

UNC Workgroup 0849R Minutes
Commercial Framework Review to Enable Hydrogen Blending
Monday 19 June 2023
via Microsoft Teams

Attendees		
Kate Elleman (Chair)	(KE)	Joint Office
Helen Bennett (Secretary)	(HB)	Joint Office
Alexander Webb	(AW)	SGN
Alexis Birchall	(AB)	Northern Gas Networks
Andrew Goodwin	(AG)	ScottishPower
Andy Clasper	(AC)	Cadent
Anna Stankiewicz	(AS)	National Gas Transmission
Anne Jackson	(AJ)	Representing REC Code Manager
Bethan Winter	(BW)	Wales & West Utilities
Callum Gurr	(CG)	BEIS
Charlotte Gilbert	(CB)	BU-UK
Chris Evans	(CE)	Kellas Midstream
Chris Wright	(CW)	Exxon Mobil
Christiane Sykes	(CS)	Shell
Colin Paine	(CP)	Engie
Daniel Hisgett	(DH)	National Gas Transmission
David Addison	(DA)	Xoserve
David Mitchell	(DM)	SGN
Davide Rubini	(DR)	Vitol
Emma Buckton	(EB)	Northern Gas Networks
Emma Robinson	(ER)	Eon Energy
Emmanouil Marroudis	(EM)	Ceres Energy
Faisal Haroon	(FH)	Cadent
Guv Dosanjh	(GD)	Cadent
Harriet Reece	(HR)	Energy Security Networks & Markets
James Whitmore	(JW)	Cadent
Jeff Chandler	(JCh)	SSE
Jennifer Randall	(JR)	National Gas Transmission
Jenny Rawlinson	(JRi)	BU-UK
Joel Martin	(JM)	SGN
Joseph Leggett	(JL)	Interconnector
Julie Cox	(JCx)	Energy UK
Kevin Clark	(KC)	Utilita
Lauren Jauss	(LJ)	RWE
Mark Field	(MF)	Sembcorp
Mark Jones	(MJ)	SSE
Megan Bray	(MB)	National Gas Transmission (Proposer)

Mohammed Burhaan	(MBu)	Energy Security Networks & Markets
Nick King	(NK)	CNG Services
Richard Pomroy	(RP)	Wales & West Utilities
Ritchard Hewitt	(RHe)	Interconnector
Rob Gaskell	(RG)	Kellas Midstream
Shiv Singh	(SS)	Cadent
Sue Ellwood	(SE)	Ellwoods Ltd
Thomas Grove	(TG)	Centrica

The Workgroup Report is due to be presented at the UNC Modification Panel by 14 December 2023.

This Workgroup meeting will be considered quorate provided at least two Transporter and two Shipper User representatives are present.

Please note these minutes do not replicate/include detailed content provided within the presentation slides, therefore it is recommended that the published presentation material is reviewed in conjunction with these minutes. Copies of all papers are available at: <https://www.gasgovernance.co.uk/0849/190623>

1.0 Outline of Request

Megan Bray (MB) introduced the Request and explained its purpose is to review the market principles and existing commercial framework to assess their compatibility with blending hydrogen into the networks and explore the required amendments where necessary. Ensuring the amended regime is simple and easy to implement whilst also remaining adaptable and consistent with relevant obligations.

2.0 Initial Discussion

MB proceeded to present the material provided for the meeting and confirmed the topics that will be discussed which include:

- Introduction to Hydrogen Blending
- UK Policy Timeline
- EU Blending Strategy
- Review Group Objectives
- Assumptions and Parameters
- Gas Quality Review
- System Operation Review

It should be noted that these minutes do not replicate detailed content provided within the presentation slides, therefore it is recommended that the published presentation material is reviewed in conjunction with these minutes. Copies of all papers are available at: <https://www.gasgovernance.co.uk/0849/190623>

Introduction to Hydrogen Blending - Slide 3

MB explained that the Government are aiming towards a policy decision for blending up to 20% hydrogen into Distribution Networks in 2023, with a decision on Transmission to follow.

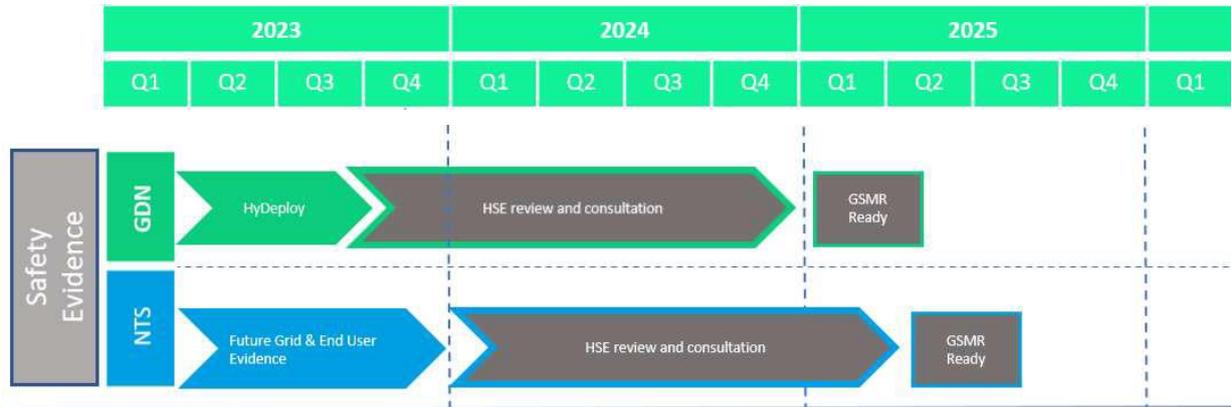
This slide also shows the National blending capacity and the Distribution Network capacity and Direct NTS Capacity split.

Introduction to Hydrogen Blending - Slide 4

MB noted the benefits of hydrogen blending highlighting it reduces the carbon intensity of gas blending for green and blue hydrogen; provides an early route to market and encourages growth of the hydrogen market.

Expected Policy Timelines - Slide 5

MB provided a view of the timeline so far, how it will progress over the next 2 years and an overview of the HyDeploy isolated network test facilities, Keele University and Winlaton which are focussing mostly on a higher domestic market and are due to start testing the Industrial & Commercial market. The safety data evidence of which is due to be submitted in 2023.



When Mark Field (MF) sought clarification that the HyDeploy trials will be completing further testing for higher pressure systems, James Whitmore (JW) confirmed that the remaining HyDeploy testing evidence will include all other Users.

Lauren Jauss (LJ) asked if the report is likely to suggest there are no changes required to the Network or, that work will be needed to make the Network safe. JW clarified that the majority of evidence should say there is zero to minimal change, but there might be some bespoke work required. The complete testing evidence will be reviewed by the Health and Safety Executive (HSE) before anything is implemented.

MB confirmed the FutureGrid decommissioned asset test facility located in Cumbria will begin tests up to 20% blending in 2023, the safety date for which will also be submitted by the end of 2023.

It was clarified that the FutureGrid project is looking at testing a range of blends, with a portfolio of different customer bases with differing burning facilities and machinery to make sure they can cope with the different blends. Depending on the output of these tests, it may require some deblending project work to be opened up.

When Julie Cox (JCx) asked if there is an understanding of having separate decision dates for Distribution and Transmission Networks, MB advised there is no clarity yet on Transmission, and there is no clear view of when that is likely to be.

Jeff Chandler (JCh) requested that the testing facilities include testing of Combined Cycle Gas Turbines (CCGTs) which can burn up to 2.5% hydrogen blend, he added there is a significant concern if CCGTs cannot be involved in the project.

Anna Stankiewicz (ASt) added that deblending will be seen as a separate Modification process.

JW also noted that associated costs for blending and deblending can be picked up within the planned Connections Workgroup meeting.

Christiane Sykes (CS) expressed her support for any discussion relating to deblending.

Ritchard Hewitt (RHe) questioned if the hydrogen is deblended from the hydrogen methane mix, what do you do with the hydrogen once it has been deblended? MB confirmed this will be considered within the Connections process.

Chris Wright (CWr) requested consideration of a solution for deblending and Direct Connects to Europe that will want to continue to export gas.

Expected Policy Timelines - Slide 6

MB explained that the Government has confirmed that a policy decision for the Distribution Networks, in principle, will be made at the end of 2023 and timelines for Transmission remain unclear.

EU Blending Strategy - Slide 7

Referring to the information on this slide, European Commission proposals for blending and Interconnectors for Belgian and Netherlands limits, JCx questioned how the hydrogen limits could be implemented in practice, noting if there is a 5% limit on Transmission, and the Gas Safety (Management) Regulations (GS(M)R) is changed to 20%, in practice, how would they be limited throughout the regulatory framework.

MB clarified that initial connections on the Distribution Network are not going above 5% and JW clarified that the difference between Distribution and Transmission will require scrutiny and some assumptions need to be made. He said that, from a billing point of view, there could be a limit of 20% in GS(M)R, but there could be thermal regulations as well.

JW noted other things in GS(M)R need to be complied with and require consideration which could constrain the % of hydrogen.

LJ highlighted the Reverse Compression Modification 0808 (<https://www.gasgovernance.co.uk/0808>) needs to be considered and how the timing of that Modification will work.

When JW clarified, this Request is not proposing to flow gas between Distribution and Transmission Networks, the hydrogen blend will be flowing within the same Network and gas will not be taken out of the Network, David Mitchell (DMi) advised there are very specific Business Rules in Modification 0808 which could be reviewed during a future Request 0849R Workgroup.

Gas Goes Green Proposal - Slide 8

No comments.

0849R Work Group Objectives - Slide 9

MB provided an overview of the objective for each of the remaining 5 Workgroup meetings:

0849R Work Group Objectives:



MB confirmed, for Workgroup 3, she will advise Joint Office if she requires any additional invitees.

LJ noted the Gas Goes Green Connections Methodology Solution Options, (currently being considered by Cadent), for Workgroup 4 and advised that consideration of site safety, the safety case referring to methane.

MF advised there could be some time required for obtaining safety approvals as moving from one type of gas to another, planning, environment, and safety need considering.

Assumptions and Parameters - Slide 10

To ensure the deliverability of this project, MB provided a view of the assumptions and parameters advising there are still some unknown certainties for hydrogen blending,

- *Blending will be implemented with the least change to existing market frameworks possible.*
- *Both In-network (commingling facility owned by Gas Transporter) and pre-blend (commingling facility owned by Delivery Facility Operator) connections will be considered within this work.*
- *Hydrogen will be available to blend.*
- *Blending hydrogen onto gas networks may be used for the role of “reserve off-taker”; therefore variability in hydrogen volumes to be injected needs to be considered.*
- *Consideration of onshore network regulatory frameworks (excluding Interconnectors).*
- *Other projects will be concluding on framework principles (e.g. the “Connections and Capacity Methodology project” and the “Functional Specification project”).*
- *Assume all existing market players will be included in blending development.*
- *All GB I&C & Domestic users will be assumed to be customers of the Hydrogen blend.*
- *This project is just considering the commercial amendments required, not physical arrangements.*
- *We assume within the project that low levels of blending (C.5%) will not impact the physical capability of the networks (due to higher volumes vs energy).*

When MB clarified this Review will not be looking at the Interconnectors regulatory framework, RHe noted that the Uniform Network Code does separate Interconnectors but there is a lot of cross-over.

MB clarified that Interconnectors do have the same requirements and the impacts will be considered, but a Modification will not be raised for the Interconnector requirements as part of this Review.

Joseph Leggett (JL) asked if there is a timeframe, MB advised this depends on EU strategy, until the final decision is known it will be hard to assess what commercial changes will be required. This will need to be looked at, but not within this review.

MB advised she will update the assumptions to make this clearer.

Assumptions and Parameters - Slide 11

MB noted three further assumptions for the first phase of blend connections and confirmed that Cadent is leading the Connections and Capacity Methodology project.

- *Within this report we assume that GS(M)R will be updated following an HSE safety review to accept volumes of up to 20% hydrogen into the networks.*
- *Only low percentage volumes of C.5% of hydrogen will be blended into the networks. Injection sites will need to comply with the CV target submitted by the network operator. This is to minimise the risk of CV Capping, remaining in line with the requirements of the Thermal Energy Regulations.*

- *The Connections and Capacity Methodology project will be reviewing suitable connection rollout models that remain in line with the Gas Act 1986. These models will then be considered within this work.*

Assumption: National Gas Transmission (MB) to update the Assumptions to address: Interconnectors regulatory framework; The different timescales for Distribution and Transmission and as there has been debate around deblanding and reverse compression, consideration to include these as part of the assumptions.

Action 0601: (MB) to update the Assumptions following each Workgroup meeting.

Gas Quality Review - Slide 13

MB provided an overview of the assumptions, parameters and existing market participant Gas Quality conditions for Gas Transporters, Connected Parties and Shippers.

Hydrogen Blending - Slide 14

MB provided an overview of the regulatory framework legislation and the initial high-level review of the changes that might be required.

JCx noted that the 5% blending limit will be managed through the Network Entry Agreements for Transmission for which there is a process for modifying them, however, there is nothing in place for Distribution. She mentioned this has been considered previously within the GMaP project but was not progressed any further. JCx suggested some engagement, or consultation is required for how 5% limits will be managed for Distribution and consider if what is under Transmission is adequate.

Harriet Reece (HR) asked, in terms of the Gas (Calculation of Thermal Energy) Regulations 1996, if there is no change required for blending up to 5%, at what level would a change be required? MB clarified that Network analysis is now being completed to determine, if blending rises above 5%, what impact this may have on the Gas (Calculation of Thermal Energy) Regulations 1996 and agreed to bring the results to Workgroup to discuss.

Joel Martin (JM) explained that the hydrogen cap is not set at 5% in the Gas (Calculation of Thermal Energy) Regulations 1996, the CV capping rules are purely a process to deal with the CV differences between gases. If hydrogen is blended at either 5% or 20%, there would be no change to these regulations.

MB clarified it would be more about how customers are billed that would need to be reviewed, JM agreed, in terms of CV capping and the obligations on Transporters to minimise CV shrinkage.

Lauren Jauss (LJ) asked if hydrogen will need to be pre-blended with methane before it goes into the Network. JW clarified with hydrogen being injected there will be gas quality monitoring, when the gas is fully blended it cannot be below the required limits.

Anne Jackson (AJ) sought clarification that the Workgroup is currently considering the changes in the context of gas quality only and that other aspects that impact will be considered on another occasion. Assuming there could be impacts, where will impact to the Gas (Calculation of Thermal Energy) Regulations 1996 that are not connected to Gas Quality going to be considered? JW confirmed this is currently being assessed within the project and will provide an update to the Review Group.

Anna Stankiewicz (ASt) highlighted the introduction of blending will be gradual and that any consequential changes, such as the impact for shrinkage, have not yet been reviewed.

JCx suggested that keeping to a minimum change needs to include specific limits to blend, it is an aspiration rather than an assumption, and the low 5% limit should be put into Code. The challenge is to be sure if the limit is 5% it needs to be written into the rules.

Reference was made to Modification 0363V - Commercial Arrangements for NTS Commingling Facilities, <https://www.gasgovernance.co.uk/0363>, which introduced commercial arrangements into UNC to facilitate the connection of NTS entry projects which require gas offtake from the NTS to meet their gas quality delivery obligations.

Ritchard Hewitt (RHe) asked, with regards to the Gas Transporter Standard Licence Conditions within Network blending who owns the equipment, if another party injects 100% hydrogen, but take gas off the Network, blends it and puts it back into Network, do they become a Gas Transporter and is there an impact on the licence conditions? MB advised she will check which is noted as an action.

Richard Pomroy (RP) said that something similar to bio-methane producers who are given an exception, for a length of pipe, to cover similar scenarios may be required or, MB said there may need to be an exception for 3rd parties to pre-blend.

JM provided clarification that the Standard Offtake Requirements point to GS(M)R, therefore, if GS(M)R changes the Standard Offtake Requirements would need a change.

JM noted, if GS(M)R changes the 20% limit, which is currently the law, the 5% is a number the detailed analysis has identified that would not impact CV Shrinkage.

JCx said that the 5% limit could be managed through NEXA/Code NEA.

JCx said, from a customer point of view, any changes/impacts might be very different and asked for a holistic approach. JCx also noted GS(M)R spec gas is not currently allowed to enter every Entry Point, and that there is a process in place.

New Action 0603: National Gas Transmission (MB) to look further into changes that may be required to Code.

Workgroup agreed that the creation of an issues list was seen as a good idea and MB confirmed she will create one.

Action 0604: MB to create an Issues List to be reviewed at each Workgroup meeting.

Amendments to Connection Contracts - Slide 15

JCx said it could be worth going back to the conclusions of the 0363V Workgroup that looked at this which determined more consideration was needed.

JM mentioned, for the bulk of Distribution NEAs, blend points will be new, none are existing, and this will require more transparency for the % level because of the potential impact on downstream customers.

System Operation Review: Existing Market Participants - Slide 17

No comments.

Hydrogen Blending: System Operation - Slide 18

MB provided an overview of the regulatory framework legislation and the initial high-level review of the changes that might be required and noted the following:

CWr noted there could be a lot more Entry Points with hydrogen production and asked how System Operation will deal with potential breaches. It was clarified this is being explored more in the Connection Methodology Workgroup.

JM added that the NEA would have to reflect an engineering/technical solution to ensure the cap cannot be breached and there will be CV targets that the System Operator would have to comply with.

RHe noted that hydrogen hubs would have some kind of right to deliver to the Network, it would then be down to the downstream Transporter to manage that delivery.

JCx mentioned her concern that 6 Workgroups will not be enough to complete this Review.

LJ also commented that it is important to be aligned with the objectives of this Review and understand the issues and concerns rather than try to solve them.

Constraint Management - Slide 19

MB explained that all Gas Transporters and System Operators are responsible for maintaining a safe and operable network. To do this, several commercial or physical tools can be used in the event there is a constraint on the network.

A Workgroup participant noted that the tools listed for National Transmission System and the Gas Transporters are based around turning down the demand, but said, based on discussions, there may need to be a bit more turn-up tools too.

JM advised that the Distribution Entry Agreements and LDZ System Operator agreements do not offer any guarantee of maximum flows or capacity, the hydrogen blending NEA will be similar, and prevailing conditions on the network will govern how much hydrogen blending can be accepted onto the network. JM noted this will require a technical solution to ensure that maximum limits will not be exceeded.

ASt noted a lot will depend on discussion with connections, allowing or stopping hydrogen blend flows. There are locational buy actions available but would not want to use that as a constraint management tool as that is not what it is being developed for.

Sue Ellwood (SE) noted there is a distinction again between market-based tools and engineering solutions which might be captured in the NEA.

Communication and Coordination - Slide 20

MB advised that enhanced coordination and communication between Network Control Rooms and Delivery Facility Operators may be required to manage blend percentages throughout the network and ensure that GS(M)R is not breached.

JCx asked who the Delivery Facility Operators are going to be and suggested that Networks discussing blend percentages and management of blending between themselves is not seen as being fair and equitable.

RHe noted, regarding clusters of hydrogen facilities grouping, how upstream storage would be managed.

It was noted that BEIS is looking to maximise the capability of hydrogen delivered onto the network, limiting the hydrogen, upstream and downstream.

Buffering service which is then part of the Network Agreement. JR – is there a right for the producer to put the hydrogen onto the network?

MB took away several issues, relating to the following topics, to capture on an Issues Tracking list which will be shared at Workgroup on 18 July:

- Deblending
- Combined Cycle Gas Turbine (CCGT) compatibility with H2 blend
- Carbon capture usage and storage
- Interconnectors
- Reverse Compression
- Connection Agreements
- Control of Major Accidents Hazard
- Gas Calculation of Thermal Energy Regulations
- Limitation to blend volume percentages
- Changes to existing NEA's to enable blending
- New NEA's for blending
- Constraint Management
- Command and Control
- Delivery Facility Operators

- Buffer Service

2.1. Issues and Questions from the Panel

None raised.

2.2. Initial Representations

None received.

2.3. Terms of Reference

The Terms of Reference are included in the Request published at www.gasgovernance.co.uk/0849.

3.0 Next Steps

KE clarified what will be on the agenda for the July 2023 meeting as follows:

- Review the Issues list, Assumptions and Actions.
- System Operation Review continued.
- Balancing Review

4.0 Any Other Business

None.

5.0 Diary Planning

Further details of planned meetings are available at: www.gasgovernance.co.uk/events-calendar/month

Workgroup discussed the timing of the July 2023 meeting to avoid a clash with the Performance Assurance Committee that will also be held on 18 July 2023.

Workgroup was advised that the PAC will be held from 9 am to 1:30 pm, therefore, allowing 0849R Workgroup to commence at 2 pm.

Time / Date	Paper Publication Deadline	Venue	Workgroup Programme
14:00 Tuesday 18 July 2023	17:00 10 July 2023	Microsoft Teams	Detail planned agenda items: <ul style="list-style-type: none"> • New Issues and Assumptions • System Operation Review continued. • Balancing Review
10:00 Wednesday 02 August 2023	17:00 25 July 2023	Microsoft Teams	Detail planned agenda items: <ul style="list-style-type: none"> • Trading Review • Charging Review (overview of functional specification project outputs)
09:30 Wednesday 06 September 2023	17:00 29 August 2023	Microsoft Teams	Detail planned agenda items: <ul style="list-style-type: none"> • GGG Connections Methodology Solution Options • Capacity Review • Connections Review

10:00 Wednesday 04 October 2023	17:00 26 September 2023	Microsoft Teams	Detail planned agenda items: <ul style="list-style-type: none"> • TBC
10:00 November 2023 (TBC)	TBC	Microsoft Teams	Detail planned agenda items: <ul style="list-style-type: none"> • Final Considerations • Pre-mod Review

0849R Action Table						
Action Ref	Meeting Date	Minute Ref	Action	Reporting Month	Owner	Status Update
0601	22/06/23	2.0	National Gas Transmission (MB) to update the Assumptions following each Workgroup meeting.	July 2023	National Gas Transmission (MB)	Pending
0602	22/06/23	2.0	Cadent (JW) to consider impacts to the Gas (Calculation of Thermal Energy) Regulations 1996 that are not connected to Gas Quality and provide an update to the Review Group.	July 2023	Cadent (JW)	Pending
0603	22/06/23	2.0	National Gas Transmission (MB) to look further into changes that may be required to Code.	July 2023	National Gas Transmission (MB)	Pending
0604	22/06/23	2.0	MB to create an Issues List to be reviewed at each Workgroup meeting.	July 2023	National Gas Transmission (MB)	Pending
0605	22/06/23	2.0	MB to create an Actions List to be reviewed at each Workgroup meeting.	July 2023	National Gas Transmission (MB)	Pending