



# Biomethane Injection into NI's Natural Gas Network

Supplier Update

15/04/2021



# Agenda

- |              |  |
|--------------|--|
| <b>10:00</b> | <b>UR Welcome</b>  |
|              | <b>Strategic Policy Context</b><br>Fred Frazer – Department for the Economy  |
| <b>10:15</b> | <b>Project Overview</b><br>Roisin McLaughlin – Utility Regulator   |
| <b>10:25</b> | <b>Biomethane Connections</b><br>David Butler – SGN Natural Gas<br>Stephen English – GMO NI<br>Lisa McCarthy – firmus energy |
| <b>11:10</b> | <b>UR Q&amp;A, Close</b>   |



# Project Overview



# Project Overview

## Purpose:

Achieving readiness for biomethane injection into the natural gas network

## Key Considerations:

- Facilitation of biomethane injections at transmission and distribution level
- Alignment with existing framework where reasonable  
→ trade off between timely implementation and functionality
- Avoidance of unnecessary complexity of regulatory arrangements and network operations
- Cost efficiency
- Protection of consumer interests
- Least regrets approach in light of ongoing development of energy strategy
- Subsidies to incentivise biomethane injection subject to DfE policy
- Facilitating Hydrogen injection is a longer term issue



# Project Overview

## Key Stages:

- Development of biomethane base case in co-operation with gas Distribution Network Operators, gas Transmission System Operators and Gas Market Operator Northern Ireland
- Consideration of feedback from supplier and producer updates
- Drafting of documentation needed
- Consultation e.g on network code and any licence changes
- Implementation
  - Changes to regulatory framework — *Regulatory Work Stream*
  - Technical requirements
  - Commercial/contractual arrangements
  - Process and system changes



*Operator-specific Work Streams*



# Project Overview

## Regulatory Work Stream:

- Development and implementation of (amendments to) arrangements that:
  - are required to facilitate biomethane injection connections to the natural gas network in Northern Ireland; and
  - require regulatory decision/direction/approval/consent

### Examples:

Gas distribution and high pressure licences, network codes, connection policies

- Members:  
Utility Regulator, Gas Distribution Network Operators, Gas Transmission System Operators, Gas Market Operator Northern Ireland, Department for the Economy (observer)
- Opportunities for engagement as part of modification processes (e.g. consultation on licence modifications and code modifications)

# Biomethane Connections

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Industry Overview



Connection Process



Technical Requirements



Documentation



Grid Injection Application



Work yet to be completed



Base Case Working Assumptions (Transmission)



Base Case Working Assumptions (Distribution)

# Agenda

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# Industry Overview

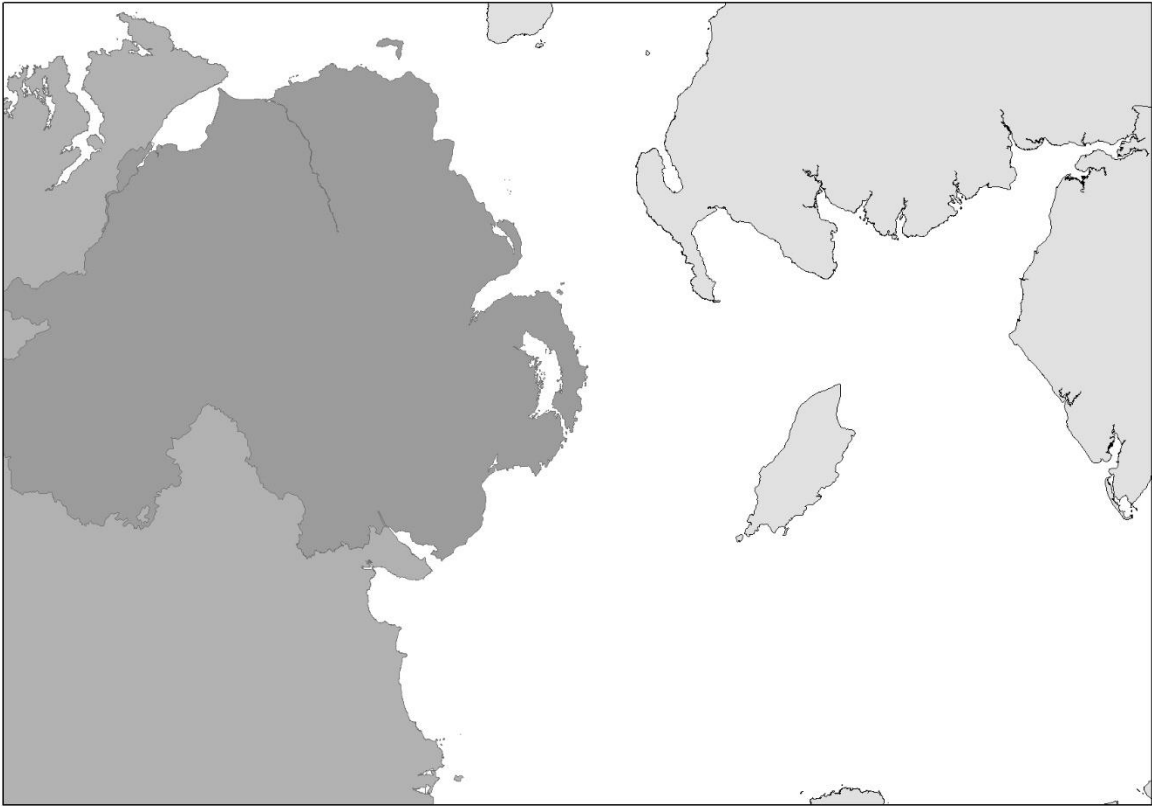
# Northern Ireland Gas Networks

## History of the Natural Gas Market in Northern Ireland

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Distribution Network	PNGL	firmus	SGN Natural Gas
Licence Granted	1996	2005	2015
Network size	3,850km	1,740km	370km
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Properties Connected	235,000	55,500	1,500

## Northern Ireland - Natural Gas Networks



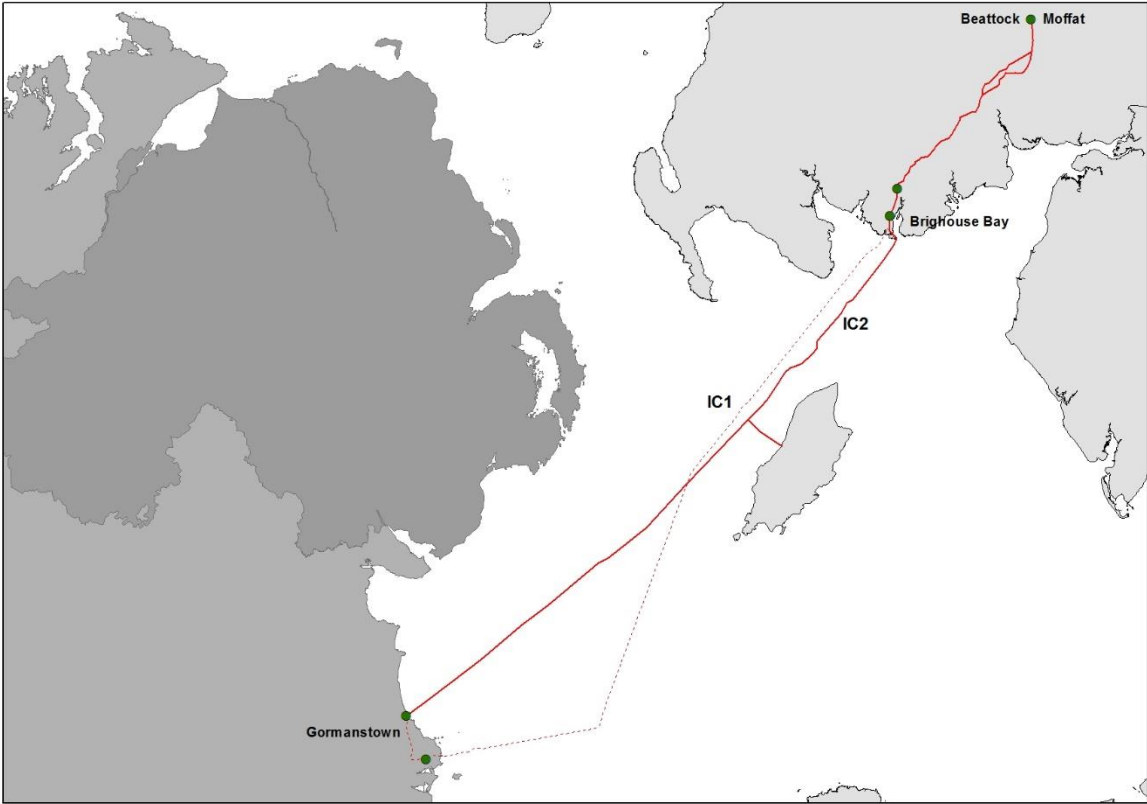
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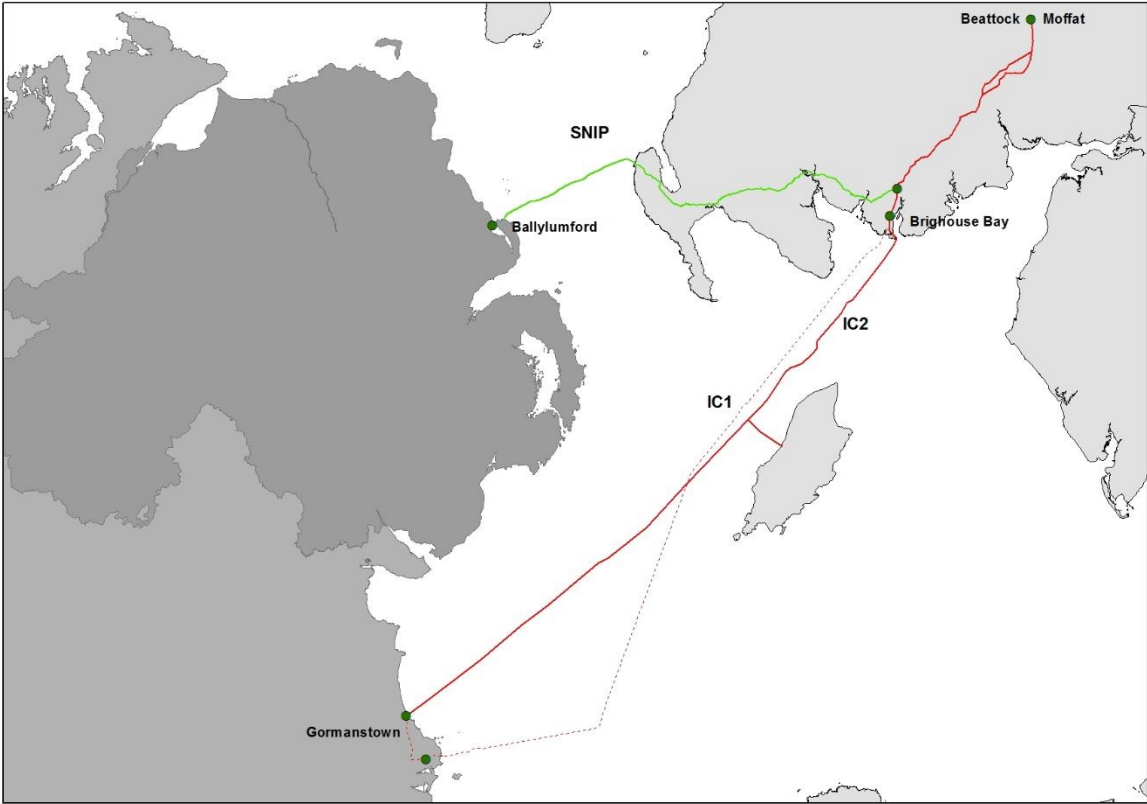
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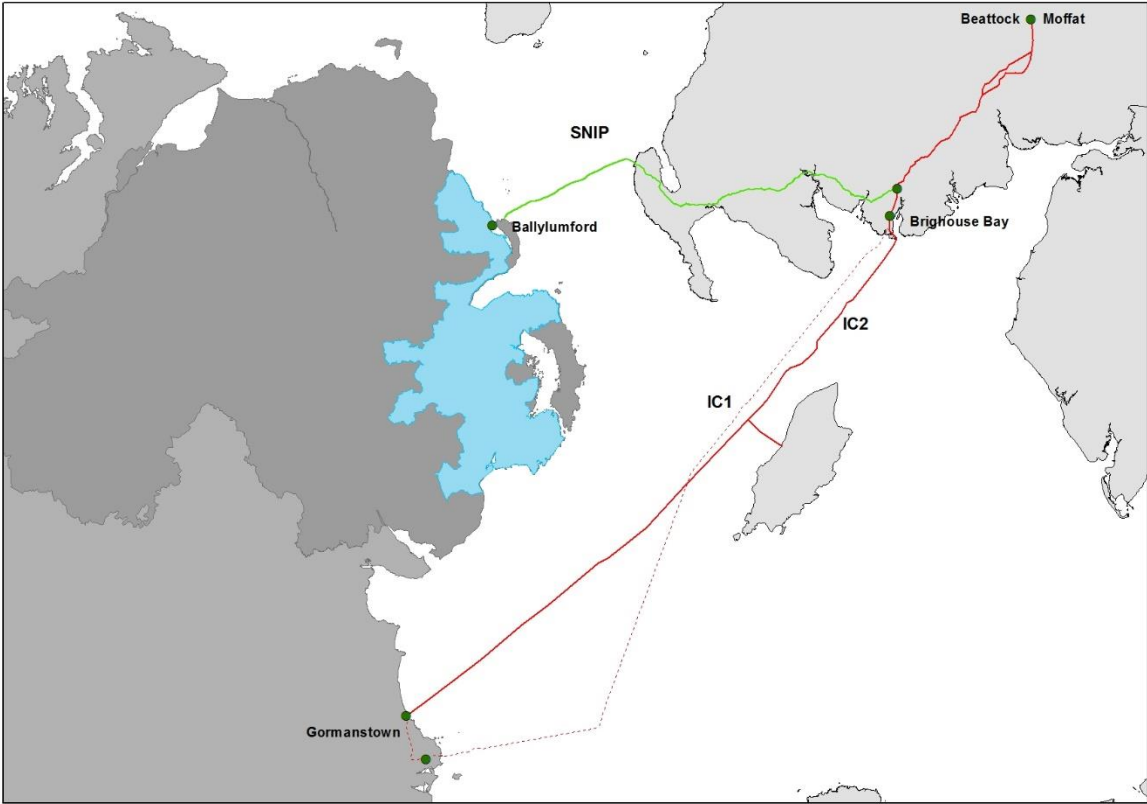
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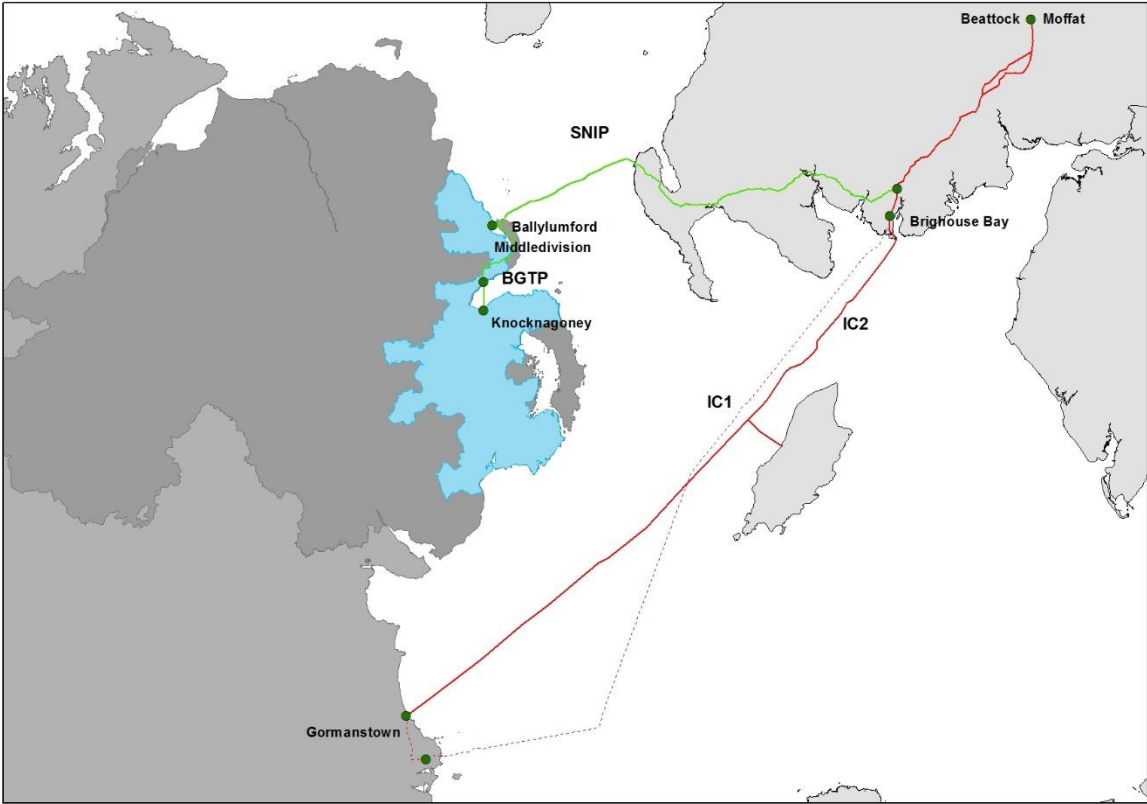
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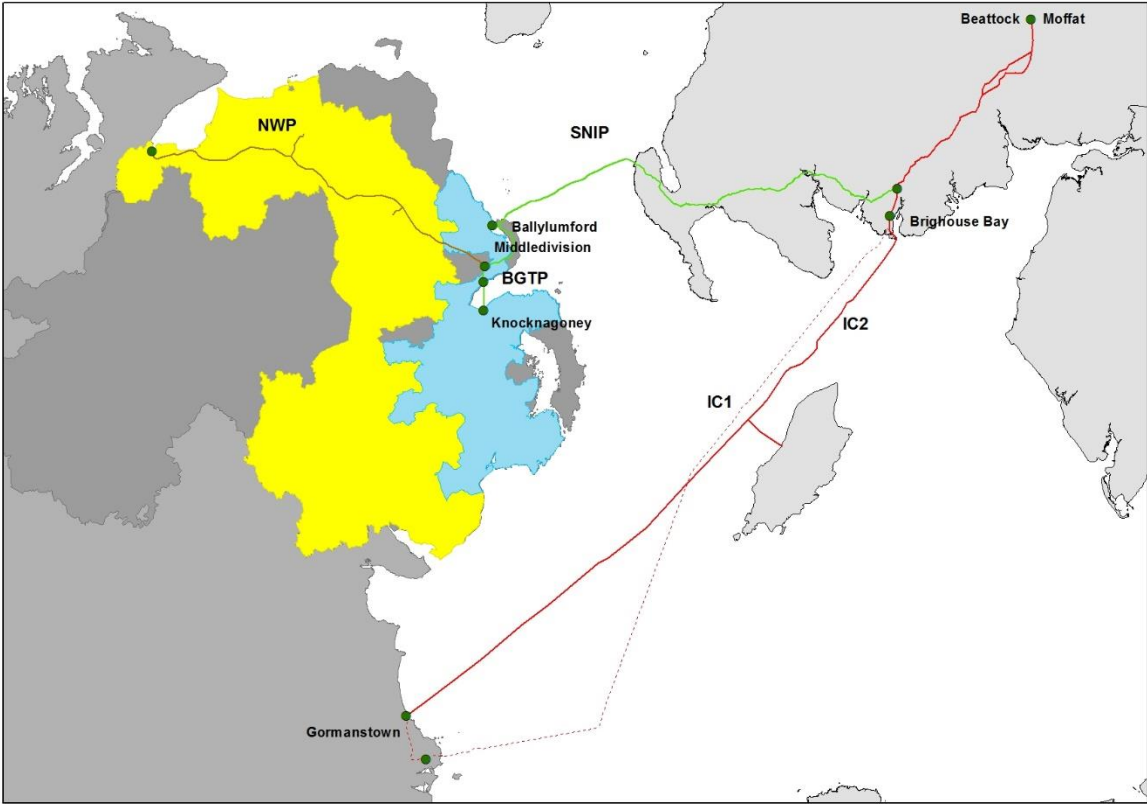
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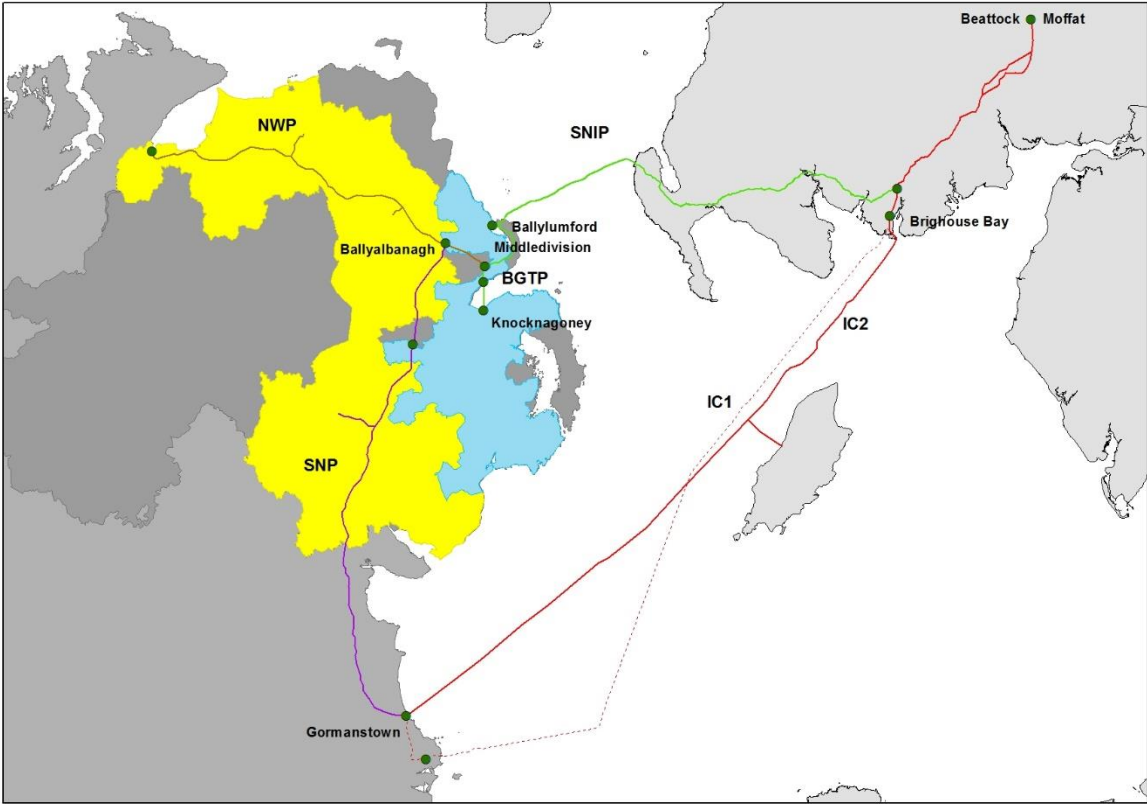
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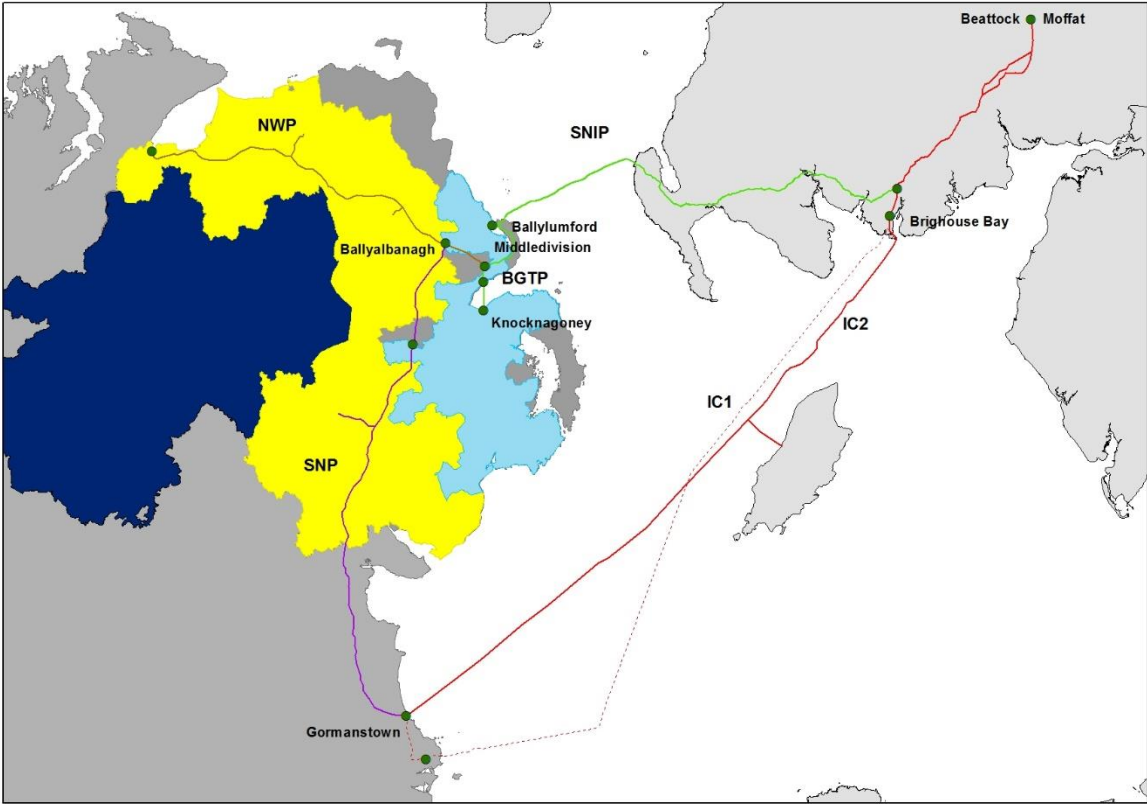
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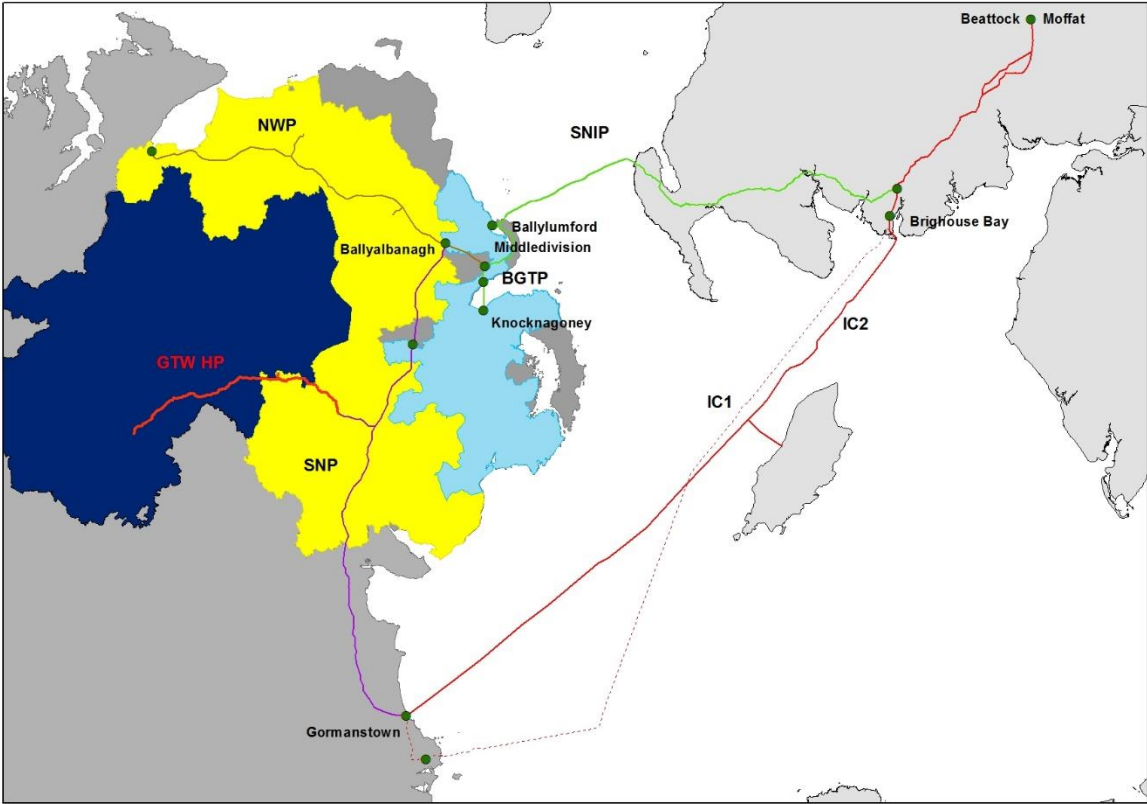
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## Northern Ireland - Natural Gas Networks



# Gas Industry Chain

## Upstream

- Exploration of gas and transportation to the processing and treatment plant
- Commodity risk – economics driven by market price of gas (often oil linked)

## Interconnector

- Large subsea transmission pipeline which transports gas from Scotland to Northern Ireland

Up to 85bar

## Transmission

- Transport of gas via large diameter, high pressure pipelines over long distances
- No commodity risk – revenues are regulated and collected from gas suppliers
- Transmits gas from initial treatment / processing plants to power generation facilities

Up to 85bar

## Distribution

- Transport of gas via smaller diameter, lower pressure pipelines to homes and businesses
- No commodity risk – revenues are regulated and collected from gas suppliers
- Purely distribution infrastructure

7 bar – Intermediate Pressure  
4/2 bar – Medium Pressure

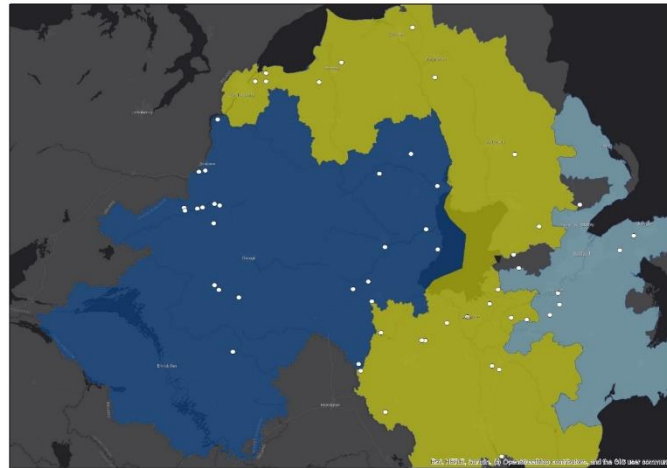
## Partially Regulated Supply

- Sell gas to end customers
- Transportation costs associated to distribution and transmission charges passed through to customers in tariffs
- Commodity risk – economics driven by market price of gas (often oil linked)

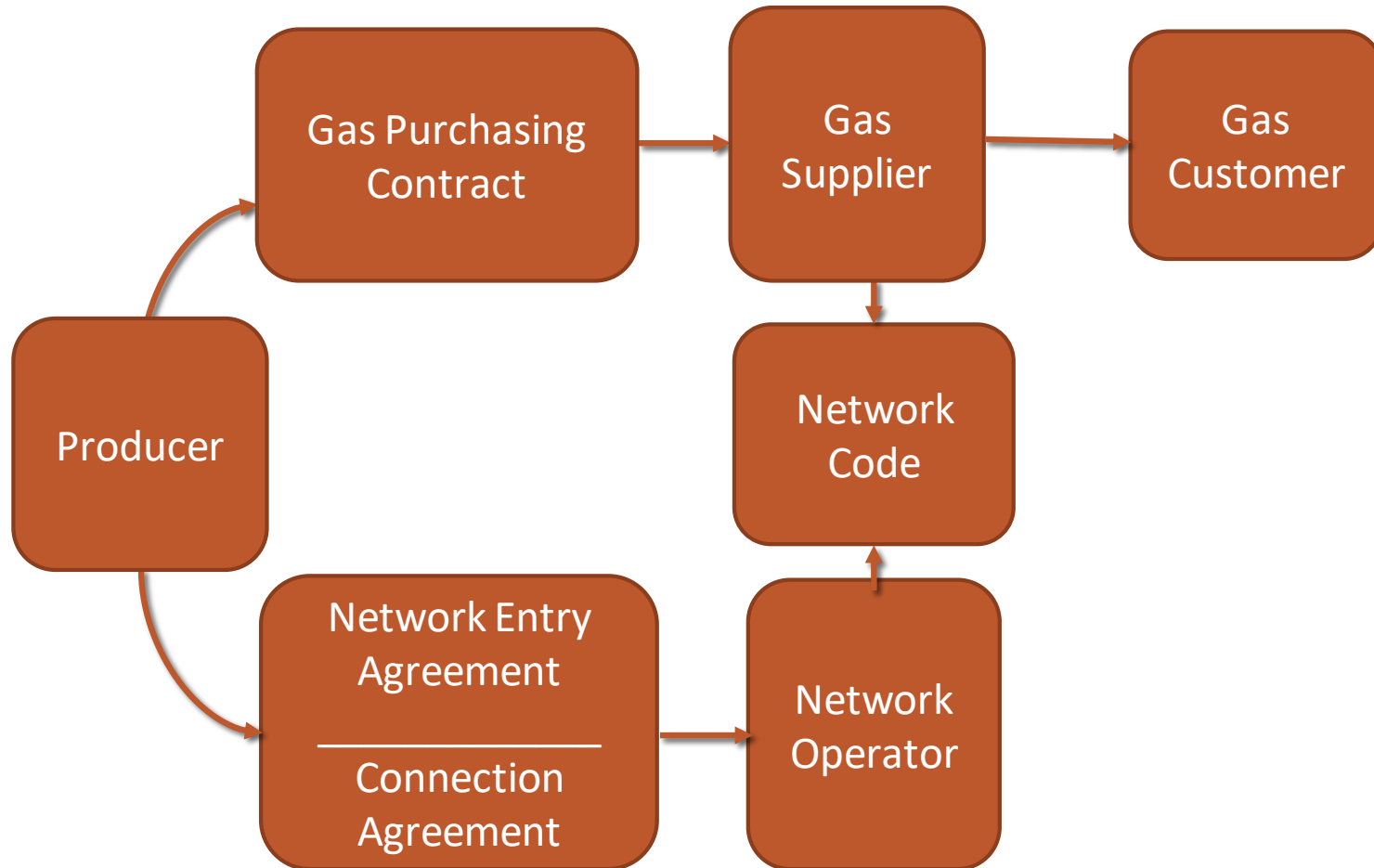
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# Connection Process

Gas Network  
and Market  
Operators



# Necessary Contractual Arrangements



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# Technical Requirements

# Biomethane Injection – Technical Update

## Type of Connections

- Single Point Injection
  - Primarily Distribution
  - Possible Transmission
- Injection Hubs
  - Suited to Transmission
  - Distribution possible

## Factors to Consider

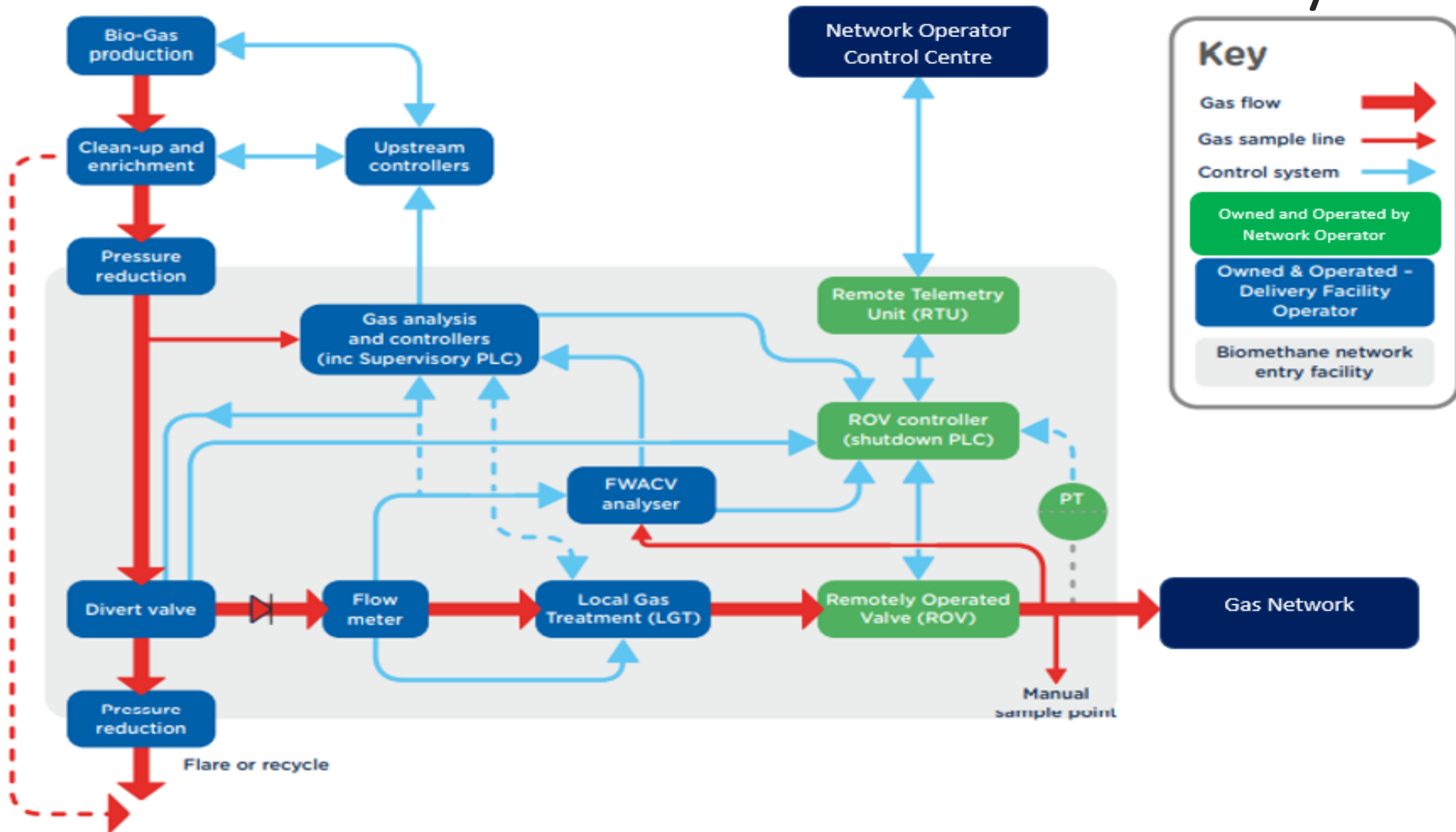
- Network Capacity / Demand
- Network Configuration
- Network pressure
- Seasonality of demand / production
- Available line pack

# Biomethane Injection – Technical Update

## Key Elements

- Pressure regulation and metering
- Gas quality monitoring
- Odorising – including accreditation process needed by producer – including interaction with environmental agency
- Propane Addition (to increase CV)
- Remote Operated Valve (ROV)
- Producer owns GEU / network operator owns ROV and associated telemetry (SCADA)

# Technical Schematic of a Minimum Connection Facility



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# Documentation



# Regulatory & Legal Requirements

- **Licence Requirements** – to be determined by the Utility Regulator
- **Network Code Modifications** – to be determined by GNOs and Utility Regulator
- **Network Entry Agreement** – all technical and operational requirements must be met
- **Biomethane must meet all Gas Safety (Management) Regulations 1996**, which stipulate the quality of the gas that is acceptable
- **The amount of energy released when a volume of gas is burned is measured by the Calorific Value (CV) of the gas and must comply with The Gas Calculation of Thermal Energy Regulations 1996**

# Required Documentation

## **Connections Agreement**

A Connection Agreement is required between both parties to ensure the installation is fit for adoption and has been designed and constructed in accordance with the Functional Design Specification. The installation will also require validation and commissioning.

There will be a charge associated with this process, which will form part of the agreement.

Other costs such as easement payments to landowners to secure the pipeline route, unforeseen costs (such as poor ground conditions) and costs due to the actions of third parties or a charge to the agreed scope of work are added to the base cost. We will provide the relevant documents to support such costs and where applicable, programme changes.

## **Network Entry Agreement**

A Network Entry Agreement (NEA) is an enduring document between both parties which sets out the technical and operational conditions for the connection. The NEA is agreed between the producer and the network operator.

As part of the NEA a risk assessment of the gas quality must be undertaken to understand more fully the implications on the network.

The timescales to complete these elements of the project can vary depending on the project complexity

# Required Documentation

## **Initial Enquiry**

This provides the enquirer with an indicative view on the suitability of the network operators pipeline to accept the volume of biomethane gas they wish to inject. It will confirm the location and pressures of the mains in relation to the site, the diameter and material of the mains and the suitability of the main(s) to accept the volume of distributed gas.

## **Capacity Study**

Builds on Initial Enquiry and develops detailed network analysis on specific site location to understand network constraints. This report is a comprehensive analysis of the network's ability to accept gas for injection at your requested connection point and is chargeable.

## **Functional Design Specification (FDS)**

The FDS set out the technical requirements a producer has to meet on the 'minimum connection model'.

## **Local Operating Procedures (LOPs)**

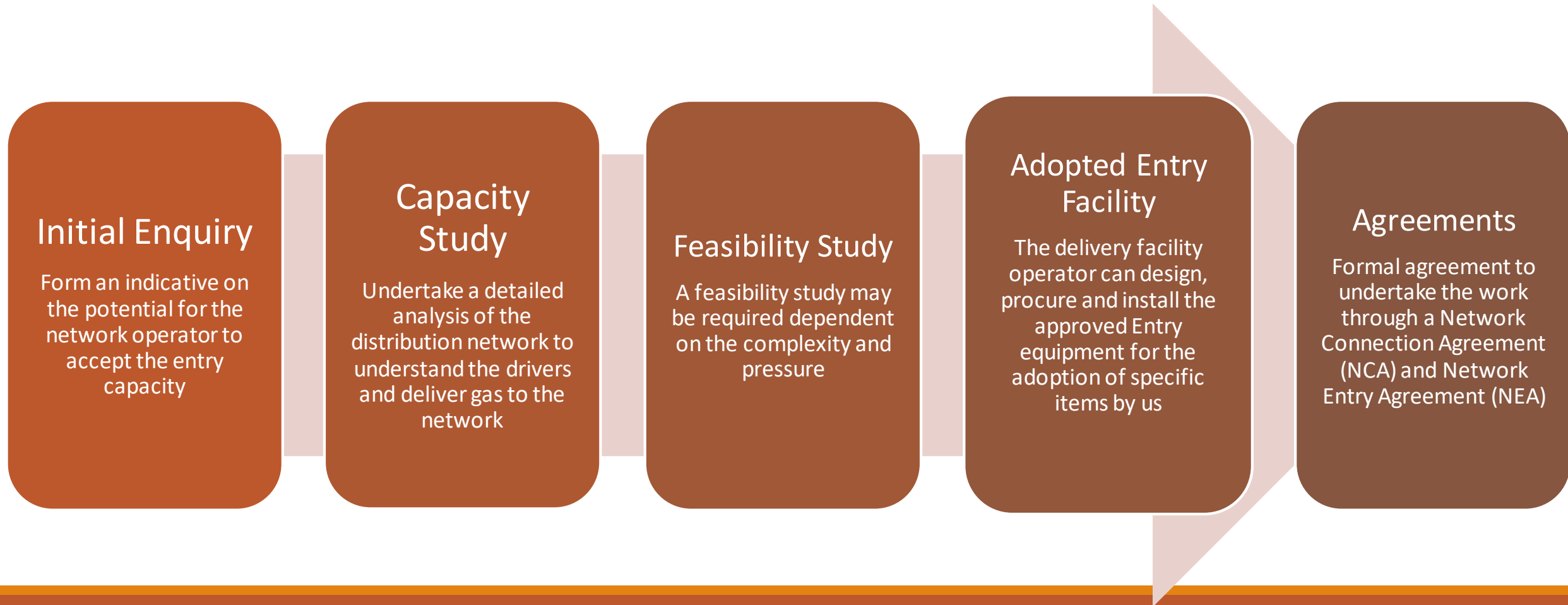
The LOPs are day-to-day procedures. These procedures outline details relating to the notification of intended gas flows, confirmation of actual gas flows, site security, management of flow rates, pressures and gas quality. They will also provide information relating to maintenance and emergency arrangements.

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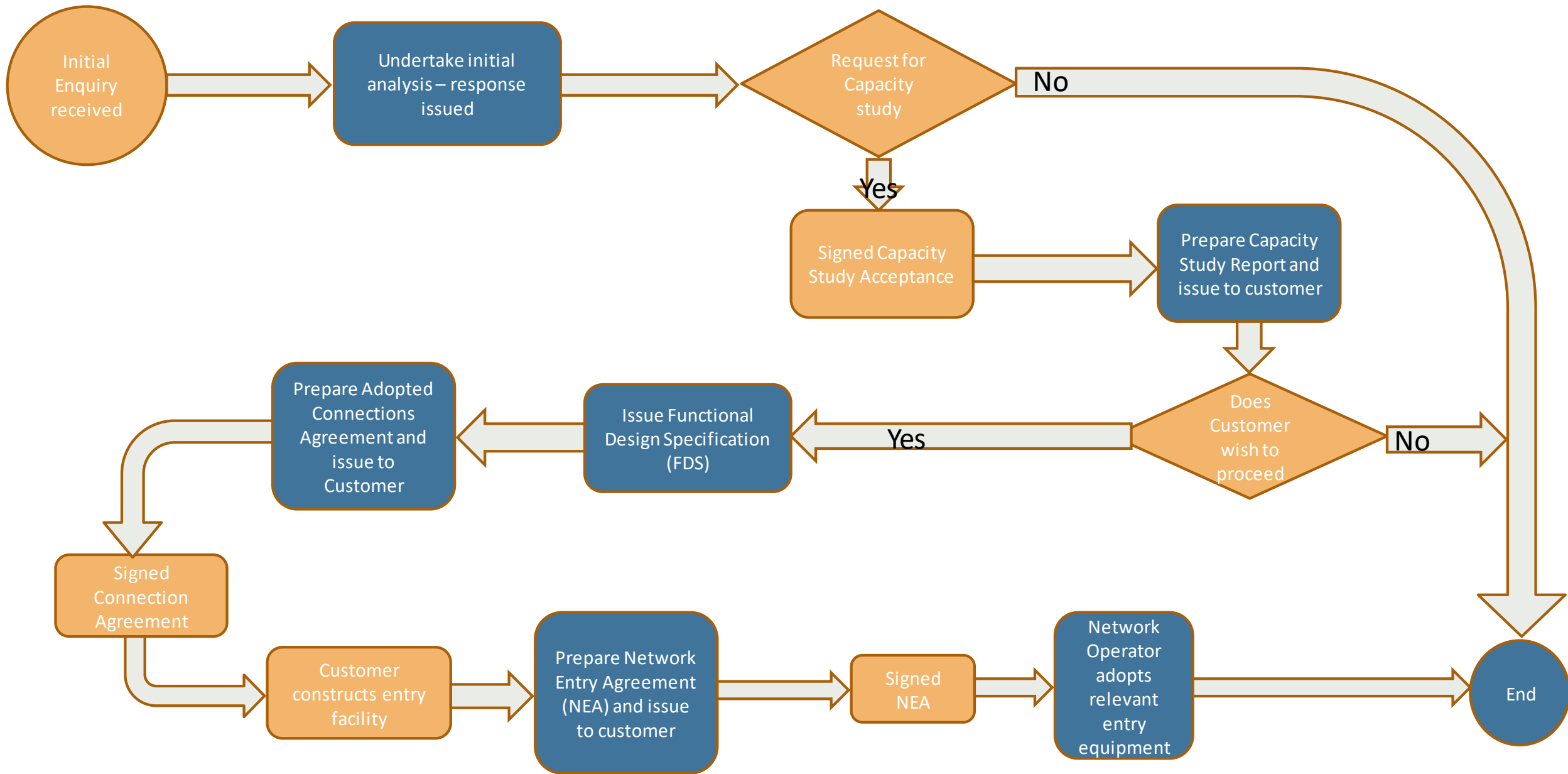
# **Grid Injection Application Process**

# Becoming a green gas Producer\*

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\*Distribution Process



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**Work yet to be completed**

# Work yet to be completed

- GNO Specific Functional Design Specs
- SCADA Requirements
- Capacity Study methodologies to be developed
- Exemption from GSMR – submission to HSE(NI) required
- Drafting of required documentation
- Ongoing Operational Arrangements
  - Local Operating Procedures
  - Emergency Call Outs
  - Gas Quality Validation / Audits
- Costs – site / GNO specific

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# **Base Case Working Assumptions (Transmission)**

# Introduction

- The following slides outline the current working assumptions for the conveyance arrangements for biomethane injection into the Transmission network
- The base case covers injections at Single Injection Point or Injection Hub on the Transmission network but not a Virtual Entry Point covering Distribution and/or Transmission injections
- The assumptions may change based on Shipper / Producer feedback and other developments
- The Transporter plans to develop business rules for biomethane injection and when required will incorporate the arrangements into the NI Network Gas Transmission Code and add the required functionality to the Delphi IT system

# Base Case – Conveyance Arrangements (Transmission)

Subject	Current working assumptions
Type of Point	<ul style="list-style-type: none"><li>• A Non-IP Entry Point will be created</li><li>• Arrangements will differ from the Moffat Non-IP Entry Point</li></ul>
Registrations	<ul style="list-style-type: none"><li>• Multiple Shippers will be facilitated at the Non-IP Entry Point</li><li>• Standard registration procedures will apply</li></ul>
Capacity	<ul style="list-style-type: none"><li>• Non-IP Entry Capacity will be booked directly with the Transporter via Delphi or PRISMA</li><li>• Capacity will be offered on a FCFS basis and not auctioned</li><li>• Annual and shorter term products will be available</li><li>• Congestion management procedures may be introduced<ul style="list-style-type: none"><li>• Dependant on the number of Shippers</li></ul></li><li>• Overrun charges to be considered</li></ul>
Nominations	<ul style="list-style-type: none"><li>• Nominations will be submitted on Delphi</li><li>• Nominations will be single sided – no matching is required</li><li>• Existing principles continue to apply i.e. timings</li></ul>
Trade Nominations	<ul style="list-style-type: none"><li>• No change to existing rules</li></ul>

# Base Case – Conveyance Arrangements (Transmission)

Subject	Current working assumptions
Allocations	<ul style="list-style-type: none"><li>• Allocations based on meter reads with estimates as a fallback mechanism</li><li>• At a Non-IP Entry Point with a single Shipper, the Shipper will be allocated the meter quantity</li><li>• At a Shared Non-IP Entry Point the metered quantity will be allocated proportionally</li><li>• Default rule: Pro-rata to nominations</li><li>• Alternative arrangements may be considered if required</li><li>• Existing timings apply:<ul style="list-style-type: none"><li>• Initial: End of D+1</li><li>• Final: End of D+5</li></ul></li><li>• Final Non-IP Entry Allocations will included in a Shipper's Aggregate NI Entry Allocation</li></ul>
Imbalances	<ul style="list-style-type: none"><li>• No change to existing rules</li></ul>

# Base Case – Conveyance Arrangements (Transmission)

Subject	Current working assumptions
Charging	<ul style="list-style-type: none"><li>• Current basis for cost recovery retained</li><li>• Postalised commodity charge applicable to Exit Points only</li><li>• Tariffs to be derived for Non-IP Entry Capacity products</li><li>• Preference to apply a discount subject to compliance with the Tariff Regulation (as transposed into UK law)</li><li>• No change in methodology for imbalance charging</li><li>• Application of equivalent of unauthorised flow charges at Non-IP Entry Points</li><li>• No change to disbursement methodology</li><li>• Further consideration required of the application of:<ul style="list-style-type: none"><li>• Capacity overrun charges</li><li>• Scheduling charges</li></ul></li></ul>
Invoicing	<ul style="list-style-type: none"><li>• Invoices and backing data to be updated with the new Non-IP Entry Capacity products</li></ul>
Credit	<ul style="list-style-type: none"><li>• Credit support will be required for Non-IP Entry Capacity products and any increases to forecast PS Code Charges</li></ul>

# Base Case – Conveyance Arrangements (Transmission)

Subject	Current working assumptions
Title and Risk	<ul style="list-style-type: none"><li>Existing principles continue to apply</li></ul>
Onward Use	<ul style="list-style-type: none"><li>Shippers will be able to use biomethane injected into the Transmission network to:<ul style="list-style-type: none"><li>Contribute to balancing their NI exit demand</li><li>Trade at the NIBP</li><li>Export to GB and ROI via Virtual Reverse Flow (subject to sufficient forward flow)</li><li>A combination of the above</li></ul></li></ul>

# Next Steps

- Consider feedback from Supplier and Producer update meetings
- In co-operation with the Distribution Network Operators and Utility Regulator review the base case assumptions and consider any further requirements including (but not limited to) Distribution and Transmission interaction
- Development of a timeline for the deliverables
- Development of business rules
- When required, incorporation of the rules into the NI Network Gas Transmission Code and modification of the Delphi IT system

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# **Base Case Working Assumptions (Distribution)**

# Introduction

- This section of the presentation aims to set out the current working assumptions for the conveyance arrangements required to support biomethane injection points on the NI Distribution networks.
- The Base Case aims to facilitate these arrangements whilst minimising change to existing industry arrangements, therefore, ensuring efficient delivery of the project.
- The arrangements will facilitate both single injection points or injection hubs on the Distribution networks.
- The Distribution Operators will work closely with GMO NI to develop the industry arrangements.
- Arrangements may change as the industry develops - we are keen to engage with the wider industry and stakeholders and will consider feedback as arrangements progress.

# Base Case – Conveyance Arrangements (Distribution)

Subject	Current working assumption	How will process be managed
<u>Recognition of Entry/Injection Points</u>	Concept of Injection Point with related quantities to be included in D arrangements – Injection Point will be classified as a System Entry Point	Distribution Network Code – Code Modification
<u>Supplier Registration</u>		
Individual injection point	1 Supplier per individual injection point	Network Entry Agreement / Distribution Network Code – Code Modification
Injection Hubs	Multiple Suppliers will be facilitated	Modification
<u>D Capacity</u>	No change to existing Distribution Capacity arrangements	
	Maximum Allowed Flows managed between Operator and Producer	Network Entry Agreement
<u>T Exit Capacity and 1-in-20 Obligation</u>	No change to 1-in-20 obligation initially – may be reviewed at a later stage	

# Base Case – Conveyance Arrangements (Distribution)

Subject	Current working assumption	How will process be managed
<u>Demand Forecasting</u>	Existing Network Code processes largely unchanged	
	Gas Supplier off-taking from BioM Injection will be required to provide forecasted offtake to Operator daily (arrangements similar to Daily Metered demand forecasts provided to Operator)	Distribution Network Code – Code Modification
	Forecasted daily demand	
<u>Allocations</u>	Existing Supplier allocation processes largely unchanged	
	Daily injection + Daily Transmission volumes = Total Distribution Daily Allocation	Metering arrangements will be set out in Network Entry Agreement

# Base Case – Conveyance Arrangements (Distribution)

Subject	Current working assumption	How will process be managed
<u>Distribution Charges</u>	At present, no change to existing Distribution Charges	
<u>Balancing</u>	As-is balancing arrangements suitable for base case (i.e. balancing will continue to take place at Transmission level)	

# Base Case – Further Consideration (Distribution)

Subject	Current working assumption	How will process be managed
<u>Onward Use of Injected Biomethane</u>	Onward use options for D-injected biomethane - balancing supplier's own demand	Producers should engage with relevant schemes to understand requirements in terms of chain of custody evidence

# Next Steps (Distribution)

- In co-operation with GMO NI and Utility Regulator, consider feedback from Supplier and Producer update meetings to ensure that the Base Case assumptions remain appropriate
- Proceed to develop and consult on business rules
- Develop and consult upon any required Code Modifications
- Develop and formalise any requirements to share biomethane injection demand information with GMO NI
- Aim to have Base Case arrangements for NI Distribution biomethane injection formalised by Q2 2022
- DNOs will provide progress updates to Suppliers via the scheduled GMOG meetings

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# Key Contacts

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**Firmus energy  
(Distribution) Limited**

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7852

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**Phoenix Natural Gas**

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# Questions and Answers