Code Modification Forum Agenda

Wednesday, 19, October 2022

Zoom Meeting

Time: 10:30

No.	Item	Duration (minutes)	Time
1.	***Review of Minutes from last meeting***	5	10:30 - 10:35
2.	***Review of Action Items from last meeting***	5	10:35 - 10:40
3.	***GNI Scheduled Maintenance Update*** - ***Operational Maintenance*** - ***IT Maintenance/updates***	5	10:40-10:45
4.	***Gas Quality – Proposed Changes Update- UK /Renewable Natural Gas***	10	10:45-10:55
5.	***Code Modification Proposal A106 – Deletion of Entry Point Transfer Provisions from Code of Operations (For mention)***	5	10:55- 11:00
6.	***Code Modification Proposal A108 – Amendment of Code of operations to transfer cost recovery of Shrinkage Gas to allowed revenues from tariffs(For mention)***	5	11:00-11:05
7.	***Code Modification Proposal A109- Calculation of Charges in respect of a Meter Quantity Adjustment (For mention)***	5	11:05-11:10
8.	***Code Modification Proposal A110- Amendment of Code of Operations to reduce the Annual Caps for certain SPC Capacity Overruns at LDM Supply Points and DM Supply Points and to delete the Supply Point Capacity Account such that Overrun Revenue is treated as part of the Transporter's allowed revenue (For mention)***	5	11:10-11:15
9.	***Status of Code Modification Proposals***	5	11:15-11:20
10.	***NGEM Exercises – GNI Presentation***	15	11:20- 11:35
11.	***Security of Supply Consultation – DECC presentation***	40	11:35-12:15
12.	***Gas and Electricity Interaction***	5	12:15-12:20
13.	***AOB Items - Questionnaires on impact of hydrogen blends on end-user appliances/ Next meeting***	10	12:20-12:30

Code Modification Forum

Minutes of Virtual Meeting – 19 October 2022

The Transporter opened the meeting and referred to the thirteen item Agenda.

1. Standing Items

1.1 Approval of minutes of previous meeting

The Minutes of the meeting of 17 August 2022 were approved.

1.2 Review of action items

The standing actions were declared to be ongoing and would remain for the December meeting.

1.3 GNI Scheduled Maintenance Update

The Transporter referred to Slide 5 which detailed that it does not plan to undertake any maintenance activities during the Gas Year 2022/23 which will interfere with gas flows. Any maintenance activities on Transporter infrastructure/equipment relating to the Bellanaboy Entry Point will be coordinated with planned maintenance shutdowns by the Corrib Operator.

1.4 Gas Quality Update

GAS QUALITY – EU/UK

Michael Crowley, Asset Policy & Performance Manager at the Transporter, presented an update on UK Gas Quality developments, referring to Slides 7 to 12

He reported that the HSE consultation process had been delayed with its analysis more protracted than anticipated and Ministerial sign off delayed because of political situation in UK. The HSE is expected to announce changes to UK gas quality by end October and subsequently amend the GSMR regulations by the end of 2022. This will lead to National Gas Grid (NGG) raising an implementation UNC Modification in early 2023, a process which will take three months. After this, a further three months will be expended in amending Network Entry Arrangements resulting in an end of 2023 timeline in completing the regulatory requirements for implementation of the gas quality change.

The Transporter intended to initiate an aligning Code Modification Proposal in tandem with the NGG UNC Modification.

In relation to the expected physical effect of the proposed change on the Irish system NGG have published the results NTS Penetration Analysis study which indicates that at present low WOBBE gas is currently delivered to the St Fergus Terminal in Scotland which supplies Moffat. This gas is blended with gas from adjacent fields and terminals to ensure it meets the current GSMR specification. Under the new regime NGG expect this situation to continue during normal operation, however if there is an outage on adjacent fields/terminals in the future, then low WOBBE gas might enter the National Grid system at St.Fergus with consequent penetration to Moffat. NGG have indicated that this might occur on approximately 18 days a year during the period 2023-2027.

GAS QUALITY – Renewable Natural Gas

Yvette Jones, Renewable Gas Project Manager at the Transporter, referred to slide 14 and reported that, following analysis and third party research (commissioned by the Transporter) it had been decided, firstly, in relation a possible lower Calorific Value (CV) parameter, not to raise a Code Modification Proposal to lower the current CV of 36.9 MJ/M3. The Transporter reports that its analysis, supported by data from other jurisdictions, would satisfactorily indicate that injecting biomethane at Mitchelstown would not have adverse impacts if managed correctly and, further, biogas to biomethane upgrading technology has advanced significantly producing biomethane with a higher CV than achieved historically.

Secondly, in relation to the upper oxygen limit, the Transporter will raise a Code Modification Proposal for an increase in the upper oxygen content for biomethane injected into the transmission network as in spite of advances in upgrading technology, it would be difficult to consistently meet the upper oxygen limit of 0.2%. While its analysis and modelling used an oxygen limit of 1% to assess impacts it was decided to propose a maximum content of 0.5%. Data from other jurisdictions indicates that upgrading technology should be able to produce biomethane with an oxygen content below 0.5% and any intending producer wishing to avail of this increased oxygen limit will have to provide supporting analysis to the Transporter. Any Industry queries in this matter should be referred to Yvette.jones@gasnetworks.ie.

The CRU thanked the Transporter for this update highlighting the Transporter engagement with the CRU safety team and that this will have a material impact on safety case.

2. Code Modification Proposals

2.1 A106 - Proposal to delete Entry Point Transfer Provisions from Code of Operations

The Transporter reported that CRU review of this Modification Proposal was ongoing, with the Industry review completed on 31 March 2022 without submission. The CRU reported that in relation to this Proposal and the other Proposals currently under CRU review, there was considerable interaction between both bodies in relation to clarification of benefits of the Proposals and the alignment of the associated legal text.

2.3. A108 - Proposal to amend Code of Operations to reflect change in Shrinkage Gas cost recovery to tariff income

The Transporter reported that the CRU review of this Modification Proposal was ongoing and it was engaged with the CRU in agreeing the legal text.

2.4. A109 - Proposal to amend Code of Operations to specify basis of calculation of charge in respect of an adjustment to a meter quantity (Meter Quantity Adjustment)

The Transporter reported that the CRU had suggested a number of changes to the proposed legal text which were under discussion. The CRU had suggested the development of a Meter Data Cleansing Process Document which the Transporter had agreed to develop and circulate in advance of the next CMF meeting. The Transporter stated that it could not finalise its position on the final text until this process document was drafted. A Shipper Representative expressed dissatisfaction at the length of time it was taking to process this Proposal and stated that it should be possible to process a Proposal within six months of issue. The CRU accepted this as a valid criticism and reported that it was meeting with the Transporter in November to discuss ways of streamlining the current process.

2.5. A110 - Proposal to amend Code of Operations to reduce the Annual Caps on Multipliers for certain SPC Capacity Overruns at LDM Supply Points and DM Supply Points and to delete the Supply Point Capacity Overrun Disbursement Account such that Overrun Revenue is treated as part of the Transporter's allowed revenue

The Transporter referred to this Modification Proposal confirming that the Industry review had completed and that it was in the early stages of the CRU review

2.4 Status of Code Modification Proposals

Number	Proposal	Proposer	Status
A099	CNG Supply Point Capacity Setting	GNI	In abeyance
A106	Proposal to delete Entry Point Transfer Provisions from Code of Operations	GNI	Consultation complete/Under CRU review
A108	Proposal to amend Code of operations to reflect change implemented in 1 October 2020 where GNI recover the cost of Shrinkage Gas from tariff income rather than directly from Shippers	GNI	Consultation complete/under CRU review
A109	Proposal to amend Code of Operations to specify basis of calculation of charge in respect of an adjustment to a metered quantity (Meter Quantity Adjustment)	GNI	Consultation complete/under CRU review
A110	Proposal to amend Code of Operations to reduce the Annual Caps for certain SPC Capacity Overruns at LDM Supply Points and DM Supply Points and to delete the Supply Point Capacity Overrun Disbursement Account specify basis of calculation of charge in respect of an adjustment to a metered quantity (Meter Quantity Adjustment	GNI	Consultation complete/under CRU review

4. Other Agenda Items

4.1. NGEM Update

Mr. Aidan Bugler, Network Operations Emergency Manager at the Transporter, presented an NGEM Update to the meeting referring to Slides 23 – 34. He reported that the updated version 5 of the Natural Gas Emergency Plan (NGEP) had been approved by the CRU and, once published on the GNI website, the Transporter would circulate the relevant link. The updated report aligned NGEP and EU gas shortage crisis levels as specified in Slides 25 and 26.

He referred to the recent 2022 NGEM Emergency Exercise 'Dara' carried out on 9th and 10th of September which received considerable media coverage and would be happy to share the final report in due course. In the Exercise they considered a 20% reduction in supply at Moffat over a 7-10-day period taking demand data from 8th of January 2021, which was a cold day with low wind. On Day 1 they looked at gas and electricity interaction and on Day 2 they focused on managing the impact on gas-fired powergen load shedding over the extended period. He gave an overview of the emergency / exercise structure and processes (slide 29) and reported on the outcomes (slide 30) which include a successful test of all relevant emergency plans with all associated teams convened and engaged.

Mr. Bugler also reported on the 2022 NEC Emergency Exercise 'Degree' which was run over four days in Great Britain with an exercise simulating demand exceeding supply in Great Britain over a 36 hour period and considering the interaction between gas and electricity networks and the impact on domestic customers . The exercise report will be published on the National Grid website once complete. He reported that the National Grid Winter Outlook was published on 6th of October.

In response to a Shipper Representative query he confirmed that the reports would be published in the upcoming weeks. He pointed out that a 20% supply reduction would not necessarily result in rolling blackouts. In response to a Shipper Representative query as to how far down the analysis went on the electricity side Mr. Bugler confirmed that it went down to DSU level but this element was considered as part of EirGrid activities. He undertook to look for further detail from EirGrid on this point. He confirmed that there will be one single overarching report produced based on feedback from key participants.

Finally, referring to slide 33, he issued a reminder of the importance of having an up to date database of Emergency Contacts for Shippers, LDM and DM end users.

4.2. Security of Supply Consultation – DECC presentation

Ann-Marie Colbert (AMC) from the Department of the Environment, Climate and Communications (DECC) gave a presentation on the Consultation on the review of the security of energy supply of Ireland's electricity and natural gas systems. She stated that the review is focused on the period to 2030 but in the context of ensuring a sustainable transition to 2050 and is accompanied by technical analysis. It does not look at tight margins on the electricity side over the coming winters. The Consultation has four components;

- Gas and electricity system information and trends to 2030 which in relation to gas predicted a reduction in total demand with increased peak day demand and import dependency
- Policy Context – referring to the shard competency between Ireland as a Member State and the EU, citing EU policy measures/ Climate Act 2021 and National Energy Security Framework
- Technical Analysis – identifying risks/mitigation options and Russia supply interruption
- Tools and Measures – joint planning/regular energy system reviews and international arrangements

In relation to the specific components AMC noted that;

1. On electricity side, we were witnessing continued increase in demand, while in relation to natural gas we're seeing lower overall demand but with increased peak day demand – notes we will be completely dependent on interconnectors to meet gas demand;

2. The demand side and supply shocks outlined events of generally low probability but very high impact events;

3. A long list of mitigation options were identified with subsequent screening to determine short list, including alignment with policy pathway and the level of Security of Supply mitigation offered by each option appraised;

4. Gas shortage mitigation options included strategic gas storage and floating LNG which would only come into play in periods where there is material risk of demand disruption; and

5. On electricity side looking at further electricity interconnection and hydrogen related options.

DECC were now seeking responses to the consultation by 28th of October.

A Shipper Representative queried the proposal on strategic storage, and whether any potential locations had been identified. In response AMC stated that the proposed storage provision would not be operated on a commercial basis but only to mitigate a shortage risk. No sites had been identified for storage.

A Shipper Representative queried why a low growth scenario was assumed in projections stating that a medium scenario would have been more appropriate. The Review assumes all targets will be achieved, and notes that offshore framework had not been developed. In response AMC stated that the Review started in 2021 based on NDP - CEPA made adjustments and assumed that all CAP targets met.

A Shipper Representative suggested that the report should be independent of government targets and timelines that the overall baseline is probably the appropriate approach.

A Shipper Representative notes that Ireland will fail to meet N-1 – this has not been front and center in the analysis, and notes a lack of urgency in this process. The focus is on non-commercial storage solutions with no project sites identified, no finance specified and no clarity on funding or regulatory framework. There are lot of unknowns on a serious issue with scenarios dependent on aspirational thinking including unrealistic 2030 offshore wind targets. He further stated that serious options have not even been considered with no CBA analysis carried out.

A Shipper Representative notes that Denmark has introduced two floating LNG terminals in a short period and queries the lack of urgency in the government approach. He questioned whether anything further would be done before 2023.

AMC responded that there is a separate work program in relation to immediate concerns, stating that this Review is developed out to 2030. In response to the Shipper Representative query as to what is being done with regard to the current situation AMC stated that this is the current remit of the CRU. The CRU stated that there was ongoing work on the short-term challenges and offered to circulate relevant details.

A Shipper Representative of one of the Corrib Partners expressed surprise that exploration options were not being considered, given that indigenous gas has a lower carbon footprint. At least CBA analysis should be undertaken here.

AMC referred to government policy on not issuing new licenses, noting that there are too many variables in relation to exploration. A CBA would only be done with respect to specific options. The Shipper Representative stated that this policy has deterred people from exploration in Ireland and will consequently drive higher gas imports . As gas is required for another 20/30 years, Ireland is locking itself into higher emissions intensity gas.

A Shipper Representative asks about the role the CRU would have in developing scenarios as the state body responsible for Security of Supply, noting that Germany is fast tracking two LNG import terminals. He stated that New Fortress Energy (NFE) was involved in a new Dutch LNG terminal which was delivered in less than five months. He stated that DECC has not engaged with NFE on similar options, noting a lack of engagement with gas industry stakeholders. He stated that this consultation has been in gestation for a long time and an opportunity was missed to engage with gas industry. He was interested in the CRU's views on stress testing and analysis. The CRU stated that it would be availing of the opportunity to submit to the consultation.

4.3. Gas and Electricity Interaction

The Transporter stated that the EAI were not, at this meeting, availing of the opportunity of making any presentation to the meeting

4.4. Any Other Business

Questionnaires on impact of hydrogen blends on end-user appliances

Ita Ryan (IT) of the Innovation Delivery Team at the Transporter informed the meeting of the Transporters intention to issue Questionnaires to targeted stakeholders on the impact of hydrogen blends on end-user appliances as part an assessment of the technical feasibility of safely injecting green hydrogen blends into the gas grid. The two key questions for the assessment were;

1. what the end-users' equipment limitations are; and

2. what adaptions would have to be made to the network.

IT referred to slides 50 – 55. On slide 50 she referred to the various market segments and on slide 53, she referred to four operating scenarios. On slide 54 the questionnaire targets were specified as the Power Generation Sector, Large Daily Metered end-users and Daily Metered end-users (residential end-users had already been surveyed). It was intended that there would be in-person interviews with large-scale users as well as the online questionnaires.

As a follow-on it was intended to;

- Test higher natural gas and hydrogen blends
- Determine the effect of higher hydrogen blends
- Determine the effect of hydrogen on the network
- Model the network to identify capacity at various nodes on network
- Ascertain the best injection locations
- Determine optimum storage capacity

A Shipper Representative queried whether an injection point location would be driven by commercial aspects and, in response, IR outlined that , at this stage it was is a high-level desktop exercise.

A Shipper Representative queried the outputs of this work and will this be available and whether this would provide signals to commercial operators. IT responded that the Report will be in draft format by next June but had no certainty on whether the report will or how it would be publicized. The report will be technical in nature concentrating on what hydrogen blends end-user's equipment can handle.

Next Meeting

The next meeting is scheduled to be held on 14 December next. It would be a virtual meeting. The Transporter would be circulating the Meeting Schedule for 2023 in due course and it was intended that three of the six meetings would be virtual and three hybrid.

5.Open CMF actions

ID	Action	Responsibility	Date Raised	Delivery Date
C572	Transporter to monitor the ongoing basis the adequacy of the initial 25% Tolerance for RNG Entry Points	Transporter	27/3/2019	Ongoing
C575	Transporter to furnish required data to CRU in connection with tariff review in relation to Supply Point Capacity Settings	Transporter/ CRU	25/3/2020	Ongoing

6.Calendar of meetings for 2022

CMF Date	Location
14 December 2022 (Wednesday)	Virtual

7.Attendees

	Name	Representing
1	Kieran Quill	GNI
2	Stephen O'Riordan	GNI
3	Aidan Bugler	GNI
4	Aidan Hogan	GNI
5	Andrew Kelly	New Fortress Energy
6	Anne-Marie Colbert	DECC
7	Aoife Coppinger	Prepaypower
8	Brian McGlinchey	Vermilion Energy
9	Brian Mullins	GNI
10	David Horan	Aughinish
11	Seán Mac an Bhaird	CRU

12	Emerson O'Callaghan	CRU
13	Michael Crowley	GNI
14	Doug O'Brien	GNI
15	Harry Molloy	Tynagh Energy
16	Ian Mullins	BGE
17	Ita Ryan	GNI
18	John King	DECC
19	Kevin Murray	BGE
20	Mark Phelan	Electric Ireland
21	Martin Regan	Marex Spectron
22	Nicholas Lincoln	Nephin Energy
23	Richard Harper	Ceres Energy
24	Tom Nolan	Ormonde Organics
25	William Carr	
26	Jack O'Connell	Consultant to CRU

Code Modification Forum

Wednesday, 19 October 2022

via Zoom Call

Agenda

1. Review of minutes from last meeting
2. Review of open actions
3. Update on Maintenance Plan
4. Gas Quality – Proposed Changes Update
5. Code Modification Proposal A106 – Deletion of Entry Point Transfer Provisions from Code of Operations
6. Code Modification Proposal A108 – Shrinkage Gas Cost Recovery from allowed revenues from tariffs
7. Code Modification Proposal A109 – Calculation of Charges in respect of a Meter Quantity Adjustment
8. Code Modification Proposal A110 – Reduction of Annual Caps for certain SPC Capacity Overruns at LDM Supply :Points and DM Supply Points and deletion of Supply Point Capacity Account to allowed revenues
9. Status of Code Modification Proposals
10. NGEM Exercises – GNI Presentation
11. Security of Supply Consultation – DECC presentation
12. Gas and Electricity Interaction
13. AOB Items – Questionnaires on impact on hydrogen blends on end-user appliances / Next Meeting.

Gas Networks Ireland

1. Review of minutes from last meeting

- Minutes of CMF meeting of 17 August 2022 were issued on 17 October 2022.

Gas Networks Ireland

2. Review of open actions

ID	Action	Responsibility	Status	Priority
C572	Transporter to monitor on ongoing basis the adequacy of the initial 25% tolerance for RNG Entry Points	Transporter	Open	Medium
C575	Transporter to furnish required data to CRU in connection with the tariff review in relation to SPC Settings for CNG Offtakes	Transporter	Open	High

Gas Networks Ireland

3. 2022/2023 Maintenance Days

GNI DOES NOT PLAN TO UNDERTAKE ANY MAINTENANCE ACTIVITIES DURING THE GAS YEAR 2023 WHICH WILL INTERFERE WITH GAS FLOWS.

ANY MAINTENANCE ACTIVITIES ON GNI INFRASTRUCTURE/EQUIPMENT RELATING TO THE BELLANABOY ENTRY POINT WILL BE CO-ORDINATED WITH PLANNED MAINTENANCE SHUTDOWNS BY THE CORRIB OPERATOR

Gas Networks Ireland

Code Modification Forum meeting

UK Gas Quality Changes

19 October 22 update

Update on HSE consultation process: Sep-22 update

- HSE has confirmed delay to consultation process:
  - Analysis of issues proved took longer than expected, particularly impact of low WOBBE gas on gas-fired generation and security of electricity supplies
  - HSE has finalised their conclusions but require ministerial sign-off in Sep-22
- HSE expects to announce any changes to UK gas quality in Oct-22 (earliest) and to amend GSMR regulations by the end of 2022
- National Grid Gas (NGG) will raise UNC Code Modification(s) when GSMR regulations are amended– expected to commence in early 2023 and take 6-months
  - It may take a further 3-months to amend Network Entry Arrangements (NEA) – so process is expected to be completed towards end of 2023?

GNI Next Steps

- GNI plan to raise a matching Code Modification, once the HSE publishes their final proposals to amend UK gas quality regulations
  - To ensure that Irish gas quality arrangements are aligned with UK and, thereby, avoid any disruptions to gas imports
  - GNI Code Modification will probably run in parallel with the NGG UNC Modification
- GNI plans to raise a separate Code Modification to increase Oxygen limit to 0.5%-mol for TX connected Bio-methane Network Entry Facilities before the end-2022
- GNI communicated the above to industry participants via the Code Modifications Forum, to provide clarity on future potential changes to gas quality arrangements

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NGG Study: GSMR Review and NTS Penetration Analysis

- NGG published the results of their study, to help market participants assess the impact of the proposed GSMR changes on their gas quality
- NGG consulted with Terminal Operators to determine how much low WOBBE gas is likely to flow, as a result of the proposal to reduce the lower WOBBE limit
  - They have then used the information provided to model how far any low WOBBE gas is likely to penetrate into the NTS
- *Their study indicates that low WOBBE gas is **currently** delivered to a number of UK Entry Points, including St Fergus in Scotland (which supplies Moffat)*
  - All of this gas is currently blended with gas from adjacent fields and terminals to ensure the blended gas meets the current GSMR specification - before entering the NTS
  - However this may change at certain terminals in the future

Gas Networks Ireland

NGG Conclusions in relation to St Fergus

- Currently up to 13 mscm/d of low WOBBE gas can be delivered to the NSMP Terminal at St Fergus (with a WOBBE of c . 46.9 MJ/m3)
  - This gas is blended with gas from adjacent fields and Terminals, to ensure that the blended gas meets the current GSMR specification - before it enters the NTS
- NGG expect this situation to continue during **normal** operation, i.e. there is unlikely to be increased production of low WOBBE gas from the proposed GSMR changes
- *However, if adjacent gas fields and Terminals are on outage in the **future**, then low WOBBE gas might enter the NTS at St Fergus (versus being curtailed today)*
  - NGG have indicated this might happen for c. 18-days per year during the gas years from 2023 to 2027

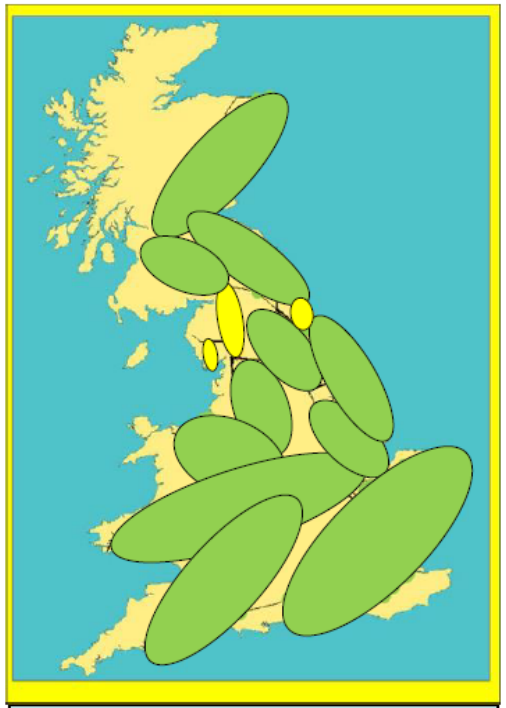
Extracts from NGG Modelling for Scenario No.1

Scenario 1

Barrow at 46.5 MJ/m^3, Bacton Perenco - Cygnus only flowing at 46.5 MJ/m^3, Teesside at 47.12 MJ/m^3, and St Fergus NSMP at 46.9 MJ/m^3, all other entry points flowing at their historical average Wobbe.

Nodes below 47.2 MJ/m3

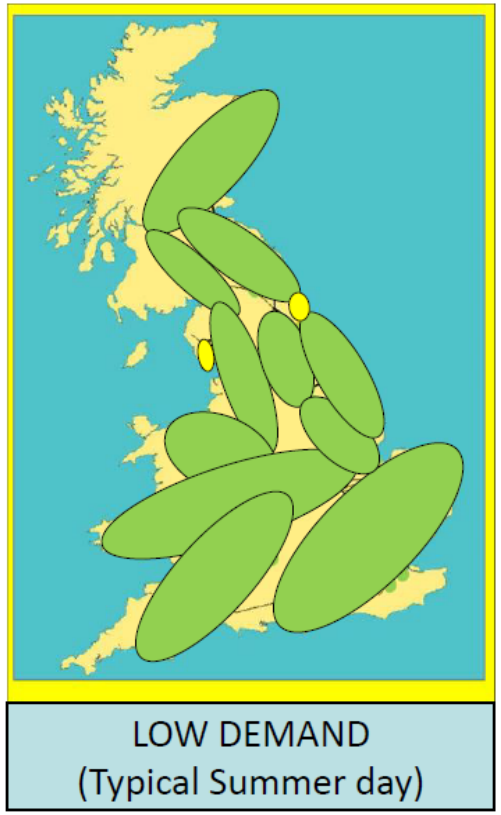
- Lupton (DN Offtake)
- ICI Avecia (Industrial)
- Keld (DN Offtake)
- Philips Tees (Industrial)
- Wetheral (DN Offtake)
- Melkinthorpe (DN Offtake)
- BOC Teesside (Industrial)
- BASF (Industrial)
- Barrow Black Start (Industrial)



HIGH DEMAND
(Typical Winter day)

46.5 – 47.2 MJ/m3

> 47.2 MJ/m3



LOW DEMAND
(Typical Summer day)

Nodes below 47.2 MJ/m3

- ICI Avecia (Industrial)
- Philips Tees (Industrial)
- BOC Teesside (Industrial)
- BASF (Industrial)
- Barrow Black Start (Industrial)

Overall conclusions

- Overall NGG only expect low WOBBE gas below the current GSMR limits to be delivered to the Barrow terminal during **normal** steady state conditions
  - The proposed reduction of the lower WOBBE limit is likely to mean that gas end-users in the Barrow area will consume low WOBBE gas more regularly
- Off-takes supplied from the Bacton, Teeside and St Fergus are only likely to receive low WOBBE gas when certain adjacent gas fields and Terminals are on outage

We would expect any low wobbe gas delivered at Bacton and St Fergus to be blended to be above 47.2 MJ/m^3 by other supplies at those locations on most days

Gas Networks Ireland

4a Gas Quality – Renewable Natural Gas

Gas Quality – Renewable Natural Gas

Oxygen and Calorific Value Code Modification Proposals Update

Oxygen:

- GNI will raise Code Modification Proposal to increase upper oxygen content for biomethane injected into transmission network
  - As previously communicated, despite advances in upgrading technology, still challenging for biomethane to consistently meet current upper oxygen limit of 0.2%
    - Analysis and modelling indicates 1% would not result in negative impacts (if managed correctly)
    - However, GNI will propose a maximum content of 0.5%
    - Data from other jurisdictions indicates upgrading technology should be able to produce biomethane with an oxygen content below this threshold
    - Modification will require analysis supporting implementation of revised upper limit at injection points wishing to avail of the increased upper limit
  - Proposal to be circulated before the end of October

Calorific Value:

- It has been decided not to progress Code Modification Proposal to decrease the lower CV limit for biomethane injected into the transmission network
  - Analysis indicates injecting biomethane at Mitchelstown with a CV lower than 36.9 MJ/M^3 would not have adverse impacts if managed correctly
  - However, not currently needed as data from other jurisdictions indicates that biogas to biomethane upgrading technology has advanced significantly and produces biomethane with higher CV than achieved historically.

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Code Modification Proposals

5. Code Modification Proposal A106

- Proposal to delete Entry Point Transfer Provisions from Code of Operation
- Issued by GNI on 10 January 2022 with Explanatory Memorandum
- Rationale; these provisions were incorporated in an era of long term capacity products when there was the prospect of a new indigenous gas source (Corrib). The provisions are now irrelevant as ;

1. A new gas source (i.e. an offshore gas field and associated facilities) is a remote prospect
2. There is now a new capacity regime with short term products
3. The only other Entry Points are IP Entry Points and the transfer provisions are only available for unbundled IP Capacity

INDUSTRY REVIEW ENDED ON 31 MARCH 2022- NO SUBMISSIONS

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6. Code Modification Proposal A108

- Proposal to amend Code of Operations to reflect change implemented in 1 October 2020 where GNI recover the cost of Shrinkage Gas from tariff income rather than directly from Shippers.
- Change was implemented in line with direction of CRU in Decision Paper dated 11/6/2019 on Harmonised Transmission Tariff Methodology for Gas (CRU/19/060) which provided that, from the start of Gas Year 2020/21 the procurement of Shrinkage Gas by the Transporter was to be classified as a transmission service and should be cost-recovered through tariffs rather than a separate charge to Shippers
- This change has to be reflected in amended text to the Code of Operations
- INDUSTRY REVIEW HAS ENDED WITHOUT SUBMISSION

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7. Code Modification Proposal A109

- Proposal to amend Code of Operations to specify basis of calculation of charge in respect of an adjustment to a metered quantity (Meter Quantity Adjustment).
- Part G(Technical) of the Code of Operations provides for adjustment to a meter quantity ("Meter Quantity Adjustment") by increasing or decreasing the metered quantity of natural gas following verification of secondary instrumentation and or measurement equipment (as the case may be) .
- GNI historically calculated the amount of the financial charge referable to the Meter Quantity Adjustment in accordance with established custom and practice. It is now proposed that the amount of the financial charge resulting from a Meter Quantity Adjustment will be calculated by reference to the average Imbalance Price (non RNG) , positive or negative (as the case may be), over the relevant adjustment period
- INDUSTRY REVIEW COMPLETED

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8. Code Modification Proposal A110

- Amendment to Code of Operations to reduce the Annual Caps for certain SPC Capacity Overruns at LDM Supply Points and DM Supply Points and to delete the Supply Point Capacity Overrun Disbursement Account such that Overrun Revenue is treated as part of the Transporter's allowed revenue.
- The proposed reduction in the annual cap is considered a substantial reduction in Shippers financial exposure as a result of certain overruns; there are no changes to the multiplier and cap at Supply Points where the Transporter Recommended Capacity is booked or where DM Supply Point is not subject to a reduction period where the multiplier and cap remain at 1.
- In association with the reduction in the cap it is proposed to remove the Supply Point Capacity Overrun Disbursement Account such that revenue from SPC Capacity Overruns will no longer be attributable to a Disbursement Account.

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Code Modification Proposal A110 (cont.)

The Code Modification Proposal:

(i) reduces the financial exposure of Shippers in the event of relevant Supply Point Capacity Overruns, and,

(ii) reduces the required systemisation and billing functions associated with the Disbursement Account and reduces the associated queries regarding calculation of Overrun Charges and the Disbursement Account.

- INDUSTRY REVIEW COMPLETED WITHOUT SUBMISSION

Gas Networks Ireland

9. Status of Code Modification Proposals

Number	Title of Proposal	Proposer	Status
A099	CNG Supply Point Capacity Setting	GNI	In abeyance
A106	Delete Entry Point Transfer provisions from Code of Operations	GNI	Under review by CRU
A108	Insert Shrinkage Gas Cost Recovery provision in Code	GNI	Under review by CRU
A109	Calculation of Charges in respect of a Meter Quantity Adjustment	GNI	Under review by CRU
A110	Reduction of Annual Caps for certain SPC Capacity Overruns at LDM Supply Points and DM Supply Points and delete Supply Point Capacity in favour of allowed transporter revenues	GNI	Under review by CRU

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NGEM Update

Update to Code Mod Forum

19th October 2022

Contents

- Approval of Natural Gas Emergency Plan (NGEP) Version 5
- National Gas Emergency Manager (NGEM) 2022 Exercise ‘Dara’
- National Grid/Network Emergency Coordinator (NEC) 2022 Exercise ‘Degree’
- National Grid 2022/23 Winter Outlook & Comms
- Updating of Emergency Contact Details - *reminder*

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Natural Gas Emergency Plan (NGEP)

- Version 5 of the Natural Gas Emergency Plan (NGEP) has been approved by the CRU.
  - Aligns NGEP Stages with Regulation (EU) 2017/1938 Crisis Levels.
- Will notify this forum when published on GNI website.

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EU Regulation 2017/1938 – Crisis Levels

Regulation (EU) 1027/1938 Article 11 – Declaration of a crisis	
Crisis Level	**Summary**
Early Warning	'where there is concrete, serious and reliable information that an event likely to result in a deterioration of gas supply may occur...'
Alert	'where a disruption of gas supply or exceptionally high gas demand results in a significant deterioration of the gas supply situation but the market is still able to manage without the need to resort to non-market-based measures…'
Emergency	'where there is exceptionally high gas demand, significant disruption to supply…gas supply insufficient to meet demand so that non-market-based measures have to be introduced…safeguarding gas supply to protected customers…'

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EU Regulation 2017/1938 & the NGEP

NATURAL GAS EMERGENCY CLASSIFICATION		
EU Regulation Crisis Level	**NGEP Emergency Stage**	**Description**
Early Warning	NGEP Emergency not declared	
Alert	1	Potential Emergency
Emergency	2	Emergency Declared and Load Shedding
	3	Allocation & Isolation
	4	Restoration

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2022 NGEM Emergency Exercise ‘Dara’

- 2022 NGEM Emergency Exercise ‘Dara’ was carried out over 2 days on 9th & 16th September.
- Simulated 20% reduction in supply at Moffat over extended period (7-10days).
- Used actual supply/demand data from 8th January 2021 (cold, low wind, high demand).
- Required load shedding of gas-fired powergen to balance supply/demand.
- Day 1: Gas/Electricity interaction.
- Day 2: Managing the impact of gas-fired powergen load shedding over extended period.

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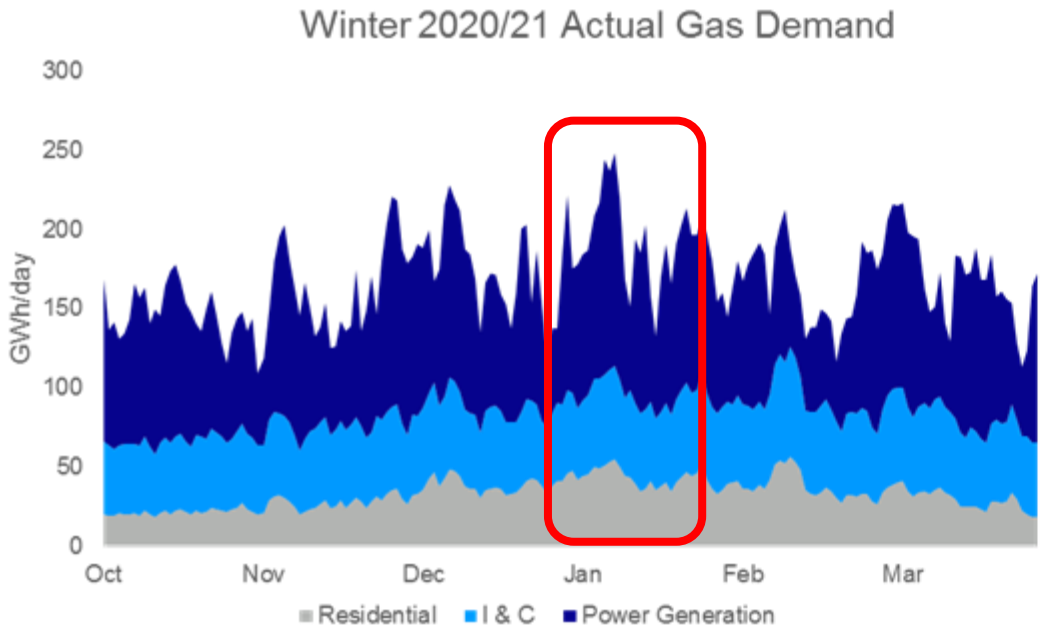
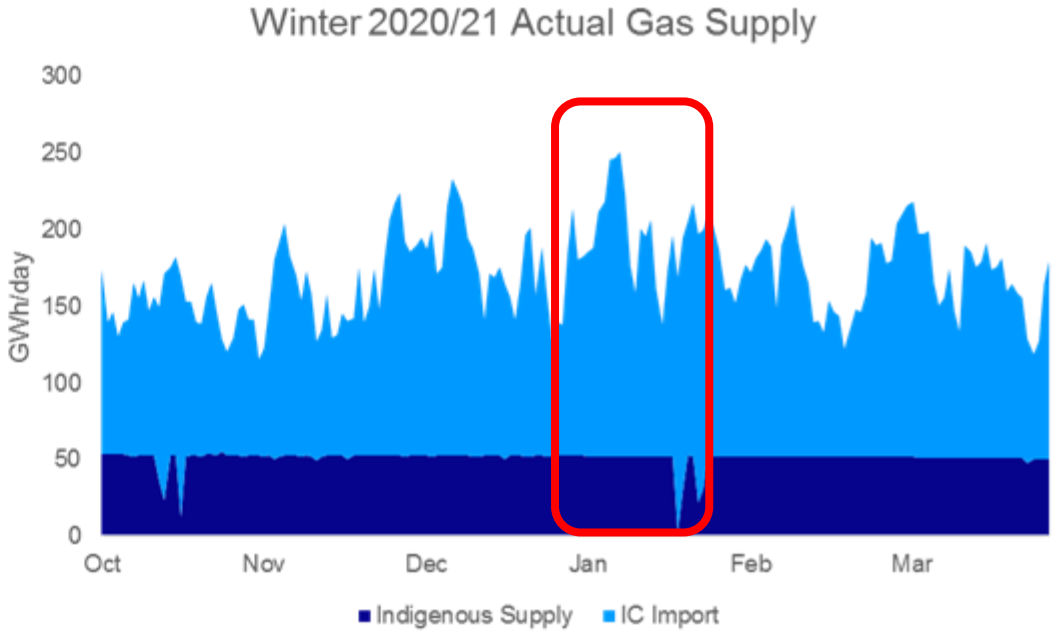
Exercise ‘Dara’ Gas Scenario

Gas use (c. 250 GWh/day) - 8th Jan 2021:

- 57% power generation
- 32% domestic
- 12% industrial





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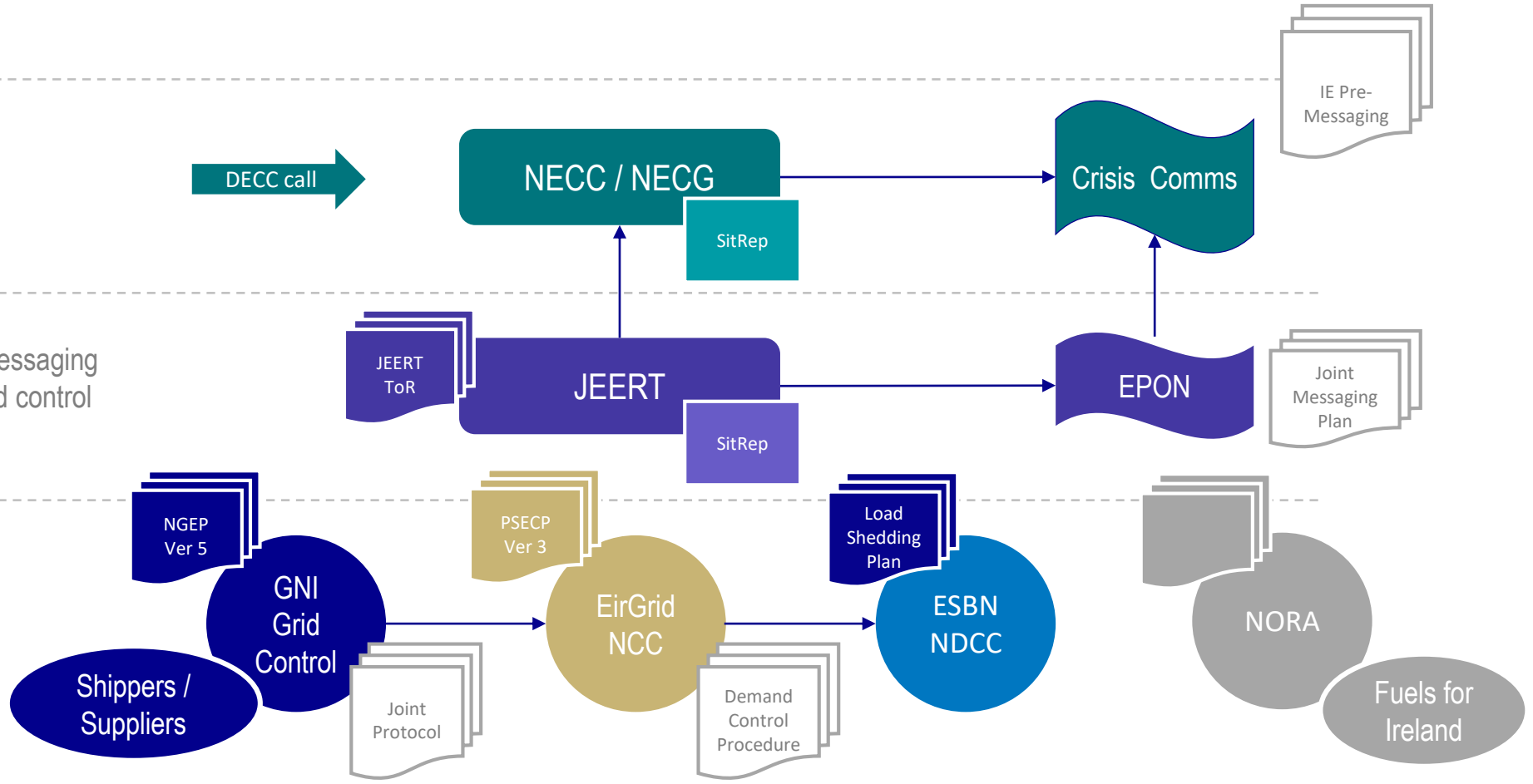
Exercise ‘Dara’ Structure and Processes

Strategic response
Multi-sector coordination
Coordinated messaging

Tactical response
Coordinated response and messaging on system status and demand control

Operational response
Real-time decision-making



CRU An Coimisiún um Rialáil Fóntais Commission for Regulation of Utilities

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ESB NETWORKS

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Exercise ‘Dara’ Outcomes

- Exercise successfully tested the emergency plans and processes of GNI/NGEM, EirGrid, ESB Networks, CRU & DECC
- Joint Energy Emergency Response Team (JEERT) was convened.
- The National Emergency Coordination Group (NECG) was convened for Day 2 at the National Emergency Coordination Centre (NECC) in Dublin.
  - Link to Office of Emergency Planning: https://www.gov.ie/en/campaigns/624e4-emergency-planning/
- Role of NORA incorporated into the exercise.
- Energy Press Officers Network (EPON) mobilised to manage the media comms.
- Exercise report being compiled.

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2022 NEC Emergency Exercise ‘Degree’

- Exercise ‘Degree’ was the 2022 Network Emergency Coordinator (NEC) assurance exercise on managing a Network Gas Supply Emergency (NGSE) in GB.
- Exercise took place over 4 days: 28th September; 4th, 5th & 11th October.
- Exercise simulated demand exceeding supply on GB network over 36hr period;
  - Interaction between gas and electricity networks in GB.
  - Impact on domestic customer (e.g. gas boilers not working if electricity blackouts).
- Exercise report will be published on National Grid website once complete.

National Grid 2022/23 Winter Outlook & Comms

- National Grid 2022/23 Winter Outlook published on 6th October:
  https://www.nationalgrid.com/gas-transmission/insight-and-innovation/winter--outlook

- Regular meeting scheduled to review:
  - Long range weather forecast and potential impact on demand
  - External influences review – Europe, LNG etc.
  - NTS 7 day margins report review
  - Issues & Concerns from GSO / GDN's / GNI

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Updating Emergency Contacts - *reminder*

- GNI maintains a database of Emergency Contacts for Shippers, LDM and DM End Users.
- Emergency contact details are stored on GTMS:
  - email addresses will be used to send the emergency notices.

- Any updates can be directed by email to: emergencyplanning@gasnetworks.ie

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Contact us:

- Any queries can be directed by email to: emergencyplanning@gasnetworks.ie

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An Roinn Comhshaoil,
Aeráide agus Cumarsáide
Department of the Environment,
Climate and Communications

Consultation on the review of the security of energy supply of Ireland's electricity and natural gas systems

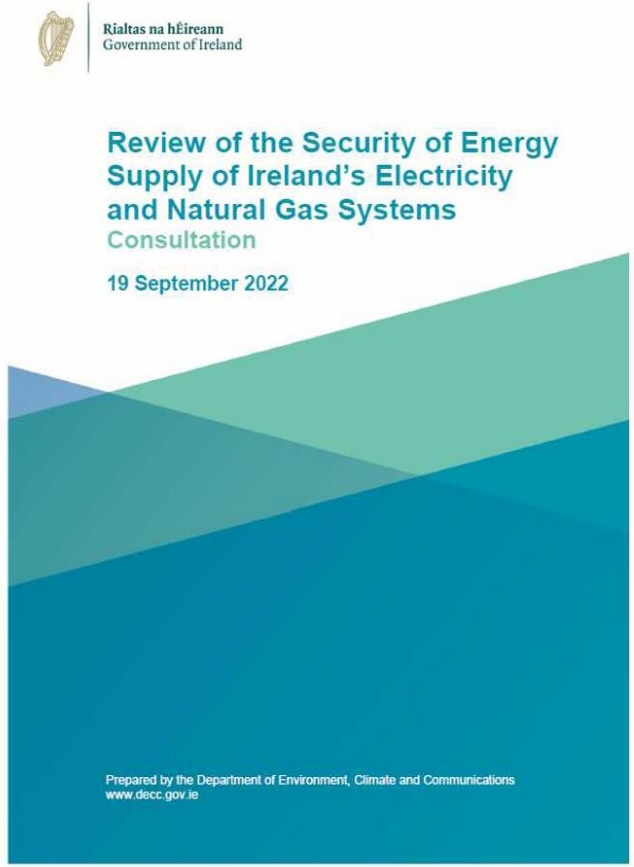
19th of October 2022

Approach

- The review is focused on the period to 2030, but in the context of ensuring a sustainable transition up to 2050.
- This review does not seek to address the expected tight margins in electricity supply over the coming winters.
  - *This is being addressed through a programme of actions being undertaken by the CRU with support of EirGrid, DECC and industry.*
- The review is accompanied by technical analysis carried out by Cambridge Economic Policy Associates Ltd.

Consultation

- Gas and electricity system information and trends
- Policy Context
  - EU and National
  - Climate and energy targets
  - International Developments
- Technical Analysis
  - Risks
  - Mitigation options
  - Russia supply interruption
- Tools and Measures



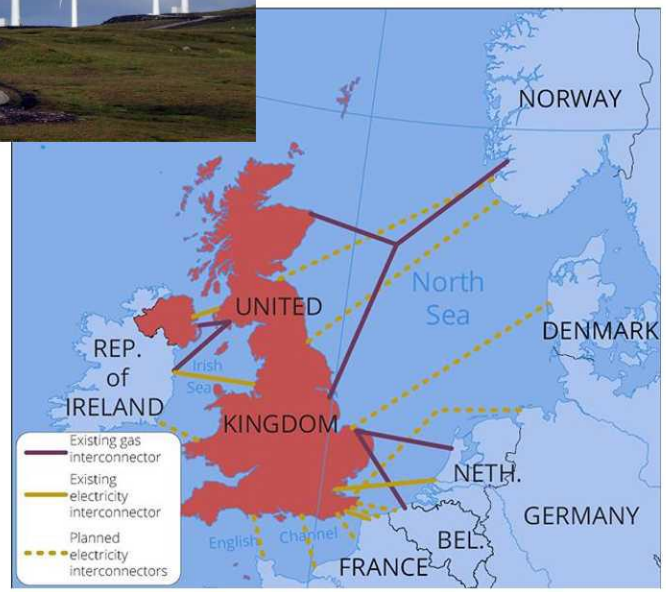
Gas and Electricity Trends to 2030

Electricity

- Continued growth in demand
- Increase in renewable generation
- Greater interconnection

Natural Gas

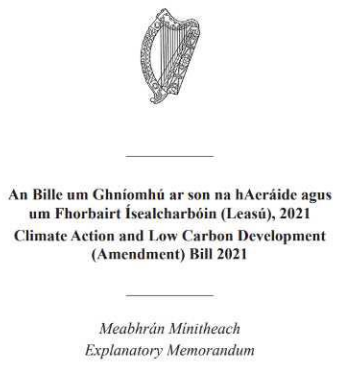
- Reduction in total demand
- Increased peak day demand
- Increasing import dependency



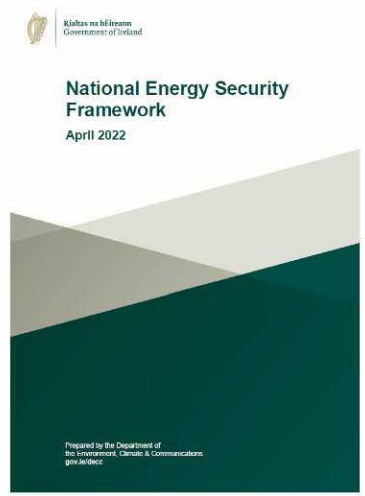
Increasing interdependencies in both systems

Policy Context

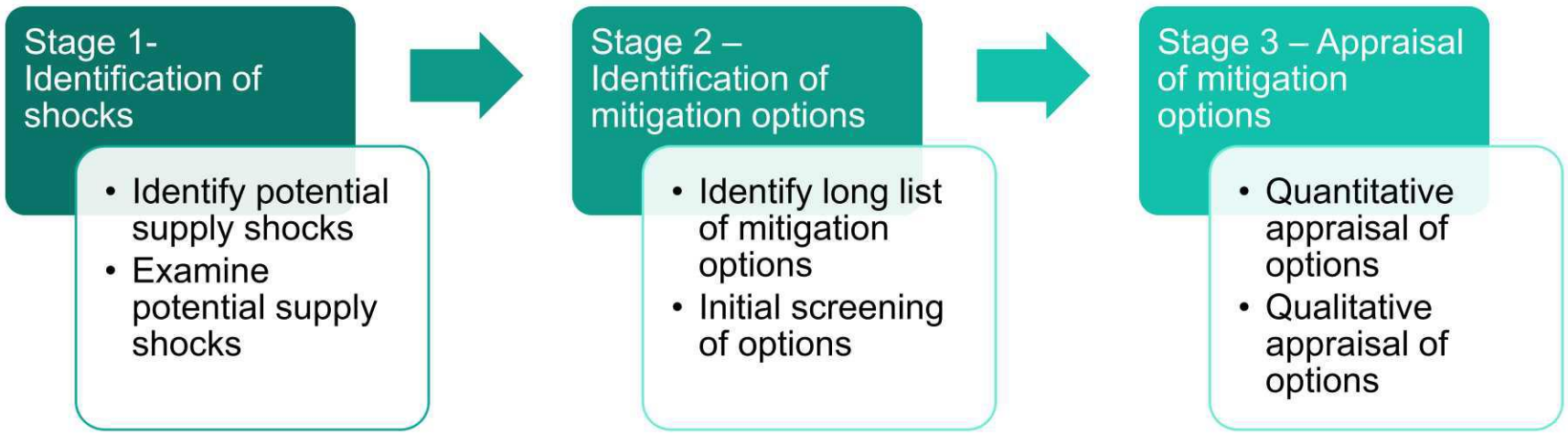
- Energy policy is a shared competence between Member States and the EU
- Fast evolving EU policy
  - *Fit for 55 package*
  - *Hydrogen and gas market package*
  - *REPowerEU*
    - EU aim to be independent of Russian gas by 2027
- Ireland's Climate Act 2021
- National Energy Security Framework


An Bille um Ghníomhú ar son na hAcráide agus um Fhorbairt Ísealcharbóin (Leasú), 2021
Climate Action and Low Carbon Development (Amendment) Bill 2021

Meabhrán Mínitheach
Explanatory Memorandum



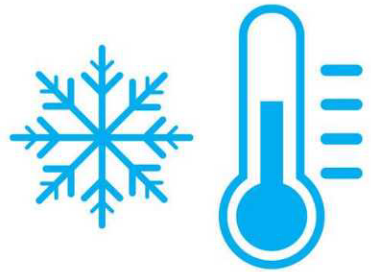
Technical Analysis



+ Assessment of full disruption of Russian gas supplies to Europe

Identification of Shocks

- Demand-side
  - weather-related events such as very low temperatures and low wind speeds
  - significant increases in electricity/gas demand



- Supply-side
  - Infrastructure or technical risks
  - Market shocks
  - Geopolitical shocks

- Shocks to security of energy supply are generally low-probability but high-impact events

Screening of Mitigation Options

- Identifying a long-list of potential options
  - multiple options were identified to mitigate against the potential shocks
  - each potential mitigation option was examined at a high level for feasibility

- Initial screening
  - to determine a short list for more complete modelled analysis
  - criteria including the potential for alleviation of identified shocks, feasibility and consistency with Ireland's climate ambition
  - taken forward for full appraisal and modelling

- Seeking feedback on all options

Appraisal of Mitigation Options

- Level of security of supply mitigation provided to the identified shocks
- Impact on emissions
- Impact on wholesale gas and electricity prices
- Capital and operating costs
- Implementation challenges
- Environmental aspects
- Risks and unintended consequences

Appraisal

Gas Mitigation Options

- Strategic gas storage – gas storage that would only operate during periods in which there is a material risk of demand disruptions
- Strategic floating LNG – a floating LNG facility that would only operate during periods of a material risk of demand disruption
- Gas package – a combination of strategic storage, renewable gas (biomethane injection and hydrogen) and demand side response

Electricity Mitigation Options

- Additional electricity interconnection – second 700MW interconnector to France
- Additional pumped storage
- Biomass plant
- Secondary fuel – increased secondary fuel storage
- Hydrogen plant conversion – converting a CCGT to hydrogen
- Electricity package – a combination of additional capacity of batteries and demand side response

Tools and Measures

1. Joint Planning
   - *Gas and electricity interdependencies increasing*
   - *Renewable gas development*
   - *Consolidated plan*

2. Regular Energy System Reviews
   - *Technical analysis every two years*
   - *Full Department led review at least every four years*

3. International arrangements
   - *Build on current arrangements with EU and UK*

Next Steps

- Consultation questions posed over three areas
  - *Risks*
  - *Mitigation Options*
  - *Policies and Measures*

- Consultation responses by the 28th of October 2022

- Minister will take recommendations to Government

11. Gas and Electricity Interaction

12. AOB

AOB Items – Next Meeting

- Questionnaires on impact of hydrogen blend on end-user appliances

- Next Meeting scheduled for 14 December 2022 in Dublin – substitute for virtual meeting?

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Purpose

Gas Networks Ireland (GNI) has been given the challenge by the Irish government of increasing renewable gas into their gas network through the Climate Action Plan 2021 (CAP).

The action plan highlights two key milestones for enabling this:

- Test the technical feasibility of safely injecting green hydrogen blends in the gas grid
- Complete an assessment of the impacts on network operations, integrity and end users' appliances

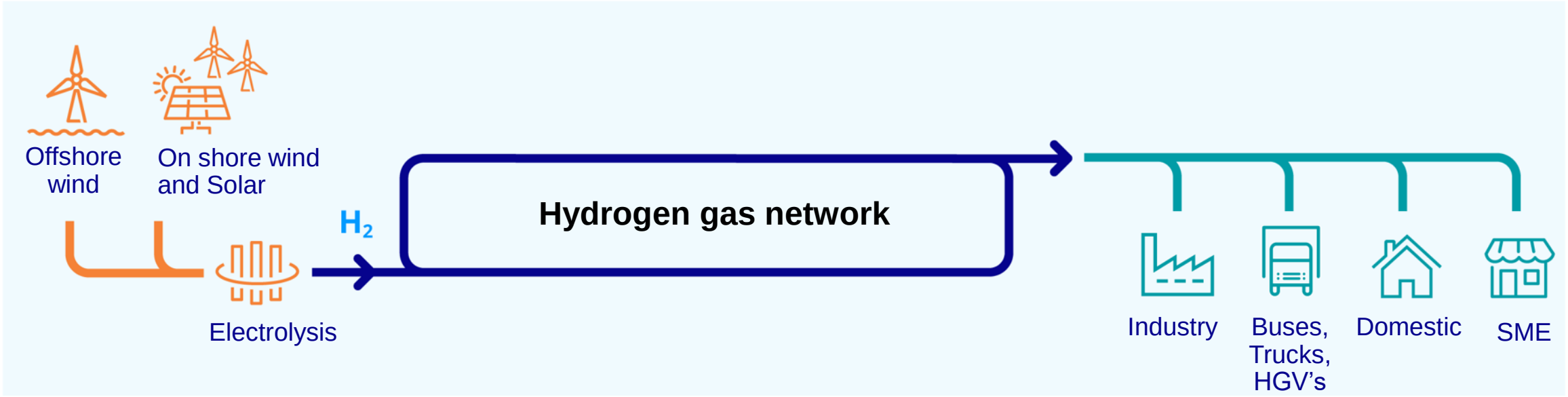
Gas Networks Ireland

Key questions

Green Hydrogen is coming from renewable sources and will be transported into the gas network.

Two key questions that should be addressed are:

1. What are the end-users' equipment limitations?
2. How to adopt the gas network to have admissible hydrogen?



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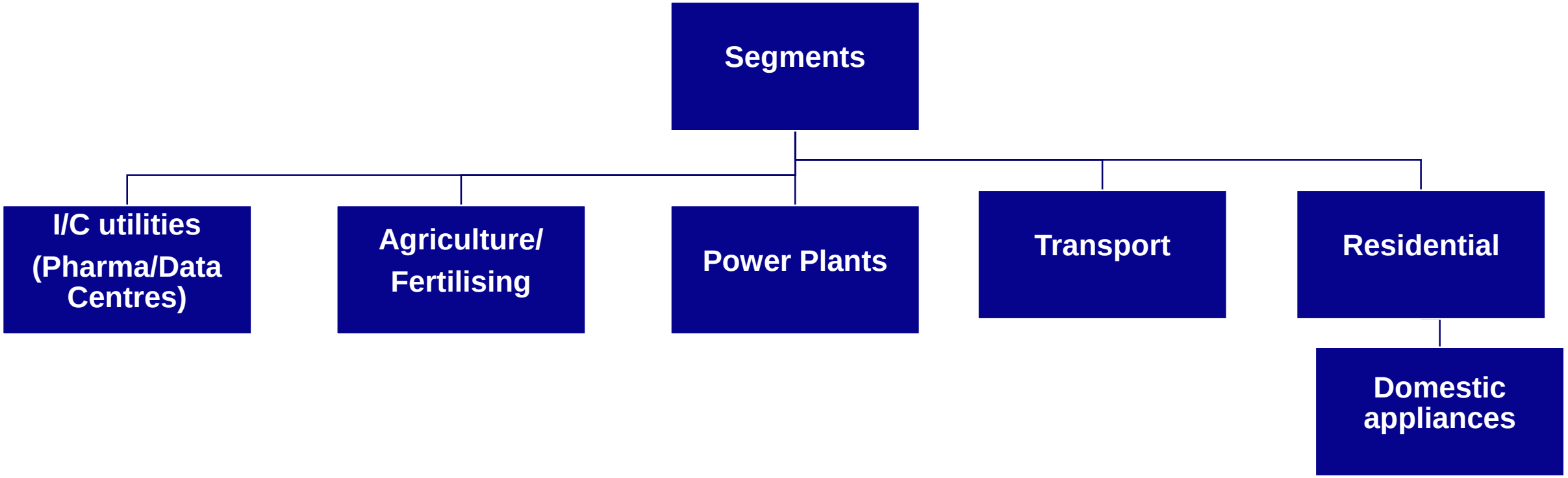
H_2 Compatibility of existing end-users' equipment



There are limitations in accepting hydrogen levels by different gas-based fuel devices.

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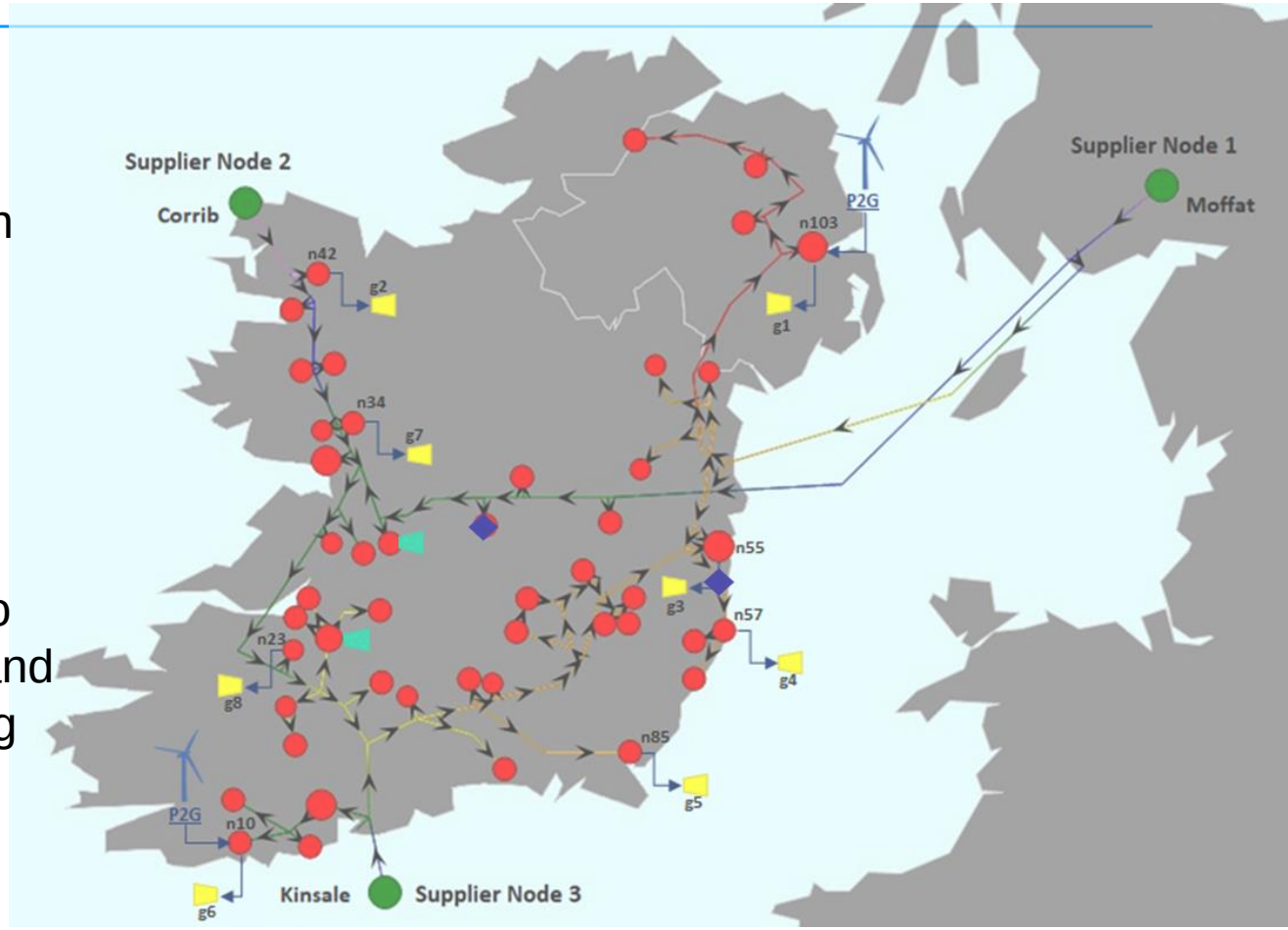
Operating Scenarios

Categorise, filter and cluster of Ireland's end-users in different segments

Estimation of a Hydrogen Storage capacity in the gas transmission system

Investigating the optimum locations to inject Hydrogen in Irish gas network

Working closely with our Future Networks Team to understand constraints and inform potential operating scenarios



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End User Questionnaire

- Requesting equipment information through questionnaires to three end user categories:
  - Power Generation,
  - Large Daily Metered
  - Daily Metered
- Holding in person interviews with the large scale end-users
- Online questionnaire based on multiple choice and describing additional technical information
- Residential users were investigated in Phase I of the project

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Future steps

- Testing higher hydrogen concentration than 20%
- Testing Biomethane and hydrogen blends
- Determine how much the addition of hydrogen impacts the operation of the gas network
- Modelling the Gas network to identify the potential capacity and its variation over time for hydrogen injection at all nodes on the Gas network
- Indicating the best locations of injection on the Irish gas network map
- Optimum storage capacity and injection points for renewable gases (hydrogen and biomethane)

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15. Code Modification Forum Meetings in 2022

Next Meeting

CMF Dates 2022	Location
16 February 2022 (Wednesday)	Zoom Meeting
13th April 2022 (Wednesday)	Dublin
15th June 2022 (Wednesday)	Cork
17th August 2022 (Wednesday)	Dublin
19th October 2022 (Wednesday)	Dublin
14th December 2022 (Wednesday)	Dublin

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Thank you for your participation