

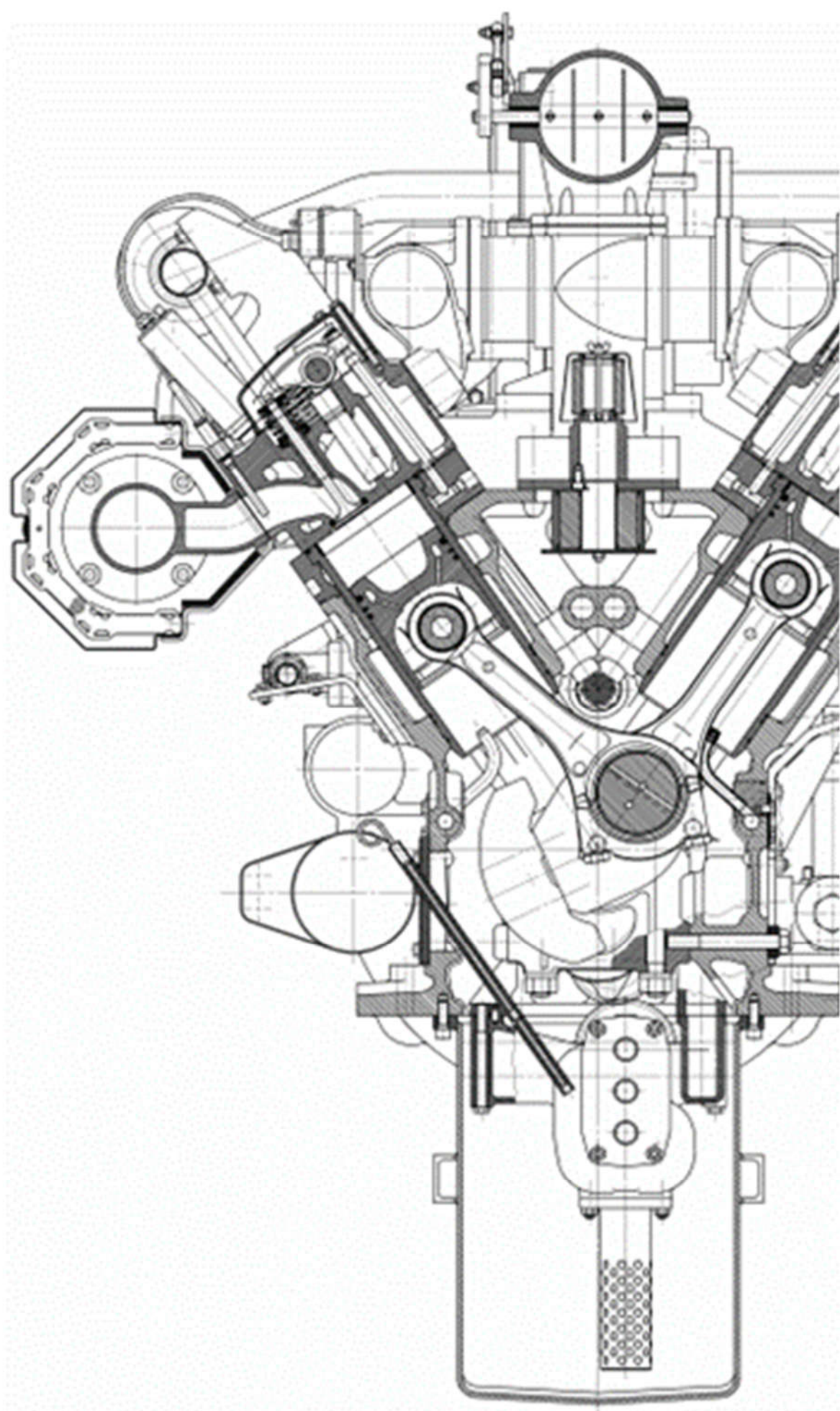
Review of the Security of Energy Supply of Ireland's Electricity and Natural Gas Systems Consultation

Response to the Department of Environment, Climate and Communications

Prepared for and on behalf of Clarke Energy Ireland Limited by:

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28th October 2022

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Wholesale Electricity and Gas Policy Division
Department for Environment, Climate and Communications (DECC)
29-31 Adelaide Road
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Review of the Security of Energy Supply of Ireland's Electricity and Natural Gas Systems Consultation Response

To Whom it May Concern,

Please find attached our submission in relation to the above Consultation.

We hope our submission will be fully considered and we look forward to furthering dialogue with DECC in relation to this topic.

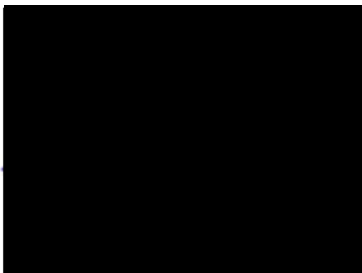
Clarke Energy is a subsidiary of the US based Kohler Company and specialises in the engineering, installation of maintenance of Jenbacher reciprocating gas engine in 28 territories around the world including Ireland.

Clarke has installed almost 5GW of Jenbacher gas engines worldwide.

Within this document, my team, along with colleagues from INNIO (Jenbacher gas engines), have presented our responses to the Consultation. The views expressed herein represent those of a successful global organisation, dedicated to delivering highly efficient and optimised energy solutions in a variety of energy intensive applications throughout the world.

Please contact the undersigned with any questions or if any clarification is required. Clarke Energy would welcome the opportunity to engage further on this topic with Wholesale Electricity and Gas Policy Division of DECC.

Yours Sincerely,



Clarke Energy Ireland Limited

-/enclosed

By e-mail: to address requested

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Introduction

Security of Supply in Ireland is impacted by a number of factors, one of which is a limitation imposed on the selection of electricity generation technologies due to the constraints imposed by the on-site Secondary Fuel Obligation.

It is noted that there is a suggestion in the consultation documentation that the on-site storage of secondary fuel should be increased further creating a barrier to the deployment of Security of Supply solutions used in other jurisdictions.

It is firmly our opinion that Gas Generation (in the form of decentralised reciprocating gas engines) should be considered secondary fuel requirement to renewable power (i.e. wind; solar etc.). Indeed, there is a strong case to be made to locate such decentralised adjust to grid network nodes close to large scale renewable generation – hence improving the utilisation factor of electricity and distribution Network infrastructure already installed.

The recent development of Fast Transient response reciprocating gas engines, which utilise advanced gas delivery systems and hence significantly improve the transient response of the traditional carburetted reciprocating gas engine, in relation to, load acceptance and rejection. Can be quickly and cost effectively deployed across a grid as decentralised electricity generation which also will enable frequency and voltage support of the grid at those network node where such generators are deployed. As has been demonstrated in other jurisdictions such decentralised equipment can be centrally or autonomously controlled.

Reciprocating gas engines are capable of achieving up to 46% simple cycle electrical efficiency based on Lower Heating Value. The standard from of the Jenbacher gas engine can achieve the emissions limits of the Medium Combustion Plant Directive (MCPD) without the requirement of secondary exhaust gas treatment and can therefore be considered Low Emission equipment.

By deploying multiple engine frames, it is also possible to maintain greater than 42% simple cycle electrical efficiency between “min gen” 50% load on a single machine up to fully load on all the installed gas engines at a particular location. This also enables flexibility of output to match grid demand at a particular network node at any time.

In the UK, where there is not a Secondary Fuel Obligation (SFO), Clarke Energy is successfully deploying reciprocating gas engine based decentralised electricity generation stations with varying size and models of Jenbacher gas engines to suit the specifics of the required application. Please find attached some Case Studies for a sample of these applications.

The deployment model that Clarke Energy has developed has delivered 50MW installed and running in less than 52 weeks (with a 20MW solution deployed in 41 weeks), on a site with all permission and permits in place. Many of the deployment sites are comprised industrial style building in industrial zones and hence close to the system demand.

The latest UK Capacity T-4 auction achieved £30.59 per kW per year – £30,590 per MW per year and the lowest in the last 4 years was £15.97 per kW per year – £15,970 per MW per excluding T3 auction in 2019/2020. At this price range in the UK, Clarke Energy expects 1,000MW of this Flex Capacity to be built currently Clarke Energy are building more than 100MW such Flex Capacity in the UK

In Ireland, we also have a range of organisations that would wish to be Auto Producers of electricity when Renewables are not available and have the resources and willingness to invest in such reciprocating gas engine technologies, however, the Secondary Fuel Obligation, which is applied to Power Generation facilities with an output of greater than 10MW is constraining such private sector development activity.

As stated, earlier Gas generation is the secondary fuel to renewables and that will be the situation for many years to come if our desire is to maintain electricity supply at current reliability levels. As a nation this last year has awoken our population to the need on this island for gas storage. The debate may rage on about whether such storage should be owned by the State or built and owned by the private sector, but citizens have recognised the need for such storage infrastructure to ensure Security of Supply.

That storage infrastructure should be comprised of the ability to convert gas already in the network in LNG for storage purposes to be used later, which could be achieved with surplus renewable electricity and should include the ability to allow importation or exportation of LNG - in LNG carriers.

Finally, modern reciprocating gas engines are now “Hydrogen Ready” – typically meaning that they are future proof investments capable of using a blend of Natural Gas and up to 20% hydrogen without the requirement to upgrade the gas engine and when upgraded (as a planned part of the gas engine lifecycle) the gas engine will be capable of up to 100% Hydrogen. Such upgrades are already in development and being tested by Jenbacher.

The remainder of this submission focuses on the specific questions raised by DECC and responses have been prepared in conjunction with IBEC of which Clarke Energy is a member.

Risks

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

A central concern with the CEPA analysis is that the core baseline scenario modelled assumes the full delivery of planned energy infrastructure and capacity. The baseline includes CRU’s Electricity Security of Supply [Programme of Work](#) and its delivery of 2GW of enduring flexible gas-fired generation capacity by 2030, and the delivery of 5GW of offshore wind by 2030. The expected RES E share in the core baseline scenario is 80% dropping only to 77% in the baseline 2 scenario. The core baseline also assumes no additional delays to the Celtic, North-South, and Greenlink Interconnectors or to the build-out of enabling infrastructure such as the development of deep-water port facilities for offshore delivery and new grid infrastructure.

The risk of delays and under-delivery is not unfounded. Ireland has longstanding problems with the timely delivery of infrastructure projects, especially energy projects. Energy supply projects can take up to a decade to bring from pre-planning to completion. The chief drivers of these delays are a cumbersome planning system, a lack of resources in key agencies, and the high frequency of lengthy judicial review challenges. These planning and licensing issues are compounded by flaws in the capacity market system which has seen expected capacity withdrawn. If these issues are not swiftly resolved, they could have a chilling effect on inward investment over the coming years.

It is also possible the study could be impacted materially by Ireland’s emergency response to its own electricity supply constraints and by the EU response to the European energy crisis. The European energy crisis has provoked an unprecedented EU policy response. Mandatory gas and electricity demand reductions are planned for winter 2022/23 along with windfall levies on some electricity and fossil fuel producers. Meanwhile measures to decouple electricity and gas prices are being considered, with the European Commission planning to begin reforms of the electricity market in early 2023. Meanwhile, Ireland’s own capacity-constrained electricity generation system is being addressed through unprecedented state intervention and the delivery of emergency modular generation. While most of these measures are short term in nature, some could have a lasting impact on Europe and

Ireland's energy system in the decade ahead. Any failure to address these short-term challenges could greatly impact the roll out of planned capacity.

One risk not addressed in the CEPA study is greater post-Brexit divergence between Ireland/EU and the UK. Ireland's energy system is heavily linked with that of Britain and Northern Ireland. We share an all-island wholesale electricity market, and our gas market functions effectively as one market with trades and flows taking place seamlessly. Ireland's emergency plans rely heavily on cooperation and coordination with the UK. While some of the shock scenarios modelled in the CEPA study could be driven by political or regulatory divergence between the UK and the EU/Ireland, these are not explicitly mentioned as potential causes. We believe that strong efforts are needed in the coming years to bring the UK and EU systems closer together. UK exclusion from EU energy forums is not in Ireland's or the EU's interest.

Ibec members also noted the complete omission of cyber security risks from the report. As energy technologies become progressively more connected to modern, digital technologies and networks, the functioning of the energy system becomes increasingly exposed to cyberattacks and cybersecurity incidents. The [EU Security Union Strategy](#), presented in July 2020, identifies the energy sector as requiring dedicated support to ensure its resilient against physical, cyber and hybrid threats.

Finally, the CEPA analysis is primarily informed by data from 2020 and 2021 when the review commenced. Given the delays to the report and the significant energy and global economic developments that have happened in 2022, it would make sense to update some of the assumptions in the study. For example, the CEPA analysis is informed by EirGrid's 2021 Generation Capacity Statement (GCS). The recently published 2022 GCS presents a far more challenging electricity constraint over the next decade and could have a strong bearing on this report. Meanwhile the likelihood of a European recession on the back of the energy crisis could have a lasting impact on energy demand in the short-medium term.

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 are largely related to problems in our costly and cumbersome planning system, the lack of resources in key agencies, and the high frequency of lengthy judicial review challenges. While new systems are being set up to help delivery Climate Action 2021 renewable targets and the 5GW of offshore capacity, these new regimes have yet to be tested. Ibec's 2019 *Better Planning* report includes a host of policy recommendations which would help tackle some of problems project developers face while also protecting important rights and processes.

Ibec has also repeatedly called for additional resources to be given to key departments and agencies involved in the delivery of energy projects. This includes the CRU, DECC, the Office of the Planning Regulator, the EPA, and especially the new Maritime Area Regularity Authority (MARA) which will be of critical importance to the processing of maritime area consents for prospective offshore generation.

Ibec recommends that the CEPA analysis be strengthened with the addition of a sensitivity analysis which could account for the risks of non-delivery of key energy infrastructure and failures to meet key renewable targets.

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

We agree with the selection of the five shock scenarios as they are sufficiently broad and informative. Our concerns relate more to underlying assumptions and expected progress towards meeting our national climate targets and the delivery of planned energy infrastructure. If a sixth shock scenario were to be considered it would be a cyber security incident.

Mitigation Options

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

We and other Ibec members questioned the stated rationale for not shortlisting the option of enhanced indigenous gas resources from existing licenses. The explanation given is two-fold; “additional domestic production of natural gas above forecasted demand could result in Ireland being locked into a high-gas energy market” and there being “unknown volume of any potential additional natural gas discoveries”. If there is an unknown volume of indigenous gas, how can it be said that the volume discovered would exceed projected demand? The shortlisting of other import gas options indicates a continued national policy preference for other countries to carry out the exploration, development and production necessary for serving our medium-term national gas demand. It has also been well documented that internationally piped gas and LNG have a higher carbon footprint than domestically produced gas. This would have been highlighted in a thorough carbon impact comparison of the mitigation options.

We and Ibec members also questioned the complete omission of carbon capture. This is unexplainable given that the technology is recognised by the European Commission and Climate Action Plan 2021 as being a key element in the net zero transition.

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

For Clarke Energy all options must be considered, and preference given to those options that deliver on key energy security, cost, and sustainability goals. Key factors like the feasibility of delivering the project/intervention in the next decade, cost effectiveness (recognising that the costs will likely fall on the consumer), and future proofing/consistency with climate goals must be carefully considered. Finding a mitigation option that meets all these goals will be challenging and some compromises will likely be required. For this reason, the lack of a comprehensive carbon impact analysis and costing of options is regrettable and makes selection and shortlisting very difficult.

Of the options shortlisted, Clarke Energy believes that LNG, gas storage for emergency use, gas decarbonisation through biomethane and hydrogen, and gas demand reduction incentives could all play a role in a secure energy transition.

LNG, gas storage and gas decarbonisation

The war in Ukraine has exposed critical weakness in Europe’s gas supply. European members states have responded to the crisis by reducing gas demand, accelerating gas storage, new solidarity arrangements, and the development of new and more secure LNG supply lines. Despite these

unprecedented and largely successful interventions, Europe is unlikely to avoid a recession. Ireland has managed to avoid these problems and need for such a response because of our strong and diverse gas supply from Corrib (c20%) and through our interconnection to the UK supply. Our resilience in the face of this European gas crisis is largely one of good fortune and geography. The future however is uncertain. Ireland's Corrib field supply is declining and the benefits of futureproofed emergency gas storage in Kinsale and/or back-up direct access to emergency LNG would give important security to our system as we transition to a fully renewable system.

We acknowledge the expressed concerns with the carbon impacts of these measures. But if used for emergency relief only and future proofed, these interventions could remain consistent with carbon budgets. To address concerns about fracked gas, measures could be introduced to better control the contracted gas use to fill LNG reserves. We note that fracked gas most likely already enters the Irish system through piped gas from the UK.

As Ireland transition to a net zero energy system, any use of natural gas must be accompanied by a decarbonisation and transition plan. We and Ibec strongly support measures to decarbonise the gas supply through the development of hydrogen, biomethane, and carbon capture and storage/use. Ibec submitted a response to the recent DECC consultation on the development of a hydrogen strategy for Ireland setting out our key asks. The final strategy and resulting policies should be considered as part of this security review.

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

Of the options shortlisted, Ibec believes that additional electricity interconnection, additional demand side responses, new electricity storage and hydrogen could all play a role in securing our electricity system while avoiding any carbon lock in.

Demand response

Ibec is currently surveying medium and large electricity users to better understand the barriers and opportunities for additional demand side response. Unfortunately, this information will only be available in mid-November 2022. Ibec would welcome an opportunity to present the findings of the work to policymakers and submit a follow up contribution to this consultation.

Interconnection

Ibec strongly supports the principle of a better connected and more efficient European system. Ibec has been a strong supporter of both the North South Interconnector and Celtic Interconnector projects. However, it is critical that all new interconnection proposals are subject to individual assessment of costs and benefits given that the costs associated with interconnection development fall primarily on electricity users. Ibec members did agree with CEPAs finding that the security of supply value of interconnection would be reduced at times when connected jurisdictions face their own/the same supply challenges.

Secondary fuel option

As stated earlier in this response, Clarke Energy believes the SFO is now constraining strategies to improve security of supply by limiting generation technology choices.

Clarke Energy also has concerns about the costs and viability of demanding that gas fired generators increase the volume of secondary fuel on site to deal with gas supply emergencies. The CEPA study seems to favor this intervention. However, we believe the costs and impact on consumers associated with this move have not been sufficiently modelled. There are also practical, planning, and environmental challenges with increasing the volume of secondary fuel supply. Not all sites will have nearby space for additional storage and planning and licensing delays could become a delaying factor. The CEPA study reports that after considering plant availability, emissions limits, and technical issues, 69% of total installed gas fired capacity would be available to operate on secondary fuel at a given time. Clarke Energy and Ibec members questioned this number. Such a policy intervention would need a more robust dedicated assessment.

New biomass plant

Ibec members raises concerns about the sustainability and supply of additional biomass to support a new unplanned biomass plant. The prospects of converting Moneypoint 1 and 2 plants to biomass are very low given the daily volume of biomass feedstock required.

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

With energy costs reaching exceptional heights in 2022, most commercial and industrial users will have taken all measures in their power to reduce energy waste and lower demand. Ibec is also aware that demand for SEAI supports, energy consultants, and energy contractors are at record levels as businesses look to renewables and energy efficiency investments to reduce their exposure to rising costs. While the war in Ukraine may have been a big driver in this regard, many firms were already reassessing their energy efficiency in 2021 as prices soared in the aftermath of the Covid lockdown. Ibec has repeatedly call on government to introduce new, more accessible, and generous supports to help businesses transition away from fossil fuels and enhance their efficiency. Ibec has recently concluded a survey of firms seeking information on how they are responding to rising costs. Ibec expects that this data will provide a crucial insight into the opportunities and challenges businesses face in reducing energy demand. Ibec would welcome an opportunity to present the findings of this research to DECC and SEAI in the coming weeks.

Ibec is also currently surveying medium and large electricity users to better understand the barriers and opportunities for additional demand side response. Unfortunately, this information will only be available in mid-November 2022. Ibec would welcome an opportunity to present the findings of the work to policymakers and submit a follow up contribution to this consultation.

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

N/A

Policy Measures

9. Do you support the policy measures proposed in section 8 of the consultation paper?

Ibec supports the proposals to begin annual joint electricity and gas assessments to provide a more holistic assessment of our energy needs. Ibec also supports the development of two-yearly technical reviews of Ireland's energy security and deeper reviews every four years. Ibec believes these reviews should cover the entire energy system, not just electricity and gas. The deeper reviews should also be strengthened with stronger modelling and carbon and cost assessments of mitigation options.

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

N/A

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