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Ofgem's RIIO-2 Call For Evidence Questions

When submitting evidence please remember:

- It should be clear and concise.
- The response should specify which part of the plan the evidence relates to.
- Responses must be evidence based (either qualitative assessment or using own or external data).

Should you require any clarification prior to submitting your response or have any problems using this response tool please email RIIO2@ofgem.gov.uk

Please note that it is recommended to use a browser other than Internet Explorer (eg Chrome, Safari, Firefox) to complete this survey if wishing to upload supporting documents.

1. **Company Name: REA**
   Email: Kiara@r-e-a.net
   Name of Individual: Kiara Zennaro

The REA is the UK's largest trade association for renewable energy and clean technologies, representing 550 members operating across heat, power, transport, and natural capital. A no-for-profit in operation since 2001, the Association's membership ranges project developers to manufacturers, installers, consultancies, financiers, and academic institutions.

2. We may publish the results of this survey on our website or may use this feedback during our upcoming open hearings. **Please check the box if you would like your responses to remain confidential.**
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3. **We may contact you to invite you to give evidence or ask a question at the open hearings. Please check this box if you are happy for us to contact you.**
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4. **Which company business plan does this evidence relate to?**

All gas distribution network operators (GDNs)

5. We welcome comments on any aspect of the Business Plans which can be in support of or disagreement with the plans.
   Which area does your evidence relate to?
   - Overall Business Plans
   - Meeting the needs of consumers and network users
   - Maintaining a safe and resilient network
   - Delivering an environmentally sustainable network
   - Digitalisation strategies
   - Enabling whole system solutions
   - Driving efficiency through innovation and competition

- Cost and financial information

Delivering an environmentally sustainable network and also innovation/competition.

6. Please state which section of the Business Plan your response relates to?

- SGN, Chapter 9 part C ref biomethane connections and relevant appendixes (Appendix 003 and EAPs)
- NGN Appendix 8 Environmental Action Plan
- Cadent's Environment Action Plan Appendix 07 04
- WWU's Chapter 13. Our net zero ready vision for 2035 C and Chapter 14. Environmental Action Plan.

7. Please state which section of the Business Plan your response relates to?

General comments that apply to all GDNs business plans

All gas distribution networks have shown in their business plan willingness and have set out actions to increase biomethane connections to the grid and lower the associated costs.

However, there are still issues that need addressing and these are largely still those described in depth in the Element Energy's Report entitled 'Distributed gas sources', issued in 2017 for Cadent (formerly National Grid Gas Distribution Ltd), SGN and WWU (uploaded as evidence).

Lack of standardisation across the gas networks

We have highlighted to Ofgem on several occasions the high and highly variable cost of connection due to the lack of standardisation of specification across the gas networks.

Although all gas networks' business plans mention the need to work on standardisation of equipment, there is limited detail on how they intend to do so, **how they intend to co-ordinate this work across the networks and what is the timeframe for it.**

All Gas Distribution Networks (GDNs) have different standards, contracts, policies for biomethane with significantly different costs.

It should be noted that the Navigant's recent report entitled 'Pathways to Net-Zero: Decarbonising the Gas Networks in Great Britain, commissioned by ENA, identifies the need for standardisation across the networks as a near-term action that is important in decarbonising the energy system (so called "low regret actions"). **For H_2 it is important that we avoid the biomethane experience of assets that are required in one GDN area and are not approved in another.**

This issue has been raised for a significant number of years. In 2011 -12 there was an Ofgem supported series of workshops known as EMIB which set the basic regime for biomethane.

The purpose of the group was to provide a forum for informed debate on the potential barriers to the commercial development of biomethane projects within the energy market and the appropriate means of addressing such barriers.

The concept was for all 4 GDNs to adopt common policies (see https://www.gasgovernance.co.uk/emib). At the time, it was too late to have any specific incentives within RIIO.

The published EMIB report (May 2012) states that '*It was recognised that establishing a single national set of standards would remove uncertainty and hence a potential barrier to entry. It would also support the development of competitive infrastructure provisions since different providers could develop competing products to deliver the common specification, and cost reductions should also be delivered as a result of requirements being replicated at all sites'.*

Unfortunately, industry has seen major divergences amongst the 4 GDNs with significant additional cost.

The table below gives our estimate of the costs (£) in the 4 GDN areas:

GDN	Capex for Grid Entry Unit (GEU)	GDN Charge (for auditing)	Estimated cost to satisfy wider GDN requirements	Total cost
WWU	400,000	15,000	25,000	440,000
Network 2	430,000	85,000	60,000	575,000
Network 3	450,000	40,000	50,000	540,000
Network 4	470,000	40,000	60,000	570,000

Examples of where there are technical divergences:

- Odorant system ownership and location in GEU
- Separate shut down plc
- Ownership of RTU
- Time of flight system
- Design details of upstream plant

Odorant system

There are a number of inconsistencies in the GDN's protocols and required GEU designs. The odorant system is an example. NGN is the only network that has the ownership of the odorant system. This slows down the process, and has resulted in extended plant downtime and flaring. NGN should align with other networks (ie leave the ownership of the odorant system with the biomethane developer or whoever owns the GEU).

Economic and Efficient

In our view the '*WWU*'s system as the most economic and efficient as this complies with HSE and Ofgem requirements at least cost. The other GDNs should adopt the *WWU*s design, or, as proposed in

the response to Ofgem RIIO2 consultation, maintain their designs but make a funding contribution equal to the difference between the total cost in their area and the *WWU*s total cost.

The same would apply to annual maintenance and compliance costs with a difference of around £10K between the highest and *WWU*'s approach.

This would provide a strong incentive for the gas networks to harmonise their specifications. If Ofgem implemented this, it is likely that all the GDNs would decide to adopt the *WWU*s design as their shareholders will not see the business case for the additional investment.

Currently, there is much uncertainty around:

- the justification for the main areas of difference between a GEU in all GDNs except *WWU* and the ones in *WWU* which are commonly accepted to be the lowest cost designs to comply with HSE and Ofgem requirements.
- The reason why biomethane producers should pay more than the *WWU* frontier cost.
- What steps are being taken by the networks to ensure biomethane connections are 'economic and efficient'.

There is also a confused position in relation to allowing self lay for >7 bar connections. Cadent have been the leader in this area , with around 10 biomethane projects going ahead as a result of Cadent allowing competitive provision of >7 bar connections. This is an investment of around £200 million that would not have happened in the 2014-16 period in the other GDN areas. Other GDNs do not allow this or allow it but insist on doing the final connection which makes it uneconomic to have a competitive option. Ofgem should review all policies in this area and ensure that for H_2 there is a fully competitive system. This should also apply to within grid compressor projects to create capacity.

Additional GDN Requirements

All the GDNs should adopt a common design of GEU and common processes and this should extend to requirements related to upstream gas processing in the biogas upgrading unit. At present some GDNs require significant additional investment in gas quality monitoring upstream of the GEU and the REA believes this is not economic or efficient. Ofgem should ensure that unnecessary costs are not being pushed onto biomethane producers without a good technical/safety reason. The REA can provide examples of this in areas of maintenance and gas quality monitoring equipment and this leads to significant costs.

Propanation

Propanation is a substantial cost for the biomethane sector and most gas distribution networks mention this in their business plans. However, again in the GDNs' business plans there doesn't seem to be a common approach in the way the networks are trying to address this issue and there is lack of focus on the Cadent NIC Future Billing project which would address this issue.

The requirement to add propane is estimated to add cost of £150,000 per year for a 500 m^3 /hour capacity plant. In addition, propane is fossil based so it increases greenhouse gas emissions of the biomethane.

Given that propanation is an issue for other green gases (such as hydrogen) as well as for biomethane, the networks should work together in one single project to reform the GS(M)R and CoTER regulations and address once for all the propanation issue across all green gases.

This is in line with the recommendations provided in the ENA's Pathways to Net-Zero: Decarbonising the Gas Networks in Great Britain report (appendix G, Action 10). This action should be completed by end of 2020.

We welcome SGN's statement in their business plant that "The current legislative requirements detailed in the GCTER sit with the gas distribution company via the letter of direction and therefore there is a requirement for SGN to drive forward solutions to resolve the issue of blending propane with biomethane".

There is another point in relation to propane and the existing rules in that if the CV is out of specification for 3 minutes (eg during start up) this automatically sends the biomethane to flare or back to the AD. This is not safety related. A degree of flexibility to allow start up excursions of CV rules should be developed to have more flexibility (eg only send to flare if CV out of spec for 15 minutes). There is no adverse consumer impact from having CV of, typically, 0.2 MJ/M^3 below the FWACV level (typically 39.8 MJ/M^3) for 3 minutes as this gas will not reach any consumers. However, it cases significant flaring with adverse GHG impact.

The use of the diverter valve leads to significant flaring over the year and is primarily related to propane. This should only be used when a plant is commissioned as most gas quality issues are propane/CV related and not related to any harmful gas composition such as H_2S or wobbe index.

Flaring gas

KPIs need to be introduced for the networks on how often and for how long ROVs need to be shut down and the impact this is having (ie the gas needs to be flared). Industry and the networks needs to look at how to address this collectively and reduce the frequency and duration of these episodes, but at present there is no collection of data, and incentive to improve performance.

Capacity constraints

The maximum injection capacity offered by the GDNs to biomethane producers for injection is limited to the minimum demand downstream of the potential gas entry point. This varies significantly at different points of the network, but it is becoming increasingly common that the closest network segment to a proposed biomethane facility does not have sufficient capacity to allow injection.

This leads to high connection costs associated with connecting at a point with sufficient capacity, or the inability to connect.

Pipelines can be installed to carry the gas from the point of production, either to a higher pressure tier which has more downstream demand, or to a location where the network has sufficient capacity at that tier. However pipeline costs, which are typically covered by the biomethane producer, can be very high and can adversely affect the business case for connection and injection to the grid.

In-grid compression is a solution to the issue of capacity and is used widely in the EU. At times when there is insufficient demand on the network to allow all gas sources to inject, compressors can be operated to 'pump' gas to a higher pressure tier. This solution is considered to be the most effective

solution, especially where there are severe constraints in the capacity available. There are other solutions that are more cost effective where the constraints in capacity are less severe.

Similarly to what we highlighted above for other issues, there isn't commonality in the way different networks approach this issue.

There is a project on the Isle of Wight that has flared gas since 2015 – the developer had a proposal to sort the capacity in 2016 with a £200K within grid compression solution to export gas from 1 bar grid to 7 bar grid. Unfortunately, SGN did not support this but is now looking at the same project in 2021 which means an additional 5 years of summer night flaring will have taken place. SGN should explain the reasons for this delay. This example shows the lack of innovation and urgency in this area as NGN/Cadent demonstrated with an NIA project in 2012 that within grid compression was feasible. REA is award of around 10 Feasibility Studies that have looked at within grid compression but there remains no plant in GB. For such projects, the REA believes a competitive solution should be provided as design, build and maintenance of compressors is a key skill for biomethane producers (an upgrading plant will typically have 4 compressors meaning over 500 in operation). In addition, around 20 biomethane projects inject directly into the LTS. There is a major risk that the 4 GDNs develop their own standards for within grid compression that add cost and complexity with no benefit – it should be noted that such compressors are related to summer operation only and have no impact on the GDN 1 in 20 security of supply obligations. The fact that over 500 compressors are in operation and maintained by 3rd parties should give Ofgem confidence that a competitive provision of such compressors (as for Gas Unie in Netherlands) is appropriate, with the GDN being the operator only. The GDNs have no competency in relation to compressors and it is not efficient for them to get involved in this activity other than as an operator

Not enough emphasis is placed on resolving the capacity issues in other networks' business plans.

Offtake agreements

One of the solutions to capacity constraints is to create additional demand through an offtake agreement. However, current rules (UNC) are written in a way that prevent local biomethane capacity to be used in any estimation of the flow in the grid for the offtake, so any offtaker is then advised they need to fund extensive reinforcement to make more capacity available. If there was an ability to link offtake availability to biomethane supply into sections of network, there could be some local linkage built, but this would require changes to UNC. If this was in the electricity sector an interruptible supply contract could be proposed. This is forbidden in the gas sector, and some consideration about consistency between energy vectors needs to be given.

Capacity studies

There is significant variation in the detail and quality of networks' capacity studies. SGN provides the highest quality capacity studies which enable investors / developers to make an informed decision about the project, whilst the other three networks are not delivering capacity studies to the same standard. The standard for capacity studies should be consistent across the networks. Examples include amount of information on variation by hour and by day, but also details separating industrial and domestic loads. The assessment of risk is by the investor, but that needs to be an informed decision.

Third party hubs

Third party hubs (like Portdown Hill) are mentioned by SGN only. They are an important option for projects with a capacity issue, however there are constraints within the current RHI regulations around multiple plants connecting to a single injection point. Any future regulations need to be reflective that having multiple production sources supplying to a common injection point where there is capacity can be the most cost effective method of encouraging investment in smaller spot production sources, particularly in the rural economy. Each of these are individual investments and should be classed as individual RHI applications, even where gas enters networks at a common point.

Bio-CNG Transport

There are now trucks and vans that can be fuelled in Bio-CNG which is gas taken out of the GDN network but matched with biomethane injected into the network without claiming any subsidy. Cadent show in their West Midlands plan that they are moving trucks to Bio-CNG. REA believes Bio-CNG is a good option now for vehicles that cannot be electrified and all GDNs should aim to replace 100% of diesel by end of the RIIO-2 period with EV or Bio-CNG. There is no reason to delay in this area given the vehicles now exist and installing CNG stations is straightforward and widespread.

There is much focus on heat in the plans, but less emphasis on the transport side. It is crucial to find suitable connection points and facilitate the right connection for transport. Where for example offtakes are to supply a bus depot or a critical transport hub, then there needs to be a consistent approach to register these offtakes as priority customers so that operations teams of networks are aware. A major gas supply disruption has the potential to bring a distribution centre or a city's buses to a halt through lack of fuel. Whilst this was an emerging technology and a small percentage of vehicles were impacted then it was manageable. Going forwards network resilience and supply to these areas will take on an added level of importance.

Provision of information

As previously highlighted to Ofgem, it would be useful to have from the networks feedback/information on:

- What biomethane flow each network had by month by Local Distribution Zone (LDZ) since their first project. It would be useful for each network to put this in a table with domestic customer gas demand and total gas demand by LDZ, and show the ratio by month of biomethane/total gas demand and biomethane/domestic customer gas demand.
- The number of biomethane gas quality excursions the networks had to notify to HSE.
- How many examples of low CV gas entering the GDN they had, which have led to CV capping and what have the costs been as a result of these.
- Anonymous information on O_2 and H_2S in the biomethane injected into the grid for all projects
- A list of all the NIA/NIC projects completed for biomethane with all the reports published.

8. If you have any supporting Evidence please upload it.

Upload the Element Energy Report and decarbonisation pathway project.

(Questions 5-8 repeated x 2)

Key questions for the Open Hearings

- How the gas networks intend to co-ordinate their work to standardise biomethane connections across the networks and do so within a clear, defined and short-term timeframe - all Gas Distribution Networks (GDNs) have different standards, contracts, policies for biomethane with significantly different costs. How they intend to avoid for H_2 the biomethane experience of assets that are required in one GDN area and are not approved in another.
- Given that propanation is an issue for all green gases how the networks intend to work together in one single project to reform the GS(M)R and CoTER regulations and address once for all the propanation issue across all green gases.
- How does NGN plan to bring its protocols in line with the other networks on the Odorant system.
- How do the gas networks intend to align their protocols in relation to allowing self lay for >7 bar connections.
- How the GDNs are planning to work to adopt a common design of GEU and common processes that extend to requirements related to upstream gas processing in the biogas upgrading unit.
- How the gas networks intend to allow a degree of flexibility to allow start up excursions of CV rules to reduce significant flaring with adverse GHG impact (issue primarily related to propane).
- How the GDNS plant to show innovation and urgency in the area of creating additional capacity through within grid compression, which has already been shown to be feasible. And how they are going to ensure they do not develop their own standards for within grid compression that add cost and complexity with no benefit. The GDNs have no competency in relation to compressors and it is not efficient for them to get involved in this activity other than as an operator.
- How the gas networks plan to show that they are doing more to decarbonise transport, by moving trucks to Bio-CNG (like Cadent). REA believes Bio-CNG is a good option now for vehicles that cannot be electrified and all GDNs should aim to replace 100% of diesel by end of the RIIO-2 period with EV or Bio-CNG. There is no reason to delay in this area given the vehicles now exist and installing CNG stations is straightforward and widespread.
- How the gas networks are planning to show they are more transparent about the data and information listed above under 'Provision of information'.