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01 November 2022

RE: Review of the security of energy supply of Ireland's electricity and natural gas systems consultation

Dear Wholesale Electricity and Gas Policy Team,

Firstly, Bord Gáis Energy very much welcomes the review conducted by the Department with the help of CEPA outlining the scale of the security of supply problems we will be facing over the coming years. As a process we believe it should be the first of many rolling reviews on security of supply as we transition towards net zero.

In terms of approach to this response, we have answered the specific questions posed by the consultation in the appendix below, but in an attempt to consolidate and simplify our message, we summarise our key points and thoughts below.

Approach to the review
In our view, the ability of the energy system to meet physical demand of electricity and gas should be reviewed on a rolling basis with a long-term horizon. The analysis by CEPA is really insightful in identifying the quantum of the problem and the ability of the different solutions to address potential shortages under the various scenarios. We would suggest however that the analysis, and the mitigations, should be broken into three timeframes: immediate term (2022-2025), medium-term (2025-2030) and long-term (2030 onwards). Splitting the analysis into these timeframes would firstly make some options viable if considered in a longer-term timeline and would also provide for better planning as we transform our energy systems. We need to plan for security of supply alongside our Climate Action Plan targets to ensure we meet expectations and demand throughout the transition.

Policy decisions to secure diversity of supply in the longer term are likely needed in the coming years, therefore, we need to start planning and actioning them now. For instance, if we are looking to hydrogen as a means of securing independence in a zero-carbon environment, actions are needed now to secure those investments. Energy infrastructure has a long lead time for delivery, and therefore, needs to be planned further than 5 years out.

While we recognise that the CRU and other state agents have plans for securing emergency electricity generation in the next 2 years, in terms of process, we suggest that subsequent reviews examine security of supply in the three timeframes suggested.

Risks
The risks identified really center on shock scenarios but in our view should consider 'operational' risks to the ability of the energy system to meet physical demand such as: grid not delivered; new capacity not procured; renewable targets not achieved. Although not shock events, they are real security of supply risks during our transition to net zero and should be planned for. These 'operational' type risks could change the perspective of some of the mitigations considered, such gas or LNG storage as pieces of strategic infrastructure to aid the transition.

We also suggest that a cyber security attack should be considered in the scenarios tested. Given the move to a smarter, more dispersed electricity system, a cyberattack could have significant implications for the physical delivery of energy supplies and should be planned for.

Mitigations

Again, keeping with the idea of rolling security of supply reviews and a long-term horizon, all options should be considered in terms of their potential contribution to security of supply in each of the timeframes. Some of the options may not deliver security of energy supplies in the short term but may be longer-term optimal options. Decisions and policy commitments may be needed in the near term if they are to develop as security of supply in the longer term. Hydrogen and biomethane are prime examples. Unless policy decisions to support the development of the industries are not taken soon, they will not emerge as options to support security of supply in any timeframe.

We are also surprised that certain measures have been discounted at this early stage based on past policy decisions. Noting the view on nuclear power and LNG in particular. Since those policy decisions were made by previous governments, a lot has changed in terms of the technologies themselves and the governance of the industries. The LNG industry is progressing its own decarbonisation pathway and new modular nuclear generators may provide baseload options to complement our hydrogen industry when the wind doesn't blow. On the latter point, we have not analysed the potential in detail, and therefore please do not take this to mean that we are advocating for nuclear power. Our point is simply, that in the interest of meeting demand in a zero-carbon system, no options should be discounted completely in the long-term.

With the above points in mind, BGE's position on the various options proposed are summarised in the tables below:

Gas Mitigation Options		
Timeframe	**Mitigation Option**	**Comment**
2022-2024	Gas Demand Side Response	We support this measure being assessed further, however; we expect that this measure would need to be complemented by others to deliver sufficient volumes
2025-2030	Gas Storage	We recommend that offshore gas storage and LNG are prioritised for further consideration given they both provide sizeable gas volumes that can address the most severe shock events that were modelled. However, we ask that DECC reconsiders its view on the non-commercial operation of both offshore gas and LNG assets. We believe that commercial operation, with specific energy security and decarbonisation controls, may provide a more secure, better value solution for Irish consumers.
	LNG	
2030+	Package of measures (biomethane, hydrogen, gas demand side response)	Injecting biomethane and hydrogen into the gas grid is a positive step, not only for energy security but also as a means to reduce the carbon intensity of gas while customers opt for lower carbon alternatives. For these reasons, we are supportive of this package of measures, however, both biomethane and hydrogen require stronger policy in order to foster market growth. While small volumes could be introduced in the coming years, it is unlikely that significant volume will be developed before 2030 to contribute to our near-term security of supply requirements.

		From 2030 onwards, some of the other measures like gas storage and LNG can be transitioned to hydrogen to help deliver Ireland's decarbonisation goals and should be considered as part of this package.
Electricity Mitigation Options		
Timeframe	**Mitigation Option**	**Comment**
2022-2024	Demand Side Response	We support assessing how best to maximise the potential for demand side response and agree with the principle of energy efficiency first.
	Secondary Fuel Obligation	Increasing the secondary fuel obligation is not a simple technical or commercial proposal. It will require significant changes for generators on site and requires further engagement if it is to be rolled out systematically.
2025-2030	Battery	Batteries are useful assets, particularly for system stability and security. Dispersing batteries across the system can contribute significantly to a low carbon system. However, the investment signals for these assets have been depleted as revenues for system services are reducing. Consideration needed on how to incentivise delivery.
	Biomass fuelled generation	Biomass at scale is not a viable option in the near term for dispatchable generation. We simply will not have the volume before 2030 to underpin investments of scale. Any biomass that we do produce would add more value in terms of abatement costs in the transport sector than the electricity generation sector.
	Interconnection	Interconnectors are useful under normal market conditions for forward hedging and price discovery. They have been shown to exacerbate supply shortages at times and system constraints limit their ability to deliver physical capacity when needed.
	Dispatchable Generation	New, renewable-ready gas fired generation is needed in this timeframe. It can be delivered, and it is a dependable source of physical supply if the gas supply mitigations are progressed simultaneously.
2030+	Package of renewable measures (offshore wind, hydrogen, bio-gas, renewable LNG, renewable offshore storage)	It is clear that a variety of mitigation options will be needed in a zero-carbon system. Several mitigation options were not shortlisted as they would conflict with existing government policy. However, given the current context in both gas and electricity markets, we encourage DECC not to be limited by past policy decisions and consider all viable options that may provide security and diversity to the system, including commercial LNG, commercial gas storage, and modular nuclear generation. Overall, we do agree that a package of zero carbon (and zero carbon ready) measures is going to be required, in the long run

I hope you find the above comments and suggestions helpful. If you have any queries, please do not hesitate to contact me.

Yours sincerely,

[redacted]
Regulatory Affairs – Commercial
Bord Gáis Energy
{By email}

Appendix
Consultation Questions

Risks

1. Are there any other security of supply risks that you can identify in addition to those set out in section 6?

CEPA's analysis ruled out several important risks that should be modelled including:

- **Risk of cyber-attack**: The IEA advises that cyber and digital-based events should be considered when modelling energy security scenarios[1]. It is not appropriate for CEPA/ DECC to disregard the risk of a cyber-attack given some previous cyber-attacks that have been experienced in Ireland, such as the HSE Conti ransomware attack in 2021, and those witnessed globally including the US Colonial ransomware attack in 2021 as well as the suspected sabotage on the Nordstream pipeline.
- **Risk that conventional generation capacity issues persist**: EirGrid's Generation Capacity Statement shows that there are adequacy issues arising in the Republic of Ireland for the remainder of this decade.[2] These shortfalls are driven by a number of existing generation plant leaving the system and strong demand growth which is forecast to be 180 MW/year up to 2025.[3] In addition, CEPA's analysis assumes that any capacity commitments will be delivered to schedule and doesn't contemplate the possibility that this generation is not delivered. However, there have been challenges in delivering generation within the required window, which is approximately 3.5 years given T-4 auctions given the time taken to announce successful bids. If changes cannot be made to incentivise sufficient generation capacity and/or there are challenges securing emergency generation then this could result in an increased reliance on conventional capacity, mainly gas generation. We believe this should be considered in the context of the mitigation options being considered, specifically the volumes that may be required.
- **Risk of reduced renewable capacity delivery**: if challenges associated with planning, consents and grid consents cannot be resolved in good time, there is a risk that Ireland's 80% renewable electricity capacity target is not delivered, including 5.5GW of solar power and 7GW of offshore wind. Non-delivery of these volumes may increase the severity of the energy security challenges faced in the 2025-2030 time period, meaning an increased reliance on conventional generation such as gas. It also points to an increased or more diverse set of measures that may need to be enlisted by Government to address and energy security concerns.
- **Risk of more extreme weather events**: while CEPA modelling '1 in 20 year' weather events, it was not clear in the analysis takes into consideration that climate change may result in these weather events happening more frequently and/or may result in these weather events being more extreme. It is important that the analysis accurately reflects likely weather patterns that may materialise in the 2025-2030 timeframe based on warming that has already occurred.

[1] See IEA Analytical Frameworks for Electricity Security available here
[2] The median demand scenario is the central scenario that EirGrid plans to (Ireland Capacity Outlook 2022-2031)
[3] EirGrid_SONI_Ireland_Capacity_Outlook_2022-2031.pdf (eirgridgroup.com) (page 58)

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

The additional risks identified above highlight the need to consider diversity of supply as opposed to simply delivery of supply. If some of the risks outlined in response number one materialise, we expect DECC may need to consider enlisting additional measures from those in the shortlist (i.e., several measures may be needed rather than 1-2 from the shortlist list provided). It could also result in the re-consideration of measures that were previously discounted for DECC's shortlist.

More broadly, there's a need to look all potential solutions that could be enlisted to help energy security. A holistic look is needed, by reviewing energy security in different time horizons from now until 2030 and beyond All possible options should remain under consideration.

We feel that CEPA and DECC ruled out several energy security options on the basis of previous Government policies. However, based on the challenges associated with delivering many of the mitigation options in the shortlist and if a longer-term approach is taken to managing energy security beyond 2030, all options should be considered, in particular commercial gas storage- and commercial LNG.

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

Please see response to question one, we feel that the scenarios required a broader consideration of potential risks.

Mitigation Options

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

There are several gas mitigation options that should be given further consideration including: commercial LNG, commercial gas storage and relying domestic fuels (explained in further detail below).

DECC should consider all potential electricity and gas security of supply mitigation options. BGE believe that the assessment of potential mitigation options should account for delivery timelines beyond 2025 and 2030 and consider the extent to which potential options could be commercially integrated to the market before strategic mitigation options are considered. Non-shortlisted options should form part of the overall consideration of options to mitigate security of supply risks in the long term and their potential to provide security of supply should not be ruled out as we move towards net-zero in 2050.

The global energy outlook has changed, and Ireland's security of energy supply policy should adapt accordingly. Security of supply should be considered on an ongoing basis and in the context of the market risks and changes resulting from the present energy crisis, and any future crisis that might arise. Past government policies, such as those on gas storage and nuclear power[4] should not dictate current security of supply decisions. Discounting potential mitigation options based on past government policies may limit the effectiveness of decisions taken now to mitigate security of supply risks in the long-term.

BGE believe that it would be inappropriate for potential mitigation options such as gas storage and LNG to be solely used for strategic security of supply purposes and that consideration should be given to the full potential of commercially integrated facilities as part of the normal supply chain and their ability to mitigate security of supply risks. Potential mitigation options should be fully assessed

[4] Electricity Regulation Act, 1999 (Section 18), www.irishstatutebook.ie

in the first instance on their commercial viability and then their ability to provide security of supply. If the security of supply criteria cannot be met, then consideration should be given to the potential of commercially operated facilities to mitigate security of supply risks under regulated conditions. Commercially integrated facilities are likely to reduce the overall cost to the consumer while mitigating security of supply risks.

Additional Gas Mitigation Options

4.1 Commercially operated LNG/ gas storage facilities

Due to the following reasons, BGE believes that is inappropriate for DECC to rule out an LNG facility which could be operated on a commercial basis:

- **Ability to secure shipments**: CEPA outlines concerns in its analysis regarding the ability of non-commercial LNG facilities to secure LNG shipments at short notice in a shock event. In practice an LNG shipment that is already in transit to North-West Europe would have to be re-diverted mid-route to Ireland at the time of the shock event meaning there's a prospect that cargoes won't be on route or cannot be rediverted at the specific time of the shock event. A commercial facility with regular shipments could provide a more reliable source of gas if it is coupled with minimum storage levels.
- **Ability to store gas for medium-long-term periods**: a non-commercial asset would require gas to be stored for long periods. CEPA raised questions around the technical capacity of FSRUs to store gas for medium-long-term periods. BGE is not aware of any non-commercial LNG facility that operates in the same manner as suggested in the consultation paper (i.e., a non- commercial asset that is only used in a shock event). For this reason, we believe the prospect of fixed LNG should not be discounted. There is a viable commercial fixed LNG prospect being put forward in Ireland at present that requires consideration for security of supply reasons. Suitable controls and regulatory arrangements could be put in place to address the concerns raised by CEPA in their assessment of this option.
- **Ability to introduce controls**: We feel there is a case to assess in further detail what controls can be put in place to operate a commercial LNG. For instance, the CEPA analysis recognizes that there could be a mandated level of strategic storage held at all times which be available immediately in the event of a security of supply shock for the purpose of mitigating the shock. In turn, the commercial operator could secure capacity and reduce the risk of a stranded asset. Provisions are made in France to ensure operators of LNG terminals and underground storage facilities provide security of supplies under pre-defined criteria in return for a pre-arranged fee.
- **LNG emissions mitigation**: BGE notes DECC's concerns that the additional energy requirements associated with LNG mean that the use of LNG in Ireland may have an adverse impact on the Climate Action Plan. However, BGE believe that a commercial LNG operators could offset carbon emissions by pairing the procurement and retirement of voluntary carbon credits with measures to reduce leakage and invest in less carbon-intensive liquefaction technology to negate the emissions from LNG while improving the security of energy supply. These technologies could include low-carbon fuels used in shipping, the use renewable energy for liquefaction and regasification processes in terminals, improved efficiency of combustion through cogeneration and trigeneration and better pipeline quality to minimise leaks. Examples of less carbon intensive technologies to reduce LNG emissions can be seen in LNG production in British Columbia that employs electrification in the upstream processes such as drilling and processing, and hydro power in the liquefaction phase. An example can also be seen in the bio-LNG facility near Fulda, Germany that will utilise biomethane produced from agricultural and municipal waste in its production process. In addition, there are now several examples of carbon neutral LNG cargoes being sold in the market (e.g., Shell, Tokyo

Gas, JERA, ADNOC, Total and CNOOC have all been involved in deals for carbon neutral cargoes). Policy-making could also assist in developing a carbon-neutral LNG market in Ireland by creating tax incentives such investment tax credits for purchasing low carbon LNG or applying carbon intensity requirements on energy imports.

4.2 Relying on domestic fuels

BGE is supportive of decarbonising Ireland's gas demand through a combination of biogas and hydrogen. However, in the context of the energy security challenges outlined in the analysis, the Government's outright ban on the exploration of gas requires reconsideration. Relying on some additional reserves, in particular those in close proximity to existing infrastructure like that in the Corrib field, could provide additional energy security whilst not increasing emissions (considering the pre-existing demand for gas that will need to be imported in any case)

Alternative Electricity Mitigation Options

4.3 Alternative decarbonised dispatchable generation

It is important to ensure that all dispatchable, decarbonized generation options are considered given the current challenges that exist. Modular nuclear, at a minimum, requires examination so that all viable options can be considered in the round when coming to a decision on a way forward. A lot has changed since the decision was made by a previous government to ban the development of nuclear power. The technology has advanced considerably to become smaller and safer and is thought that it can work alongside wind/solar in the production of hydrogen (to provide security of its supply volumes). As a company, BGE is not considering or supporting nuclear generation as a policy choice in the near term. We are simply highlighting that in the interest of our long-term ambition and the need to ensure security and greenness of supplies, it should not outrightly be discounted from consideration in the longer-term.

4.4 Renewable Ammonia

While the consultation puts forward hydrogen-based energy security proposals such as the option for a CCGT to be converted to run on hydrogen generation by 2030, we believe there is a much bigger role for hydrogen to support Ireland's energy security needs in the 2030-2050 time period, particularly through providing hydrogen storage. As renewable ammonia is a form of hydrogen storage, we believe, consideration should also be given to the potential of renewable ammonia to diversify Ireland's mix, reduce import dependency, complement renewable energy objectives and mitigate security of supply risks. This potential option would also have the benefit of generating export revenue as it is relatively easy to produce, store and transport in large volumes, particularly when compared to hydrogen. BGE believe that consideration should be kept open for any technology option that meet the criteria set out in CEPA's technical analysis.[5]

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

As outlined in our response to Question 4, DECC should consider all potential electricity and gas security of supply mitigation options. BGE believe that the assessment of potential mitigation options should account for delivery timelines beyond 2025 and 2030 and consider the extent to which potential options could be commercially integrated to the market in the first instance before strategic mitigation options are considered. Taking account of the relatively high volume of gas that would be

[5] CEPA Technical Analysis of the Security of Energy Supply of Ireland's Electricity and Natural Gas Systems, (page 11)

required to mitigate the shock events modelled by CEPA we believe LNG and offshore gas storage come to the fore as appropriate options to address Ireland's energy security needs. However, BGE believes that it would be inappropriate for potential mitigation options such as gas storage and LNG to be solely used for strategic security of supply purposes and that consideration should be given to the full potential of commercially integrated facilities and their ability to mitigate security of supply risks, while supporting our decarbonization ambitions.

5.1 LNG

BGE is supportive of the introduction of LNG because it:

- **Provides diversity**: LNG would provide an alternative route for gas into country which would mitigate the risk of a Moffatt outage under Scenarios 3, 4 and 5 as set of in CEPA's analysis.[6]
- **Provides sufficient volumes**: LNG is the only gas mitigation option in CEPAs' analysis that provided the required volumes to meet all shock scenarios, including a 30-day outage of gas supplies from Great Britain.
- **Aligns with EU policy goals**: Ensuring that all Member States have access to liquid gas markets and diversified sources of supply is a key objective of the EU's Energy Union[7] and has been called out as an important option in REPowerEU, Europe's plan to reduce dependence on Russian fossil fuels.[8]
- **Has a decarbonisation pathway**: As advised in REPowerEU, to move away from Russian fossil fuel imports, it has been advised that any new LNG terminals should be hydrogen ready. For example, a German utility is planning a 'hydrogen-ready' terminal for LNG in Germany which may incorporate a green ammonia terminal.[1]

We recognise that there are concerns regarding potential risks associated with LNG but, as outlined in answer to question 4 above, we feel that these risks (e.g., stranded assets, carbon emissions etc.) can be appropriately managed. In our view, different forms of LNG should remain under consideration, including commercial LNG and potentially fixed LNG if a commercially viable project can be stood up in a short time period (please see response four for details on risk mitigation and commercial operation).

While we are supportive of LNG, we believe there are challenges that must be overcome, including:

- **Access to assets**: we are concerned that there may be significant challenges for Ireland in securing LNG assets to deliver this option given the surge in demand for LNG across Europe. As of April 2022, there were 7 LNG import terminals under construction and 26 LNG import terminals in the planning stage in Europe.[9]
- **Implementation timeline**; Under DECC's floating LNG proposal, a new FSRU unit takes around 2.5 - 3 years to contract and a conversion of a conventional LNG vessel around 1.5 years, however, if a contractor can be secured, lead times can be accelerated by utilising existing FSRU units e.g. the second Egypt FSRU was completed in just 5 months).10 Leasing

[6] (iii) Scenario 1 + an outage of the IC2 gas interconnector which lasts for 30 days (iv) A full disruption of gas supplies from GB assuming average winter conditions which lasts for 7 days (v) A longer disruption of gas supplies from GB which lasts 30 days assuming average winter conditions

[7] Energy union (europa.eu)

[8] [8] REPowerEU | European Commission (europa.eu)

[9] Europe: LNG import terminals by country 2022 | Statista

[10]According to Timera Energy, FSRU terminal FSRUs can be delivered in half the time of an onshore terminal and the cost of a new FSRU can typically represent only 50-60% of an onshore terminal. Lead time is typically driven by construction of onshore infrastructure (not development of the FSRU unit). How FSRU's are impacting LNG market evolution | Timera Energy (timera-energy.com); ExxonMobil, Floating Storage and Regasification Units; Timera Energy, How FSRU's are impacting LNG market evolution (2018);

an LNG facility would also offer independence from against global supply issues and mitigates risk of a stranded asset.

- **Ensuring gas flows are sufficient**: it is vital that the gas network can accept the high volumes of gas flow from the LNG terminal/ FSRU location to key demand sectors, allowing for sufficient flow volumes on key pipelines.

5.2 Offshore Gas Storage

BGE supports offshore gas storage for a number of reasons:

- **Flexible**: it can mitigate against security of supply shocks. Gas storage could play a significant role in securing the supply of gas in case of potential disruptions (i.e., in a situation where GB may need to reduce supplies to Ireland due to a supply disruption to the UK) or particularly high demand (i.e., during a cold spell) where it could be supplied without delay. Noting CEPA's concerns about its actual contribution to increased volumes of gas to the market, it seems at odds with CEPAs view of battery storage for electricity and even demand side management as a tool to balance supply and demand
- **Scalable**: repurposing Kinsale does not provide as high a volume of gas as LNG but by including other depleted gas fields such as Ballycotton, higher volumes can be delivered that could help mitigate a larger portion of gas needs during shock events. This is an important consideration as offshore gas storage has a daily limit in the volume of gas that can be released meaning additional sites could help to better provide for gas needs if a shock occurs
- **Has a decarbonisation pathway**: gas storage can be repurposed for hydrogen storage helping support Ireland's longer-term decarbonisation and energy security needs. It is expected that approximately 20-30TWhs of hydrogen storage is needed in future

5.3 Onshore Gas Storage

As the onshore gas storage option has not been outlined in any detail, it has not been possible for us to assess its feasibility. We feel it would be premature for it to be ruled out but a much more comprehensive assessment would be needed before we could determine if it is a suitable option. It should be considered alongside the proposal to increase the secondary fuel obligation on gas fired generators as it may be a better, lower carbon option in the medium term.

5.4 Demand Management

While we are supportive of the concept of gas demand side management and would support further feasibility assessments, this measure would need to be accompanied by either gas storage and/or LNG to provide sufficient gas volumes to mitigate against the shock scenarios that have been modelled.

A much clearer proposal on demand side management would be needed to allow a full assessment. While the analysis suggests that a gas DSR scheme could deliver 10% savings, it is not clear how this would translate in a shock scenario, for instance, is this 10% of total gas demand and how many days this would apply to? A key step would be to engage with larger gas demand sites (i.e., LDMs) to understand to what extent they may be able to reliably engage in a gas DSR scheme, including whether they would have the ability to store sufficient alternative fuels (e.g., diesel) on site to engage in any gas DSR scheme as well as whether it is feasible to burn these fuels for several days taking account of any emissions limits that may apply.

5.5 Package of Measures

This proposal involves a combination of gas DSR as well as biomethane and hydrogen injection to the grid. While we support all elements of this proposal, and in the long term we do see hydrogen and biomethane as key pillars of our sustainable security of supply. However, similar to the stand-alone gas DSR proposal, these elements do not provide sufficient volume to mitigate against a shock event in the medium term (out to 2030). Therefore, we believe LNG and gas storage must be prioritised for further assessment for the time horizon in question.

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

Changes to the secondary fuel obligation as well as an increase in batteries and electricity DSR are put forward as the most feasible options to deliver in the 2025-2030 time period, however, all require careful management.

- Changes to how the secondary fuel obligation applies (technically and strategically) need to be made if it is to be viable. Site limitations for storage, emissions limitations and sourcing of the secondary fuel all need to be considered fully before this proposal is accepted and implemented.
- Consideration is needed in terms of how batteries can be run commercially and if market incentives (from the system services market and the capacity market) are appropriate, in particular, if longer duration batteriess are appropriately incentivised. System constraints are also curtailing their optimal use.
- Even in the current market environment, it has been challenging for electricity DSR volumes to scale up. Consideration must be given to what changes are needed in the market to support DSR before an expected volume is decided on in the context of this consultation.

Ultimately, and in line with a longer-term decarbonised pathway for security of supply we believe that additional dispatchable, renewable ready, generation is the most cost effective and reliable source of security of supply for the 2025-2030 period. Changes to the capacity market and the system services market are needed to secure their investment in the near term. In a post-2030 timeframe, we believe hydrogen-run generation should remain a priority given large market of up to 90 TWhs that is expected to develop, as well as the fact that hydrogen's long-duration storage capability can contribute to Ireland's energy security needs. We comment on each of the individual proposals below.

6.1 Hydrogen

We believe hydrogen will play a critical role in supporting Ireland's energy security landscape. However, most hydrogen is expected to be developed from offshore wind meaning significant and reliable volumes to operate generation plant would not be a viable option until the mid-2030s. While we would support further investigation of DECC's proposal to use curtailed wind to develop hydrogen for use in a refurbished CCGT, securing a sufficient volume of hydrogen could present an issue.

Prior to the scaling of offshore wind in the 2030s, consideration needs to be given to how Ireland can secure hydrogen volumes that will support CCGT conversion to hydrogen. We are concerned that challenges with developing renewable capacity, particularly off the south Irish coast, will mean that certainty will not be available on green hydrogen supply at the time that investment decisions will need to be made. We believe that solutions such as hydrogen imports should not be ruled out. Other European countries are starting to reach agreements on hydrogen interconnectors and Ireland may wish to consider this option as a temporary import measure to get a hydrogen market up and

running[11]. In the longer-term Ireland could use the interconnector to export hydrogen volumes once offshore wind reaches sufficient scale.

6.2 Biomass Generation

BGE's understanding of the CEPA analysis is that the development of a 450MW biomass run generator would not be feasible as sufficient stocks of biomass material cannot be grown domestically in line with EU sustainability requirements.

For the relatively small volumes of biomass that can be produced domestically, our understanding is that it would be more efficient, from an abatement cost curve perspective, for that volume to be used in other hard to abate sectors such as transport. We therefore do not support consideration of largescale biomass electricity generation as an option for security of supply.

6.3 Batteries

While we support investment in batteries, we need to be clear on what sort of security they provide to the system. Given that batteries are of limited duration and once discharged are not available again until charged, they are more akin to a system security tool as opposed to a supply security tool. Recognising they can provide supply very rapidly in response to system shocks, they are no replacement for lost gas or electricity generation on a longer-term basis. Therefore, we believe careful consideration of the following is needed:

- **Appropriate number/volume of batteries**- the volumes proposed by DECC (335MWhs by 2025 and 150MWhs by 2030) should be assessed in more detail to understand if this volume is appropriate for the size or Ireland's power system and the constraints that persist on the system. We believe clarity should be provided from EirGrid as to an indicative volume of batteries can be accommodated on the grid, considering SNSP objectives. This is necessary to prevent the market becoming saturated and to limit the risk of stranded assets.
- **Clarity on route to market**- it is unclear how DECC proposes that these batteries are introduced to the market or in other words, under what mechanisms incentives will be provided? If it is expected that batteries will be incentivised in the capacity market, which may be more appropriate for energy security needs, consideration is needed on the de-rating factors that are provided to batteries to ensure incentives are appropriate. Particularly, if, for security of supply reasons, long duration batteries (4 hours+) need to be incentivised.
- **Competitive running**- we see a potential challenge for new batteries being operated competitively given EirGrid cannot optimise battery operations (i.e., discharging and charging). Information asymmetry on when batteries can/ should bid into markets is another issue that must be addressed to reduce the risk of these batteries becoming stranded assets.

6.4 Pumped Hydro

An additional pumped hydrogen facility could help to mitigate a relatively small but sustained electricity supply shock, increase grid resilience and reduce Ireland's dependency on imports if a suitable site can be identified in a non-constrained location. Costs and timescale for delivery may impact its viability in the timescale being considered. Longer term, dispatchable hydrogen generation may be a better option to provide security against supply shocks.

That is not to say that it should be discounted as a strategic asset, in particular to provide reliable system support. Further consideration is needed on how a pumped hydro asset would be remunerated and indeed how this cost would be supported by customers. BGE believes that funding support mechanisms such as long-term cap-and-floor tariffs should be established to support and

[11] Reuters see here for further info.

reflect the longer-term investment nature of a pumped hydrogen facility as a critical energy security asset to strike a balance between commercial incentives and appropriate risk mitigation for project developers.

6.5 Additional interconnector

Electricity interconnectors have not been proven to alleviate security of supplies during the current energy crisis. In fact, there are times when energy has flowed from Ireland to the UK even during times of scarcity on the island. Previously it was though that interconnection to France would provide a route to cheap and diversified electricity supplies given the nuclear fleet in France. However, recent evidence has shown that France is equally affected by the supply shocks affecting Ireland and has turned from a net exporter to a net importer from Spain.

Grid constraints would also limit the ability of an Interconnector to physically provide security of supply – particularly to the demand center in Dublin. Currently there is a physical cap on the volume of power that can flow from Cork towards the East. A 700MW Interconnector would breach that export limit alone and there is little information on when that constraint will be alleviated.

6.6 Secondary fuel

BGE does not agree with the mitigation option to increase the Secondary Fuel Obligation ("SFO") as it is currently proposed. It is anticipated that generators will face several challenges in looking to increase the SFO and there is a risk that this increased requirement could be applied unevenly across generators potentially distorting the market. While some increase to the SFO may be helpful for energy security reasons, we believe a fundamental re-think of how secondary fuel is provided to the market is needed with a view to providing a fairer solution that is underpinned by all generators, not just CCGTs (and other applicable entities).

Generators will likely face the following challenges when aiming to increase their SFO storage levels from 5 days to the proposed 14 days:

- SFO requires the injection of water to maintain emission levels within EPA limits. Any increase in the secondary fuel requirement may result in high emissions above those levels approved by the Environmental Protection Agency (EPA) for a given CCGT facility, this can be exacerbated by reduced water intake which can result in further increases in emissions. A clear Government policy on emission exemptions would be needed taking account of energy security needs.
- Generators would need to engage with Irish Water to consider their capability to increase supply levels for this increased demand and it is likely that additional infrastructure to store water onsite would be required. This would require planning and construction activities if suitable space can be made available which is also not clear. Currently, it is unclear if water intake and storage can be increased to allow for 14-days of secondary fuel operation
- Additional storage tanks for secondary fuel would be required on-site meaning planning permission is needed. Consideration should be given to the length of time needed for both planning permission and construction, as well as significant capital investment
- The additional SFO would also require the reclassification CCGT plant Seveso grades as the extensive changes required for the plant's operation, maintenance and design to facilitate additional secondary fuel storage would increase the risk profile of the plan.

BGE believes that the SFO as currently constituted is an unfair requirement that applies a cost only to gas-fired generation units (including embedded generation units such as data centers and auto-producers) in the Republic of Ireland. The disproportionate extra costs of the SFO are likely to flow through to electricity prices and are therefore an unnecessary cost on consumers.

The SFO also runs contrary to the technology neutral basis of current system service developments. The asymmetrical requirement by the SFO on gas-fired generation instead of all generation units creates an unlevel playing field in generation by penalising gas-fired generation with extra costs at a time that the gas share of the SEM generation fuel mix is shrinking and is expected to continue receding over the coming decade. The obligation to support the security of electricity supply therefore needs to be shared across all generation units connected to the grid, and not solely on one generation technology.

BGE notes CEPA's statement regarding storage facilities and sourcing costs that there is scope for the National Oil Reserves Agency (NORA) to provide oil supplies during emergency circumstances, and that the cost of an increase in secondary fuel could be offset by liaising with NORA to secure supply of oil under emergency circumstance. BGE note that the ability of a centralised stock of secondary fuel to mitigate security of supply risk may be limited by the time lag between the identification of a security of supply shock and the delivery by road haulage of large quantities of secondary fuel to generating facilities.

Overall, given the above challenges, we are concerned that many sites applicable under the SFO may not be able to deliver the higher requirement and those that may face an unfair increase in cost to operate the higher SFO.

6.7 Electricity DSR

The hope and expectation over the years in planning for the delivery of a zero- carbon energy system has been that higher prices (through carbon tax increases) would drive customers to reduce their consumption. Energy efficiency first was expected to be delivered through price signals. However, even in the current environment of unprecedented prices and few supply alternatives, large customers are not engaging in demand side response initiatives. The market rules are simply not conducive to the delivery of a commercially viable proposition to market at scale. We believe these rules require further assessment if a DSR scheme is to be successful.

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

Energy efficiency is at the core of delivering tangible reductions in demand for gas and electricity. However, in the current environment of rising prices, rising interest rates and supply shortages, the ability of customers to invest in energy efficiency is waning. In line with the governments retrofit targets for 2030, we need to consider as an industry how to navigate the current environment and support customers in making the investment if we are to succeed in achieving our retrofit and energy efficiency targets for 2030.