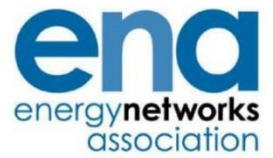


The Voice of the Networks



Energy Networks Association

Open Networks Project

**Whole System FES - Gas input to
Whole System FES**

Phase 2 report

August 2020

Document Control

Version Control

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1.0	12 August 2020	Product 3 team	Released for sign-off to WS4 meeting

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Background

WS4 P3 has built upon the 2019 WS1B Product 2 which has aligned the methodology for representing scenarios across electricity network companies and enabled Electricity DNOs to input more directly to the production of the GB wide Future Energy Scenarios (FES). The 2019 product has introduced common building blocks for use by electricity network companies in the GB FES and in the FES produced by other network companies. The building blocks enable better comparisons between scenarios produced by different network companies and more effective information exchanges. The work has also enhanced the process whereby electricity DNO's contribute to the production of the GB FES.

Description

Phase 1 of this product defined the scope for streamlining of the Whole System FES process for Gas Distribution Networks (GDNs). The product is aiming to bring further alignment to the FES by examining processes developed in WS1B P2 in 2019 and comparing these with existing GDN processes to look for streamlining opportunities. As part of this, the product team reviewed ongoing work through other forums in the industry and considered opportunities to streamline gas distribution input to GB FES.

The aim of this product is to further improve the quality and consistency of network company Future Energy Scenarios (FES) and related publications by involving gas network companies in the processes to develop scenarios.

Outcomes & Benefits

Enhancements to existing information exchange processes can lead to:

- Better quality information for FES (including the GB FES) around gas use including regional supply and demand.
- Improved gas network company scenarios for investment planning.
- Comparable scenarios across network companies through the alignment of methodologies and processes for data exchange.
- Aligned positions on decarbonisation options and timelines
- Improved FES scenario output

Indicative Impact for companies

- Impact: Revised processes for Gas and Electricity network company FES production and for inputs to the annual GB FES.
- Cost: Key changes are new ways of exchanging information between National Grid and GDNs. Additional resources to support the improved data exchange are not envisaged to be large.
- Opportunities for more integrated whole system approach to FES through aligned gas and electricity processes.

Team members

The following participants supported Product 3:

Name	Company
Colin Thomson	SGN
Joe Mitchell	SGN
Rob Nickerson	National Grid Electricity System Operator
Bethan Winter	Wales & West Utilities
Keith Owen	Northern Gas Networks
Sanjeev Loi	Cadent
Lorna Millington	Cadent
David Tuffery	Western Power Distribution

The section below describes sub-deliverables of WS4 P3. These are based on the sub-deliverables already delivered in WS1B P2, which looked at improving DNO involvement in the production of the 2019 FES (and subsequent FES documents).

Identify and implement tactical improvements GDN/ESO liaison to feed into 2020 FES

Identification of current touchpoints with National Grid FES team

GDNs have a later starting point than the DNOs had at the outset of WS1B P2, as there is already significant data sharing ongoing between Gas distribution and the ESO. Information exchange between the GDNs and ESO is very evolved process, with a comprehensive data exchange enshrined in UNC code.

FES Engagement cycle

GDNs already take part in developing FES through Regular stakeholder workshops, calls for evidence and bilateral meetings as part of the ongoing FES engagement cycle (right).

Gas Futures Group

National Grid is part of the ENA's Gas Futures Group, which provides another opportunity for GDNs and National Grid to exchange information, improving the FES process.

Xoserve Data

National Grid already has access to Xoserve demand data (large loads).

Uniform Network Code

The Uniform Network Code (UNC) is the hub around which the competitive gas industry revolves, comprising a legal and contractual framework to supply and transport gas. It has a common set of rules which ensure that competition can be facilitated on level terms.

Within the UNC Transportation Principal Document (TPD), there are several sections that require the publication/sharing of data between GDNs and National Grid:

- Section B – System Use and Capacity

This section contains information relating to the use of the System, and to NTS Entry Capacity (different types of Entry Capacity, auctions, availability, allocation, constraint management, curtailment of Interruptible NTS Entry Capacity, surrender, different types of charges, neutrality arrangements); NTS Exit Capacity (registration at different points, different types of charges, surrender, Firm Capacity Application); Supply Point and LDZ Capacity (different types of registration and charges); Capacity Transfer; NTS Offtake Capacity (Statement, registration, charges).

- Section H – Demand Estimation and Demand Forecasting

This section concerns the estimation and forecasting of demand for gas at NDM Supply Point Components. It includes information relating to End User Categories and Demand Models (composite weather variable, seasonal normal demand, NDM sampling), and the determination of Supply Meter Point demand (formulae, annual load profile, weather correction factor, scaling factor, etc.). It also covers NDM Annual Quantities (including the formula), NDM capacity (including formulae), and daily demand forecasting.

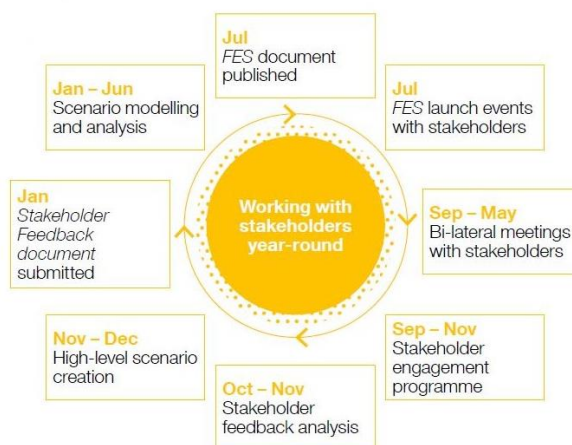


Figure 1 - FES Engagement Cycle

- Section O – System Planning

National Grid NTS publishes assumptions and information regarding supply and demand for gas in respect of the Total System and its use. Each Transporter also publishes information regarding supply and demand for gas in respect of the relevant System and its use. This section sets out the requirements for Shippers to provide information to the Transporters to enable publication, and defines the criteria (consultation processes, sources, confidentiality, content, etc.) surrounding the gathering of the information required to produce these documents.

The GDN Long Term Development Statements are published in October every year as part of their licence obligations ([SGN](#), [NGN](#), [Cadent](#), [WWU](#)).

The TO is already involved in the FES process, as the TO produces the [Gas Ten Year Statement](#) (GTYS) (published November), which is linked to the FES process.

Tactical changes to be implemented for subsequent FES (FES 2021)

1. Scenario production timeline

We have produced a timeline of the various scenarios being published by each of the network companies and the Electricity System Operator (ESO) during 2020. This already exists for electricity networks as a result of the work done in WS1B P2 (published [here](#)). This gives stakeholders improved visibility of the various scenario publications being produced during the year.

GDNs publish ten-year demand forecasts and long-term development statements as part of their licence obligations. As a result, GDNs don't all publish their own FES as the electricity networks do (e.g. [SPEN FES](#)). The below timeline shows how and when the various scenario publications are produced throughout the year. This includes:

- [Gas Ten Year Statement](#)
- Long Term Development Statements ([SGN](#), [NGN](#), [Cadent](#), [WWU](#))

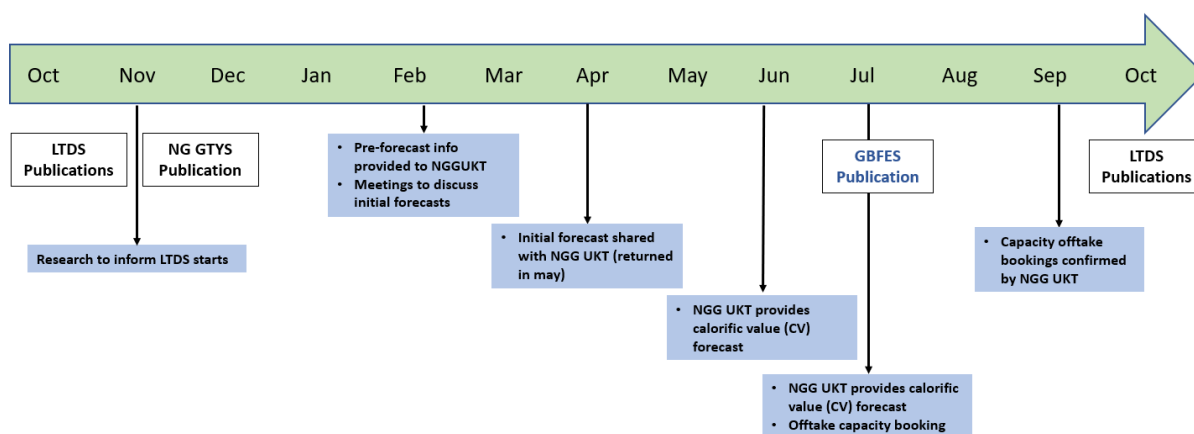


Figure 2 - Publications and data exchange timeline for GDNs and NG

Finalise templates and processes for information exchange to support 2020 delivery of Whole Electricity System FES

The objective of this sub-deliverable was to develop and agree templates and processes for the exchange of network information related to the development of Future Energy Scenarios.

1. Information exchange process development

The data exchange process is designed as a method to ensure that the GB FES and regional forecasts are aligned within the starting year, and that the most up to date thinking regarding forecast years is shared. An example of where this approach may be of benefit is in forecasting trends of Low Carbon Technologies uptake. One issue we may encounter is a different amount of modelling that has been carried out from region to region (e.g. WWU's regional FES), so GDNs will not be able to provide the same data to National Grid.

2. Building Blocks development

The buildings blocks are proposed as a collection of data gathering points from which a forecast can be derived. The building blocks are designed to take account of different factors which have a gross effect upon gas/electricity demand/supply.

Demand

A significant amount of data relating to demand is already being shared through the UNC (e.g. annual, 1-in-20 peak, flat and flex offtake capacity). Through this product, we have developed common templates for sharing data relating to some specific sources of demand. These include:

- Large loads
- Peaking plant (type, location, capacity).
- Biomethane

Most of this information is already shared between GDNs and National Grid, however, this varies between GDNs, and a common template for providing this would streamline the process of relaying it to the FES team.

Hydrogen

There is a clear opportunity to illuminate the timescales for a hydrogen economy and how the transitional arrangements may manage the conversion of the GB gas infrastructure from Natural Gas to hydrogen.

Modifications to UNC section H have been proposed as a way of improving our understanding of the role of hydrogen in a net zero energy system.

UNC section H currently only talks about 'gas' data which has been understood as methane. This means that there's no formal mechanism for sharing hydrogen data nor a code requirement to do analysis of peak demand for hydrogen and how this splits by region in order to facilitate comparison.

Resolving the hydrogen landscape is seen as a priority, alongside the information exchanged necessary to manage the transition processes which would see an ever-decreasing requirement for natural gas with a corresponding growth in demand for hydrogen.

However, there is currently insufficient data across each of the GDNs to develop an accurate forecast of hydrogen supply/demand to the level that is required under section H. We believe we should seek a more granular approach to information exchange rather than the annual "one shot" submissions as required under the existing section H.

There are a number of hydrogen demonstration trials underway and planned for the upcoming GD2 price control. As policy develops around the future of hydrogen and greater understanding is gained from pilot projects, there may be scope to provide common templates for hydrogen technology data (e.g. electrolyser injection/blending sites, industrial users, domestic supply, transport).

This should be kept under review by the demand forecasting working group for future FES cycles.

3. Assumptions/Exceptions

A common data sharing process doesn't specify that each GDN use a specific format for their own scenario production (or even that they must produce scenarios), it just allows for easier information sharing between parties.

Identify and agree licence and code changes required to support data exchange and ongoing FES delivery

1. Determining the need for licence and code changes

In developing this product, we've found that there is already a significant amount of codified data sharing ongoing between Gas distribution and the ESO (See current touchpoints section, above).

Where data is not already provided, there are processes already in place to facilitate further data exchange.

Support delivery of Whole System FES

1. On-going support of Whole System FES
 - i. GDNs already attending events/meetings to help shape the whole system FES approach (e.g. Shaping FES 2020 event, FES network group, bilaterals)
2. Continued support for whole System FES through 2020
 - a. As far as practicable, the Building Blocks developed will be used to share information between network companies. Each of the GDNs can use these data templates going forward.

Relevant Workstreams

- WS1B P2 (2019) (Final report available [here](#)).
- WS4 P5: Coordinated Gathering Regional Data. Activities include:
 - Agree scope for service including generic basic data, and data provision/sharing mechanism.
 - Agree mechanism to coordinate gathering of regional data e.g. procurement of service provider or agreed common data framework.
 - Present a high-level cost benefit analysis alongside potential delivery implications and timescales in order to assess and agree next steps.
- WS4 P6: Current Network Resource Data Analysis. Activities include:
 - Consider, identify and document what data currently exists for published network resources or other resources that already exist and could be published, as well as an initial view of priority data gaps.

Coordination with other workstreams will continue so that learnings can be shared and there is no duplication of effort

Conclusions and recommendations

Conclusions

A comprehensive level of demand forecasting and capacity information is already shared, the process for which is well established in UNC.

GDNs are keen to continue this engagement and explore how to enhance further these processes to supplement the industry view of the transition to Net Zero.

This product has developed ways to improve GDN data input and stakeholder visibility of GDN scenarios (long term development statements). These include:

- Scenario/forecast production timelines
- Data sharing templates for some specific sources of demand/supply.

Recommendations

Resolving the hydrogen landscape is seen as a priority, alongside the information exchanged necessary to manage the transition processes which would see an ever-decreasing requirement for natural gas with a corresponding growth in demand for hydrogen.

There are a number of hydrogen demonstration trials underway and planned for the upcoming GD2 price control. As policy develops around the future of hydrogen and greater understanding is gained from pilot projects, there may be scope to provide common templates for hydrogen technology data (e.g. electrolyser injection/blending sites, industrial users, domestic supply, transport).

This should be kept under review by the distribution, transmission and demand forecasting working group for future FES cycles.

This recommendation also ties in with work being carried out as part of the BEIS hydrogen programme development group on system transformation. The group is looking at a number of areas related to hydrogen system transformation, including data exchange. Some projects coming out of this group that could feed into this work.

Next steps

A summary of the next steps is given below.

Date	Stakeholder	Purpose
12 August 2020	ENA Open Networks WS4 meeting	Consideration of report. recommendation to Steering Group and Gas Futures Group for sign-off
Mid-August	Steering Group and Gas Futures Group	Sign-off and completion.

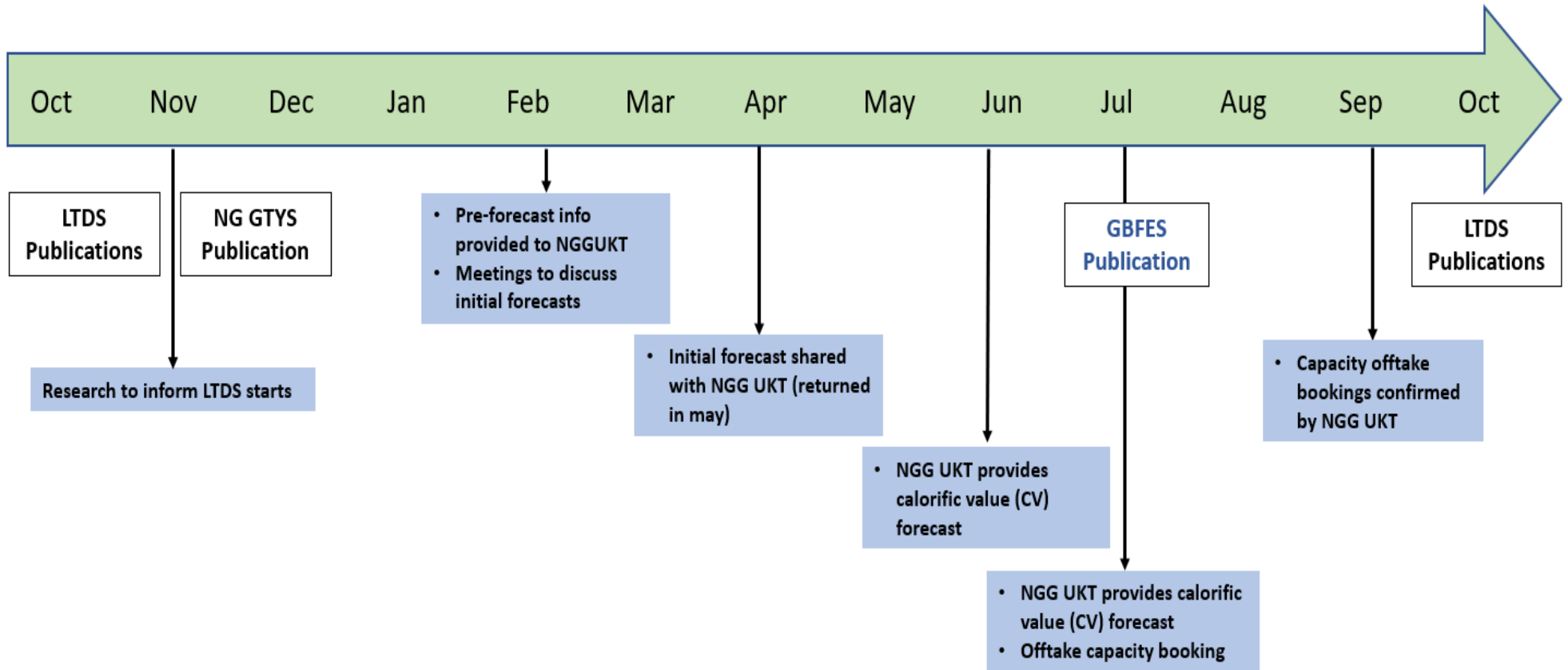
Table 1 – Summary of next steps

Annex 1: Data already provided

- 10-year annual demands for each LDZ by customer load band type
 - NDM firm
 - Total NDM consumption
 - Total consumption
 - Total LDZ consumption
 - Shrinkage
- 10-year 1-in-20 peak demands by LDZ by load band:
 - NDM Firm
 - DM Firm Consumption
 - Total Consumption
 - Total LDZ Demand
 - Shrinkage
- Historic demand including weather corrected and reconciliations.
- Count of current domestic and non-domestic connections.
- Count of new loads (domestic and non-domestic) during last year.
- DS8: Annual gas requirements of large loads over the next 10 years.
- Commentary on large loads (varies by GDN)
- Starting to share some gas peaking plant data although not aligned on how this is shared.

Annex 2: Scenario Production timeline

Publications and data exchange timeline for GDNs and NG shown below;



Annex 3: Flexible Generation template

Numbers of sites (#)	LDZ1	LDZ2	LDZ3	Total
Legacy sites				
Connected sites				
Accepted Enquiries				
Capacity market registration t-1				
Capacity market registration t-4				

Electrical Output (MWe)	LDZ1	LDZ2	LDZ3	Total
Legacy sites				
Connected sites				
Accepted Enquiries				
Capacity market registration t-1				
Capacity market registration t-4				
Projections to Y+1 (in addition to above)				

Gas Peak Day Input (MWh)	LDZ1	LDZ2	LDZ3	Total
Legacy sites				
Connected sites				
Accepted Enquiries				
Capacity market registration t-1				
Capacity market registration t-4				
Projections to Y+1 (in addition to above)				

Annex 4: Biomethane template

LDZ	Connected (#)	Accepted (#)	Connected Throughput (TWh)	Accepted Throughput (TWh)	Connected - Equivalent homes	Accepted - Equivalent homes
LDZ1						
LDZ2						
LDZ3						
Total						