Review of the Security of Energy Supply of Ireland's Electricity and Natural Gas Systems Consultation

Gas Networks Ireland's Submission to the Public Consultation

28th October 2022

Key Messages

Gas Networks Ireland (GNI) welcomes the public consultation on the Review of the Security of Energy Supply of Ireland's Electricity and Natural Gas Systems (the 'Consultation') published by the Department of the Environment, Climate and Communications (DECC). We believe this is a critical process to deliver the investment necessary to ensure the security of the overall energy system. In our capacity as the licensed gas Transmission System Operator (TSO), GNI considers strategic onshore energy storage to be the preferred gas supply mitigation option for Ireland, for the reasons outlined in turn below.

Who we are

GNI operates and maintains Ireland's €2.7bn, 14,664 km national gas network supplying over 720,000 Irish homes and businesses. With a track record for secure and prudent network investment, GNI has developed a gas network that plays a central role in Ireland's energy system, supporting a diversified and growing economy which is dependent on secure energy supply. GNI supplies more than 30% of Ireland's total energy requirement, including 40% of all heating and on average c.50% of the country's electricity generation requirements. The dependency on gas-fired generation varies across the year. For example, in August 2022, gas-fired generation accounted for 64% of electricity usage in Ireland, and up to 92% within specific days. GNI will be key in helping to deliver Ireland's decarbonised energy future, by continuing to operate the system safely and by securely transporting natural gas, as well as facilitating renewable gases such as biomethane and, in time, green hydrogen. GNI has significant in-house skills, competency and technical expertise, built over 40 years of delivering gas securely for Ireland.

GNI has an established history of proactively identifying risks to the security of gas supplies in Ireland and investing to ensure that the gas network is the safe and resilient backbone of Ireland's energy system. Key investments to date to ensure gas security of supply include the onshore Scotland system (the United Kingdom (UK) entry point), two subsea Interconnectors from Scotland, the completion of the transmission ring main from Dublin through Galway to Limerick and, most recently, the twinning of the South-West Onshore Scotland system which received EU Projects of Common Interest (PCI) funding. This twinning investment was made with the expectation of further gas supply projects in Ireland coming online to counter reductions in indigenous gas supplies[1], which the market to date has not delivered. GNI believes that given the current risk profile of Ireland's gas supplies, further investment is warranted to ensure the continued security of the gas transmission network and gas supplies.

Challenges facing Ireland's Energy Sector

While the infrastructure which delivers Ireland's gas supplies is considered extremely safe, robust and secure, the recent sabotage of the Nordstream 1 & 2 pipelines and increased risks of cyber-attacks illustrate how new risks which were previously considered improbable could result in a sudden and unexpected curtailment of gas supplies. The conflict in the Ukraine has demonstrated the potential for geo-political uncertainty to undermine the physical and economic security of gas supply. These geo-political events underline the necessity to urgently assess and enhance energy security in Ireland.

1https://www.cru.ie/wp-content/uploads/2015/07/CER15102-PCI-Process-Twinning-CEF-Funding-Decision.pdf

Recognising the key role that storage plays in peak demand management, the EU has mandated that storage facilities for all Member States should be close to full to meet peak winter demand and address potential supply disruptions. Ireland is one of only a few Member States with no domestic gas storage facilities since the cessation of seasonal storage at the Kinsale facility in 2017 and has no solidarity arrangements for gas storage with another Member State. Ireland's dependence on the UK entry point and the lack of diversity of entry points make a compelling case for investment in gas security.

The Consultation, along with the CEPA Technical Analysis Report, identifies a number of security of energy supply risks for Ireland, which together with further risks outlined by GNI within this submission, may be summarised as follows:

Infrastructure Risks

- Ireland's overwhelming dependency on the UK gas entry point is apparent: Ireland's gas demand is currently c. 75% sourced through the UK market, which is expected to increase to c. 90% by the end of this decade (due to the decline of the Corrib entry point).
- The 'N-1 criterion' is a basic indicator of supply security and has been enshrined in EU law since 2010 (EU Regulation 2010/994). Where Ireland previously complied with this requirement on a regional basis with the UK, it has failed to meet this requirement since Brexit. In the event of an outage on Ireland's largest piece of gas import infrastructure from the UK entry point, Interconnector 2 (IC2), during a peak demand period there would be insufficient gas supply in Ireland to satisfy demand resulting in load shedding of the largest gas users, i.e. gas-fired power generation. This could lead to electricity supply disruptions across Ireland, with significant negative impacts on the Irish economy and society.
- It is likely that many combinations of partial interruptions within GNI or UK National Grid infrastructure associated with the UK entry point could lead to a situation where gas demand in Ireland exceeds the available supply. In all likely scenarios, such interruptions would lead to load shedding, as described above.
- In a worst-case scenario of a full outage of the UK entry point during a peak demand period, Ireland cannot satisfy the gas demand of Protected Customers as defined by EU Regulation 2017/1938. Indeed, CEPA have indicated that a 30-day total loss of gas supply from the UK entry point (Moffat) would lead to a Value of Lost Load (VoLL) in the Republic of Ireland (ROI) of at least €4.6 Billion in 2025. Moreover, an ESRI Working Paper from 2010 estimated that, even 12 years ago, *"losing gas-fired electricity would cost 0.1 to 1.0 billion euro per day, depending on the time of week, the time of year, and rationing of electricity"*.[2]

Market Dynamics

- Although the CEPA Technical Analysis considers many valid scenarios across the supply and demand vectors, it fails to consider a curtailment of gas within the UK market, including as a result of geo-political or economic factors, as a key risk to Ireland's gas (and therefore energy) market. A curtailment in the UK, to any degree, will result in a curtailment in Ireland and consequent load shedding.

2 https://www.esri.ie/system/files/media/file-uploads/2015-07/WP397.pdf

- GNI project a decline in annual gas demand over the course of the next 10 years. This is a direct result of Irish energy policy and specifically, investments in renewable energy generation and decarbonisation of domestic heating. However, peak gas demand[3] is expected to increase further in the coming years, due to additional gas-fired electricity generation required to back-up the intermittent renewable generation and support large energy user demand, resulting in severe winter peak demand that cannot be met by existing entry points.

Decarbonisation Challenges

- GNI considers that any significant investment in gas infrastructure must be consistent with our national decarbonisation commitments and compliant with our obligations, including legally binding carbon emissions ceilings, under the Climate Action and Low Carbon Development (Amendment) Act 2021. Such investment must provide a pathway towards meeting Ireland's 2030 carbon-reduction commitments and, ultimately, carbon neutrality by 2050.
- Ireland is committed to significant investment in offshore wind generation, with a clear intent to develop a green hydrogen industry of scale, capable of significantly contributing towards Ireland's decarbonisation efforts, and hydrogen export potential in the longer-term. Green hydrogen produced from excess offshore wind can be: 1) blended in the natural gas network to decarbonise the gas; 2) stored seasonally in strategic locations; and 3) transported efficiently to domestic hydrogen clusters and international markets via the gas network. The EU TEN-E Regulation[4] has identified a priority hydrogen corridor for western Europe (HI West), including Ireland, to deliver new hydrogen infrastructure and the repurposing of gas infrastructure to enable an integrated hydrogen backbone.

Investments in Ireland's energy system to enhance security of supply should seek to address ***all*** of the challenges identified above.

Mitigation measures - Optimum Gas Supply Solution

GNI, in collaboration with EirGrid, completed a review of the resilience of Ireland's energy systems in 2018.[5] The central consideration of the review was EU Regulation 2017/1938, which defines 'N-1' as an established norm for energy security resilience. This report concluded, at that time, that the optimum energy investment for Ireland would be the construction of a Floating Storage and Regasification Unit (FSRU). The report also noted that if the State wished to secure strategic gas storage (i.e., gas which would be readily available to be used to address a security of supply event), an additional investment would be required to construct onshore storage; the content of which

3 Peak gas demand in Ireland typically occurs in winter, when high levels of domestic heating and industrial production coincide with very low winds, resulting in high levels of gas fired power generation. Although annual demand and peak demand have historically seen close correlation during periods of growth and decline, they are now set to diverge as power generation in particular moves away from fossil fuel use. Growth in peak demand will eventually be mitigated by new electrical interconnection and the development of offshore wind and solar generation, which are less intermittent. The graph in **Appendix 1** displays the future divergence.

4 https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32022R0869&from=EN

5 https://www.gasnetworks.ie/docs/corporate/gas-regulation/Long-Term-Resilience-Study-2018.pdf

could be preserved for such a purpose (in contrast to an FSRU which would normally be utilised for commercial gas sales).

Several developments since 2018 challenge the adequacy of this previous conclusion:

- Government policy on the importation of fracked gas indicates a fundamental misalignment between a solution that relies entirely on LNG imports[6] and the pathway to a decarbonised energy system.
- Peak gas demand forecasts have increased substantially in the interim.
- The recent geo-political uncertainty, previously outlined, is placing strain on the overall EU gas system. This raises the possibility of gas commodity shortfalls in the EU requiring curtailment amongst gas customers. Although the UK system upon which Ireland relies is considered to be resilient to this impact, consideration of curtailments within the UK system needs to be included in reviewing security of Ireland's energy supply.
- The sabotage of the Nordstream Pipelines and the ever-present threat of cyber-attacks on energy systems raise the risk profile around interruptions to vital gas infrastructure.

In short, risks that were once considered improbable are now considered possible. For these reasons, the N-1 standard should now be considered (in GNI's view) as a de minimis standard and policy makers should plan for mitigation actions to address the impacts of longer and more catastrophic outages on key infrastructure. This is even more important as Ireland moves towards more renewable (intermittent) electricity being introduced onto the energy system.

The mitigation measures detailed in the Consultation all have merit and each can provide impetus to address some, or all, of the security of supply risks previously outlined. However, in light of the context set out above, GNI now considers strategic onshore energy storage to be the preferred gas supply mitigation option, as it is the only option that can fully address ***all*** of the security of supply risks for both gas and electricity.

GNI believes that the strategic onshore energy storage project, as referenced by DECC (on page 43 of the Consultation), best meets the following key criteria against which all mitigation options were considered:

1. *Consistency with the Climate Action Plan*
2. *Security of Supply Impact*
3. *Feasibility of Implementation*

6 GNI has considered approaches to energy security which can specifically exclude the creation of a new natural gas entry point to the Irish gas market. We have concluded that a strategic onshore energy storage project can substantially achieve this goal, although LNG imports would be required during an emergency event. Additionally, consideration could be given to the security of supply benefit of facilitating short term LNG imports during the construction of such a facility.

The key characteristics of a strategic onshore energy storage facility include:

- mitigating any partial or full outage on the UK entry point;
- being able to address severe winter peak demand by operating in peak shaving[7] mode as an emergency measure;
- being capable of supplying 100% of Ireland's gas demand during periods of UK curtailment, therefore eliminating any potential for Ireland to be equally curtailed;
- being filled through the utilisation of existing gas supplies, thereby not introducing new sources of natural gas, which could potentially increase carbon emissions compared to renewable alternatives and/ or increase demand;
- being designed to facilitate the commencement of green hydrogen storage and distribution, in alignment with Ireland's climate ambition with clear long-term decarbonisation merits; and,
- being developed in phases to mitigate security of supply risk, as follows:
    - initially, construction of a jetty facility, to facilitate the importation of natural gas as a short-term contingency measure to address the N-1 risk;
    - followed by delivery of a fully operational strategic gas store (capable of handling initial quantities of hydrogen), to mitigate all security of supply risk;
    - and, aligning with longer-term decarbonisation ambition, facilitate the storage, import and export of green hydrogen.

We look forward to further engagement with DECC on such measures in due course and will work constructively and supportively with whichever gas-related mitigation measures are selected by Government.

7 Peak Shaving in the natural gas industry is a term used for infrastructure designed to supplement the normal operation of the network, by providing additional gas flows when peak demand exceeds the normal capacity of the network.

GNI's Response to Specific Consultation Questions

Questions on Risks

1. Are there any other security of supply risks that you can identify in addition to those set out?

GNI has identified the following additional risks to consider:

1.1 Failing to meet the N-1 criterion of EU Regulation 2017/1938

Ireland is not compliant with EU Regulation 2017/1938 concerning measures to safeguard the security of gas supply. Consequently, the CEPA report and its conclusion that no gas or electricity customers would be lost during an IC2 outage is incorrect. GNI recommends that future energy security modelling for Ireland broadens the scenarios to ensure compliance with this Regulation is considered, as further outlined in response to **Question 3**.

1.2 Potential Curtailment of Gas Supplies

1.2.1 Global Gas Commodity Curtailment

While recognised in the Consultation as a supply side risk, the likelihood of gas commodity curtailment happening has increased due to the escalating EU energy crisis. There is a key risk in terms of the infrastructure being readily available but flows not occurring for commodity/ market reasons. This would eventually negatively impact Ireland.

1.2.2 UK Gas Curtailment

The CEPA Technical Analysis fails to consider a curtailment of gas within the UK market as a key risk to Ireland's gas (and therefore energy) market. This risk should therefore be included in the scenarios modelled. In all scenarios, curtailments in UK gas supplies result in curtailments to Ireland, due to emergency arrangements in place with National Grid. The mitigation to this risk is a solution(s) which can indigenously supply 100% of Ireland's peak gas demand.

1.2.3 Potential Power Generation Curtailment

Concerning potential power generation curtailment, the Energy Security Emergency Group identified a significant risk to gas security of supply from an interruption to gas supplies via the UK entry point (Moffat), based on peak day gas demand data for the period 2022 to 2030. Such a risk could lead to curtailment in the power-generation sector and will require significant mitigation to ensure security of gas and electricity supply. The CEPA report does not consider this risk and instead assumes that such power generation plants can readily switch to secondary fuels and operate without gas for as long as may be required. GNI understands that not all gas-fired generation plants will seamlessly switch to alternative fuels during a security of supply incident and that each plant will be derated by c. 10%. EirGrid/ SONI, in their 2022 Ireland Capacity Outlook[8], reported that generation plant unavailability was leading to generation deficits and the situation had deteriorated since their previous report, stating: "*In the short term the deficits will increase due to the deteriorating availability of power plants, resulting in their unavailability ahead of intended retirement dates*". Furthermore, they highlighted the risks associated with a switchover to alternative fuels, saying: "*A*

8 https://www.eirgridgroup.com/site-files/library/EirGrid/EirGrid_SONI_Ireland_Capacity_Outlook_2022-2031.pdf

fuel changeover introduces additional risks at a time the power system is experiencing high electricity demands".

1.3 Cyber Security Risk

A number of energy utilities have suffered cyber security attacks over recent months across Europe, which affirms the need for any security of supply mitigation measures put in place as a consequence of this Consultation to be established and operated with robust expertise in both physical and cyber security, using best-in-class cyber security processes.

2. If there are other risks that you have identified, could you outline some mitigation options to address the risk(s)?

In the context of meeting N-1, the subsea pipeline element of Interconnector 2 (IC2) is the largest piece of gas infrastructure. The N-1 calculation concludes a supply deficit of circa 35% of ROI peak demand during an outage to this infrastructure. Therefore, mitigation measures which can provide in excess of 35% of the peak ROI gas demand will address this risk.

While several gas mitigation options would allow Ireland to meet N-1, the strategic onshore energy storage project is the only solution in DECC's shortlist of mitigation options that can meet 100% of gas demand indigenously in the event of UK curtailment, while also meeting the three *"key criteria against which all mitigation options were considered"* as set-out in the Consultation:

1. *Consistency with the Climate Action Plan*
2. *Security of Supply Impact*
3. *Feasibility of Implementation*

Further detail on these criteria is detailed in our response to **Question 5**.

3. Are the five shock scenarios that were considered, and the additional scenarios related to the Russian invasion of Ukraine, sufficiently broad?

GNI believes that the CEPA Technical Analysis presented is conservative in several areas; however, this is not material in reaching a conclusion that Ireland ultimately needs to invest in its energy security. GNI notes the following regarding the assumptions/ modelling used in the CEPA Assessment:

3.1 Modelling/ Compliance with EU Regulation 2017/1938 (N-1)

- GNI believes that the CEPA statement that all gas and electricity demand can be met during a disruption to the second gas interconnector (IC2) is incorrect. In the event of a disruption/ outage on IC2 coinciding with a peak gas demand period, a gas emergency would be declared, and load shedding arrangements would be instigated accordingly.
- The CEPA modelling presented is based on the assumption that gas-fired generators will be seamlessly transferred to secondary fuel and continue to run on such fuel during gas outages of any duration. The gas system is designed to support all customers and to accept a design that does not support the power generation sector during peak demand is a fundamental deviation from practice (particularly where such peak demand coincides with a period of peak electricity demand) that would have knock-on impacts for security standards and costs in the electricity market. In addition, this assumption overlooks a number of potential logistical, commercial,

operational and environmental issues associated with switching gas-fired power stations to more carbon-intensive secondary fuels. Satisfactory solutions to mitigate the risks outlined in the CEPA report, the Consultation and the further risks outlined in GNI's response must cater for all gas customers, including gas fired power generators.

- UK gas system curtailment and its impact on Ireland's security of energy supply is not modelled in the analysis presented. GNI believes that such a curtailment and the knock-on implications for Ireland's gas supplies is a key risk; indeed, this was recently modelled as part of a national-level Gas and Electricity Emergency Training Exercise.
- CEPA's assumptions about the ability to draw on potential linepack to supply additional gas when there is a supply shortfall (as outlined in Section 3.2.1 of CEPA's Technical Analysis) is inconsistent with EU Regulation 2017/1938. Linepack is not permitted to be modelled as a mitigation measure in the N-1 calculation methodology and in any case would only be a limited temporary solution. Furthermore, it is optimistic to presume that in the case of a disruption which removes key components of gas infrastructure from operation, that the gas within that same infrastructure remains available for use.

3.2 Use of Annual Gas Demand rather than Peak Demand

- GNI's 2022 modelling based on EirGrid's 2022 Generation Capacity Statement shows that **annual gas demand is reducing** over the period 2022 to 2030 in line with Climate Action Plan 2021 targets for the energy sector. That said, CEPA's gas demand scenario applied is lower than GNI's 2020 Network Development Plan (NDP) Low Scenario, therefore presenting an overly optimistic outlook.
- While overall gas demand is reducing, **peak demand is increasing**. All energy networks are designed to cater for peak demand, to do otherwise risks customer outages during peak demand periods. Consequently, GNI recommends that for energy security reviews, peak demand as opposed to annual demand is the critical measure to model. GNI's analysis indicates that the 10-year highest peak day gas demand for the period 2021/22 to 2030/31 is forecast for gas year 2024/25 and is expected to be 356.6 GWh/d, which is 13.5% higher than the highest peak day gas demand (314.1 GWh/d) stated in GNI's 2020 NDP Low Forecast. Given the anticipated growth in renewable electricity generation, the ability to meet peak day gas demand to back-up intermittent renewables becomes even more critical.

GNI recommends that the next time Ireland's energy security is reviewed (indicated in the Consultation to be every 2 years), the scenarios are broadened to take account of the considerations identified by GNI above.

Questions on Mitigation Options

4. Do you have any additional mitigation options that you think should be considered?

GNI does not have any additional mitigation options that we think should be considered.

5. Which gas supply mitigation options, if any, should be considered for implementation?

5.1 Primary Mitigation Option

GNI believes that the optimum mitigation measure for gas security of supply must incorporate the three **key criteria** set out in the Consultation.

Criterion 1: be **consistent with the Climate Action Plan** and Government Policy, and:

- be designed to facilitate storage and distribution of renewable gases, including green hydrogen; and,
- not introduce new sources of natural gas, which could potentially increase carbon emissions compared to renewable alternatives and/ or increase demand.

Criterion 2: ensure **security of gas supply:**

- with the potential to meet 100% of gas demand in any gas supply disruption scenario;
- while ensuring that Ireland is compliant with all aspects of the N-1 Regulation 2017/1938.

Criterion 3: be **feasible** to implement.

The mitigation measures detailed in the Consultation all have merit and each can provide impetus to address some or all of the risks outlined above. However, GNI believes that only the strategic onshore energy storage project presented by DECC (on page 43 of the Consultation) meets ***all*** of these criteria ***and*** the additional risks outlined in response to **Question 1**. GNI therefore considers this project to be the optimum gas supply mitigation solution for Ireland. As the Consultation outlines, this *"onshore energy storage facility, used in a manner similar for oil, where Ireland has strategic reserves of gas in addition to its strategic oil reserves. Such a facility would liquify natural gas imported using the existing import facilities".*

The following section details how the strategic onshore energy facility meets these key criteria.

Criterion 1: Consistency with Climate Action Plan

There are clear long-term decarbonisation merits to this strategic storage solution:

- It provides a clear pathway to use green hydrogen and can be transitioned and repurposed to do so.
    - This facility could be designed to facilitate the commencement of hydrogen storage and distribution, which can support all possible future uses of hydrogen in Ireland, i.e. blending into the gas network, 100% hydrogen supplies to 'hard-to-decarbonise' industry and/ or import and export potential.
- It ensures a secure supply of gas which is essential to provide back-up to renewable sources, while contributing to a future decarbonised energy system for Ireland's economy and citizens. Indeed, DECC notes its *"potential for future hydrogen use"*: *"The facility could also be designed to be hydrogen ready which would be a means of optimising the value of such a facility and contributing to the development of hydrogen in Ireland".*

- In the more immediate term, this strategic facility will be filled through the utilisation of existing gas supplies and would only be used during pre-defined emergency events. As DECC outline, it would *"not create diversity of supply and therefore would not create the potential for increases in gas demand"*, which is consistent with Ireland's legally binding carbon emissions ceilings. As further indicated by DECC, this option *"would only be used in the event of a supply shock and therefore the impact on carbon emissions would be relatively low".*

Criterion 2: Security of Supply

- This strategic storage solution can be designed to uniquely mitigate any partial or full outage on the UK entry point**;**
- It will be able to address severe winter peak demand by operating in peak shaving mode as an emergency measure;
- It will be capable of supplying 100% of Ireland's gas demand during periods of UK curtailment, therefore eliminating any potential for Ireland to be equally curtailed.
- It will mitigate any partial or full outage on the UK entry point. As outlined by DECC in Table 7, this facility is a *"scalable option which addresses peak day demand growth, N-1 test, 22% curtailment and outage of UK entry point".* CEPA elaborated that such a facility *"could bring security of supply benefits relative to an underground storage facility, as it would allow a greater proportion of daily gas demand to be served".*
- It can be designed to include the following benefits:
    - short-term benefit through peak shaving of peak demand load, avoiding the need for alternative infrastructural investment. CEPA indicate that this strategic facility "*could also serve as a peak shaving storage that could mitigate the risk of peak gas demand going above the daily gas import capacity".*
    - medium-term benefit as a guaranteed critical domestic store of natural gas for security of supply;
    - medium to long-term benefit as a hydrogen storage location, with the capability to import and export green hydrogen and connect to the Irish and EU gas network and hydrogen backbone; and,
    - potentially 'upscaled' to cater for gas customers in Northern Ireland and Isle of Man.

Criterion 3: Feasibility of Implementation

GNI is cognisant that the strategic storage option would need to be carefully assessed with respect to the timelines and costings.

Criterion 3.1 Development Phases

- The strategic onshore energy storage facility can be developed in phases to mitigate security of supply risk as follows:
    - initially, construction of a jetty facility, to facilitate the importation of natural gas as a short-term contingency measure to address the N-1 risk ;
    - followed by delivery of a **fully operational strategic gas store** (capable of handling initial quantities of hydrogen), to mitigate all security of supply risk;
    - and, aligning with longer-term decarbonisation ambition, facilitate the storage and import/ export of green hydrogen.

- The timelines to implement such a storage solution for gas supplies will coincide with the timeline for hydrogen molecules entering the gas network. Therefore, any storage mitigation measure will be required to specifically allow for blending/ deblending and storage of hydrogen in the short-term and export of hydrogen in the longer-term.

Criterion 3.2 Cost Considerations

- The strategic onshore storage solution needs to be cost effective and evaluated accordingly, against the benefits it will deliver to both gas and electricity security of supply versus other storage options. GNI believes the costs would be comparable, if not favourable, when compared to the strategic gas storage options of equivalent scale presented in the Consultation.
- A direct cost related benefit of this strategic storage solution would be removing the need for further investment in expansion at the UK entry point beyond the capacity of the existing interconnectors. Such investment would otherwise be required as peak gas demand is expected to exceed capacity at that entry point, based on GNI's 2022 modelling.
- Any security of supply project, such as a strategic onshore energy storage solution, will require funding for upfront costs to build such a facility, in addition to ongoing costs for operation.

5.2 Broader Gas Mitigation Options

In addition to this specific strategic onshore energy storage solution, GNI believes that renewable gases should play a vital role in Ireland's energy system to enhance energy security and is already delivering biomethane grid connections. The development of renewable gases at scale provides two key advantages: 1) diversifying supplies and reducing gas import dependency; and 2) decarbonising energy usage in the gas network. Moreover, the EU has indicated through REPowerEU that one of the best medium to long term solutions to mitigate against gas supply disruptions is to develop indigenous or imported renewable gas sectors. Consequently, we **fully support the broader Gas Mitigation Package** (gas storage, renewable gas, green hydrogen and gas demand side response) measures outlined in the Consultation.

GNI believes that an accelerated deployment of support schemes for indigenous renewable gases is essential to support market development, and we proposed actions to advance same in our response to DECC's CAP 2023 Consultation.[9] There are also funding opportunities for biomethane under the REPowerEU chapter that should be explored as part of Ireland's Recovery and Resilience Plan. Failure to develop a renewable gas industry in Ireland will prolong our dependency on imported natural gas, as indigenous gas supplies from the Corrib field continue to decline.

6. Which electricity supply mitigation options, if any, should be considered for implementation?

GNI welcomes the electrical supply mitigation measures shortlisted for consideration, but would draw attention to the fact that, in the context of increasing electricity demand in Ireland, additional renewable generation capacity will still require additional dispatchable back-up, similar to the role played by natural gas today. In the context of this Consultation, this back-up needs to be secure.

GNI recommends that DECC consider energy security in the context of the future integrated energy system and what our energy system will look like in a net-zero 2050. In particular, new

9 https://www.gasnetworks.ie/business/renewable-gas/policy/ireland/index.xml

interconnections to Europe can only enhance energy systems interoperability and thereby security of supply.

GNI supports initiatives such as batteries, pumped storage, bioenergy, additional wind, solar and interconnection and recognises that all are needed to meet our decarbonisation ambitions, but none of these will provide the back-up at scale, which is required as Ireland's electrifies much of its heating and transport and increases the nation's electricity supply requirements as a result.

7. What measures should be considered on the demand side to support security of supply of electricity and gas?

GNI recommends that a review of interruptible demand is carried out to consider which gas and electricity customers / sectors can be interrupted, considering: 1) benefits to residual customers/ gas and electricity networks; and 2) ability (bearing in mind potential technical, logistical, operational risks) to either transfer to other fuels or temporarily cease operations. This review should determine appropriate approaches to load shedding and transferring to secondary fuels, given the knock-on benefits and challenges to the energy networks as a whole. This could include identifying which large customers could facilitate demand-side management under the appropriate technical and commercial conditions.

GNI fully supports the electricity mitigation measure – to convert a gas-fired power generation plant to hydrogen (as outlined in the Consultation), in the context of developing an anchor tenant for a green hydrogen cluster. Ireland's gas network can optimise the storage, transport and thereby production of green hydrogen while demand in other sectors emerges (i.e. aviation, power generation, industrial heat, export). The unique ability of the gas network to break the 'chicken and egg' conundrum identified in Ireland's Hydrogen Strategy Consultation can be a viable pathway in the evolution of the hydrogen economy in Ireland, providing a route to market for offshore renewable electricity, and thereby incentivising the growth of the hydrogen economy and reducing energy import dependence. If co-located, the strategic onshore energy storage facility would support this hydrogen power generation plant by being a hub for storing green hydrogen.

8. Do you have any views on how the mitigation options should be implemented?

Given Ireland's lack of domestic gas storage facilities since the cessation of seasonal storage at the Kinsale storage facility in 2017, coupled with our increasing dependence on the UK for gas supplies and the current EU energy gas supply crisis, GNI believes that a strategic energy storage solution should be implemented under an accelerated timeline subject to new planning processes being considered.

In addition, a holistic approach to stakeholder engagement on energy security of supply is important, including engagement with all parties down-stream of the UK entry point, including Northern Ireland and Isle of Man. The strategic onshore energy storage facility could be designed to cater for gas customers in NI and consultation with the NI energy industry is warranted to assess interest. We recommend that the Department engage in discussions with the Northern Ireland authorities accordingly.

During a full outage of the UK gas entry point Ireland's protected gas customers (as defined under EU Regulation 2017/1938) cannot be fully supported, as current indigenous supplies of gas might not fully meet their demand. Only the range of gas-related solutions put forward by DECC mitigate this risk. GNI wishes to affirm that any mitigation measures to be pursued should cater for the energy demands of protected customers in all situations.

Questions on Policy Measures

9. Do you support the policy measures proposed in the consultation paper?

9.1 Joint Network Planning

GNI are supportive of more integrated planning with EirGrid to support the development of a balanced integrated energy policy landscape. As the interdependencies between the gas and electricity transmission networks have increased over the past few years, so too has the level of joint planning and collaboration. Both GNI and Eirgrid's network planning functions already work closely together on an annual basis through the development of the **10 year Network Development Plan** (GNI) and **10 year Generation Capacity Statement** (EirGrid) to ensure the correct information and inputs are available for each other's analysis and key assumptions are understood and aligned. Both TSOs have developed positive working relationships through this process and are actively working to further improve collaboration. GNI favours retaining and enhancing the current approach, i.e. developing two separate, but fully aligned, 10 year plans for the gas and electricity networks. The timelines for development of both plans and sharing of key information should be set-out and agreed at the beginning of each year to ensure information is made available to each TSO when needed and both plans can progress as programmed. Given the potential for large new connections to impact on both electricity and gas networks, consideration should be given to putting legal arrangements in place to allow certain customer specific information to be shared between both TSOs for the purposes of network planning.

GNI is supportive of a collaborative and **joint** assessment of future energy scenarios beyond the 10 year planning horizon, which would focus on developing scenarios and pathways to decarbonise both the gas and electricity networks in an integrated and optimised manner. This would consider increased usage of renewable gases, such as biomethane and particularly hydrogen, thereby leading to greater collaboration and the development of synergies between the energy systems. Such an assessment could look at 15, 20 and 30 year planning horizons and should be aligned with similar studies at an EU level under ENTSOG and ENTSO-E. Performing such an assessment on a 3 year interval would seem optimum and a supportive regulatory oversight of this collaborative joint electricity and gas assessment would be required.

9.2 Regular Energy Security Reviews

GNI supports the policy ambition to run the Security of Supply Technical Analysis every two years. The results of which could then be committed to and translated into specific Government Climate Action Plan measures and specific actions. This biennial review should be flexible and dynamic to reflect developments in national and EU energy landscapes and policies, including relevant

regulatory amendments and decarbonisation ambitions and targets. Engagement with relevant stakeholders, including network operations, should be a key part of the review process.

9.3 International Arrangements

GNI will continue to work closely with National Grid UK and notes the importance of ongoing engagement between DECC and BEIS on security of supply considerations.

10. What further tools and measures do you think would contribute the most to Ireland's energy security of supply?

GNI believes that there are several tools and measures that can be deployed to enhance Ireland's energy security of supply.

10.1 Planning

An additional measure that can assist with the implementation of a strategic onshore energy storage solution is a process to fast-track the planning approval of such a facility (including specific reference to hydrogen and the ability to store same), which may require changes to planning legislation.

10.2 Research & Development

Given the recent emergence of new threats to energy security across the EU, GNI believes that long-term energy and climate modelling to identify the optimum pathway to net zero should reflect the impacts of such a pathway on Ireland's energy security requirements. As demonstrated via REPowerEU, the EU considers indigenous renewable gases, including biomethane and green hydrogen, to play a key role in both accelerating the drive to net zero and enhancing Europe's energy security. Research is required as to how to accelerate the deployment of indigenous green hydrogen at scale in Ireland. To this end, actions to support, pilot and demonstrate green hydrogen projects should be included in the Government's Climate Action Plan 2023.

10.3 Supportive Regulatory Framework

As set out in the EU's proposed Hydrogen and Gas Market Decarbonisation Package, developing a regulatory framework for green hydrogen is a critical step in developing a green hydrogen economy in Ireland. GNI affirms that the necessary measures and steps to ensure successful delivery of a green hydrogen pathway for Ireland, including regulatory and safety requirements, should be clearly set out in Ireland's forthcoming Hydrogen Strategy, in addition to being put forward as actions in the Government's Climate Action Plan 2023.

10.4 Funding

GNI believes that switching from a renewable-led decarbonisation policy narrative to one centred on emissions reduction policy is essential if Ireland is to meet its legally binding climate targets while enhancing our energy security. To this end, and to incentivise indigenous renewable gas markets for biomethane and green hydrogen, an appropriate financial support mechanism will need to be implemented.

Appendix 1 ROI Annual and Peak Gas Demand Forecast 2021 to 2031

Graph 1: Gas Networks Ireland Demand Outlook