

October 28, 2022

**Consultation Submission on
DECC's Review of the Security of
Energy Supply of Ireland's
Electricity and Natural Gas Systems**

Prepared in partnership by:

**Port of Cork Company
Pilot LNG, LLC**



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Port of Cork Company

The Port of Cork Company is a commercial semi-state company responsible for the broad range of commercial running of Cork harbour as well as the navigation and berthage in the port. The Port of Cork Company's facilities and operations are situated at four distinct locations in Cork's natural deepwater harbour: The City Quays provide the service for bulks, both Tivoli and Ringaskiddy provide the lift on/ lift off, roll-on/ roll-off, and bulks services, while Cobh caters for cruise liners with Ireland's only dedicated deep-water berth for cruise ships. The Port of Cork is the key seaport in the south of Ireland, it is one of only two ports in Ireland to service all six shipping modes - lift on/ lift off, roll on/ roll-off, liquid bulk, dry bulk, break bulk, and cruise.

Pilot LNG, LLC

Pilot LNG is an energy consultant and solutions company, focused on the delivery of liquefied natural gas (LNG) as a cleaner fuel. Our global project portfolio is being developed by an experienced management team with a successful track record in energy infrastructure projects.

Cork LNG Import Terminal

Pilot LNG and the Port of Cork have entered into a Heads of Agreement to explore and initiate the development of an LNG Import Terminal in Cork Harbour, Republic of Ireland. The Mid-Scale Floating Liquefied Natural Gas Terminal (3 Mtpa) is a flexible asset that can support energy transition plans. New infrastructure is required to provide access to clean burning LNG in support of long-term climate goals and a feasible and pragmatic energy transition for the country.

Cork Harbour is a key energy hub with key industrial facilities in close proximity to the considered site (Ireland's only oil refinery & 1,400 MW of gas-fired power generation). The approach to an LNG import project has been in identifying an optimal location with access to deep water and established gas pipeline transmission for gas supply takeaway via the Gas Networks Ireland system. The project is streamlined for speed to market, utilizing existing floating technology that has been proven operationally, and yard construction providing competitive economics versus traditional land-based alternatives.

Consultation Request from DECC

Port of Cork and Pilot LNG are pleased to submit to DECC's Review of the Security of Energy Supply of Ireland's Electricity and Natural Gas Systems. The following consultation addresses Section 9 (questions 1, 2, 5, 7) of the Review.

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

Security of Supply Risks

The likelihood and impact of the various risks identified in Section 6 are absolutely credible. Our team certainly recognizes the addressed challenges associated with weather risks on the demand side, and international / geopolitical challenges on the supply side; however, we suggest that there are other more localized risk factors we have identified below, that create a serious risk exposure to Ireland's general security of supply ambitions.

Our focus on Ireland coupled with global LNG development experience substantiates our thoughts on localized issues in Ireland that carry major risks for the security of supply. For instance, the potential physical and commercial constraints of supply infrastructure could potentially prove more disruptive to Ireland's energy security plans, than the grander global risks highlighted in the report.

We have identified four silos of risk we would like to highlight:

1. Political (local)
2. Regulatory
3. Commercial/Contractual
4. Technology

Political

The report addressed specific geopolitical issues, highlighting relationships with neighboring countries (predominantly the UK) and global gas suppliers (Russia, Qatar, Nigeria, etc.). Of equal importance are local political (small "p") drivers, policy processes, and decision-making.

An effective government is Ireland's best chance at electricity and gas supply security. Mitigation includes:

- Competency, flexibility, innovation, budget efficiency, minimizing red tape, effective policy implementation with long-term consistency, despite leadership changes
- Looking at the successes and failures of other government's energy policies and implementation

As the world works toward a net zero framework, establishing effective energy policies grows even more complex. There is not a clear roadmap to success, however, Ireland can benefit from studying the practices and decisions of other countries. There has never been a time more evident than today to see the global effects of failed energy policies and decisions. For instance, Germany and the United States are facing potentially detrimental crises derived from politically driven judgements.

The German Government pursued a policy of sourcing Russian gas and building a position that was almost solely reliant on sole source gas supplies. Despite German reliance being highlighted over many years, their government dismissed diversification. As Russia closed the pipeline and supplies to the Ukraine in 2006, 2009 & 2014¹, the German Government remain in statis and tied to Russia.

Comparatively, Lithuanian and Polish Governments authorized the development and construction of LNG import terminals². Lithuania's Klaipeda Nafta project went into operation in 2014, providing the nation with security of supply and the ability to access the global natural gas markets. The diversity of supply in Lithuania provided negotiating leverage with Russia/Gazprom, resulting in lower natural gas costs for the country³.

In 2020, a change in Government in the United States clearly demonstrated the dangers of inconsistent policies with each new regime. The current US Administration canceled the previously granted permits for a major oil gas pipeline⁴ that had spent 10 years in the regulatory process and expended billions on construction. While this won political points with the new Government's allies, this decision has ramifications that the US faces today, in 2022. Currently, the administration is attempting to pressure OPEC to not reduce

¹ Russia cuts off gas supply to Ukraine: <https://www.reuters.com/article/us-russia-ukraine-gas/russia-cuts-off-gas-to-ukraine-idUKTRE4BN32B20090101>
<https://www.nytimes.com/2014/06/17/world/europe/russia-gazprom-increases-pressure-on-ukraine-in-gas-dispute.html>

² Projects KNL & Polskie LNG : <https://www.kn.lt/en/our-activities/lng-terminals/klaipeda-lng-terminal/559>
<https://www.gaz-system.pl/en/terminal-lng.html>

³ Lithuania KNL: <https://www.politico.eu/article/how-lithuania-cut-its-ties-to-toxic-russian-gas/>

⁴ Keystone Pipeline: <https://www.instituteforenergyresearch.org/fossil-fuels/gas-and-oil/keystone-xl-pipeline-canceled/>

oil production and drive current high prices even higher⁵. This singular event has had a detrimental effect on the overall US economy and across the energy industry. The oil and gas energy industry are taking a risk-averse position to additional capital investments for fear of having these assets stranded by future Government policy changes mid-stream⁶. The limited investment by producers and infrastructure companies has only exacerbated the current pricing climate in the US and the economic impacts are being felt across the entire nation.

Poor decision-making, disingenuous narratives, and finger-pointing around energy are not solely at the national level. In the US New England region, outrage at high energy prices from the political class was highly publicized. The loudly publicized suggestion that high natural gas prices in the US northeast were driven by the US southwest/Gulf natural gas exports. This narrative has been roundly debunked. The real culprit -- politically driven policy and decisions. Pricing in the New England region is at least five times higher than even their neighboring states. The mitigation plan was to bring an incremental supply from cheap-producing regions in Appalachia to the New England market, via the substantially complete pipeline infrastructure. The cancellation of this important infrastructure was identified as the cause of the underlying supply/demand unbalance⁷.

There is a simpler picture of a poorly structured government energy policy example in California. The state requires its own unique blend of gasoline/petrol and imposes high taxation of the fuel. As a result, in times of supply/demand imbalance, the prices relative to the rest of the US become far higher. Generic blends of fuel from neighboring states cannot make up the shortfall, and California has actively fought against any new refining capacity within the State to provide additional supply⁸.

Major swings in policy positions as Governments change office do not provide investment certainty and long-term planning horizons for energy assets and infrastructure. Poorly considered, short-term, populist, or Quixotic Government policy could be considered one of the greatest risks for a nation to execute a

⁵ Biden asks for delay of OPEC reduction until after elections: <https://fortune.com/2022/10/13/saudi-arabia-opec-oil-production-biden-white-house-november-midterm-elections/>

⁶ Producers limiting investment on concerns of Gov policy: <https://www.texastribune.org/2022/03/25/texas-permian-basin-oil-russia-invasion/>
<https://oilprice.com/Energy/Energy-General/US-Shales-Debt-Detox-Is-A-Huge-Win-For-Shareholders.html>

⁷ EQT Letter on LNG & New England Gas Prices: <https://www.eqt.com/wp-content/uploads/2022/02/Letter-to-Secretary-Granholm-vF2-2.16.22-1.pdf>

⁸ California regulations and policy that have caused gasoline/petrol price spikes: <https://www.forbes.com.cdn.ampproject.org/c/s/www.forbes.com/sites/davidblackmon/2022/10/11/californias-gasoline-price-blowout-is-a-problem-of-its-own-making/amp>

sound and pragmatic energy security plan, that would underpin a nation's long-term economic well-being⁹.

Regulatory/Permitting

As previously noted, global factors impact energy security, however international risks are usually outweighed by national, regional, and local dynamics. Energy security and supply will generally require the investment and construction of new assets. Whether wind, solar, hydrogen, or LNG, these assets will have to be developed within a regulatory framework. Additionally, these projects will require public input and support.

Regulatory and permitting measures are pertinent to safe and fair energy delivery, however, they also must be adaptive, responsive, and unbiased. Often persuaded by public opposition, regulatory bodies must remain politically impartial to expedite the clean energy transformation. National and local governments must ensure their regulators adopt processes that address the concerns of the public expeditiously and honestly without bowing to political pressures.

Conceptually, there is a public consensus that energy progress and innovation are mandatory. However, once a general concept moves to the actual localized development of infrastructure, projects begin to face the risks and challenges of local opposition. This opposition has driven many project cancellations, hindering energy progress.

“Not In My Back Yard” (NIMBY) is a real risk for any project development that supports the required infrastructure to underpin energy security – no matter how clean these energy sources claim to be. There are several recent examples of clean energy projects that received generally positive reviews in concept but were thwarted by local opposition once under development.

Recent examples of clean energy projects at risk due to local opposition:

- Hydroelectric power transmission supply line from Quebec, Canada to Massachusetts, was opposed in Maine¹⁰.

⁹ Acknowledgement that traditional fuels are needed in today's world: <https://time.com/6175734/reliance-on-fossil-fuels/>

¹⁰ Hydroelectric transmission line through Maine: <https://www.eenews.net/articles/embattled-maine-power-line-foreshadows-u-s-climate-obstacles/>

- The development of Carbon Capture pipelines in the US Midwest to support CO₂ reduction has been met with fervent opposition by local farmers and NGO's¹¹.

Compelled by the concerns of climate change, the energy industry is working toward a portfolio of cleaner sources of energy. Renewables, such as wind and solar have been actively championed by many environmental groups, who have been very vocal. Despite the US adding more and more wind power to the mix, there is still tremendous opposition to new infrastructure of any kind¹². This same NIMBY mindset is present in Ireland and could be a barrier to energy security plans.

Energy security will require the prevention of overreach of state, local, or national government agencies in applying the laws to energy project infrastructure development. Again, lessons can be learned by current events, including examples from two US Agencies:

- Environmental Protection Agency (EPA)
 - In late June 2022, the Supreme Court issued a ruling stating that the Environmental Protection Agency cannot put state-level caps on carbon emissions under the 1970 Clean Air Act, and that they went beyond their regulatory mandate and specifically had exceeded their congressional authority. The Court said that, instead, the authority to decide how power is created in the U.S. must come from Congress¹³.
- Federal Energy Regulatory Commission (FERC)
 - FERC recently announced that it would include greenhouse gas emissions as part of its regulatory remit for energy projects despite this not being covered under the Natural Gas Act and FERC's expanded authority through the Energy Policy Act of 2005. This has drawn criticism that FERC has moved away from its neutral position on natural gas infrastructure permitting, to a politicized entity¹⁴.

¹¹ Carbon Capture opposition in Iowa:

<https://www.desmoinesregister.com/story/money/business/2021/11/28/what-is-carbon-capture-pipeline-proposals-iowa-ag-ethanol-emissions/8717904002/>

¹² Quiet opposition to hundreds of clean energy projects:

<https://www.forbes.com/sites/robertbryce/2021/09/26/heres-the-list-of-317-wind-energy-rejections-the-sierra-club-doesnt-want-you-to-see/?sh=5becb4e15bad>

¹³ West Virginia v's EPA: https://www.supremecourt.gov/opinions/21pdf/20-1530_n758.pdf

¹⁴ FERC GHG Proposal: <https://www.washingtonpost.com/climate-environment/2022/04/27/top-energy-regulator-is-turmoil-over-climate-rules/>

Commercial/Contracting Risk

This section discusses the underpinning commercial agreements required to execute the development of energy infrastructure that will provide energy security, and contractual requirements around the gas commodity supply needs.

Although a complex topic, for this exercise we simply wish to call out the fundamental requirements around having long-term commitments from customers, to underpin the capital-intensive investments required for major energy infrastructure. This commitment spans all assets from downstream retail buyers of wind/solar/gas power/electric for industrial/generation customer(s), or energy majors taking a terminal capacity position in an LNG import terminal.

Just as a bank would want a home buyer to show steady income when looking to secure a mortgage, funders of energy project assets want to see long-term future revenues through customer agreements. These agreements demonstrate the ability to pay back the invested capital. If there are barriers that hinder long-term customer contracts, then projects will fail to materialize – at the risk of energy supply security. Barriers can include:

- Regulatory
 - open access requirements for the terminal capacity
- Political
 - a country's political climate and volatility, or safety
- Economic
 - offered service is simply too costly/expensive for the end-user market – such as building out a hydrogen economy today

From a global natural gas standpoint, the contracting risk discussion in energy security would likely revolve around the decision to take a position in long term LNG supply from the upstream market versus relying on the global spot market.

This could be either from LNG portfolio players selling delivered LNG to a receiving terminal (Delivered Ex-Ship) or for the nation or downstream customers to go back through the value chain to the source and sign agreements for loading at the liquefaction point (Free on Board). In both cases, there is a long-term commitment that would provide some volume certainly and a level of price certainty. By going down the path of no long-term LNG supply commitments, then the project and/or the nation is exposed to the volatility around the global supply and demand swings and the prices that come with

that¹⁵. The challenge or risk will be the balance of contracting versus spot exposure and the risks of being either in or out of the money against the long-term contracts as prices fluctuate (and the criticism or praise that comes with it). This same challenge will come with taking advantage of the volatility on the spot with low prices, versus being hurt by high prices or even no available volumes when the market is short LNG¹⁶.

Governments that are truly committed to their security of energy supply can demonstrate their commitment by providing meaningful public support to energy projects through marketing and partnerships. A step further would be to financially backstop/subsidize critical energy infrastructure.

There is no right answer for the contracting risk, and it would likely be advisable to consider a portfolio of long-term and spot options for Ireland.

Technology Risk

In choosing the technologies that will support the long-term transition to a more sustainable or cleaner energy system.

As nations grapple with the challenge of energy security and the transition to a cleaner energy system, the decisions and risks around what technologies and the timing and effectiveness of those technologies becomes key to the economic wellbeing of a nation. There are some voices that are demanding a magic bullet or a complete re-set on current energy systems and technologies, starting immediately. This is simply an unrealistic approach to making real and sustained progress, while balancing the economic competitiveness of individual nations against the global economy. A key element of ensuring energy security and limiting risk, is to take a pragmatic approach, and the optimization of current technology at the front end of this transitional period.

While renewables, mainly wind and solar, are mature technologies now and are expected to replace traditional fossil fuels globally by up to 50% by 2050¹⁷ - it is also recognized that these fuel sources because of their intermittence, will require backup fuel support. From Gas Networks Ireland 2021 Ten-Year Network

¹⁵ Global Swings in LNG Prices: <https://www.reuters.com/business/energy/whats-behind-wild-surges-global-lng-prices-risks-ahead-2021-10-01/>

¹⁶ Pakistan receives no interest in its LNG 2022 tender: <https://lngprime.com/asia/no-bids-in-pakistan-lngs-tender-for-72-shipments/62908/>

¹⁷ DNV Energy Transition Report 2050: <https://www.dnv.com/events/launch-of-energy-transition-outlook-2022-229565>

Development Plan; Natural gas is the most important fuel in assisting Ireland's transition to a low-carbon economy, as its flexibility means it is the optimal complementary energy source to intermittent renewable energy sources such as wind and solar. In 2020, 51% of Ireland's electricity was powered by natural gas¹⁸.

There are discussions on various fuels that could be available to support the energy transition and supply security, namely hydrogen¹⁹, ammonia, methanol, biomethane, and battery storage. However, there are questions about scale, costs, and availability/timing of these options. For Ireland's short-term requirements, natural gas and its correlating infrastructure is clearly the most obvious solution for technology choices to support a pragmatic energy transition.

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

Mitigation - Regulatory/Permitting

In terms of mitigation for the regulatory and permitting risks, a path to the least contentious process, recognizing that not everyone will support the energy asset under development, would be to site a facility or asset in a place that offers the least environmental impact.

In the case of Ireland, Pilot LNG explored various sites that would provide the greatest value for the smallest impact for natural gas/LNG facility. Evidence supports an FSRU in Cork Harbour.

- In a large deep-water port that is in close proximity to an already existing energy hub (two large gas-fired power plants & Ireland's oil storage facility)
- A major marine location with the second-largest Port in the Republic of Ireland
- Major container terminal & a major cruise port

¹⁸ Gas Networks Ireland Ten-Year Plan 2021 (Published 2022):

<https://www.gasnetworks.ie/corporate/company/our-network/network-development-plan/>

¹⁹ Hydrogen costs for the last mile: <https://www.reuters.com/business/energy/hydrogen-costs-be-determined-by-delivery-methods-2022-10-12/>

- All the required port support infrastructure in place – tugs, ship husbandry, etc.
- A very small physical footprint being the offshore jetty as the only permanent infrastructure requirement
- “Remote” in the sense that it is a sea-island structure in the bay with access only via water transport
- Minimal impact to landowners as it minimizes any pipeline extensions/expansions
- Within 1.5 miles of the Gas Networks Ireland natural gas transmission system for tie-in that is mostly laid on the sea floor (minimal impact to landowners)
- CRU-based analysis of entry point costs in 2019 showed the lowest cost entry tariffs for Irish gas customers for regasified LNG entering the gas network would be from Cork
- A floating facility (FSRU), that is a flexible asset and can be moved in 5, 10, or 15 years depending on the status of Ireland's energy transition
- Is a platform for reloading smaller LNG marine bunker vessels that can supply LNG as marine fuel to the shipping/maritime industry
- From Cork could support the decarbonization of the maritime industries in Dublin, Belfast, Bantry Bay and the Irish south and east coasts as well as the Irish Sea

Mitigation - Commercial/Contracting

Mitigation for the commercial and contracting risks, especially around gas supply requires discussions with the Irish downstream gas market, such as industrials or base load generations. Assessing the potential customers' interest in terminal capacity or long-term firm gas supply could mitigate the price volatility. It may be a portfolio of global upstream customers acquire the terminal capacity that provides global gas competition, or it may be that a third-party open access process for some of the capacity is required to be made available on a short-term basis²⁰. Having the LNG terminal in place does open various contracting and supply options for the Irish market.

²⁰ KNL has interest from multiple sellers: <https://lngprime.com/europe/kn-seven-firms-to-import-lng-via-lithuanian-fsru-in-2023/63558/>

Mitigation - Technology

In terms of mitigation for the technology risks, it has for the most part been addressed in the Report. There is a recognition that a floating regasification and storage unit be an asset consideration for energy security. As noted in the regulatory section response above, it provides a very small environmental footprint, and is flexible enough from an asset optimization standpoint, to be relocated in the future, should it no longer be required due to Ireland's energy transition. These facilities have been placed into 37 projects worldwide since 2010 and served projects and markets worldwide. They are currently the preferred solution across Europe, as the continent attempts to provide a quick and competitive solution to replace Russian gas supply²¹.

Country	Location	Project Type	Capacity (Mtpa)	Est. Start Date
Estonia/Finland	Paldiski	FSRU	1.8	Q4 2022
Finland	Hamina	On-Shore	0.9	Q4 2022
France	Le Harve	FSRU	Unknown	Q1 2025
Germany	Brunsbuettel	On-Shore	5.9	Q1 2026
Germany	Wilhelmshaven	FSRU	7.4	Q1 2023
Germany	Stade	On-Shore/FSRU	9.8	Q1 2026
Germany	North & Baltic Sea	FSRUs	12.6*	Q3 2024
Greece	Thessaloniki	FSRU	5.4	Q1 2025
Italy	Tyrrhenian & Adriatic Sea	FSRUs	7.4	Q1 2025
Latvia	Skulte	FSRU	3	Q1 2024
Netherlands	Eemshaven	FSRU	2.9	Q3 2022
Netherlands	Gate	On-Shore	5.9**	Q3 2022

Source: Various new reports and press releases from individual projects 2022

²¹ FSRU projects under development in Europe:
https://www.rigzone.com/news/europe_rushing_to_install_new_lng_import_facilities-29-aug-2022-170138-article/

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

Implementation of Gas Supply Mitigation Options

The mitigation options developed in the DECC paper all are tending to focus on the asset development side and are in and of themselves, reasonable options to address. The soundest of those in our experience is the floating storage & regasification unit option for all the reasons stated above.

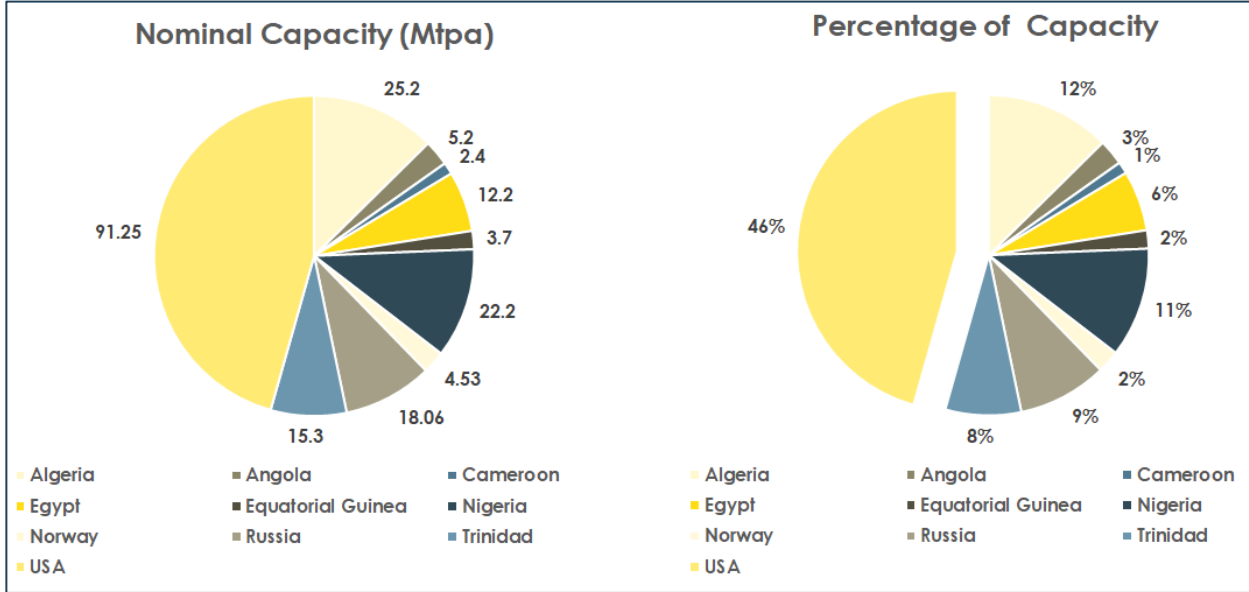
What does not appear to have been addressed is the actual gas supply and mitigation around this component of the value chain?

It appears from the Irish press that no matter what supply option, the Irish Government does not want US LNG based on the belief that hydraulic fracturing is somehow more damaging than traditional hydrocarbon extraction processes²². We would suggest that this position could potentially limit Ireland in its broad ambitions to acquire competitive LNG pricing and volumes, and is also potentially redundant inasmuch as Ireland will still receive natural gas from the UK, which given the UK's LNG import terminals are currently sourcing US LNG, and in addition the UK is considering lifting its ban on hydrocarbon extraction using hydraulic fracturing, Ireland could still be receiving natural gas from these extraction processes.

There has been voiced the legal option that Ireland would be unable to ban or restrict the importation of US LNG supply or fracked gas, due to restrictions around the EU single market²³. If Ireland were simply to look for supply from alternative liquefaction sources, then this would be possible. However, there could certainly be price & supply availability challenges simply because Ireland would be removing a supply source (the US) that accounts for almost 50% of the Atlantic Basin nominal LNG capacity.

²² Government opposition to "fracked gas" imported into Ireland: <https://www.irishexaminer.com/news/politics/arid-40821156.html>

²³ Ban not possible on US LNG: <https://www.businesspost.ie/news/legal-ban-on-importing-fracked-gas-not-possible-government-says/>

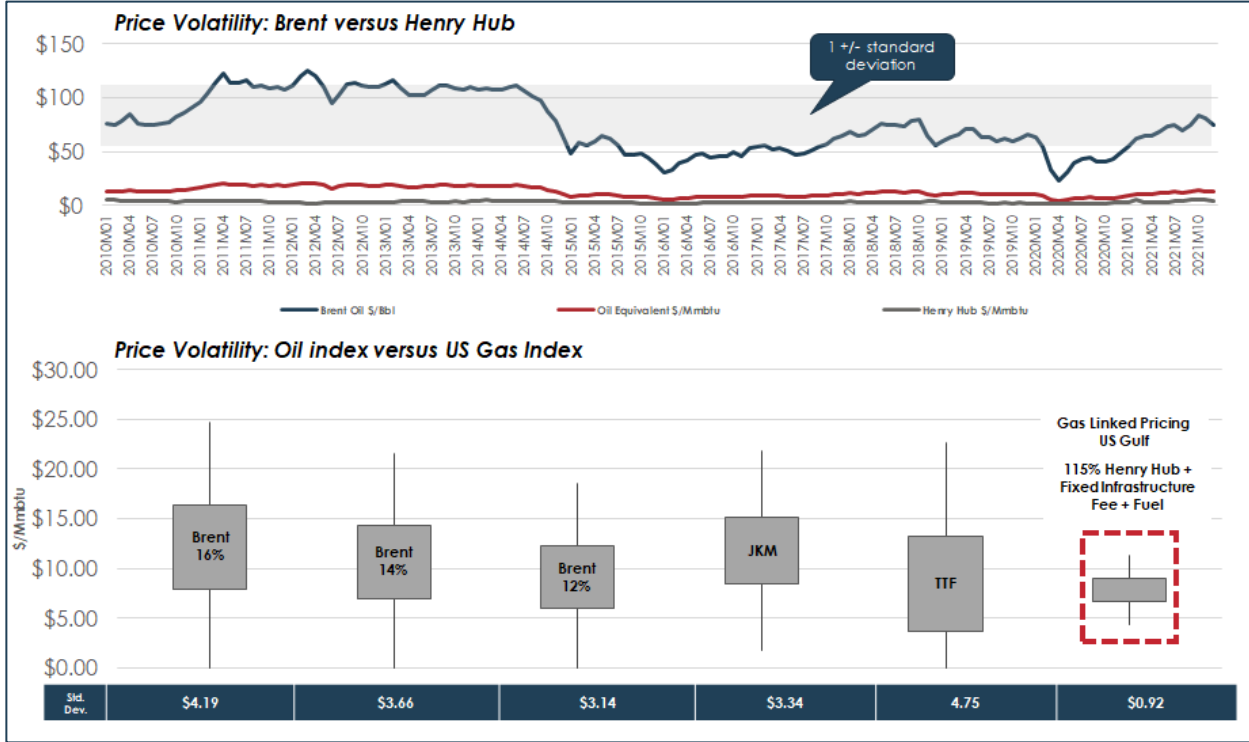


Source: GIIGNL Annual Report 2022

It is worth noting that US LNG has made progress in advancing improved options for LNG supply. The LNG terminal operators in the US Gulf have offered decarbonized LNG cargoes to customers through carbon capture and sequestration²⁴. In addition, the regulatory regimes around natural gas production and fracking is being advanced. The US Environmental Protection Agency (EPA) has recently announced new rules around methane leak from natural gas wells²⁵.

By removing the option of US LNG supply, this also potentially reduces the option of a price link to the US Henry Hub gas market. The US Henry Hub linked LNG price has not always been the least cost option, it has always been in general the least volatile and a lower cost option, especially over the long term.

²⁴ Venture Global Offers Decarbonized LNG Cargoes: <https://www.prnewswire.com/news-releases/venture-global-launches-carbon-capture-and-sequestration-project-301300871.html>
²⁵ New EPA Rues for Methane Leaks: <https://arstechnica.com/tech-policy/2021/11/epa-announces-rules-to-slash-methane-leaks-throughout-oil-and-gas-supply-chain/>



Source: PLNG research & World Bank Pink Sheets

Over the last 10 years, oil prices have proven to be almost five times as volatile as natural gas prices.

- Brent Crude standard deviation of \$26.17 / Bbl
- Henry Hub gas standard deviation of \$0.92 / MMBtu, or \$5.43 / Boe

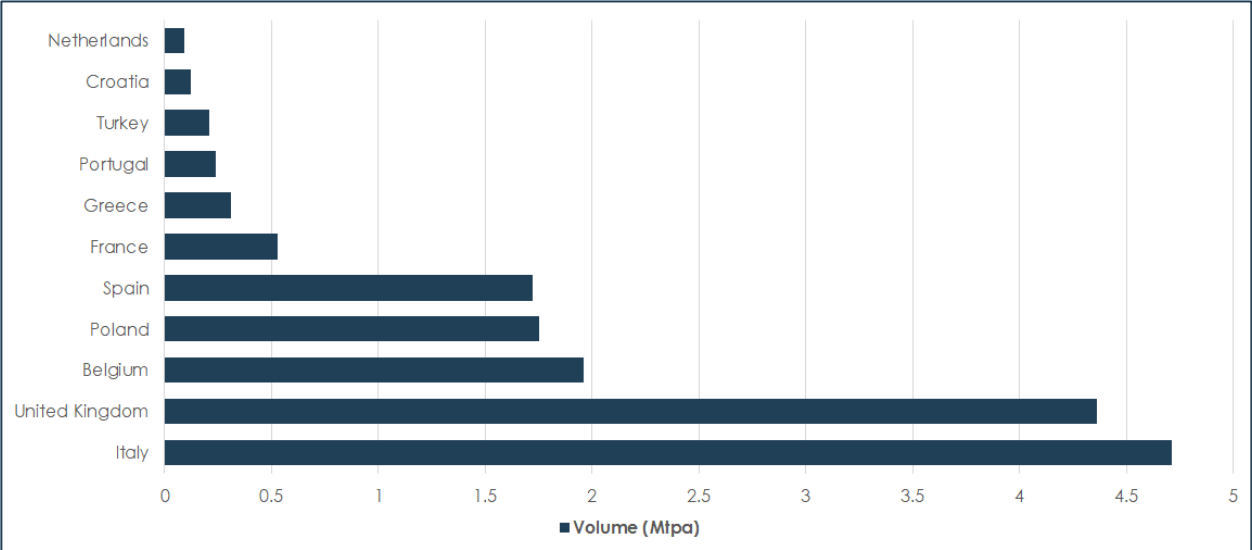
Linking LNG prices with U.S. Henry Hub natural gas rather than Oil provides greater cost certainty to LNG fuel buyers. To potentially remove this option from the Irish supply source mix, could impact the pricing and/or availability of gas supply.

If US LNG is off the table, then there are potential alternatives to supply Ireland with non-fracked LNG. Currently Qatar supplies approximately 77 Mtpa or about 23% of the global supply. Qatar has announced that it will be increasing its LNG production from the North Field. The North Field Expansion (NFE) development plan includes six mega liquefied natural gas (LNG) trains which is going to ramp up Qatar’s liquefaction capacity from 77 million tonnes per annum (Mtpa) to 126 Mtpa, which is approximately 64% production increase by 2027.

A self-imposed 12-year moratorium on further developing LNG extraction from the North Field was lifted in May 2021, allowing Qatar Petroleum (QP) to proceed with the North Field LNG Expansion, which will increase LNG production

in two phases. The first phase of the North Field project is expected to increase capacity by 43% from 77 million tons per annum (Mtpa) to 110 Mtpa by 2025. The second phase, called the North Field South Project (NFS), will further increase the production capacity from 110 Mtpa to 126 Mtpa, a total 64% increase by 2027.

This large increase in LNG production could certainly provide Ireland with a supply opportunity that is non-fracked gas. Europe's current supply from Qatar is shown in the chart below (Volumes delivered in 2021):



Source: GIIGNL 2022 Report

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

Demand Side Measures

It is our belief that if the suppl side policy and planning are sound, then all else being equal should provide a solid energy security foundation and a minimization of requirements on the demand side of the equation.

With Ireland's ambition to have a greater portion of the generation portfolio be renewable (wind, solar, etc.), there does need to be a sound understanding of the required backup generation development. As renewable energy has a lower capacity factor, then adequate backup generation to cover any capacity shortfall should be considered as part of the mix for the developers of the renewable assets. We assume the most straightforward support of this backup generation is gas-fired power assets. In conjunction with an LNG import

terminal, we believe that supports the energy security foundation, and the onus then is on planning for the generation portfolio mix and demand side management.

A recent example of a renewable energy developer attempting to decouple themselves from the generation deliverability risk, and place that risk with the downstream customers, can be seen in Dominion Energy's permitting requirements in Virginia, US. Dominion filed for approval for a 2.9 GW wind farm offshore Virginia, and to a) not be required to guarantee a level of performance, b) the ability to buy power off the open market if they failed to produce enough wind-generated electricity, and to have the costs they incur pass through to the customers (customers would have to pay for whatever power prices Dominion have to pay to secure the shortfall). Dominion essentially would be passing all of the risk onto the customers, and the price impact onto the customers. Dominion's clear cynical path was to avoid all of the uncertainty around backup generation and gas generation shortage in Virginia while leveraging off an effort to develop renewable energy sources. Fortunately, the Virginia State Corporation Commission (SCC), the state power generation regulatory body, required Dominion to guarantee a generation capacity factor of 42% deliverability over a three-year rolling average and to bear some of the power supply risk. Dominion has indicated that they will scrap the project if they do not get the ability to pass the risk on to the customer²⁶.

The takeaway from the Dominion challenge applicable to Ireland, is to ensure that there is enough generation capacity backing the renewable portfolio so that the end-users/customers are not unduly burdened by the performance limitations of the renewable portfolio, and the risks to performance and price are correctly allocated to the asset developers and not Ireland's electricity users.

²⁶ Dominion Energy Offshore Wind Project: <https://energynews.us/2022/09/28/advocates-want-guarantee-dominions-offshore-wind-project-will-live-up-to-its-promise/>