With or without you – the Ireland and GB gas systems

Energy Spectrum Ireland comment
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About the author

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Tom works on a range of aspects of the GB and Irish energy markets, helping clients evaluate and deliver their strategic goals. Tom has 10 years’ experience working across a range of energy roles at EDF Energy, AEA Energy and Environment, Ofgem and Origami Energy. His specialties include flexibility market (DS3), investment appraisal, energy policy and capacity markets.

At Cornwall Insight, Tom has

• Delivered Cornwall Insight’s I-SEM fundamental and project finance courses
• Supported a global institutional investor on energy supply and DSR due diligence
• Supported on the commercial due diligence on a number of battery storage deals
• Led the development of Cornwall Insight’s frequency response report
• Assisting investor in the acquisition of a power station in Northern Ireland
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On 1 March 2018 National Grid issued a Gas Deficit Warning (GDW) for the GB market. There was a predicted supply/demand imbalance due to the extreme weather conditions, high gas demand and low gas stocks in Europe. Failures at key gas infrastructure compounded the effect of this being the first winter during which Rough gas storage – which provided 70% of GB gas storage – was effectively offline.

GDWs were introduced in 2012, replacing Gas Balancing Alerts, and are issued in advance of or during a gas day when National Grid expects a significant supply/demand event, which instigates a material risk to the physical end-of-day balance. Following a GDW, the intention is that gas shippers should seek to balance their portfolio and be prepared to respond accordingly to any balancing action requests from National Grid through demand side action or trading on the On-the-day Commodity Market (OCM), the within day market created for gas balancing purposes in 1999. Whilst GB has had a number of similar alerts before 2012, this instance was the first GDW to be issued since their introduction that year.

Ireland can hardly be a passive observer when it comes to the GB gas market given the level of interconnection between the two markets. Gas Networks Ireland, who own and operate the gas network, reacted to the development in GB.

Figure 1: Networked Gas Consumption by Sector 2011-2016

Source: Cornwall Insight and Central Statistics Office / An Phríomh-Oifig Staidrimh
saying “there are currently no restrictions on gas supply to customers in Ireland”.

One

Historically, the level of indigenous gas production in Ireland has been limited. At times, the Scotland Northern Ireland Pipeline (SNIP) interconnector and the Moffat gas interconnector have imported around 95% of Ireland’s gas requirement and are currently limited to physical flow from GB to Ireland. This means that in the event of low demand and high gas indigenous production it is not possible to physically flow gas from Ireland to the GB market, limiting flexibility.

However, the Corrib gas field now supplies over 50% of Ireland’s gas demand and the Kinsale field also provides some supply, helping to insulate Ireland from the GB market fluctuations in supply and demand. Ireland like GB also has limited gas storage capacity. Kinsale gas field provides some seasonal storage, with some additional facilities proposed, but yet to be built.

Ireland’s existing gas fields will however eventually reach the end of their lives; the Corrib field is forecast to be depleted by the mid-2020s. This factor combined with a lack of new commercial discoveries of gas leads to the distinct possibility of the construction of the planned Shannon Liquified Natural Gas (LNG) terminal. Shannon project has planning permission for up to four LNG storage tanks each of 200,000 cubic metres capacity, becoming a critical strategic asset for meeting Irish gas demand. Likewise NextDecade have also proposed a liquid natural gas company (LNG) import terminal at the Port of Cork. The Port of Cork would receive liquid natural gas shipped from NextDecade’s planned Rio Grande LNG project in South Texas.

Despite the increased gas self-reliance and plans for LNG to add diversity, Ireland still has and will continue under current plans to have a strong dependency on the GB system. So events such as the recent GDW are, and will remain, very important for Ireland.

Mysterious ways

EU Regulation 994/2010/EC (“The Regulation”) mandates that EU Member States are required to implement measures to safeguard gas security of supply. As part of the regulation, the EU can assess the performance of member states through two standards – the supply standard and the infrastructure standard. The supply standard requires the following

- That the gas transmission system operator builds a gas network resilient for a 1 in 50 winter
- Suppliers book capacity to “protected” (typically domestic and SME customers, and customers providing essential public services) customers for a 1 in 50 winter, and
- Gas producers and storage operators comply with instructions of the National Gas Emergency Manager (NGEM) in an emergency, which may include injecting into the system during an emergency

The Infrastructure Standard is assessed by

Source: Gaslink National Development Plan 2013

Figure 2: Ireland – GB gas network

Source: Gaslink National Development Plan 2013
performing the N-1 calculation. The N-1 calculation removes the technical capacity of the single largest piece of gas infrastructure on a peak day with a view to determining whether the remaining gas infrastructure can meet 100% of peak day gas demand. To pass, the calculation must equate to 100% or more. Ireland currently cannot meet the Infrastructure Standard, meaning that after losing the single largest gas infrastructure the technical capacity of the remaining infrastructure cannot meet demand with demand side measures insufficient.

In order to pass the Infrastructure Standard, Ireland requested that the UK adopt a regional approach, which takes the island of Ireland and GB as one region for the assessment. The Commission for Energy Regulation (CER) and the Department for Business, Energy and Industrial Strategy (BEIS) published a Joint Preventative Action Plan in December 2016. Crucially, whilst this builds solidarity and regional cooperation, the intent is not to guarantee gas can be supplied to all consumer in both markets at the same time. The plan recognised there is “no guarantee of gas”.

Market incentives and differences in regulation will play a strong role in reality. Shippers in Britain who are short during a gas deficit emergency would be required by GB regulations to compensate firm customers whose load is interrupted. As the recent events demonstrate, within day prices in GB can also escalate very quickly. The control put in place by Ofgem under the gas Significant Code Review means GB shippers will have greater financial incentives to ensure continuation of gas supplies in GB. These incentives in GB could have a positive impact for the Irish gas market. However, there needs to be alignment with otherwise there is a risk of negative impacts on Irish gas system, and the behaviour of shippers in response to those incentives.

The action plans developed for the period of 2015 and 2018 identified the preventive measures to improve gas security of supply across both gas markets, with a set of non-market measures when market measures alone cannot guarantee supply. These actions include the following:

- **Market Based Supply Side Measures in Ireland** – market signals from the UK’s NBP should create pricing signals resulting in industrial customers opting not to consume gas (i.e. reducing demand)
- **Market Based Demand Side Measures in Ireland** – due to operational limitations on the electricity system, it would be too risky to have an uncontrolled fuel switch from gas fired generators to secondary fuel (i.e. oil). As such, a controlled fuel switch over a more prolonged period may be preferable
- **Non-Market Based Supply Side Measures in Ireland** – increased production is provided for in Ireland’s National Emergency Plan. Corrib can meet approximately 28% of Ireland’s peak day gas demand in 2018-19
- **Market Based Supply Demand Measures in Ireland** – fuel switching is a nonmarket based measure that could be used. Eirgrid indicated the risk of electricity networks tripping when
switching fuels that require a controlled switch over to secondary fuel. Eirgrid have indicated that the electricity system would require 30 hours to switch the 11 gas fired plants (running at peak) to their secondary fuel. This ramping down would require gas consumption equivalent to 60% of the overall peak day gas demand. In addition, daily metered customers, for example industrial users, could also provide demand side response to a potential emergency.

A joint action plan is certainly welcome, given that without indigenous gas supplies Ireland will always be reliant to some extent on GB market gas flows. Furthermore, the current joint action plan only runs until the end of 2018.

Stuck in a moment

A new action plan will become far more challenging with Brexit on the horizon. It is not yet clear whether or how the UK government will wish to treat the EU regulation, or how they will entreat with Ireland on gas as a result. Common sense suggests continued cooperation, but politics could get in the way. Of course there needs also to be final settlement on how the GB gas market interacts with continental Europe. Tariffs on gas imports are unlikely, but divergence could still drive changes in flows.

There are also other challenges on the horizon being driven by the new Irish Integrated Single Electricity Market (I-SEM). The gas demand of the power sector equated to approximately 33,536GWh annual demand or 62% of total networked gas consumption in 2016. The introduction of a new capacity remuneration mechanism and the upcoming T-4 auction for delivery year 2022-23 to take place in September 2018, and the impact on gas demand from the power sector. This is likely to lead to different outcomes for the Irish gas demand in the future, and could see power sector gas demand increase.

Coal closures will potentially lead to replacement with new Combined Cycle Gas Turbines, and development of lower capital cost replacements such as gas reciprocating assets and Open Cycle Gas Turbines is entirely possible under new flexibility services (DS3) to meet peaking system response and reserve requirements emerging from more renewable generation.

The intention of building a new electricity interconnector to France, the so-called Celtic Interconnector, offers the benefit of allowing for reduced reliance on gas for power generation in Ireland at times of stress in either the Irish or GB gas markets, whilst not needing to import what is likely to be high priced electricity from GB if their gas market is under pressure. But this is likely to only provide for 700MW of capacity – less than the combined electricity interconnection with the GB market currently – and is yet to have its business case approved by the Commission for Regulation of Utilities (CRU). It is by no means a substitute for Ireland’s current energy relationship with Britain.

In summary, Ireland’s gas sector may be more self-reliant, but it is still impossible to consider it as completely independent from its GB peer. The political backdrop of Brexit raises questions about the nature of future cooperation to help Ireland comply with EU regulations that are unlikely to be a priority for the UK government and thus not resolved quickly, even if physical market dynamics and will most likely lead to some form of continuation of the status quo in the end. Increased indigenous demand from new gas generation stations is a distinct possibility and could place greater pressure on the need for self-sufficiency, particularly with GB gas becoming less cushioned by long term strategic storage at Rough.

There are questions around the potential need for a gas pipeline from France to Ireland although the natural gas flows across Europe is probably not suited to this. So new LNG facilities such as that coming through at Shannon or Cork could be the start and not the end of Ireland’s excursion into this expanding global market, with or without Brexit.

However, competition for existing LNG cargoes is relatively intense, and as GB discovered in this recent period of gas imbalance, the price swings when you are reliant on international gas volumes to meet demand can be phenomenal.
Electricity market rules across the island of Ireland are changing and the development of the Integrated Single Electricity Market (I-SEM) provides opportunities and challenges for energy market participants.

This course will help you understand the opportunities that the new arrangements can deliver by introducing the key concepts underpinning the system and providing detailed insight into the factors affecting businesses.

“Very good, both lecturers had a wealth of knowledge” – Arevon Energy

To book or for more information, contact Richard Wetherall

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