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An Coimisiún um Rialáil Fuinnimh

National Preventive Action Plan - Gas

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Ireland

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Acronyms

AGI: Above Ground Installation

BGN: Bord Gais Networks

CCDF: Complementary Cumulative Distribution Function

CER: Commission for Energy Regulation

DCENR: Department of Communication, Energy & Natural Resources (Ireland)

DECC: Department of Energy & Climate Change (Great Britain)

DETI: Department for Enterprise, Trade & Investment (Northern Ireland)

EU: European Union

GB: Great Britain

IC: Interconnector

JRC: Joint Research Centre

LNG: Liquefied Natural Gas

NDM: Non Daily Metered

NGU: Natural Gas Undertaking

NTS: National Transmission System

PSO: Public Service Obligation

SNIP: Scotland to Northern Ireland Pipeline

SNP: South North Pipeline

SWSOS: South West Scotland Onshore System

TSO: Transmission System Operator

UK: United Kingdom

UREGNI: Utility Regulator for Northern Ireland

1 Introduction

Pursuant to the implementation of EU Regulation 994/2010 (“the Regulation”), Member States are required to implement measures to safeguard security of gas supply including, inter-alia, the development of a biennial Preventive Action Plan. Therefore, the CER, as the designated Competent Authority for Ireland, has prepared this National Preventive Action Plan (hereafter in this document referred to as the Preventive Action Plan),¹ in accordance with Article 4 and 5 of the Regulation.

Essentially, the primary tenet of the Preventive Action Plan is risk management, as the Regulation requires that Member States develop preventive measures, to reduce the risk to gas supplies, and in particular to safeguard supplies to protected customers. Consequently, the preventive measures identified within this Preventive Action Plan, are in response to the risks identified within Ireland’s Risk Assessment document, which was submitted to the European Commission in June 2014, in accordance with Article 9 of the Regulation.

In order to ensure compliance with Article 5 of the Regulation, Ireland’s Preventive Action Plan contains:

- i. the results of the Risk Assessment;
- ii. the measures, volumes, capacities and the timing needed to fulfil the infrastructure and supply standards;
- iii. obligations on Natural Gas Undertakings (NGUs) and other relevant bodies;
- iv. other preventive measures to address the risks identified in order to maintain gas supply to all customers (where possible);
- v. mechanisms to be used for cooperation with other Member States for preparing and implementing joint Preventive Action Plans;
- vi. information on existing and future interconnections; and
- vii. information on Public Service Obligations (PSOs) regarding security of gas supply.

Additionally, in terms of preparing Ireland’s Preventive Action Plan, cognisance was given to the Regulation’s requirements that the Preventive Action Plan take account of ENTSOG’s 10-year network development plan for Europe, and the emphasis attached to the utilisation of market based security of gas supply measures.

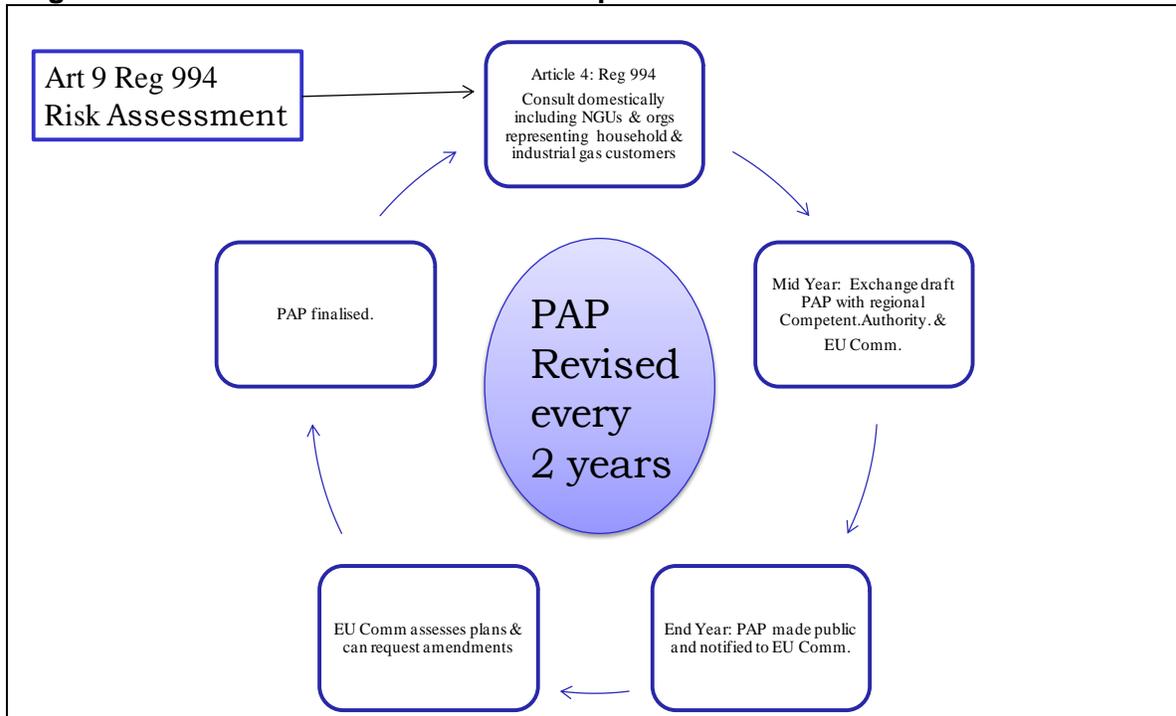
In accordance with the Regulation, Ireland’s Preventive Action Plan will be amended biennially, as illustrated in Figure 1.1 based on:

- an updated Risk Assessment, which reflects market developments (both at a national, regional and European level);
- consultation with industry stakeholders (i.e. NGUs, and organisations representing the interests of household and industrial gas customers); and

¹ In terms of application, Ireland’s Preventive Action Plan should be viewed as an evolving document, which is designed to mitigate manageable risks to security of gas supply.

- interactions with regional Competent Authorities (i.e. DECC), and the European Commission.

Figure 1.1: Preventive Action Plan Development Process



1.1 Structure of Preventive Action Plan

Ireland's Preventative Action Plan document is structured as follows:

- Section Two: provides an overview of the Irish gas market, which includes information on the structure of Ireland's gas network (including current and future interconnections).
- Section Three: provides a high level overview of the results of Ireland's Risk Assessment.
- Section Four: examines potential measures to fulfill the infrastructure and supply standards, as required under the Regulation.
- Section Five: provides a synopsis of obligations on relevant bodies and NGUs operating within the Irish market.
- Section Six: summary.

2 Irish Gas Market: An Overview

The objective of this section is to provide an overview of the Irish gas market. Specifically, this section focuses on Ireland's gas infrastructure, and the supply and demand for gas, thus providing foundations for interpreting Ireland's Risk Assessment, and the Preventive Action Plan.

2.1 Overview of Ireland's Gas Network

Gas supply in Ireland is delivered via a network of approximately 13,309km of pipelines. The integrated supply network is sub-divided into 2,149km of high pressure sub-sea and cross-country transmission pipe, and approximately 11,160km of lower pressure distribution pipe connecting customers to the system (see Figure 2.1 for further details).

In terms of obtaining gas supplies, the Irish gas system conveys gas from two Entry Points, namely:

- Moffat (Western Scotland); and
- Inch (Southern Ireland).

The Moffat Entry Point connects the Irish natural gas system to National Grid's gas system in Great Britain (GB), and allows for the importation of GB gas to Ireland, via two sub-sea interconnectors and an onshore pipeline in Scotland.

From the connection with the National Grid system at Moffat, the Scotland based onshore system consists of:

- a compressor station at Beattock, which is connected to Brighthouse Bay by two pipelines from Beattock to Cluden;
- a single pipeline from Cluden to Brighthouse Bay; and
- a compressor station at Brighthouse Bay, which compresses the imported gas into the two sub-sea Interconnectors.²

From Brighthouse Bay there are two pipelines connecting Ireland to the GB gas network (i.e. Interconnector 1 (IC1) & Interconnector 2 (IC2))³. IC1 and IC2 are connected to the onshore Irish system north of Dublin at Loughshinny and Gormanston respectively.

At Ireland's second entry point, Inch connects the Kinsale and Seven Heads gas fields and the Kinsale storage facility to the onshore network.

Ireland's onshore gas system consists of a ring-main system between Dublin, Galway and Limerick, with cross-country pipelines running from the ring-main system to Cork, Limerick, Waterford, Dundalk and numerous regional towns. Additionally, the gas system is linked to the Corrib terminal in Mayo and also includes a compressor station at Midleton, Co. Cork.

² Prior to reaching the Brighthouse compressor station, an offtake station at Twynholm supplies gas to Northern Ireland, via the Scotland to Northern Ireland natural gas transmission pipeline (SNIP).

³ A sub-sea spur connects the Isle of Man from IC2.

Figure 2.1: Overview of Ireland's Gas Network



Source: [ENTSOG](#)

With reference to gas connections, the Irish gas system connects to the UK gas system at three points. There is one physical entry from GB at Moffat, and two physical exits to Northern Ireland system at Twynholm and Gormonston:

- **Moffat:** Moffat is Ireland's primary gas entry point, which connects the National Transmission System (NTS) in GB and Gaslink's transmission system in Ireland. This entry point between GB and Ireland is unidirectional, as gas can only flow physically from Scotland to the three markets downstream (i.e. Ireland, Northern Ireland, and the Isle of Man). There is also a facility to virtually reverse flow gas from Ireland to GB at this point.
- **Twynholm:** Gas is delivered from Moffat to the Northern Ireland gas system at Twynholm, where the gas is delivered to Northern Ireland customers via the Scotland to Northern Ireland Pipeline (SNIP). The SNIP is owned and operated by PTL, which is a subsidiary of Mutual Energy Limited.

- Gormonston: The South North Pipeline (SNP) is a gas transmission pipeline (which forms part of Northern Ireland's transmission system) that spans both the Irish and Northern Irish jurisdictions, and facilitates physical gas flows from GB (from Moffat), along IC2 into the SNP for delivery to Northern Ireland (NI). However, the SNP does not facilitate gas flows from the Irish onshore network to NI (and vice versa). The SNP is commercially operational, and includes a virtual reverse flow facility where gas can be virtually reversed flowed from NI through the Irish subsea system to Moffat.⁴

2.2. Future Development of Gas Interconnections

Article 6(5) of the Regulation stipulates that Transmission System Operators (TSOs) shall enable permanent bi-directional physical capacity on all inter-connections points between Member States by the latest 3rd December 2013 except:

- in the case of connections to production facilities, to LNG facilities and to distribution facilities; and
- where an exemption has been granted in accordance with Article 7.

In terms of enabling physical reverse flow at Moffat, Ireland has notified DECC and the EU Commission of the request for an exemption under Article 7 of the Regulation. The rationale for this decision is based on findings by Gaslink (the TSO on the Irish side of the flange) and National Grid Gas (the TSO on the GB side of the flange). Additionally, Ireland's 2014 National Risk Assessment, which was submitted to the EU Commission on the 3rd June 2014, found no requirement to enable bi-directional capacity at Moffat. However, Ireland's 2014 Risk Assessment noted that developments regarding the potential for physical reverse flow will be continued to be monitored by the Competent Authorities.

With reference to the SNP, the relevant TSO (i.e. BGE UK) submitted a request for an exemption under Article 7 of the Regulation, on the basis that the TSOs have not received any formal requests from market participants requesting physical reverse flow on the SNP. The Competent Authorities concerned did not object to the granting of this exemption, but will monitor the situation through the development of the biennial Risk Assessments.

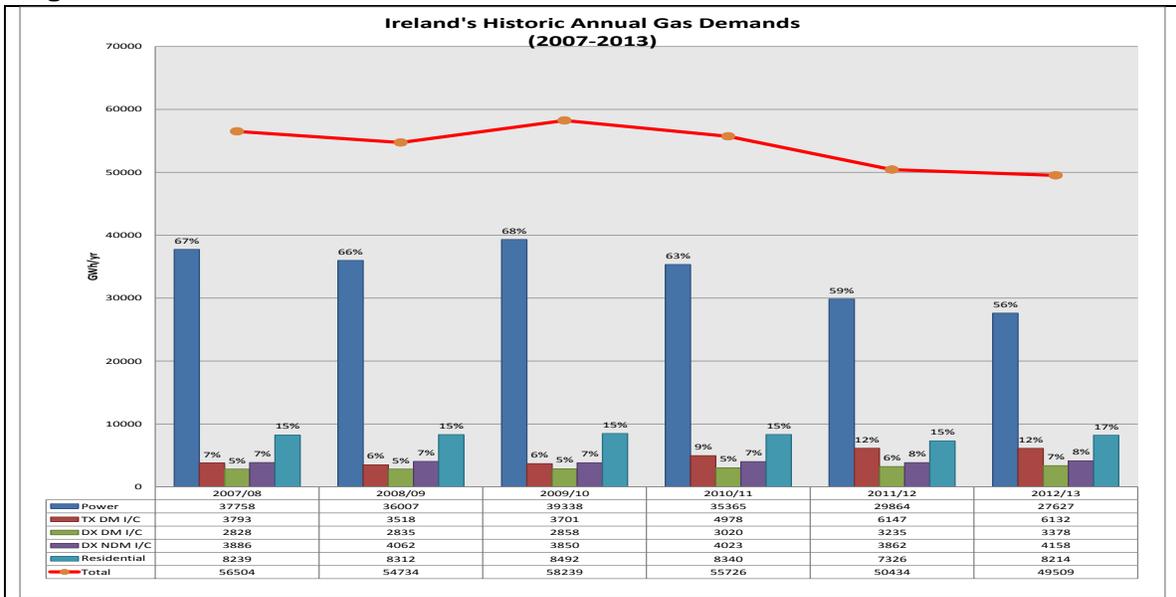
⁴ A Virtual Reverse Flow service can be implemented at an interconnection point where gas nominated to flow backwards is less than that nominated to flow in the opposite direction. In this case, the TSO can offer capacity as a 'counter flow' or "backhaul" on a 'virtual' basis in the other direction. The gas is not actually moving in the opposite direction, but the gas flow requested in the counter flow direction is subtracted from the gas flowing in the forward direction. This is referred to as "netting". Counter flow transport can be offered up to the maximum of the physical flow, however generally only on an interruptible basis, as a TSO cannot guarantee the shipment of the counter flow gas under all circumstances.

2.3 Gas Demand

In 2012, natural gas accounted for 30% of Ireland’s Total Primary Energy Requirement (TPER),⁵ with approximately 56% of natural gas used for electricity generation. Following energy transformations, natural gas accounted for approximately 16% of Ireland’s Total Final Energy Consumption (TFEC) in 2012.⁶

With reference to historical annual gas consumption, Ireland has experienced a decrease in gas consumption since its peak in 2009/10. The recent decline in annual gas consumption can be attributed to a myriad of factors, including increased wind generation, weak economic growth, relatively cheap coal prices and energy efficiency initiatives. Figure 2.2 provides a breakdown of Ireland’s historical total annual gas consumption by customer segment.

Figure 2.2: Ireland’s Historic Annual Gas Demand⁷



Ireland’s recent peak day gas demand has declined relative to its all-time peak of 258.5 GWh/d in 2010/11 (see Figure 2.3). The decline in peak day gas demand can be attributed to 1-50 weather events in 2010/11, which resulted in Ireland experiencing record peak day gas demands. It should be noted that the Irish power sector demand is not particularly weather sensitive, as its demand is driven by relative fuel-prices. Additionally, an increase in wind generation has impacted on the quantity of gas used for power generation. This impact is expected to become more significant as Ireland strives to meet its target of 40% renewables by 2020. In contrast to the power generation

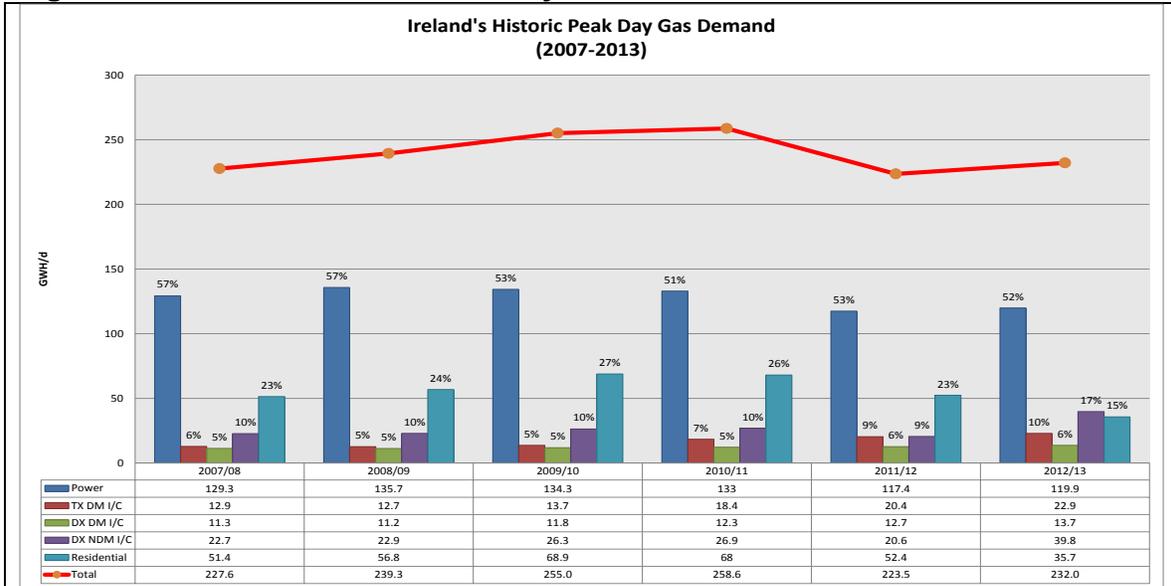
⁵ TPER is the total requirement for all uses of energy, including energy used to transform one energy form to another, and energy used the final consumer. Oil accounts for Ireland’s largest source of energy, and accounted for approximately 45% of Ireland’s TPER in 2012. [View SEAI's Energy in Ireland Key Statistics 2013 for further information.](#)

⁶ TFEC is the energy used by the final consuming sectors of industry, transport, residential, agriculture and services. It excludes the energy sector, such as electricity generation and oil refinery.

⁷ Source: Gaslink’s 2013 Network Development Plan (pg59).

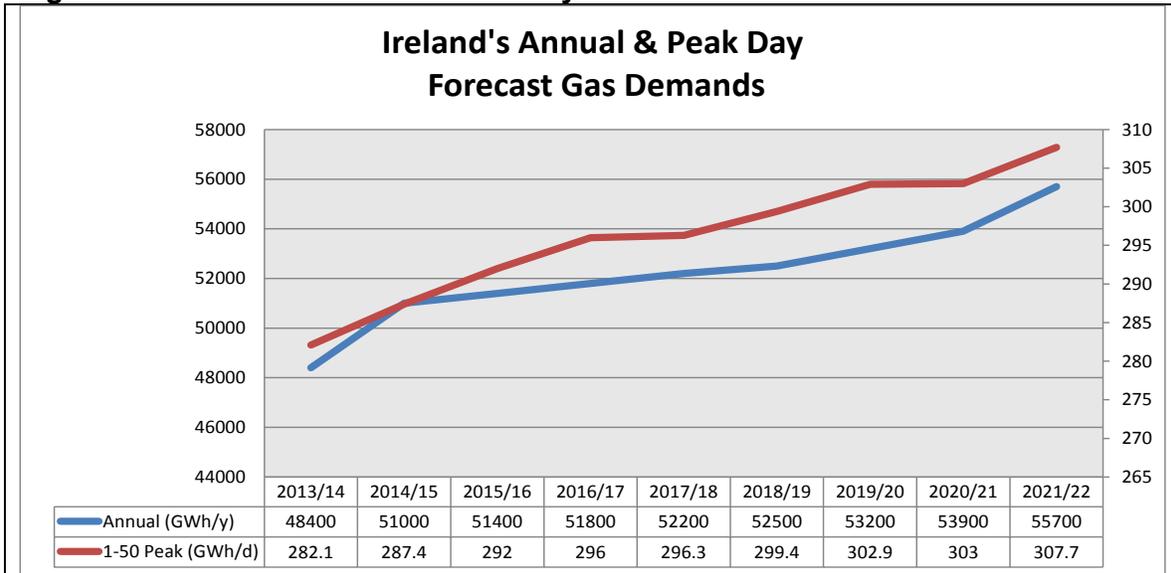
sector, the residential sector is particularly weather sensitive, as the gas is used for space heating purposes.

Figure 2.3: Ireland’s Historic Peak Day Gas Demand⁸



With reference to forecast gas demands, Gaslink’s 2013 Network Development Plan noted that annual gas demands are forecasted to increase by 12% over a ten year period, with peak day gas demands increasing by 8%. Figure 2.4 illustrates forecasted growth rates in annual and peak day gas demand up to 2021/22.

Figure 2.4: Ireland’s Annual & Peak Day Forecast Gas Demands⁹



⁸ Source: Gaslink’s 2013 Network Development Plan (pg59).

⁹ Ibid (pg 62 & 63).

2.4 Gas Supply

In 2012/13, the Moffat entry point supplied approximately 96% of Ireland's annual gas demand and 88% of peak day demand, with the Inch entry point satisfying the remaining annual and peak day gas demand. Within the next two years, it is anticipated that Ireland's dependence on gas imports from GB will decrease due to the commissioning of a third entry point (i.e. Corrib, Co. Mayo).¹⁰

According to Gaslink's 2013 Network Development Plan, gas production from the Corrib gas field is expected to meet approximately 47% of annual system demands over the first two years of operation, and 25% of peak day gas demands. However, Corrib has a short production profile and is expected to rapidly deplete within 6 years of its commencement. Therefore, the initial maximum daily supply at Corrib (forecasted to be 92.7 GWh/d) is expected to decline to 52.1 GWh/d. In the event that other sources of gas supply do not materialise (e.g. Shannon LNG), Ireland is likely to remain dependent on gas imports from Great Britain in the medium term.

¹⁰ The gas field is located off the northwest coast of Ireland, and is currently being developed and expected to start commercial production in 2015.

3 Results of Ireland's Risk Assessment

In June 2014, Ireland submitted the results of its Risk Assessment to the European Commission, which focused on Ireland's ability to meet:

- the demand for gas in the event of failure of the largest piece of infrastructure;
- the demand of "protected customers".¹¹

Consequently, the objective of this section is to provide a précis of Ireland's Risk Assessment in terms of identifying the issues that need to be considered in the Preventive Action Plan.

3.1 Infrastructure Standard

The Infrastructure Standard is based on the N-1 Criteria, which describes the ability of the technical capacity of the gas infrastructure to satisfy total gas demand in the event of disruption of the single largest gas infrastructure during a day of exceptionally high gas demand occurring with a statistical probability of once in 20 years.

In terms of Ireland's Risk Assessment, total disruption to the gas supply from the Moffat entry point constituted Ireland's 'largest gas infrastructure' in relation to gas supply, and was therefore used as the basis for calculating Ireland's N-1. The results of Ireland's N-1 calculation indicated an N-1 result of 41%. Even with Corrib on stream in October 2015, Ireland will not meet the N-1 Infrastructure Standard.

In order to meet the N-1 criteria (by the 3rd of December 2014), Ireland requested the UK to adopt a regional approach to N-1, in accordance with Article 6(3) of the Regulation. Following the request, DECC, as the Competent Authority for the UK has agreed to a regional approach. This has resulted in the UK and Ireland submitting a Joint Risk Assessment and a Joint Preventive Action Plan to the EU Commission.

3.2 Supply Standard

Under Article 8(1) of the Regulation, the CER, in its role as the Competent Authority, is required to ensure that NGUs, which it identifies, take measures to ensure gas supply to protected customers in the following cases:

- i. extreme temperatures during a 7-day peak period occurring with a statistical probability of once in 20 years;
- ii. any period of at least 30 days of exceptionally high gas demand, occurring with a statistical probability of once in 20 years; and
- iii. for a period of at least 30 days in case of the disruption of the single largest gas infrastructure, under average winter conditions.

The Risk Assessment confirmed Ireland's current ability to meet the three criteria under Article 8(1), assuming Corrib coming on stream. Table 3.1 provides a breakdown of Protected Customers Gas Demands/Volumes and the supply capacity required.

¹¹ Protected customers means all household customers and small businesses connected to the gas distribution network, and in addition all hospitals, nursing homes, retirement homes and high security prisons

Table 3.1: Protected Customers Gas Demands/Volumes¹² & Capacity Required¹³

Article 8 (Supply) - Regulation 994/2010	Part i	Part ii	Part iii
	(mscmd - 7days)	(mscmd - 30days)	(mscmd - 30days)
Demand/Volume	63	270	191
Supply Capacity Required	63	270	191
Supply Capacity Available	303	1,298	369
Meets Requirement	Yes	Yes	Yes

For clarity, it should also be noted that Ireland does not currently envisage increasing the supply standard beyond the 30 day period. The obligations that the CER has placed on undertakings in relation to Article 8 of the Regulation to protect supply to protected customers are as follows:

- An obligation on the TSO to build network for a 1-50 winter. Consequently, TSO investment in Ireland is triggered to meet 1-50 gas demands (if the investment trigger was based on a 1-20, investment could be delayed).
- An obligation on all suppliers to book capacity at the exit for protected customers for a 1 in 50 winter.¹⁴ Under this arrangement, Protected Customers book and pay for the appropriate amount of capacity based on a 1-50 winter. The actual gas flows on the peak day will, inter-alia, depend on the weather. In addition, when a protected customer (i.e., the NDM sector) switches supplier their 1 in 50 capacity booking is also transferred with them to the new Supplier and thereby retaining the 1 in 50 capacity booking requirement for such customers. Additionally, suppliers are obliged to nominate gas flows against this capacity. The transporter advises each shipper of how much gas to nominate based on forecasts of their protected customer demand for that day. The shipper is obliged to nominate (i.e. deliver) that quantity of gas. If they do not do so they must pay scheduling and shrinkage charges in addition to the balancing charges.¹⁵

¹² Protected Customer gas demands are based on a 1-50 demand forecast. The use of the 1 in 50 demand forecast presents a more conservative analysis than the use of a 1 in 20 as per the Regulation. Consequently, 1 in 50 year Non Daily Metered (NDM) demands are approximately 6% higher than the demands for a 1 in 20 year event. As the 1-50 obligation on suppliers refers only to capacity and does not affect commodity, the CER is of the view that this obligation complies with Article 8(2) of Regulation (EU) 994/2010. Furthermore, the CER is of the view that the higher 1-50 standard does not have a material negative impact on the GB gas market, given that Irish gas exports from GB account for only approximately 5.7% of GB's 1-20 peak day gas demand (ref 2014 Joint Risk Assessment between UK & Ireland).

¹³ Supply capacity required is based on the assumption that level of supply required is equivalent to the level of system demand, i.e. the system is in balance.

¹⁴ The TSO calculates the capacity requirements for the protected customers (on a per shipper basis) and charges the shipper for this capacity. This is required by the Code of Operations. If the shipper does not pay the charges this would be reported to the CER as it would be a breach of the Code of Operations.

¹⁵ The TSO will bill the shipper for scheduling, shrinkage and balancing charges. If the Shipper does not pay the charges, it would be a breach of the Code of Operations and the CER would be informed.

- An obligation on all shippers to balance the gas offtakes of their customers with the gas inputs into the system. A Shipper is incentivised to ensure that there is enough gas to meet its customer's demand through the application of imbalance penalty charges under the Code of Operations.
- Gas Producers and storage operators are obliged to comply with instructions of the National Gas Emergency Manager (NGEM) in an emergency, which may include injecting into the system during an emergency.

3.3 Internal and External Hazards

Given the importance attached to the Moffat entry point, Ireland's Risk Assessment examined in more detail particular failure modes (i.e. internal system hazards) that apply from the Moffat entry point to on-shore Ireland. Additionally, the Risk Assessment considered other failure modes including loss of Bellanaboy, Kinsale Storage and the SNIP. Ireland's 2014 Risk Assessment also considered external hazards (i.e. natural and man-made events), and detailed the relevant preventive measures within the National Risk Assessment.

3.4 Risk of Loss of Supply from GB and Outside of EU

Following its gas Significant Code Review (SCR), Ofgem is implementing provisions to enhance GB's gas security of supply and minimise the probability of a gas supply deficit in GB. Specifically, Ofgem have decided to sharpen the incentive on gas shippers to enhance security of supply in GB by reforming the gas cash-out mechanism in an emergency (i.e. by implementing dynamic cash-out prices).¹⁶ Therefore, GB shippers who are short during a gas deficit emergency would be required to compensate firm customers whose load is interrupted.¹⁷ As a result, GB gas shippers will have greater financial incentives to ensure gas supplies in GB.

Given Ireland's reliance on the GB market for gas supplies, the gas SCR will also have a positive impact for the Irish gas market in that it should decrease the probability of a gas deficit in GB. However, there is also the potential for a negative impact depending on commercial incentives in Ireland relative to those in GB, and the behaviour of shippers in response to those incentives. CER will continue to monitor these developments and any issues identified will be raised at the UK Ireland Emergency Group Forum (see Section 4.4 for further details).

Ireland's 2014 Risk Assessment also considered the impact of a gas supply interruption to the EU from third countries. In order to assess the impact of such an interruption, it was necessary to identify the sources of gas that enters the GB gas market (given Ireland's dependence on gas supplies from GB). Following an analysis of GB's gas

¹⁶ In GB, shippers pay imbalance (cash-out) charges if they do not take the same amount of gas off the system as they put in. If the system is substantially short, the supply of available gas would be insufficient to meet demand and a Gas Deficit Emergency would be declared. Prior to the gas SCR, cash-out-charges were frozen during a gas supply emergency (i.e. Stage 2), which potentially reduces the incentive on gas shippers to bring gas to GB, thereby undermining GB's gas security of supply.

¹⁷ The cost of network isolation is priced at the estimate of a domestic consumer's value of lost load (VoLL) - £14 per therm. The gas SCR also permits a demand side response.

supplies, Ireland's Risk Assessment indicated that a disruption of gas supplies from a country outside the EU does not appear to impose any significant risk to gas supplies to the UK, and by extension gas supplies to Ireland. However, an interruption of gas supplies from a third country can impose indirect effects to Ireland through an increase in NBP gas prices.

4 Preventive Measures

In order to ensure compliance with the infrastructure standard, this section outlines the preventive measures that can be undertaken, in terms of ensuring gas security of supply. Consequently, this section discusses the following:

- market based measures;
- non-market based measures;
- operational and infrastructure improvements;
- interactions between gas and electricity sectors; and
- regional cooperation.

4.1 Market Based Measures

Annex II of the Regulation identified a non-exhaustive list of market based supply side and demand side measures (see Table 4.1) that the relevant Competent Authority shall take into account in order to improve security of gas supplies.

Table 4.1: Market Based Measures

Supply Side Measures	Demand Side Measures
Increased production flexibility	Fuel switching
Increased import flexibility	Use of interruptible contracts
Facilitating the integration of gas from renewable energy sources	Voluntary firm load shedding
Commercial gas storage	Increased efficiency
LNG terminal capacity	Increased use of renewable energy sources
Diversification of gas supplies	
Reverse flows	
Coordinated dispatching by TSO	
Use of long-term and short term contracts	
Investment in infrastructure	
Contractual arrangements to ensure gas supply	

4.1.1 Market Based Supply Side Measures

With reference to market based supply side measures, Ireland has limited production storage capability which enters the system from the Kinsale gas fields via the Inch entry point. It is clear from the market operation that suppliers react to market signals (i.e. high NBP prices) by increasing supplies from these indigenous sources. In the cold periods of January and December 2010 a combination of production and storage gas from Kinsale contributed 16% of Ireland total demand. Without this source of gas, the Moffat entry point would have been strained and unable to deliver the gas required to meet the demand. Additionally both interconnectors from Moffat (IC1 and IC2) were required to be in operation to deliver the quantities of gas required to meet Irish demand.

Gas from renewable resources (e.g. biogas) is still in its infancy in Ireland and is used mainly for electricity production. However, it is considered that this could play a role in

diversity of gas supplies in the future. To date, the CER has consulted on the requirements for injection of biogas into the grid (CER/13/209 – Biogas Injection into the Natural Gas Grid), and intends to issue a conclusion paper within the coming months. In the meantime, the CER has been working with Gaslink to put in place the technical and regulatory measures to allow direct connections of biogas to the gas grid

Given Ireland geographical location, on the periphery of Europe, measures such as reverse flows and coordinated dispatching are not feasible supply side market based measures. Furthermore, the use of long term and short term contracts do not protect Ireland against low supply in the UK, or major infrastructure risks.

4.1.2 Market Based Demand Side Measures

With an average of 56% of gas in Ireland being used for power generation in 2012, Ireland has always relied on fuel switching as a supply-side measure for managing the gas system and protecting smaller, vulnerable and priority gas customers. Recently, the CER consulted on whether fuel switching could be introduced for power stations as a demand-side measure. However, EirGrid, the electricity TSO, was strongly opposed to the introduction of fuel switching in the interests of safeguarding the power system. They contended that fuel switching should only be considered as an emergency response measure. This should continue to be co-ordinated by the gas and electricity system operators as there is an increase in the probability of electricity power outages due to fuel switching. Specifically, EirGrid advised that 'market-driven, uncoordinated change-over to secondary fuel would represent a significant and unnecessary risk to the supply of electricity to customers'. Accordingly, in the short term, and until market-based fuel-switching mechanisms have been fully assessed, fuel-switching of power stations is not being taken into account by CER as a market based demand side measure.

With reference to interruptible contracts, Article 14 of Regulation 715 of 2009 requires that transmission system operators provide both firm and interruptible third-party access services. Consequently, the CER has consulted on introducing an interruptible capacity product at entry and exit points. In respect of interruptible at exit, there was no great support for this product, from respondents to the consultation. Further, given that capacity is not congested at transmission exit, the risk of interruption is very low and thus the difference in price between a firm and interruptible exit capacity product would be negligible. Thus, the market demand for such a product at exit would be negligible. Therefore, the CER does not propose introducing an interruptible product at exit. However, in respect of Interruptible at entry, the CER introduced an interruptible capacity product at the Moffat entry point, as required under Regulation 715/2009.

4.2 Non-Market Based Measures

Annex III of the Regulation identified non-market based supply side and demand side measures (see Table 4.2) that can be utilised to enhance gas security of supply.

Table 4.2: Non-Market Based Measures

Supply Side Measures	Demand Side Measures
Use of strategic gas storage	Enforced fuel switching
Enforced use of stocks of alternative fuels	Enforced utilisation of interruptible contracts
Enforced use of electricity generated from sources other than gas	Enforced firm load shedding
Enforced increase of gas production levels	
Enforced storage withdrawal	

Fuel switching represent the most immediate non-market based measures that can be utilised to ensure gas security of supply.¹⁸ Power stations in Ireland comprise 56% of the gas demand and can be instructed by EirGrid to run on a secondary fuel in order to prevent or respond to a gas emergency situation.

Arrangements are currently in place, which ensure that gas generators in Ireland are able to switch from their primary fuel to their secondary fuel while operating continuously and run on their secondary fuel for up to 5 days. The secondary fuel capability includes the following measures:

- Electricity generating plants whose primary fuel is gas are required to be able to run on a secondary fuel;
- Such plants must also ensure that sufficient stocks of secondary fuels are held on site;
- Electricity generating plants whose primary fuel is not gas (such as oil and coal fired plants) are required to hold additional primary fuel in storage; and
- EirGrid monitor the capability of generators and have commenced a schedule of periodic planned tests.

Daily metered customers could also provide demand side response to a potential emergency. Other non-market based measures outlined in Table 4.2 including increased production and storage withdrawal are provided for in Ireland's National Emergency Plan. With reference to production, Corrib can meet approximately 40% of Ireland's peak day gas demand in 2015/16 and may have the potential for increased output in an emergency situation.

It should be noted also that the second interconnector from Moffat (IC2) was built for security of supply reasons. It provides 100% back up capacity and is being underwritten by the Irish customer. It has always been assumed that in the event of loss of supply at Moffat the linepack in IC1 and IC2 could supply the Irish demand on a 1 in 50 winter for five days, assuming all power stations could be fuel switched in 5 hours. This does not

¹⁸ Ireland's Risk Assessment confirmed an N-1 calculation of 141% assuming Corrib was on stream, and the option of fuel switching was exercised.

allow for any supply to Northern Ireland through the SNP, which is connected to IC2. However, the 2014 UK Ireland Joint Risk Assessment considered the impact of Northern Ireland having access to linepack on IC2.

4.3 Infrastructure & Operational Improvements

With reference to the improvement of gas security of supply, the UK and Ireland Competent Authorities are considering initiatives such as potential security upgrades at key points within the UK's and Ireland's gas systems. Additionally, the development of Projects of Common Interest (see Table 4.3) has the potential to enhance security of gas supply in the UK and Ireland.¹⁹

Table 4.3 – UK-Ireland Projects Granted PCI Status

Project code	Project title	Project Promoter
5.1	Cluster to allow bidirectional flows from Northern Ireland to Great Britain and Ireland and also from Ireland to United Kingdom including the following PCIs: 5.1.1. Physical reverse flow at Moffat interconnection point 5.1.2. Upgrade of the SNIP (Scotland to Northern Ireland) pipeline to accommodate physical reverse flow between Ballylumford and Twynholm 5.1.3. Development of the Islandmagee Underground Gas Storage (UGS) facility at Larne	Gaslink Premier Transmission Limited Islandmagee Storage Limited
5.2	Twinning of Southwest Scotland onshore system between Cluden and Brighthouse Bay	Gaslink
5.3	Shannon LNG Terminal located between Tarbert and Ballylongford	Shannon LNG

In order to support security of supply, the CER also requires Ireland's electricity TSO (i.e. EirGrid) to engage in a programme of secondary fuel switchover testing of gas generators and monitoring of their fuel stocks. As a part of this programme, EirGrid submits an annual report to the CER regarding generators compliance with fuel switching arrangements. Additionally, the CER requires that Ireland's gas TSO (i.e. Gaslink) undertakes annual gas emergency exercises to test the effectiveness of industry response to a gas supply emergency.

¹⁹ In October 2013 the European Commission published its first list of EU-wide Projects of Common Interest under Regulation (EU) 347/2013. These projects were assessed on a range of criteria including their impact on diversity of supply, market integration and security of supply. Infrastructure projects with PCI status benefit from faster and more efficient permit granting procedures, improved regulatory treatment and access to financial support under the Connecting Europe Fund.

4.4 Gas Electricity Interactions

Ireland's electricity and gas markets have become increasingly intertwined, thus creating greater interdependencies in order to maintain gas and electricity supply. Furthermore, the interdependence between Ireland's gas and electricity sectors has also mirrored a broader trend of interdependence amongst other critical infrastructure systems including oil, communications, water and transportation. Therefore, the potential for a domino effect has increased, whereby the failure of one key component of a critical infrastructure system could trigger simultaneous challenges for other critical infrastructure systems. Issues regarding gas/electricity interactions are being progressed through:

- the CER's annual Gas Electricity Interactions workshop;
- the CER's Gas Electricity Emergency Planning Group; and
- closer interaction between Ireland's gas and electricity TSOs.

4.5 Regional Approach

Regional co-operation is an underlying feature of the Regulation and is required in particular for the establishment of the Risk Assessment, the Preventive Action Plans and Emergency Plans. In addition, co-operation is important for meeting the infrastructure and supply standards, and in the provisions for EU and regional emergency responses. This is of particular importance as Ireland is dependent on the UK for its gas supply and Northern Ireland in turn is dependent on Ireland's gas import infrastructure to meet 100% of its gas supplies.

As detailed in the national Risk Assessment, Ireland cannot meet N-1 standard in the short-term. Accordingly, the CER as Ireland's Competent Authority requested DECC as the Competent Authority in the UK to agree to a Regional Approach to fulfilling the standard as provided for in Article 6(3) of the Regulation. DECC acceded to this request, and the CER is currently working with them regarding the development of a regional approach. To date, this has included the development of a Joint Risk Assessment and a Joint Preventive Action Plan.

In order to facilitate a regional approach, the UK and Ireland Competent Authorities meet through the UK and Ireland Emergency Group Forum. The forum comprises the three government departments (DECC, DCENR and DETI), the three regulators (OFGEM, CER and UREGNI), and the gas and electricity TSOs. Meetings take place every six months. The group is working towards a regional approach to emergencies. This involves the establishment of protocols to link emergency plans of each jurisdiction. Emergency exercises are carried out by the three TSOs on an annual basis and plans are refined on the basis of the learnings from the exercises. The forum is also used to discuss the implementation of the Regulation and the plans and assessments carried out by each jurisdiction in compliance with the Regulation.

5 Obligations on Relevant Bodies & NGUs

Article 5 of the Regulation requires that Member States' Preventive Action Plans shall contain the obligations imposed on relevant bodies and NGUs (including the safe operation of the gas system). For the purpose of this Preventive Action Plan, relevant bodies and NGUs are interpreted as follows:

- **Relevant Bodies** refers to the Department of Communication, Energy & Natural Resources (DCENR) and the CER; and
- **NGUs**: refers to a natural or legal person carrying out at least one of the following functions: production, transmission, distribution, shipping, supply, purchase or storage of natural gas, including Liquefied Natural Gas (LNG), which is responsible for the commercial, technical and/or maintenance tasks related to those functions, but shall not include final customers.

5.1 Relevant Bodies

DCENR

The DCENR has overriding responsibility for energy policy including security of supply of gas, electricity and oil, whose functions include the introduction of legislation and of Public Service Obligations (PSOs). Specifically, under section 21 of the Gas Energy (Miscellaneous)(Provisions) Act 2002 (as amended), the Minister for Energy may direct the CER to impose PSOs relating to security of supply.

To date, no such direction has been given to the CER in relation to security of gas supply. However, the DCENR has imposed PSO obligations within Ireland's electricity sector,²⁰ in order to support the national policy objectives of:

- security of energy supply;
- the use of indigenous fuels; and
- the use renewable energy sources.

Currently, the PSO levy support extends to biomass (landfill gas), biomass-CHP, and biomass-anaerobic digestion, which are consistent with the potential supply side measures identified in Annex II of the Regulation for increasing gas security of supply.

Commission for Energy Regulation

The primary obligations of the CER, as Ireland's designated Competent Authority, in relation to the implementation of the security of supply Regulation include:

- the completion of a Risk Assessment;
- the establishment of a Preventive Action Plan and Emergency Plan in order to mitigate the risks identified in the Risk Assessment;

²⁰ Section 39 of the Electricity Regulation Act 1999 (as amended) sets out the legal basis for the PSO levy in Ireland. Additionally, Statutory Instrument No. 217 of 2002 made under Section 39 requires that the CER calculates and certifies the costs associated with the PSO and sets the associated levy for the required period.

- monitoring of security of gas supply at national level;
- cooperating with other Competent Authorities to prevent a supply disruption and to limit damages in such an event; and
- establishing the roles and responsibilities of relevant market participants.

In addition to the security of supply functions, the CER also has explicit safety functions relating to the safe storage, transmission, distribution and utilisation of natural gas.

5.2 NGUs

5.2.1 Obligations on gas Shippers and gas Suppliers

In 2009, the CER (in conjunction with UREGNI) consulted on:

- whether shippers/suppliers be required to secure supplies for an exceptionally cold winter; and
- whether shippers/suppliers be required to book capacity for an exceptionally cold day (1 in 50 or 1 in 20 day).

In the context of almost all of Ireland's gas being sourced from Moffat and limited storage opportunities available on the island, it was decided not to require shippers to secure gas supply for an exceptionally cold winter. This would put an unfair burden on shippers and potentially result in higher gas sale prices. It was noted also that this would provide no security in the event of infrastructure failure from the Moffat interconnection point.

With reference to booking capacity for the peak day demand, the CER and UREGNI decided that capacity should continue to be booked at exit for the NDM (domestic and small business sectors). The CER is of the view that there has been no significant change in the market or in the gas supply situation since the consultation took place in 2009, which would support the imposition of additional obligations on shippers and suppliers. However, the obligation placed on shippers and suppliers to book capacity for a 1-in-50 peak day, as set out in Ireland's network code is to continue.

5.2.2 Obligations on Transmission System Operator (Gaslink)

Gaslink, as the TSO, has a key role in the development of emergency arrangements for Ireland. In addition to its general obligations Gaslink is required to operate a secure safe and reliable network and to develop the network to ensure long term gas demand is met. Specifically its licence obligations require it to:

- maintain the operational integrity of the gas transportation system;
- design the Transmission system to meet 1-in-50 peak day demand;
- publish 10 year network development statements on an annual basis;
- Develop and maintain the Natural Gas Emergency Plan; and
- Provide Transmission and Distribution emergency response.

The CER has designated Gaslink as the National gas Emergency Manager (NGEM) to manage the operational response to gas supply interruptions in Ireland. Additionally, the CER has designated Gaslink as the Crisis Manager, in accordance with the Regulation.

With reference to market rules, Gaslink is also responsible for the Code of Operations, which sets out the market measures to maintain a supply / demand balance on the system. In this role Gaslink develops new products (e.g. storage) as the market dictates.

5.2.3 Obligations on Gas Producers

Gas producers are required to comply with the instructions of the NGEM. Specifically, in the case of a shortage of gas supply they may be instructed to increase production.

5.2.4 Obligations on Gas Storage Operators

PSE Kinsale Energy Ltd operates South West Kinsale storage, which is currently the only gas storage facility in Ireland. As a gas storage operator, PSE Kinsale Energy Ltd is obliged under licence conditions to cooperate with the NGEM in the event of an emergency.

5.2.5 Exceptions to obligation on NGUs

Article 8(2) of the Regulation requires that the CER identify in the Preventive Action Plan how any increased supply standard or additional obligation imposed on NGUs may be temporarily reduced in the event of a Union or regional emergency. It is considered that this requirement is not relevant to Ireland, as the CER has not imposed such obligations on NGUs.

5.3 Safety Obligations on NGUs

Under the provisions of the Energy (Miscellaneous Provisions) Act 2006 (the '2006 Act'), the CER has the responsibility to regulate the activities of NGUs with respect to onshore gas safety, through the establishment of a natural gas safety regulatory framework (the 'Framework'). In terms of operating the Framework, the CER requires NGUs to manage their gas safety risks to a level that is "as low as reasonably practicable" (ALARP), with an appropriate level of regulatory intervention necessary to secure compliance with the Framework and achieve the desired safety outcomes. Specifically, under the Framework document, NGUs are required, to demonstrate that they have suitable arrangements in place for responding in the event of large-scale network gas emergencies.

6 Summary

Ireland's Preventive Action Plan (2014-16) has been prepared in accordance with the Regulation. Given that the Preventive Action Plan will be required to be updated on a biennial basis, the CER will continue to monitor market developments, and update the document to ensure consistency with the Regulation.