



Commission for Energy Regulation

An Coimisiún um Rialáil Fuinnimh

Mitigation Measures to address Potential Capacity Constraints at the Moffat Entry Point in 2013/14

Consultation Paper

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Executive Summary

The Joint Gas Capacity Statement 2011 (JGCS) revealed a potential capacity constraint at Moffat as early as 2013/14. This consultation paper considers:

- (i) whether or not regulatory intervention is warranted to mitigate this potential capacity shortfall and, if so,
- (ii) what is the optimal mitigation measure.

This Consultation Paper does not address long-term security of supply issues and is only focussed on potential measures to prevent potential capacity constraints in 2013/14.

This consultation is being carried out jointly by the Commission for Energy Regulation and the Utility Regulator (the Regulatory Authorities) given the nature of the issue and the potential implications for systems in both jurisdictions. Any resulting regulatory intervention may be undertaken individually by one regulator or by both regulators on a voluntary co-operation basis.

An important result of the network modelling for the JGCS 2011 is that for 1-in-50 winter peak day forecasts, capacity limits at the Moffat Entry Point in onshore Scotland may potentially be breached as early as 2013/14. This result is based on a range of specific gas demand and supply assumptions principally regarding low flows from the Inch Entry Point, the theoretical technical capacity of the Beattock Compressor Station and non-uniform flow profiles (renominations) in the onshore Scotland system.

The network modelling presented in the JGCS 2011¹ also showed a potential constraint at Moffat in 2015/16 which was based upon (*inter alia*) assumptions regarding flows and pressure at the Moffat Entry Point. However, BGN indicated that, where these assumptions do not hold true, the constraint may arise as early as 2013/14. It is this earlier potential constraint in 2013/14 which is the focus of this Consultation Paper.

¹ This was carried out by Bord Gáis Networks (BGN) on behalf of the Regulatory Authorities.

Therefore, the Regulatory Authorities (RAs) are requesting the views of all interested parties on the most appropriate supply and/or demand measure(s) which could be undertaken to address the potential capacity constraint at the Moffat Entry Point.

The measures raised in the Consultation Paper include:

- The introduction of Interruptible exit capacity products
- Fuel switching by gas fired generating stations and/or large gas customers
- Amend Shipper Renominations
- Reinforcement of the onshore Scotland network, as proposed by Bord Gáis Networks (BGN)
- Measures involving gas storage
- Measures to ensure continued high pressures at Moffat

Information on other suitable measures is also requested.

The RAs note that further analysis is required on the assumptions that have been used in the JGCS 2011 network analysis and on the options put forward in this Consultation Paper. As part of the CER's third gas networks price control (PC3), an examination will be carried out in January 2012 on BGN's proposed reinforcement of the onshore Scotland network including the assumptions underpinning this proposal, as well as on other demand and supply mitigation measures. At this stage the RAs are seeking comments on the potential mitigation measures contained in this paper and any further arrangements that respondents may view as appropriate. The responses to this Consultation Paper will be taken into account as part of this PC3 analysis and will inform the RAs' decision-making on the matter.

In order to examine the relative merits of various mitigation measures, the RAs have also set out high level principles for consideration by respondents when commenting upon the merits of potential mitigation measures.

The RAs consider that this consultation will allow for an informed decision on the implementation of appropriate supply and/or demand side measures to remove or mitigate the risks identified. As discussed above, the decision on the most appropriate mitigation measures will be supported by the CER's PC3 analysis. The RAs also intend to review a number of assumptions and inputs used as part of

modelling for the JGCS 2011 including, *inter alia*, revised economic growth forecasts and the impact of the application of the PTL network code to power station renominations in Northern Ireland. Given the likely timelines associated with potential reinforcement of the onshore Scotland network, the RAs intend to produce a decision paper on the matter by January 2012.

1.0 Introduction

As part of the Common Arrangement for Gas project (CAG), each year the CER and the Utility Regulator (“the Regulatory Authorities”) jointly produce a report on the ability of the transmission networks in Ireland and Northern Ireland to meet forecast gas demand and potential supply scenarios over the next ten years. The latest report, referred to as the Joint Gas Capacity Statement 2011 (JGCS), covers the period 2010/11 to 2019/20². The network analysis presented in the JGCS 2011 was prepared by Bord Gáis Networks (BGN) on behalf of the Regulatory Authorities with input from the Transmission System Operators (TSOs) in both jurisdictions.³

An important result of BGN’s network modelling for the JGCS is that capacity limits at the Moffat Entry Point in Scotland may potentially be breached in certain scenarios as early as 2013/14.

This result is present in relation to the following three factors:

- 1-in-50 winter peak day forecasts;
- Where flows from Inch decline from 2013 and cease in 2016 and where the Corrib project is delayed until 2014/15;
- the potential outturn event that primary assumptions regarding the Moffat Entry Point, such as the Anticipated Normal Offtake Pressure (ANOP) of 47 barg pressure or a flat flow profile, which in part determine the theoretical technical capacity of Beattock Compressor Station, do not hold true.⁴

² The period covering two years (e.g. 2010/11) refers to the Gas Year, October to September.

³ The Joint Gas Capacity Statement 2011 is available at <http://www.cer.ie/en/gas-security-of-supply.aspx>

⁴ As stated in the JGCS, the required limits at the Moffat Entry Point could be shown as being breached by 2015/16 (as opposed to 2013/14) where such primary assumptions are left unchanged, Inch flows decline and Corrib supply is impacted by a further delay past 2014/15.

The RAs therefore committed to consulting on potential mitigation measures with a view to implementing the most economic and flexible solution(s) as soon as reasonably practicable.

1.1 Purpose of this Paper

The purpose of this paper is to seek the views of all interested parties on appropriate supply and/or demand measures which could be undertaken to address the projected capacity constraint at the Moffat Entry Point.

This consultation paper stems from the results of the Joint Gas Capacity Statement 2011, which is prepared jointly by the CER and Utility Regulator as part of the CAG project. It should be taken into account that, in the event that the implementation of mitigation measure(s) is deemed necessary, a decision on the most appropriate measure(s) would be required in the coming months prior to the completion of CAG legislation. Therefore, any decisions taken by the CER and Utility Regulator arising from this Consultation Paper will be voluntarily taken by each individual RA in co-operation with one another, i.e. without purporting to be based on CAG.

1.2 Scope of this Paper

It is recognised that potential measures discussed in this paper may be relevant in the context of certain obligations on Member States set out in the EU Regulation 994/2010 concerning measures to safeguard of gas supply, such as the Infrastructure Standard. This issue is also pertinent in the context of the RAs' commitment under the CAG project to put in place a single approach to security of supply on the island. The RAs are mindful of these overlaps and consider that this consultation and respondents' comments may be useful in the context of future separate consultations.

It should be noted, however, that this consultation should be principally considered in relation to the noted forecast capacity constraint at the Moffat Entry Point. To be clear, the need for an examination of potential mitigation measures arises regardless of the progress of the CAG project and is not intended to specifically address Member State requirements under EU Regulation 994/2010.

1.3 Contact Details

Respondents are asked to submit their comments (preferably by email) by close of business on the **16th December 2011** to the contacts below. The CER is also interested in any detailed cost implications respondents may have about the potential options.

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2.0 Network Modelling Results of the Joint Gas Capacity Statement 2011

2.1 Gas Supply Assumptions

As part of the preparation of the JGCS 2011, the CER and the Utility Regulator engaged with existing and potential gas producers and storage operators in Ireland and Northern Ireland on the status of their current/proposed operations. In light of information provided by these parties, input assumptions for three supply scenarios were decided upon by the RAs in conjunction with the TSOs in each jurisdiction. These scenarios were chosen in order to assess the capacity of the transmission systems to function safely under differing supply conditions during the forecast period.⁵ The detailed network modelling was then carried out by BGN on behalf of the RAs using the agreed input assumptions.⁶ A summary of the input assumptions is provided in section 3 of this paper.

The 2011 JGCS diverged from previous Joint Gas Capacity Statements in that a less optimistic view of flows from future supply sources was taken. The supply scenarios in the 2011 JGCS are more limited in terms of the flows taken as being available from the Inch Entry Point. For the three supply scenarios in the 2011 JGCS, storage operations at Inch were taken as ceasing in 2012/2013 with Inch supply comprising production and cushion gas from 2013/14 until 2015/16. In contrast with previous reports, the JGCS 2011 therefore addresses a more constrained supply scenario and examines the effect of more limited indigenous flows on to the Irish transmission system in the short to medium term. The JGCS also takes into account the delivery of

⁵ In relation to the supply scenarios, see Chapters 1 and Chapter 4 of the JGCS for further information.

⁶ In choosing the input assumptions for the supply scenarios, the RAs do not take a view on the commercial viability of existing or proposed projects. The decision to include data for certain projects is made by the RAs depending on the chosen focus and scope of the network analysis and is based upon information provided by producers/storage operators.

gas from the Corrib field including the potential for a further one-year delay to the project until 2014/15.⁷

2.2 Forecast Gas Demand

In order to develop a gas demand forecast for both Ireland and Northern Ireland until 2019/20, separate forecasts for the power generation, industrial/commercial and residential sectors were prepared based on a variety of assumptions. These included expected electricity generation, forecast GDP growth, anticipated residential gas connection figures, as well as the impact of energy efficiency initiatives. Further information is available in Chapter 3 of the JGCS 2011.

⁷ In addition to flows from GB through the Scotland to Northern Ireland Pipeline (SNIP) and the two BGE subsea Interconnectors, the system modelling undertaken by BGN also takes into account the potential introduction of gas storage at Larne in Northern Ireland in 2015 and from the Kish Bank Basin, offshore Dublin in 2018.

3.0 Potential Capacity Constraint at the Moffat Entry Point

3.1 Potential Constraint at Moffat in 2013/14

The 2011 JGCS identifies a potential constraint that may arise in 2013/14. This potential constraint is detailed in section 5.8.1 “Summary of overall modelling results” and section 5.8.3.1 “Flows at Moffat before Corrib commencement”. In the summary and conclusions section (section 6), particularly in section 6.2.1 “Potential Capacity Constraint on the Southwest Scotland Onshore System” the RAs noted their intention to consult on potential mitigation measures... with a view to implementing the most economic and flexible solution(s) as soon as practicable”. This commitment was reiterated in section 6.5 “Conclusion and Recommendations of the Regulatory Authorities.

For simplicity, the inputs and assumptions (‘factors’) relevant to this potential constraint are outlined in Table 1 below. Table 1 provides a high level summary of the factors that have been used in the JGCS 2011 network analysis. As part of the CER’s third gas networks price control (PC3), an examination will be carried out in January 2012 on BGN’s proposed reinforcement of the onshore Scotland network including on the assumptions underpinning this proposal, as well as on other demand and supply mitigation measures. This information will be used to support the RAs’ final decision on the most appropriate mitigation measure(s) to be taken. The factors are further discussed in section 3.2.

Table 1: Potential Capacity Constraint 2013/14: Overview of Primary Supply & Demand Factors

- Demand-Forecast: 1-in-50 winter peak demand
- **AND** Inch Flows: Storage operations cease in 2013/14; production and cushion gas continue from 2013/14 and cease in 2015/16;
- **AND** Corrib Flows: Flows commence in October 2014

With a combination (of one or more) of the following key factors:

- Lower pressures at Moffat – Network analysis currently assumes an Anticipated Normal Offtake Pressure (ANOP) of 47 barg, though lower pressures were observed last winter and the contractual pressure is 42.5 barg
- Swing/Stepped flow profile as opposed to a flat flow profile (i.e. no renominations) at the Moffat Entry Point
- Lower Gross Calorific Value (GCV) at Moffat – Network Analysis currently assumes 39.765, in line with typical observations, though lower GCVs recently have been observed.

Other Potential Factors:

- Requirement for an increase in system flexibility – further commercial developments may require greater system flexibility;
- Inability to operate Beattock compressor station in series mode;
- Higher demands occurring than forecasted demand.

3.2 Forecast Capacity at the Moffat Entry Point

The technical capacity of the Moffat Entry Point is essentially determined by the physical capacity of the Southwest Scotland Onshore System, which includes Beattock and Brighthouse Bay compressor stations, the onshore Scotland BGÉ transmission network and the sub-sea interconnectors.

The network modelling carried out by BGN on behalf of the RAs assumed a flat profile⁸ and Anticipated Normal Offtake Pressure (ANOP) of 47 barg and showed a potential constraint at the Moffat Entry Point in 2015/16. However, BGN have indicated that, where these two assumptions do not hold true, the constraint may arise as early 2013/14.⁹ It is the earlier potential constraint in 2013/14 which is the focus of this Consultation Paper.¹⁰

Projected demand may exceed the capacity of the onshore Scotland system in 2013/14 under the 1-in-50 winter peak day forecasts.¹¹ This potential constraint is present in all of the supply scenarios modelled in the JGCS, i.e. the constraint arises regardless of flows from potential storage projects as these are forecast to come on stream later in the forecast period. Key assumptions underlying this result are discussed in more detail in the subsequent sections.

While the capacity at the Moffat Entry Point is not forecast to be breached on the 1-in-50 year peak days for the forthcoming winters up to 2013/14, BGN have noted nonetheless that based on current market arrangements, operating the system with very little spare capacity provides little or no operational flexibility and could pose a significant challenge in the event of an unexpected supply or demand event, e.g.

⁸ i.e. no shipper renominations.

⁹ These two assumptions are further discussed in section 3.2.1. and 3.2.2.

¹⁰ For example, Table 5-4 in the JGCS summarises the level of Southwest Scotland Onshore Scotland capacity utilised on 1-in-50 year peak days in relation to a potential constraint in 2015/16. This table does not account for changes to assumed pressures and flows at Moffat detailed in section 3.2.1 and 3.2.2 of this consultation.

¹¹ The modelling carried out by BGN also show that measures would be needed for 2019/20 in the event of Corrib proceeding in 2013/14 taking into account Corrib's flow profile.

higher demand than forecast due to colder weather, lower pressures at Moffat or a supply outage.

3.2.1 Primary Assumptions at the Moffat Entry Point

The capacity available in the onshore Scotland network is currently subject to the capacity of Beattock compressor station.¹² The capacity of the two subsea interconnectors to Ireland and the Scotland to Northern Ireland Pipeline is therefore fundamentally dependent on the operation of the Beattock compressor.

The main driver of capacity at Beattock is the available pressure from the National Grid NTS system at Moffat. The theoretical maximum capacity of the existing Beattock compressor station has been assessed at 353 GWh/d (32.0 mscmd). This is based upon:

- National Grid's Anticipated Normal Offtake Pressure (ANOP) of 47.0 barg for the Moffat Entry Point (i.e. the expected pressure under normal circumstances). It should be noted, however, under the Pressure Maintenance Agreement, National Grid are required to provide a minimum pressure of 42.5 barg at Moffat.
- A discharge pressure of 85 barg to ensure maximum pressures downstream at Twynholm and Brighthouse Bay;
- A gas inlet temperature of 15 °C, and a gas molecular weight of 18.3; and
- Three compressor units operating in "series-mode" configuration, with the fourth unit operating in stand-by mode.

Regarding anticipated pressures at the Moffat Entry Point, to date a 1-in-50 peak day peak day source pressure of 47.0 barg has been assumed by BGN for network modelling purposes. This assumption was validated by BGN's observations of actual pressures on the peak days that occurred in early January 2010, when hourly pressures at Moffat ranged between 50.0 and 56.7 barg, averaging at 54.4 barg for the day. However, while an ANOP of 47 barg has been utilised as the expected

¹² The capacity of a compressor station is defined as a function of the gas inlet conditions and the ability of the compressor component parts to meet specific output conditions.

available pressure at Moffat, BGN have stated that during December 2010 and January 2011, pressure levels breach the ANOP on a number of occasions and average daily pressures approached the ANOP on a small number days. Lower suction pressures at Moffat reduce the capacity of Beattock Compressor station, the onshore Scotland system and in turn the Moffat Entry Points.

BGN have noted that if pressures closer to National Grid's minimum contractual pressure under the Pressure Maintenance Agreement (42.5 barg) are assumed for the 1-in-50 peak day, this could result in a reduction in the maximum theoretical capacity of the compressor station to 302 GWh/d (27.4 mscmd). Therefore, if the contractual pressure of 42.5 barg was to be utilised for network modelling purposes, as opposed to the ANOP of 47 barg which is currently incorporated, a breach of capacity limits for the forthcoming winters (i.e. 2011/12, 2012/13 and 2013/14) may then be shown.

The maximum capacity of Beattock is also based upon a flat flow profile. This assumption is being reviewed by BGN on account of the actual flow profiles observed at Moffat during the peak demand periods experienced in 2010. The actual flow profiles observed at Moffat represent a stepped/swing type flow profile rather than a flat flow profile. The swing/stepped flow profiles which actually occur result in onshore Scotland pressures fluctuating in line with hourly flow variations. The pressure losses in the onshore Scotland system increase during periods of high demand. Based on the existing supply scenarios, BGN's modelling has demonstrated that the inclusion of up to date flow profiles at the Moffat Entry Point, i.e. adopting a swing/stepped profile, for the 1-in-50 winter peak day modelling (in conjunction with other primary assumptions noted in Table 1 below) would show a breach of capacity by 2013/14.

3.2.2 Latest BGN analysis of Beattock Compressor Station

Subsequent to the publication of the 2011 JGCS, BGN undertook additional analysis regarding the performance of Beattock compressor station. This analysis was undertaken to determine the technical capacity of the Moffat Entry Point given that the Beattock compressor station can currently operate in parallel mode only. Engineering works are currently progressing, which should allow for additional

operation in series mode, subject to the successful completion and testing of these works in 2012.¹³

BGN have highlighted that the capacity of the station operating in parallel mode (31 mscmd) or series mode (32 mscmd), exceeds the original design capacity of the station (26 mscmd). BGN have also noted that the record peak flow through the station, 27.2 mscmd, on 8th December 2010, exceeded the station's design capacity.

Though the capacity of the station in parallel mode (31 mscmd), is not significantly lower than that of series mode (32 mscmd), the discharge pressure of the station is significantly affected, reducing by ~7 barg in parallel mode. This has implications downstream of Beattock, in terms of prevailing pressures at Twynholm and the amount of system flexibility that is available to accommodate within day renominations on peak demand days.

BGN have recently engaged with various stakeholders including the Department of Communications Energy and Natural Resources (DCENR), the Regulatory Authorities, and Mutual Energy Ltd. in order to advise of these implications, and the measures that will be taken to address the operational challenges that may arise in the Southwest Scotland Onshore System this coming winter (2011/12).

Regardless of the station operating in series or parallel mode, the South West Scotland Onshore System (SWSOS) capacity constraint identified in the 2011 JGCS is forecast to manifest in 2013/14 if 1-in-50 type demands occur in conjunction with a combination of the supply and demand factors noted in Table 1 above.

¹³ Joint Gas Capacity Statement 2011 – Section 5.7.3.2

4.0 Mechanisms to Address Potential Future Constraints

4.1 Introduction

As part of the JGCS 2011, BGN indicated that the potential capacity constraints in onshore Scotland could be overcome by twinning the 50 km Cluden to Brighthouse Bay 85 barg pipeline. During the production of the JGCS, BGN informed the RAs that a final decision on infrastructure investment for 2013/14 would not be required until the end of 2011. This has now been revised to the end of January 2012.

The RAs have noted BGN's proposal. The RAs are also mindful that the potential capacity constraint in onshore Scotland evident in relation to BGN's 1 in 50 peak demand forecast is largely based upon flows from Inch declining and ceasing in the medium term combined with uncertainty surrounding the Corrib commencement date.

Taking these issues into account, the RAs have put forward for consideration a range of commercial and/or physical measures to overcome potential short-term capacity constraints at the Moffat Entry Point with a view to implementing the most economic and flexible solution(s) as soon as reasonably practicable.

4.2 Proposed High Level Principles

The RAs are aware that any decision to introduce new demand and/or supply mechanisms cannot be taken in isolation. The issue must take into account Government policy, regulatory duties, as well as EU and national legislative requirements. Equally, the chosen mechanism(s) should be proportionate to the risk being faced and should not have an undue adverse impact on gas consumers, as well as on the functioning of the gas and electricity markets. As part of the CER's third gas networks price control (PC3), an examination will be carried out in January 2012 on BGN's proposed reinforcement of the onshore Scotland network including on the assumptions underpinning this proposal, as well as on other demand and

supply mitigation measures. This analysis will support any decision by the RAs to put in place arrangements that are proportionate to the risk being faced.

Given the pivotal role of ensuring adequate capacity in onshore Scotland to the gas market in Ireland and Northern Ireland, both in terms of gas molecules and on gas prices for customers, it is important that all pertinent factors relevant to the various supply and demand side measures are taken into account, analysed and compared.

The RAs have set out high level principles for consideration by respondents when commenting upon the merits of potential mitigation measures.

- Security of gas supply

Ensure that gas demand in both jurisdictions is met on both the peak day and during cold weather periods as a result of the introduction of one or a number of mitigation measures.

- Proportionality

Ensure that any chosen mitigation measure(s) are proportionate to the level of risk, i.e. the probability, consequence and projected frequency of the potential constraint.

- Practicality and timing

Ensure that mitigation measure(s) are not overly complex and can be implemented/utilised by all relevant parties in a timely manner.

- Costs

Avoid unnecessary and excessive additional costs on gas consumers.

In the event additional costs do arise and are deemed acceptable:

- ensure that these costs do not adversely impact on the efficient operation of the natural gas market and the competitive position of natural gas versus competing fuels;

- facilitate a fair and transparent cost allocation between Ireland and Northern Ireland.

- Legislative

Ensure that the chosen measure(s) are compatible with national and EU legislative requirements

- Environmental

Seek to minimise any adverse effects of the chosen measure(s) on the environment

4.3 Potential Mitigation Mechanisms

The RAs briefly describe below possible demand and supply mechanisms for alleviating potential future capacity constraints at Moffat. This is not intended to be an exhaustive list. The RAs seek the views of all interested parties on the options put forward and additional proposals are welcomed.

Potential Demand Side Measures:

1. A) Interruptible Capacity Products

Article 14 of Regulation 715 of 2009 requires that transmission system operators provide both firm and interruptible third-party access services. As part of the CAG project, the TSOs have published a consultation paper on the introduction of interruptible products at system entry points. The TSOs have also raised the question as to whether Interruptible Exit Capacity is required and/or feasible at Transmission Exit, having regard to availability of Short Term Capacity Products.¹⁴

The introduction of demand side management or interruptible contracts for non-domestic customers was also raised by one party in response to the 2008 CAG Consultation Paper on Security of Supply. The RAs consider that the use of

¹⁴ CAG 2012 Business Rules Capacity Revision 1.0 05/07/2011

interruptible contracts may be a useful mechanism in particular during periods of high gas demand.

Interruptible capacity products have been an established feature of the gas markets in Northern Ireland and Great Britain for some time. The benefits of such products are that they allow TSOs to reduce/cease supply to relevant large gas users in the event of high gas demand.

Premier Transmission Limited currently offers an interruptible product for shippers on the SNIP and the Belfast Gas Transmission Pipeline. This product is written into PTL and BGTL Network Codes. Interruptible supply contracts are also in place between shippers and certain large gas customers. These constitute a commercial interruption product which is purely a matter between customers and shippers/suppliers and is separate from a TSO (i.e. operational) interruption. All NI gas customers who have interruptible supply contracts are required to have fuel switching arrangements in place. These interruptible contracts tend to be with large industrial and commercial customers, such as hospitals or heavy industry.

In relation to GB market arrangements, National Grid utilise a mechanism of Gas Balancing Alerts whereby large energy users may be called on to reduce gas demand where possible and/or shippers are notified to bring additional gas supplies on to the GB transmission system .

No interruptible services are currently available in Ireland. Business rules for an interruptible product at the entry had been developed within the Code Modification Forum in 2008 in order to meet the European requirements set out under EC Regulation 1775/2005. However, it was decided at the time to not systemize the product on GTMS due to CAG being in development and due to the absence of congestion on the system.

In the recent RA paper on the tariffing of non annual capacity products as part of CAG¹⁵, the RAs stated regarding system exit capacity that '*... it may be more*

¹⁵ Consultation Paper on the Harmonisation of Network Tariff Capacity Commodity Ratios, Interruptible and Short Term Products and the introduction of an Entry Exit Hub Concept 20th July 2011 CAG/11/018

beneficial to incentivise the industrial and commercial sector to book interruptible capacity at the exit rather than building additional infrastructure. This could apply on an exit zone basis where otherwise additional entry capacity would be built or on a local scale within an exit zone where local additional infrastructure may need to be built. If required, the RAs will review the tariff structure of interruptible capacity at the exit point, following the results of the TSOs' consultation.'

The TSOs in both jurisdictions are requested to examine appropriate interruptible capacity products both at system exit points for shippers and for certain large gas consumers in light of the results of the JGCS 2011. The issue of how much capacity should be offered at system exit points and the price of such capacity are key issues in this regard.

In order to manage demand during severe weather periods, it is considered that such interruptible products should be principally aimed at gas-fired generating stations and large gas users who can affect significant demand reductions.

Northern Ireland currently has interruptible arrangements in place for large gas users and also provisions for power stations to reduce demand on the network (see discussions on flip-flop and fuel switching below). However given the analysis presented in the JCS 2011 and the increased likelihood of a supply interruption, a review of the existing arrangements would be prudent.

1. B) Fuel Switching by Power Generators and I/C Customers

As a corollary to the interruptible products noted above, the RAs consider that it may be worth considering the case for gas-fired power generators and other relevant large customers to switch to an alternative fuel during periods of peak gas demand.

In Ireland, under procedures agreed between the National Gas Emergency Manager and EirGrid, gas-fired generating units in Ireland may be directed by EirGrid to run on a secondary fuel in order to prevent or respond to an emergency situation. The CER published a Decision Paper in January 2009 which set out obligations on generators in relation to the storage and provision of secondary fuel capability.¹⁶ Generators in

¹⁶ See CER/09/001.

Ireland are currently required to hold the equivalent of between 1 and 5 days of alternative stocks depending on the generating unit's running hours.

Different arrangements exist in Northern Ireland for back-up fuel supplies. In order for DETI to grant a licence to construct, extend or operate a power station, generators must ensure adequate back-up fuel supplies. This is a requirement under Article 39 of the Electricity (Northern Ireland) Order. Ballylumford power station is required to hold a few weeks stock of backup fuel as they were part of the original privatisation power procurement agreements, whereas new merchant plants entering the market, such as Coolkeeragh, must hold 5 days continuous supply of back-up fuel. Generators must also have contracts in place to resupply back-up fuel stocks.

Taking into account the extended periods of cold weather experienced in the winters of 2010 and 2011, the RAs ask for respondents' views on the appropriateness or otherwise of extending the amount of alternative fuel to be held by certain stations to more than five days

It should be noted that the RAs focus is limited to fuel switching only. The RAs are not seeking to review existing natural gas emergency arrangements. The RAs are also mindful of the need for fuel switching to be efficiently scheduled, managed and monitored by the electricity and gas TSOs (and/or emergency managers) in each jurisdiction.

At a high level, the RAs consider that there are two approaches in relation to fuel-switching which could be undertaken to address a potential constraint at Beattock during peak demand.

(i) Existing Emergency Managers/TSO Arrangements

One approach is as per existing arrangements whereby emergency managers in both jurisdictions may issue a specific direction (in conjunction with the electricity TSOs) for a reduction in demand from gas-fired generating station(s) which would address the short-term constraint and prevent a natural gas emergency.

In Ireland, the Natural Gas Emergency Manager (NGEM) may require gas-fired generating stations to come off load in order to prevent a natural gas emergency.

Under procedures agreed between the NGEM and EirGrid, gas-fired generating units may be directed by EirGrid to run on a secondary fuel.

In Northern Ireland, where there is sufficient time to rebalance the network a Stage 1, Potential National Gas Supply Emergency may be declared and an emergency strategy will be developed and if necessary implemented at Stage 1. This strategy could include voluntary interruption of gas supplies to power generation in consultation with SONI (System Operators Northern Ireland).

A mechanism is in place in Northern Ireland for a 'capacity shortfall day' which is not an emergency but deals with arrangements where high demand or demand profiling causes a capacity shortfall. Under this arrangement when there is not enough capacity on the system to meet demand, the Ballylumford and Coolkeeragh power station nominations are reduced alternatively in order to meet the available capacity on the system. This process of alternating the reduction of nominations between the two power stations is carried out until the capacity shortfall is addressed. These 'flip-flop' arrangements are contained in the PTL network code.

(ii) Pre-arranged schedule

An alternative mechanism is for the electricity TSOs to develop a specific scheme whereby one or more gas-fired generators would commit to come off load and switch to an alternative fuel for a certain number of days per year (if required) in order to reduce all island gas demand by a specific amount (e.g. 2 mscm/d). The details of such a scheme would need to be developed in close collaboration with the TSOs but it may give flexibility to the TSOs to plan fuel switch-over in a more efficient manner such as when demand is lower during the night.

The RAs recognise that fuel switching by generators under such a scheme would have to be properly scheduled, managed and closely monitored by the gas and electricity TSOs, especially since the potential gas shortage will likely coincide with a time of extreme demand and stress on the electricity system. Clearly, cost-recovery for such fuel switching or loss in capacity payments and the knock-on impact on the SEM would also have to be addressed. Other issues to consider include the timing and frequency of fuel switching in order to mitigate within-day swings in gas demand

and the reliability of generator fuel switching capabilities during extreme weather conditions. Emissions associated with fuel-switching and emissions limits of the affected facilities should also be taken into account and further discussion with the relevant authorities in each jurisdiction would be required.

2. Amendment to shipper renominations at Moffat

Given the lack of any major constraint at the Moffat Entry Point since its introduction, a high degree of flexibility in relation to entry nominations has been in place for all shippers on the island. In effect, shippers are able to submit renominations on the day and can increase and reduce such amounts based on demand on the day.¹⁷ In order to promote greater efficiency in capacity bookings at Moffat, it may be appropriate to limit the amount of flexibility that has previously been provided by the system operator. This approach can be achieved by applying the existing arrangements in the respective network codes whereby nominations which cannot be facilitated are rejected. This would be particularly relevant for nominations received later in the Gas Day. Penalties for leaving the system out of balance are also contained within the codes. A further approach would be to introduce additional penalties/charges in relation to such renominations.

This approach is currently being applied by PTL to power station renominations in Northern Ireland and the impact to the operation of the network is being monitored by the TSOs.

Potential Supply Side Measures:

1. TSO investments in network infrastructure in onshore Scotland

The RAs are mindful that reinforcement/modification to infrastructure in onshore Scotland or on the subsea pipelines by the relevant TSOs may serve to mitigate the potential capacity constraints.

¹⁷ The requirements relating to renominations for Irish shippers are set out in section 1.2.5 Part D of the Gaslink Code of Operations.

BGN have noted that twinning the 50 km of pipeline from Cluden to Brighthouse Bay pipeline would reduce pressure losses between Beattock and Brighthouse Bay. This would therefore lower the required discharge pressure at the Beattock compressor station, while still achieving suction pressures in excess of minimum requirements at Twynholm and Brighthouse Bay and enable increased flows through the onshore Scotland system.

A lower discharge pressure requirement at Beattock compressor station allows for increased flows through the station and onshore Scotland, thus increasing the stated capacity of the Moffat Entry Point. BGN have also noted that a twinned pipeline would result in lower pressure losses in onshore Scotland and so higher suction pressures, in excess of 60 barg, at Brighthouse Bay would be possible. This would also have the effect of increasing the station's capacity.

BGN's preliminary compressor and network modelling indicates that by twinning the single pipeline between Cluden and Brighthouse Bay, the technical capacity of the Moffat Entry Point would increase by approximately 10 to 15%, subject to further analysis.

This proposal has been raised on a number of occasions since the completion of IC2 in 2003. The RAs are mindful of the significant costs associated with such reinforcement and its potential adverse impact on network tariffs. The RAs are now inviting comments on this proposal and other potential network investment.

2. Utilisation of Gas Storage/LNG

A) Commercial/Strategic Investment in Gas Storage/LNG

While there is currently limited gas storage available in Ireland and none in Northern Ireland, the RAs note the proposed development of a number of commercial storage (and LNG) facilities over the coming years in the two jurisdictions, as noted in the JGCS 2011. In the short term, however, the RAs are mindful of the need to address a potential constraint by 2013/14. In the JGCS 2011, two of the chosen supply scenarios focused on the potential introduction of a storage facility at Larne and at the Kish Bank Basin. These facilities are projected to come on stream in 2015 and

2018 respectively and it is therefore unlikely that the potential constraint in 2013/14 could be mitigated by the commencement of such facilities.

It is also recognised that this potential constraint as forecast by BGN is in part on account of a reduction in flows from Inch from 2013/14. Therefore, for the purpose of this consultation paper, options regarding gas storage mitigation measures are considered in the context of the sole existing storage facility on the island, that is the PSE Kinsale Energy facility at Inch.

Potential incentives for the commercial provision of gas storage, as well as the issue of strategic storage, have been raised in previous regulatory papers. In the recent CAG Consultation Paper on Treatment of Transmission Network Tariffs for Gas Storage Facilities¹⁸, the RAs put forward the introduction of a “Combined” capacity product under CAG in order to facilitate the usage of facilities in Ireland and Northern Ireland and thereby enhance investment in storage facilities on the island.¹⁹ The RAs are progressing a decision paper on transmission tariffs for gas storage facilities as part of CAG.

In this case, the RAs are considering gas storage in the context of a potential short-lived capacity constraint in 2013/14 rather than a supply constraint. The costs associated with holding certain levels of commercial storage for use during the winter months, for a number of winters, could be relatively low and may be considered appropriate.

In simple terms, regarding gas storage, the important point to consider is the ability of storage to address the issue at hand.

¹⁸ This paper is available on the [All-Island Project website](#).

¹⁹ The suggested product involves a single tariff for entry into and exit from the Moffat Entry Point. See section 6 of CAG Consultation Paper on the Treatment of Transmission Network Tariffs for Gas Storage Facilities 23rd June 2011 CAG/11/005.

B) Obligations to hold minimum levels of indigenous storage

As a corollary to potential commercial/strategic support for gas storage, requirements on transmission system operators and/or shippers to hold gas in storage should also be considered.

There are no obligations on shippers and suppliers in Ireland and Northern Ireland to hold a certain level of supplies in storage in Ireland or Northern Ireland. Such obligations were raised as part of the 2008 CAG Consultation Paper on Security of Gas Supply. There was a range of opinions amongst other respondents in relation to obligations on storage operators. One supported the requirement for the TSO to maintain minimum levels of stock in storage in order to maintain the safety of the system. Another party distinguished between requiring minimum storage space and minimum gas in storage. A requirement on shippers to hold certain minimum levels of gas in storage was generally supported by storage operators and rejected by shippers/suppliers. A variety of other options were put forward including strategic storage reserve guaranteed by all Irish consumers and the underwriting of minimum levels by government authorities.

The RAs noted that the introduction of such obligations for shippers/suppliers would be consistent with the provisions of the Supply Standard to be implemented under Article 8 of the EU Regulation No 994/2010. However, as stated in the CAG Conclusions Paper, it should be taken into account that it may not be suitable to impose requirements when there is currently limited gas storage on the island.

3. Agreed and Anticipated Pressures at Moffat

As noted above, under the Pressure Maintenance Agreement, National Grid are required to provide a minimum pressure of 42.5 barg at Moffat. They have also confirmed a higher Anticipated Normal Offtake Pressure (ANOP) of 47 barg which, until last winter, was validated by BGN's observations at Moffat. However, BGN have noted that during last winter (2010/11), pressure levels breached the ANOP on a number of occasions and average daily pressures approached the ANOP on a small number of days.

Given that the operational benefits of hourly pressures exceeding 47 barg at Moffat, in particular during periods of peak demand, Gaslink are continuing to engage with National Grid in relation to the contractual and ANOP pressures at Moffat. Gaslink are progressing this issue as a matter of urgency and will liaise with the RAs as soon as possible.

Question: The RAs request the views of all interested parties on the potential constraint and on the potential mitigation mechanisms noted above. Information on any other suitable measures is also welcomed.

5.0 Next Steps

The RAs intend to examine all responses received with a view to producing a decision paper on the matter in January 2012.

The RAs are mindful that the advancement of security of gas supply on the island is not an isolated, short-term measure but an ongoing process that requires continuing input from all stakeholders. The RAs also note that any decisions taken in relation to the introduction of demand and/or supply mitigation measures may require code modifications, licence changes and/or further examination as part of the CER's third gas networks price control (PC3). Therefore, further engagement with natural gas undertakings and Government Departments in each jurisdiction may be required depending on the preferred mitigation measure(s).