Gas Networks Ireland

Network Development Plan 2023

Gas Networks Ireland Consultation Response

1 Introduction

As the Transmission and Distribution System Operator for gas, Gas Networks Ireland (GNI) is responsible for the development and safe operation of the gas network, taking account of the long-term needs of the system. GNI has license obligations to produce a ten -year Network Development Plan (NDP) annually. Before the final version of the NDP is published, the Commission of Regulation of Utilities (CRU) is required to consult all actual or potential system users. This is undertaken via a public consultation on the draft NDP, hosted by the CRU. Based on the responses received to the consultation, GNI updates the NDP where necessary and publishes the final version on the GNI website.

The CRU held a public consultation on GNI's draft ten-year NDP covering the period 2022/23 – 2031/32.

This Public Consultation ran for four weeks from 4th April 2024 to 3rd May 2024.

As part of the Public Consultation, the CRU received views and comments from seven respondents:

- MaREI
- The Sustainable Energy Authority of Ireland (SEAI)
- An Taisce
- Friends of the Earth (FoE)
- Electricity Association of Ireland (EAI)
- SSE
- Net Zero Energy

GNI appreciate the level of interest shown in the NDP 2023 and welcome the detailed feedback received from the seven respondents. While the scope of the NDP aims to cover all aspects influencing medium-term gas demand supply and demand in Ireland, it is noted that in some instances the views and comments received fell outside the scope of the Network Development Plan and of this Public Consultation. Hence, GNI's responses set out below are limited to the views and comments received that relate to the scope of the Public Consultation. More broadly, and where relevant, GNI has taken aspects of the responses that fall outside of the scope and timeline of the NDP into consideration in other areas within GNI's business.

The Public Consultation has not resulted in material changes being made to NDP 2023[1]. Where relevant, it is highlighted below where views conveyed in the public consultation responses have been factored into the planning for the next iteration of the Network Development Plan (2024). The final version of the NDP 2023 is now published on GNI website, along with this response letter.

[1] See section 2.7 below for details of minor change to NDP 2023

1.1 NDP Model Data Freeze

The NDP provides an overview of how the gas network may develop over a ten-year period. It incorporates analysis and commentary on current supply and demand for gas, as well as on projected gas consumption and development of infrastructure. The primary function of the document is to provide a ten-year adequacy assessment of the gas network, to ensure adequate infrastructure is in place to safeguard a secure and resilient gas transportation system to meet Ireland's projected energy needs over the ten-year NDP horizon. As such, the modelling assumptions adopted in the NDP are based primarily around current policy measures in place, while also incorporating the potential for policy change to address energy and climate targets. To allow time to complete the detailed modelling and analysis required to produce the NDP, a modelling 'data freeze' is required. This results in a lag between the time when modelling assumptions are finalised and when the NDP becomes available for public consultation. The modelling data freeze date for the NDP 2023 was October 2023. At this time, the key document informing the NDP energy policy assumptions was the Climate Action Plan 2023. Each year, these assumptions are updated to align to latest energy policy measures in place at the time of the data freeze.

1.2 NDP Study Period

As mentioned above, the NDP is a ten-year lookahead; hence, the final year of the 2023 NDP time horizon is gas year 2031/32. Hence, any detailed forecasting of gas supply and demand beyond this ten-year period is outside the scope of the NDP.

Gas Networks Ireland recognise the importance of looking beyond the ten-year period to ensure prudent technical and economic planning for a net-zero carbon gas network to be in operation by 2050. We are in the process of developing a longer-term strategic planning document out to ten to twenty years for delivery in 2025. More detail of the scope of what is to be included in the longer-term forecasting can be found within the PC5 Regulatory Framework document[2] on the CRU's website.

[2] PC5 Regulatory Framework

1.3 Consultation Questions

The following questions were included in the Public Consultation, which respondents had the option of using as a basis for their review of the Network Development Plan.

Q1. Does the report sufficiently demonstrate the adequacy of the gas transmission system and security of supply?

Q2. Section 6 of the report shows projections for the CO2 emissions produced from the gas network. Should this aspect of the report be developed and clarified further and, if so, do you have any suggestions as to what could be considered in future?

Q3. Do you agree generally with the assumptions GNI have used in their modelling and the presentation of supply and demand data and the wider report?

Note: Assumptions pertaining to data centre development are addressed in response to question 8.

Q4. Does the report provide sufficient clarity on infrastructure development, future investments and timeframes for such projects?

Q5. Do you have suggestions on further improving the clarity and presentation of information and data in the report?

The Gas Network Ireland's NDP is primarily focused on security of supply and forecasting demand and supply as per the relevant legislation. The legislative landscape has evolved with the Climate Action and Low Carbon Development Act and the introduction of Sectoral Emissions Ceilings. With that in mind the CRU wish to include some specific questions on these areas, as follows:

Q7. The Government's Energy Security in Ireland to 2030 package was published in November 2023 which was just before the policy data freeze date of December 2023 and limited time was available for a detailed assessment of the relevant actions. There are key actions that are relevant to GNI, including those specifically related to the Resilience Work programme for Gas. Do consultee respondents have a view of how these actions could be addressed in future iterations of the TYNDP?

Q8. Figure 6-6 shows the Annual large new industrial and commercial demand loads. Should there be further consideration given to the detail and presentation of industrial and commercial and large energy user demand in this report?

Two respondents out of seven used this format in their response. As a result, this report instead addresses common themes across all responses under the headings below and identifies links between these themes and the questions above as applicable and where it is unambiguous.

2 Gas Networks Ireland Responses

2.1 Carbon Emissions and Carbon Budgets (linked to Q2)

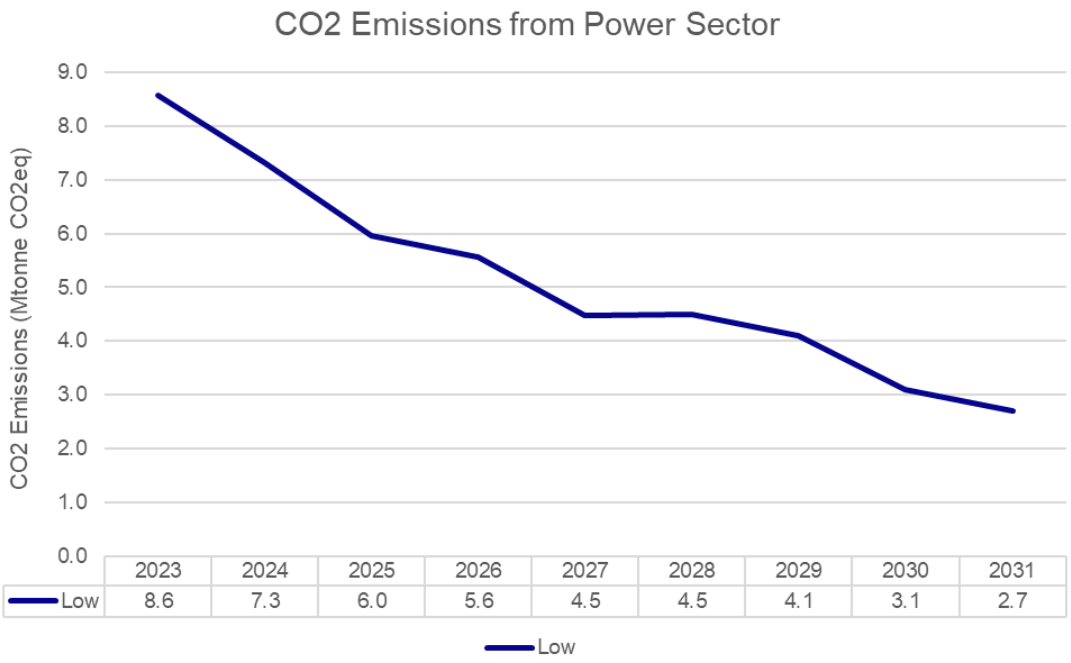
Gas Networks Ireland, in setting out the inputs and assumptions behind the three scenarios of the Network Development Plan (NDP), takes into account all national energy policies in place prior to the data freeze date. GNI fully supports the Government's emissions reduction targets of 51% by 2030 and net-zero by 2050, with the near-term targets to be achieved via the Sectoral Emission Ceilings and Carbon Budgets introduced in 2022[3]. It has been recognised that meeting the carbon budgets and targets by 2030 is challenging[4] and that the scale and pace of the action required, is significant. To ensure prudent planning for the capacity of the gas network, which is the objective of the NDP report, Gas Networks Ireland must take on board this uncertainty when laying out the NDP scenarios.

The methodology for forecasting gas demand as part of the NDP is available on our website[5]. It is noted in the NDP that Gas Networks Ireland do not model a whole of energy system as part of our forecasting model, with one exception, the power generation sector, where we model the entire Single Electricity Market (SEM). This limits us in commenting *on whether the majority of the total sectoral carbon emission budgets are met*. However, Gas Networks Ireland recognise that we can quantify *the contribution of natural gas towards the total carbon emissions* of the Transport, Built Environment – Residential, Built Environment – Commercial, and Industry sectors, and we intend to include this information in NDP 2024 following the completion of a verification of the breakdown between industrial and commercial customers in our forecast methodology.

As regards the power generation sector carbon limits and budgets, we intend to publish the forecast annual carbon emissions in the next iteration of the NDP following further consultation with EirGrid, as the electricity TSO, and with further consideration of planned operational measures identified by EirGrid in their Shaping Our Electricity Future and Operational Policy Roadmap documents, alongside any other similar relevant documents published in 2024 ahead of the NDP 2024 modelling data freeze date.

Gas Networks Ireland fully appreciate that the carbon emission limits and targets as set out in the Climate Action Plan 2023 (CAP 2023) are legally binding. To this end, the Low gas demand scenario included in NDP 2023 aims show a pathway to meeting the power generation sector carbon emission limits and budgets. This scenario includes the renewable capacity build-out rate included in CAP 2023 of 22GW, which is identified as being the minimum requirement to meet the sectoral carbon emission targets. The Low scenario results in a Renewable Energy Share in Electricity (RES-E) of 84% by 2030. Included as follows is the indicative forecast annual carbon emissions from the power generation sector for the Low scenario. Note that this forecast does not include any potential further decrease due to the use of biomethane or hydrogen in the power generation sector.

[3] Sectoral Emission Ceilings
[4] Ireland's Greenhouse Gas Emissions Projections 2022-2040
[5] Gas-Forecasting-Methodology-Report.pdf (gasnetworks.ie)



As mentioned previously, further consideration of, in particular, relevant electricity network roadmap documents published by EirGrid is required ahead of publishing the power generation sector emission targets for all three NDP scenarios.

2.2 Large Energy Users

Decarbonising all new Large Energy User (LEU) connections, whether they are connecting to the electricity grid, or the gas network, will take time. The renewable gas market in Ireland is in its development phase; the introduction of support schemes for renewable gases will stimulate growth of the biomethane sector, which in turn can enable a faster decarbonisation of new LEUs that want to connect to the gas network.

GNI support the proposal for a glide path to be set to deliver this ambition[6] and believe that an appropriate connection policy regime can play a key role in achieving this. LEUs seeking to connect to the gas or electricity networks can drive investment in renewable energy in Ireland, including indigenous renewable gases, and this can be leveraged to stimulate the industry. A trajectory based on an integrated energy system approach could also help LEUs decarbonise over time with, in certain instances, a transition from gas as their primary fuel to electricity, with gas as backup over time.

As regards NDP 2024, GNI will take into account the principles and measures outlined in the anticipated Large Energy User connection policy, which is due in Q3 2024, subject to publication within our data freeze date.

2.3 Gas Quality

For modelling purposes as part of the NDP process, GNI assume calorific values at the various entry points based on average historic values. The assumed values are outlined in Appendix 3 of the NDP. Queries around the gas quality at specific locations in the network, and the potential for gas quality specifications to be changed in the future, are continuously being addressed and discussed at the shipper and code modification forums held by GNI. Specifically, a recent update was given at the April 2024 Code Mod Forum[7], providing a comprehensive overview of which gas quality specifications are expected to be updated in future. While there

[6] Review of Large Energy Users connection policy - consultation paper
[7] Available to all Code Mod Forum stakeholders here

are many initiatives at a European level in this space, it is difficult to categorically identify which gas quality specification changes will be transposed into the Irish specifications, particularly given that we are downstream of GB, a third-party country.

Forecasting future gas quality specifications of gas within the network is challenging even with the revised specifications, as National Gas Transmission do not provide forecasts of the upstream gas quality of imports via the Moffat Entry Point. As a result, forecasting gas quality parameters at a more local level within the network is not currently possible, given that the vast majority of gas supplied to the network is imported from GB, and that the sources of the imported gas vary in proportion between LNG, indigenous (GB) supply and Norwegian imports, all of which have different gas qualities.

2.4 Biomethane

2.4.1 Biomethane Supply Potential

Gas Networks Ireland published a Biomethane Energy Report[8] in September 2023 which outlines the potential for biomethane production, with a focus on the potential supply by 2030, and the different routes to market for different biomethane suppliers. Biomethane supplier connection enquiries are assessed on a case-by-case basis by Gas Networks Ireland, depending on a number of factors that are outlined in detail in this report.

2.4.2 End Use

Biomethane is a renewable gas, structurally identical to natural gas that can be used as a direct substitute for natural gas. Biomethane is fully compatible with both the national gas network and end-use technologies such as existing appliances, industrial infrastructure, CNG vehicles and gas turbines, and can seamlessly replace natural gas to reduce emissions in residential, industry, transport and power generation.

The National Biomethane Strategy[9] states that biomethane "...can seamlessly replace fossil gas to reduce emissions in heating, transport, and power generation" and "In the absence of policy interventions, it is expected the sector that pays the highest premium for biomethane will ultimately secure the resource."

2.4.3 Emission Factor

Biomethane that satisfies the Renewable Energy Directive's life cycle sustainability criteria can be classified as "a zero-carbon rated fuel". This criteria states that all biomass fuels used for electricity, heating and cooling must achieve at least a 70% GHG emissions saving, increasing to 80% for projects that come into operation from 2026 onwards. The savings required for biomass fuels used in transport are slightly lower, at 65%. The producer of the biomass fuel must be certified by an EU Voluntary Scheme[10] as having met the sustainability and GHG reduction criteria in RED II before the biomethane can be classified as 'renewable' and then 'zero emissions'. *All biomethane currently entering the gas grid has been certified as net-zero by one of these Voluntary Schemes.*

Studies and publications demonstrate that biomethane can go beyond this net-zero position and provide carbon abatement or negative emissions. These include:

- The Marginal Abatement Cost Curve published by Teagasc in 2023[11] outlines the range of CO2eq

[8] biomethane-energy-report.pdf (gasnetworks.ie)
[9] National Biomethane Strategy
[10] Bioenergy Voluntary Schemes
[11] Marginal Abatement Cost Curve

emissions that could be displaced by producing biomethane from a range of feedstocks that are waste products. This study identifies that for 5.7TWh of biomethane production, 74 tCO2eq/TJ emissions could be displaced for each TJ of biomethane produced. Given that natural gas produces 56.7 tCO2eq/TJ[12], the net saving of displacing natural gas with biomethane could be as much as 17.3 tCO2eq/TJ.

- Climate Action Plan 2023 and 2024 both attribute an abatement of 0.2 MtCO2eq and 0.4 MtCO2eq to the production and utilisation of 5.7TWh of biomethane in 2030, equivalent to a net saving in the range of 7.2 to 14.4 tCO2eq/TJ.

GNI recognise that the emissions associated with biomethane are dependent on various factors, including the type of feedstock, the production process and potential fugitive emissions from Anaerobic Digestion (AD) plants. However, all biomethane that is forecast to enter the gas network will need to meet the Renewable Energy Directive sustainability requirements. Hence, in NDP 2023, we have attributed biomethane with a net saving of 0 tCO2eq/TJ, classifying it as carbon neutral.

2.5 Compressed Natural Gas (CNG) for use in the Transport sector

GNI envision that all gas demand for transport will be met by renewable gases, specifically biomethane, within the ten-year timeline of the NDP. In the Best Estimate scenario of the NDP 2023, by the end of the NDP horizon, the forecast gas demand for the transport sector is equivalent to less than 1% of ROI demand and would require 6% of the projected biomethane supply to meet this demand. Currently, most biomethane produced in Ireland is utilised in the transport sector under the Renewable Transport Fuel Obligation (RTFO). In 2023, approx. 96% of CNG consumed in Ireland was certified as renewable or bio-CNG under the RTFO, which is operated by the National Oil Reserves Agency (NORA).

To date, there has been little progress in the decarbonisation of the HGV fleet in Ireland. In 2022, only 3% of registered vehicles in Ireland were classified as HGVs yet the SEAI estimates indicate that these vehicles were responsible for 20% of total transport CO_2 emissions.

Biomethane has been identified as a suitable alternative fuel in hard-to-abate sectors, such as transport. The recently published National Biomethane Strategy calls out the role that biomethane can play in decarbonising HGV transportation, particularly in the transitional phase ahead of the anticipated electrification of the sector.

There is also the potential for Hydrogen to play a role in fueling HGVs towards the end of the NDP 2023 horizon and beyond, as identified in the National Hydrogen Strategy. This would mitigate the risk of CNG refueling infrastructure becoming stranded assets in the event that biomethane was no longer being used in the transport sector.

2.6 Hydrogen

The National Hydrogen Strategy[13] outlines the potential supply sources and demands for Hydrogen out to 2050. In Action 12, the Strategy calls for the development of "…a plan for transitioning the gas network to hydrogen overtime taking due consideration of: …e. the potential use of hydrogen blends during a transition phase, the costs associated and how the transition from blending can occur."

Gas Networks Ireland has commenced work to ensure the gas network will be ready to support the

[12] Conversion Factors | SEAI Statistics | SEAI
[13] National Hydrogen Strategy

transportation of hydrogen as soon as volumes become available. NDP 2023 includes details of the testing that has been carried out to date in preparation for the possibility of hydrogen blending on the network, and for the possible full conversion of sections of the network to 100% hydrogen transportation.

As outlined in the NDP:

"...looking beyond 2030, the gas network can be fully decarbonised by utilising biomethane and hydrogen. In the interim it is likely that hydrogen will begin to enter the network within the forecast horizon of the NDP, in low blended volumes on the Transmission gas network and with the potential for higher blends in parts of the Distribution gas network. 100% hydrogen clusters based around large hydrogen customers may also begin to emerge within the period of the NDP."

Hence, the NDP recognises both the prospect of indigenous standalone hydrogen cluster networks, and the possibility of both imported[14] and indigenously produced hydrogen being blended with methane in the existing network. Furthermore, in accordance with the National Hydrogen Strategy, all indigenously produced hydrogen is assumed to be generated via electrolysis which will either utilise renewable electricity which would have otherwise been curtailed or electricity generated from dedicated renewable energy assets, such as offshore wind.

2.7 Environment Screening

Gas Networks Ireland has completed both a Strategic Environmental Assessment (SEA) Screening Report and a screening for Appropriate Assessment and will publish both of these reports on our website alongside the final version of the Network Development Plan 2023.

An amendment to the NDP 2023 has been made in light of the omission of a reference to the AA assessment.

2.8 Security of Supply

NDP 2023 forecasts that the 1-in-50 peak day GNI system demand would exceed the current supply capacity available[15] from gas year 2024/25 onwards, as illustrated in Figure 10-1 of the report. Section 10.4 outlines the list of incremental capacity upgrades that are scheduled out to 2026, with each phase of these works providing additional capacity to meet the projected demands. The Decision on PC5 Transmission Revenue[16] contains further detail of the works to be undertaken to maintain a safe and resilient gas network.

2.9 Future of the gas network infrastructure

GNI appreciate that as the energy system in Ireland transitions towards a net zero-carbon system, changes will be required to the gas network infrastructure. These changes may involve repurposing and decommissioning sections of the transmission and distribution networks. Within the timeline of the NDP 2023, i.e. out to September 2032, it is not expected that significant decommissioning works will be required to be undertaken based on the forecast levels of gas demand in each sector. However, this does not preclude the possibility of decommissioning works being carried out on a localised and case-by-case basis during this timeframe. Looking beyond the timeline of the NDP, infrastructural changes to the gas network will be assessed as part of GNI's Network Transition Plan, which is due to be published in 2026.

[14] The EU Gas and Hydrogen Package outlines the requirement for all Member States to be capable of accepting 2% hydrogen blending at their Entry Point by 2030.
[15] Supply capacity as at the Data Freeze date for NDP 2023
[16] Decision on October 2022 to September 2027 Transmission Renevnue for Gas Networks Ireland