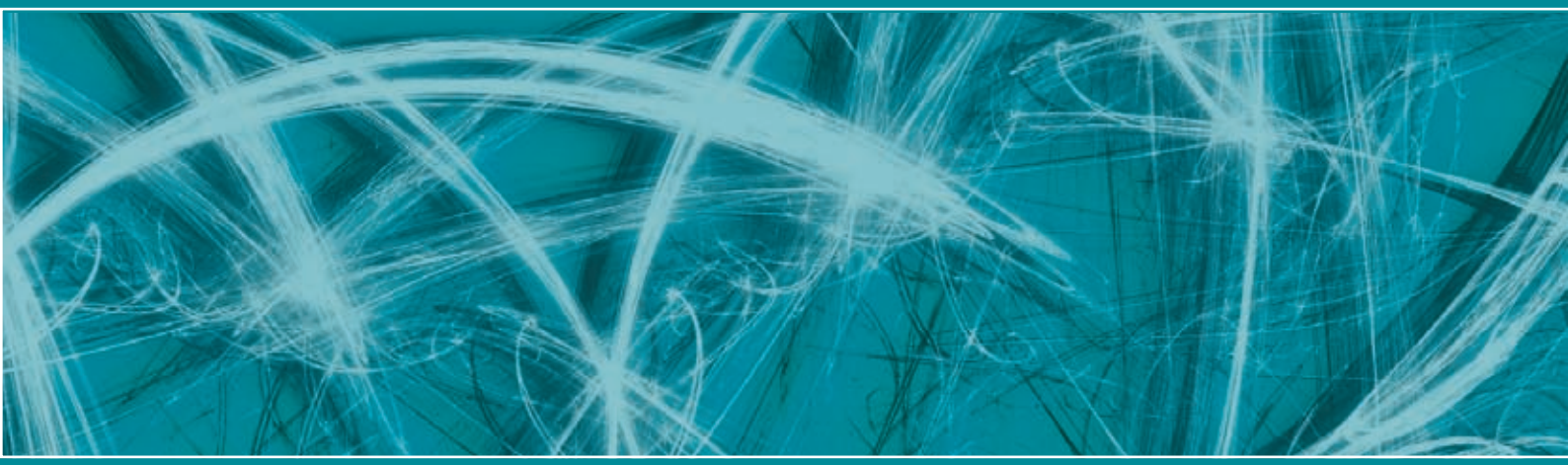
GAS CAPACITY STATEMENT | 2007



CER
Commission for Energy Regulation
An Coimisiún um Rialáil Fuinnimh

Contents

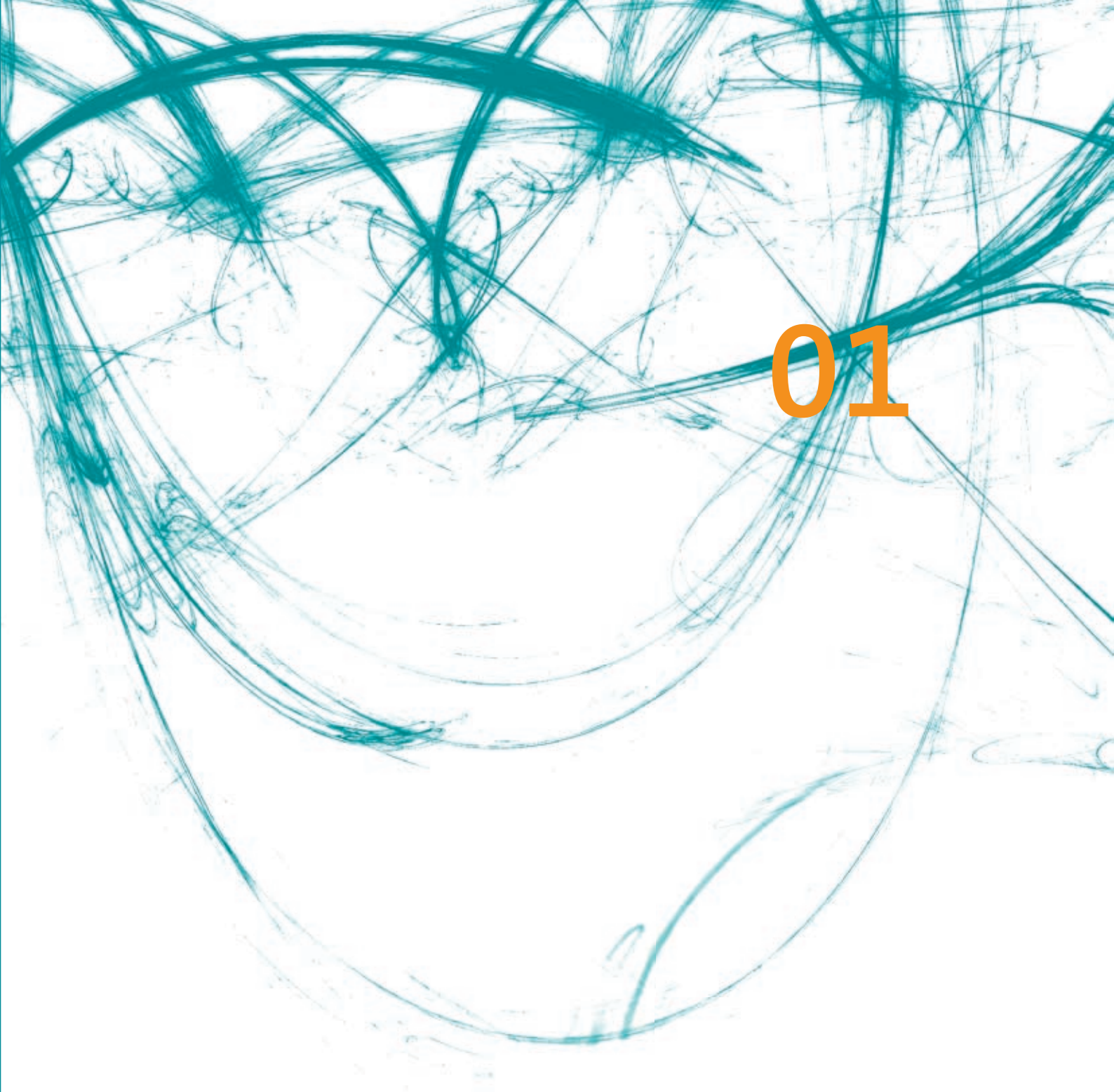
Commissioners' Foreword

This is the fifth annual Gas Capacity Statement to be produced by the Commission for Energy Regulation under Regulation 8 of Statutory Instrument European Communities (Internal Market in Natural Gas) (No.2) Regulations 2004. This Statement presents a summary of the analysis and review of forecast gas supplies into and gas demand from Ireland's natural gas transmission system over the next eight years. By considering a range of possible scenarios the study constitutes our best estimate of the adequacy of Irish natural gas transmission system to meet demand growth and enable access to European Markets.

The methodology applied is a repeat of last year's process requiring the update of the central planning forecast and the selection of key sensitivity cases to test the capacity of the pipeline network for boundary conditions that reflect uncertainties in the forecast. Growing gas demand has been catered for with recent investments in Ireland's natural gas transmission network. Projects such as the South-North and Mayo-Galway pipelines and the pipeline to the West extend the gas supply area. This year's Statement considers a more diverse range of supplies with liquefied natural gas imports at Shannon added to the indigenous production potential of the Corrib development and access to European markets via the Scotland-Ireland interconnectors. In the work programme underway for the next Gas Capacity Statement cognisance will be taken of the longer time frame as recommended by the Energy White Paper 2007.

The report shows, once again, that the high pressure transmission system has sufficient capacity for supplies to meet the reasonable medium-term demand growth of the central planning case and system reinforcement is needed only onshore Ireland for local areas of demand growth. The development of indigenous supply sources has experienced delays and any further delays may lead to a potential capacity constraint on the system in Scotland. Analysis of this scenario identified the requirement for additional infrastructure in Scotland for a short period prior to the arrival of supplies from either Corrib or LNG at Shannon. As these potential reinforcements in Scotland have very high capital investment associated with large transmission projects the conclusion is to pursue the low cost alternatives of performance improvement of operating equipment and commercial incentives to reduce peak-day demand.

The Commission would like to thank all who contributed to the development of this Statement. We hope you will find the information it provides both useful and accessible.



01

Introduction

01 Introduction

1.1 BACKGROUND

The Commission for Energy Regulation ("the Commission") is required under Regulation 8 of Statutory Instrument European Communities (Internal Market in Natural Gas) (No.2) Regulations 2004 to prepare and publish a Gas Capacity Statement.

This Statement, the fifth to be published by the Commission, considers the forecast of customer demand for natural gas, the sources of supply and the capacity of the gas transmission system for the period 2006/07 to 2013/14. The function of this Statement is to inform market participants, regulatory agencies and policy makers of the adequacy of capacity in the Irish gas transmission network to cater for demand growth and provides an indication of likely investment projects required over the Statement period.

The Commission acknowledges the assistance it has received in producing this Statement from all industry participants, including shippers, gas producers, power producers and other large consumers, other interested parties and industry observers. In particular, the Commission would like to acknowledge the assistance of Bord Gáis Éireann (BGÉ).

1.2 GENERAL APPROACH

This assessment of the adequacy of the gas transmission system involves the testing of the network to meet possible future demands for capacity due to the growth in demand for gas and the routes for transporting the available supplies to the point of demand. This requires the formation of a gas demand forecast matched to a supply pattern for the statutory seven-year period of the Statement and the modelling of the transmission system using transient network analysis software. The system modelling is undertaken by Bord Gáis Transmission (BGT) with the oversight of the Commission and its advisers.

The supply and demand forecast is compiled from a number of data sources in addition to consultation with a number of existing and potential market participants. The data sources include the annual questionnaire circulated by the Commission seeking information related to current and projected levels of supply and demand, general economic and industry forecasts and, from the Transporter, the number of new load connection enquiries and the current year's operating experience. Information related to measured daily pressures and profile of demand are used to form the first base-year network model which is then run for the seven years of the Statement, thus making eight years of analysis for the supply/demand scenario[19].

Gas demand projections for the market sectors of residential, industrial and commercial loads and power generation are determined from individual drivers for the sectors in addition to more general drivers such as the outlook for economic growth and employment growth for Ireland. For example, assumptions about the level of new house building and the number of new and existing houses likely to be connected to the gas network are critical inputs to residential demand growth. For power generation, growth in electricity demand is also determined by forecasts of economic growth and

19 While a seven year review period is required under the legislation, due to the long lead times associated with natural gas reinforcement projects and the timing of the study, it was decided to extend the review period to eight years including the current year.

the questionnaire responses from Power Station Operators and the EirGrid Generation Adequacy Report (2007-2013) are used to develop a central gas demand forecast for this sector. The individual market sectors are combined to form annual demand projections and the corresponding peak-day demands calculated for 1 in 50 winter peak-day conditions for the firm demand.

Gas supply information obtained from the Producers' and Storage Operator's responses to the questionnaire is used to construct a supply/demand match on the basis of indigenous gas production and stored gas being made available first and imported supplies are then used to meet the projected demand level. Any variation in the timing of new indigenous gas sources or in the rates of demand growth will present different capacity requirements on the network. The approach taken to address the uncertainties in the planning process is to repeat the methodology of last year's Statement. That is, a central supply and demand scenario was developed based on updating the previous year's forecast and this was used for full network analysis to test the adequacy of the system over the period of the Statement. The Commission has also chosen a number of sensitivity cases around this central supply scenario.

A key sensitivity case chosen was to examine the adequacy of the system in the event that the development of new indigenous supplies was delayed. Also, a demand stretch sensitivity was investigated by advancing the commissioning of new large loads. Previous Statements included a minimum demand-level analysis representing a summer day that demonstrated adequate capacity in that season. This year's study includes a sensitivity case to represent the first day likely for injection into storage at a demand greater than the summer minimum. This sets a condition for a demand that requires the network configuration to be different from that of the peak-day design and operation when the flow of gas at Inch switches from a supply into the network to a demand from the network. Using these scenarios, the Commission considers whether the system is adequate to cope with a reasonable expectation of demand over the next eight years.

The assumptions related to demand growth and specific results of the analysis are described in detail in the relevant section of the report.

1.3 REPORT STRUCTURE

Section 2 of this Statement describes the Bord Gáis Transmission network and outlines projects for network reinforcement planned or currently under consideration by Bord Gáis Transmission in its role as the gas Transporter.

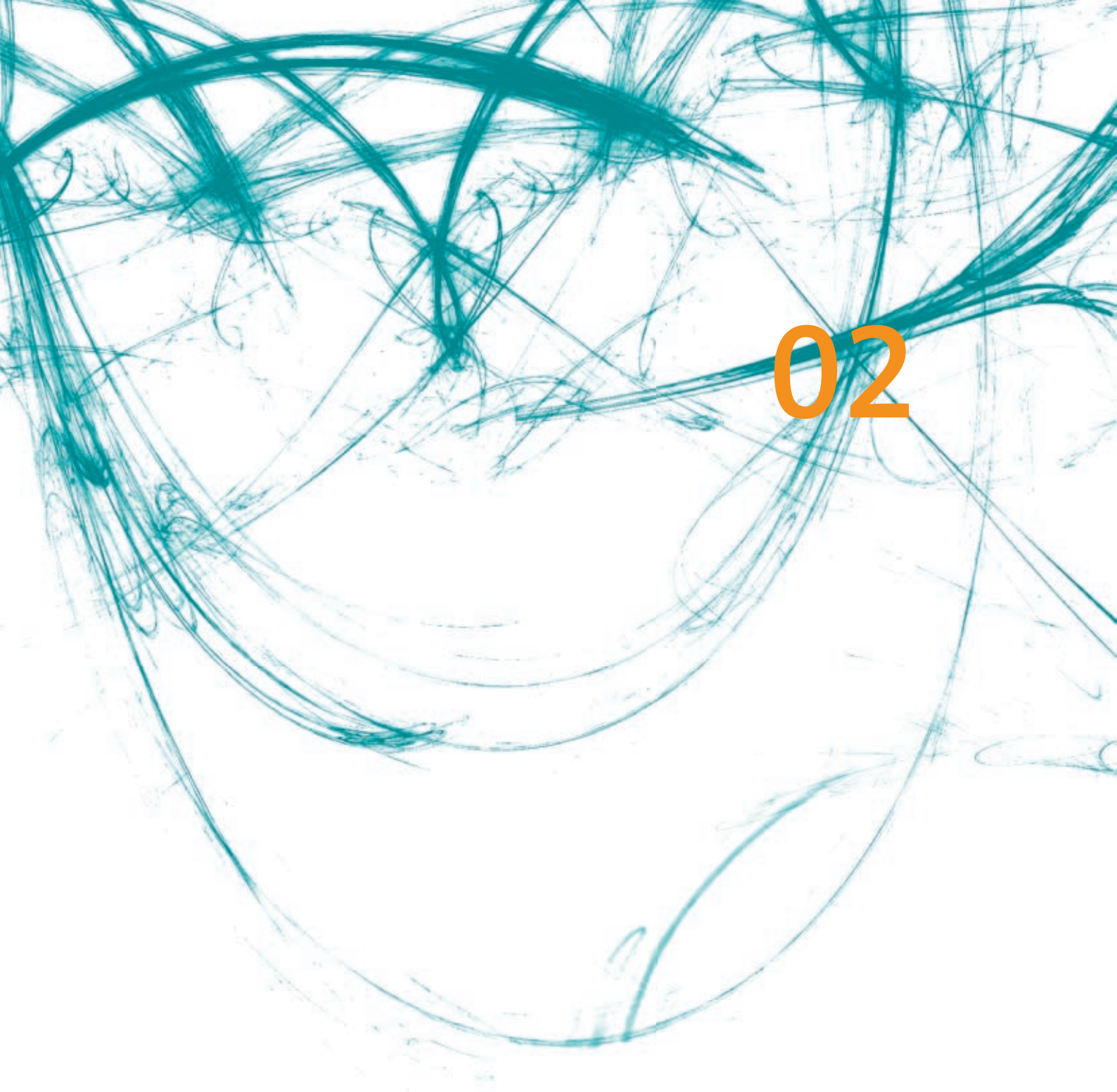
Section 3 provides the central planning case projections for gas demand by market sector (residential, industrial and commercial and power generation) for the eight-year period analysed for network capacity.

Section 4 considers Ireland's gas supply from current sources and the development of gas storage together with the potential for new indigenous sources, and their timing, in addition to the requirement for gas imports.

Section 5 describes the network simulation and the gas supply/demand scenario modelled with the sensitivity cases selected to test the capacity of the transmission system. The results of the network analysis are presented and issues arising from the modelling are discussed together with potential projects to develop capacity.

Section 6 discusses the overall conclusions of the study and comments on other issues that are pertinent to the development of the Irish gas infrastructure.

The Appendices include tables and graphical data to assist with the explanation of the findings and a glossary of terms used.



02

Transmission Network

02 Transmission Network

Gas supply in Ireland is delivered via a network consisting of around 12,063km of high pressure pipelines and distribution pipes. The integrated supply network is sub-divided into 2,298km of high pressure sub-sea and cross-country transmission pipe and about 9,765km of lower pressure distribution pipe connecting customers to the system.

2.1 OVERVIEW OF THE GAS TRANSMISSION SYSTEM

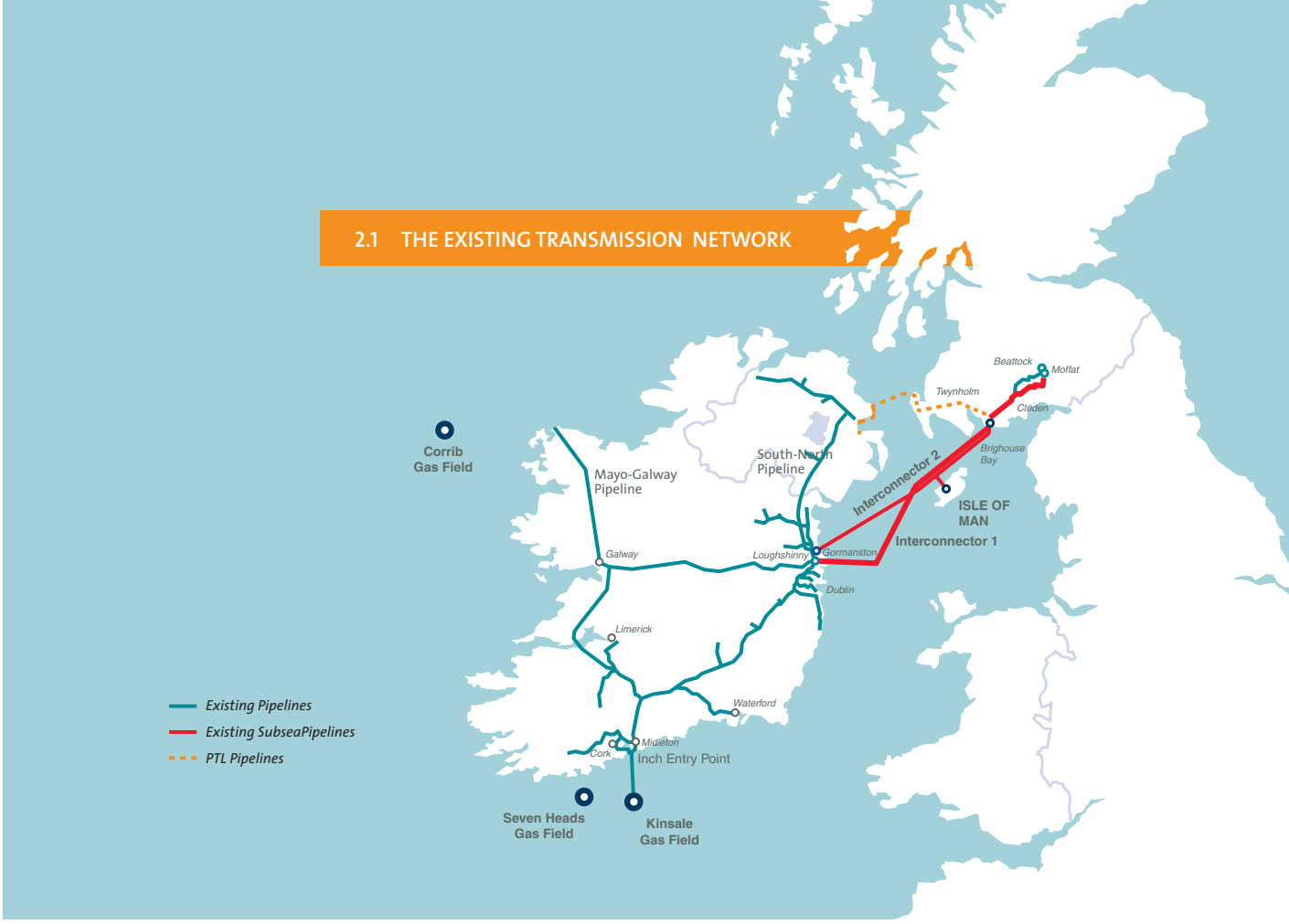
The BGÉ high pressure transmission network consists of approximately 2,019km of pipe. This excludes the south–north pipeline and the north-west pipeline since they fall outside the scope of this study. This system conveys gas from two entry points at Inch and Moffat to directly connected customers and distribution networks throughout Ireland, as well as to connected systems at exit points at Twynholm in Scotland (the Scotland-Northern Ireland Pipeline, SNIP), and to the Isle of Man. The Moffat entry point, located onshore in Scotland, connects the Irish natural gas system to the National Grid system in the UK so that gas can be imported via the UK pipeline system to Ireland through the two sub-sea interconnectors. The Inch entry point, located in Cork, connects the Kinsale and Seven Heads gas fields and the Kinsale storage facility to the onshore network. The Irish system has three compressor stations; Beattock and Brighouse Bay in southwest Scotland, and Midleton in southeast Ireland near Cork.

2.2 SCOTTISH ONSHORE SYSTEM

From the connection with the National Grid system at Moffat, the Scottish onshore system consists of a compressor station at Beattock which is connected to Brighouse Bay by two pipelines from Beattock to Cluden and a single pipeline from Cluden to Brighouse Bay all capable of operating at 85barg. A second compressor station at Brighouse Bay compresses the imported gas into the two sub sea interconnectors which can operate at pressures in excess of 140barg if required. Before reaching the Brighouse compressor station, an offtake station at Twynholm supplies gas to Northern Ireland and this gas is transported to Ballylumford via the Scotland-Northern Ireland Pipeline (SNIP). The SNIP pipeline operates at a maximum pressure of 75barg and there is a minimum guaranteed delivery pressure into this system which is currently 56barg.

2.3 UNDERSEA SYSTEM

From Brighouse Bay there are two pipelines connecting Ireland to the UK gas network. Interconnector 1 (IC1), which consists of 600mm pipe, has been in operation since 1993. Interconnector 2 (IC2) which was constructed using 750mm pipe was completed in 2002 and has been operational since January 2003. There is a sub-sea spur connection to the Isle of Man from IC2 which first supplied gas to the island in May 2003. IC1 and IC2 are connected to the onshore Irish system north of Dublin at Loughshinny and Gormanston respectively. The maximum operating pressure is deemed to be 145barg although currently the normal operating pressure in this system is less than this level.



2.4 ONSHORE IRISH SYSTEM

The onshore transmission system has been developed over a 25-year period. The original part of the system was built in 1978 to supply the Cork area from the Kinsale Head gas field. The connecting sub-sea pipeline is owned and operated by Marathon Oil Ireland Limited. The main Cork to Dublin trunk pipeline was built in 1982, with pipeline spurs constructed to intermediate locations. The onshore Irish system was expanded in 2002/03 by the completion of the pipeline to the West which has a design pressure of 85barg. This created a ring main pipeline system which connects eastern, western and southern regions. The ring main pipeline also contributes to continuity of supply by allowing customers to be supplied from an alternative direction, providing a more secure gas transportation system. The Inch entry terminal is connected directly to the Cork system and the only compressor station in the onshore Ireland system is at Midleton to assist the gas to flow north towards Dublin.

A recent development to the system is part of the Mayo to Galway pipeline which will link the Corrib gas field to the Irish market. The 149 km of 650mm diameter pipeline from Mayo to Galway will connect a proposed onshore terminal in Bellanaboy Co. Mayo, into the Pipeline to the West at Craughwell in Co. Galway. The Mayo-Galway pipeline has been laid to within several hundred metres of the proposed terminal at Bellanaboy. The section of this pipeline to Galway is fully operational and the remainder of the pipeline is to be commissioned in stages before the arrival of Corrib gas so that the Mayo towns can be supplied with gas.

The system is now largely developed and the existing network now includes the North West pipeline (112km of 450mm diameter pipeline) which is a development related to the Northern Ireland system expansion. In addition a new pipeline has been completed recently between the IC2 land-fall at Gormanston, Co. Meath to connect to the North West pipeline at Ballyalbanagh in Co. Antrim. The pipeline, commissioned on October 2006, is 156km in length and will facilitate supplies to towns and industries in the corridor from Newry to Belfast and will provide an alternative supply of gas to the north when required. The connections to the Northern Ireland system are not modelled as part of this study.

2.5 PLANNING THE TRANSMISSION SYSTEM

The transmission system is designed and maintained to comparable international standards to ensure the co-ordinated development of a safe, secure, reliable and efficient system for the transmission of gas for the long term benefit of users. The Bord Gáis Networks' transmission planning process involves the consideration of many factors, including:

- demand forecasts;
- projections of gas supplies from indigenous sources;
- availability of imports;
- economics of alternative development options;
- operation, maintenance and protection;
- security of supply;
- gas storage requirements;
- co-ordination with downstream loads and customers; and
- Strategic and environmental considerations.

2.6 PLANNED NETWORK DEVELOPMENTS

Within the period of this Statement, Bord Gáis Networks is not expected to undertake any major extensions to the transmission system as the Mayo-Galway pipeline which is needed to introduce Corrib gas into the system and the South-North pipeline which is related to gas supply in Northern Ireland are now complete. Further developments are primarily demand-led extensions or reinforcements to the onshore Ireland system.

Potential Developments

The main development that will have a significant impact on the system is the proposed liquefied natural gas (LNG) import terminal on the Shannon Estuary. The current view is that this terminal will be in operation by the winter of 2012/13 and this timing has been included in the base case scenario. The terminal is close to the existing transmission system and would be connected to it by a relatively short length of pipeline.

The Department of Communications, Marine and Natural Resources recently commissioned a feasibility study on the construction of a pipeline from the Mayo - Galway Pipeline to Donegal town via Sligo. This provides the possibility that there may be future pipeline projects in this region.

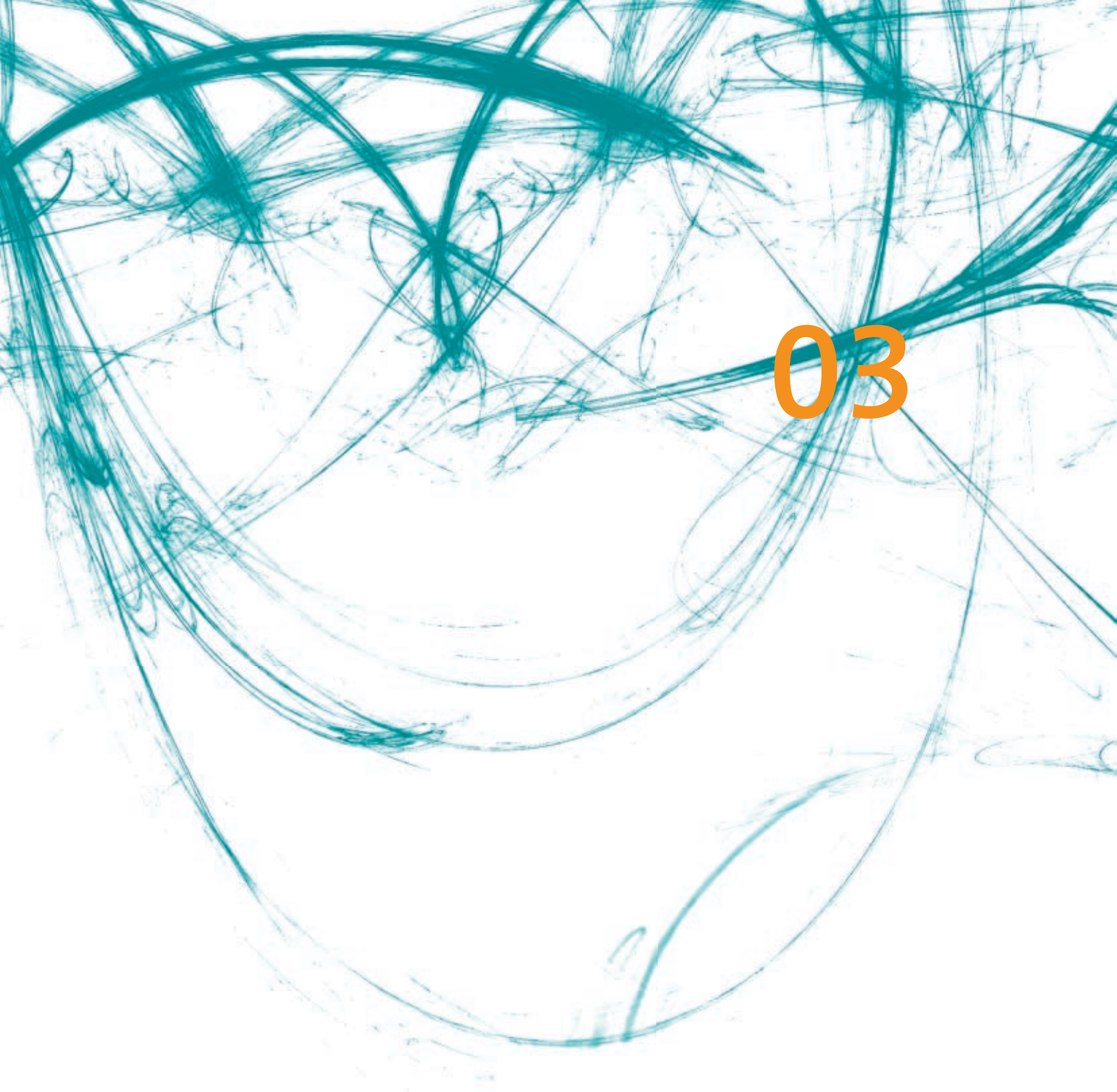
2.7 OVERVIEW OF THE GAS DISTRIBUTION SYSTEM

Gas is delivered by the high pressure transmission network to above ground installations (AGI) designed to reduce the pressure to a suitable level for delivery to the BGÉ distribution system. The majority of the distribution system comprises PE (polyethylene) pipe operating in two nominal pressure tiers of 4bar and 75mbar delivering gas to more than 575,000 customers' premises in towns and cities.

Planning and development of the distribution system incorporates demand forecasts based on customer information and connection requests for individual residences and new housing schemes in addition to industrial and commercial (I&C) loads.

The distribution system design is based on 1 in 50 winter criteria applied to a standard annual load by classification of domestic residence or to customer specific information for industrial and commercial loads.

System efficiency is obtained at the planning and design stage by incorporating the overall diversity of demand within network models to optimise network extension and reinforcement projects.



03

Gas Demand

03 Gas Demand

3.1 INTRODUCTION

The central demand forecast used in this Statement is based on the demand projections of the 2006 Statement updated by taking account of developments in the market such as new gas fired power generation projects, changes in economic growth projections, current and projected house building rates and the recorded demand in 2006. This methodology is a repeat of the process followed for the 2006 Gas Capacity Statement whereby the forecast demand for natural gas in Ireland, having been developed from first principles for earlier Statements, is updated by reviewing each market sector and applying changes to the assumptions used to develop the central demand forecast.

3.2 HISTORICAL GAS DEMAND BY SECTOR[19]

The historic gas consumption in Ireland reflects strong demand growth in the residential and power generation market sectors, as shown in Table 3.1 below, with total annual demand rising from about 2.5bcm in 1998 to nearly 4.6bcm in 2006.

TABLE. 3.1

MSCM/YEAR	1998	1999	2000	2001	2002	2003	2004	2005	2006
Power Generation	1,466	1,619	1,946	1,964	2,190	2,489	2,558	2,373	2,846
Own use/losses	32	46	30	50	50	51	55	53	77
Residential	366	414	467	510	503	569	704	684	731
All I&C: of which	1,168	1,137	1,222	1,278	1,138	782	973	965	923
- I&C	671	698	813	800	765	782	973	965	923
- non-energy (IFI)	497	439	409	478	373	–	–	–	–
TOTAL GAS DEMAND	**3,032**	**3,216**	**3,665**	**3,802**	**3,881**	**3,891**	**4,290**	**4,075**	**4,577**
Total exc. IFI	2,535	2,777	3,256	3,324	3,508	3,891	4,290	4,075	4,577

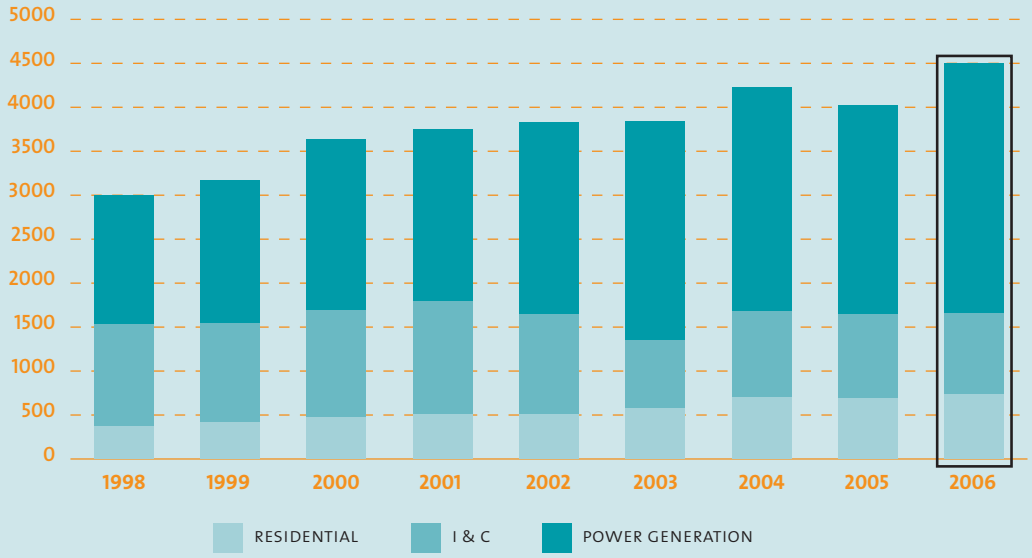
Sources: Years '98 – '04 SEI; Years '05 – '06 BGÉ (IFI

For the period 1998 to 2006 the actual annual consumption of natural gas in Ireland has increased by about 80% and the residential and power generation sectors have almost doubled over that period. Total demand for natural gas dropped in 2005 due to a combination of milder weather and fuel switching in the power generation and industrial sectors due to record wholesale gas prices.[20] The industrial and commercial market sector is seen to decrease over the 1998 to 2006 period due to the closure of a major gas load at IFI.[21] However, excluding the IFI load the growth of this sector

19 Actual volumes consumed, not weather corrected
20 Irish Fertiliser Industries
21 BGÉ Annual Report 2005

is about 38% over the period shown. The proportion of each market segment is shown in Figure 3.1 below where the steady growth of the residential and power generation sectors are seen with the power generation sector accounting for over 60% of annual consumption in 2006.

FIGURE 3.1 TOTAL GAS DEMAND BY SECTOR



3.4 GAS DEMAND PROJECTIONS

The gas demand projections are formed for the individual sectors of residential, I&C and power generation by updating the assumptions underlying the growth drivers for each sector. Historical gas demand statistics provided by Sustainable Energy Ireland and BGÉ are used together with the current year information of consumption and customer numbers to ensure the baseline data is correct. The overall gas demand projection is formed by adding the separate market sector components.

3.4.1 Residential Demand

The gas demand in the residential sector is driven primarily by the number of connected customers with weather factors influencing the peak winter load. Economic growth influences this market sector in the annual energy consumption and the rate of new housing development.

The BGÉ residential customer base increased by 36,716 customers, or just over 7%, in the 2005/06 Gas Year giving a total number of residential customers of about 538,027 by the end of the 2005/06 Gas Year.[22] New housing completions totalled 93,419 in 2006[23] and projections for the industry are still robust although a reduction in the level of activity is expected in 2007/08.[24] In addition, the number of new residential connections for gas distribution completed in 2006 was lower than that forecast for the 2006 Gas Capacity Statement.

The level of demand growth experienced in the residential sector in the 2005/06 Gas Year, the average annual consumption, the new connections and most recent forecast for new housing have been used to update the demand projections for this sector based on last year's central demand scenario.

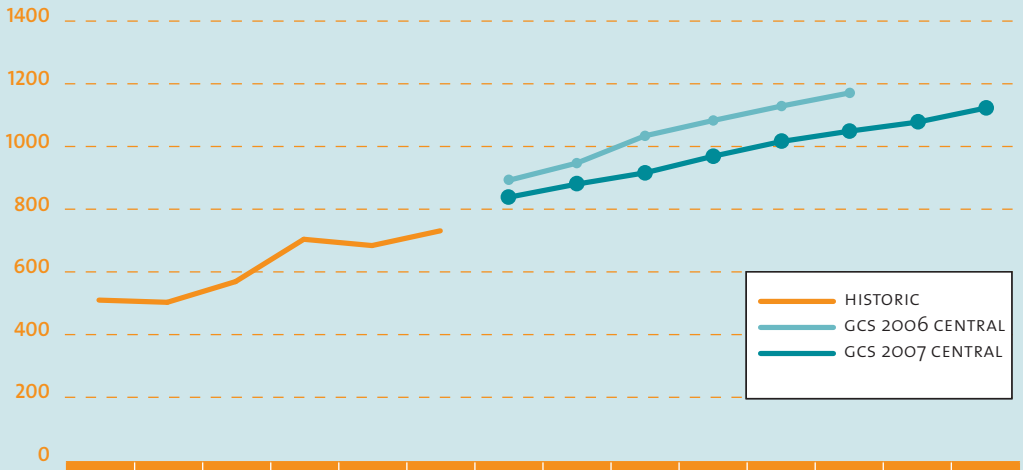
For this year's residential demand projection, new house completions are expected to reach only 75,000 units in 2008 and continue at a reducing level to a long term underlying demand at 60,000

22 Bord Gáis Networks data
23 Central Statistics Office data
24 AIB, Irish Economic Outlook, April 2007

per annum from 2010 onwards. The number of new gas connections is forecast to continue to grow at a rate of over 6% for the 2006/07 Gas Year, drop to 5% for the 2007/08 Gas Year and then gradually decline to just over 3% per annum by 2013/14.

The average annual gas consumption per residential customer is assumed to be 16,200kWh for the central demand scenario.[25] This value has been reduced from the 17,000kWh used for the 2006 Statement. This adjustment is due to the increasing proportion of new housing in the residential sector which is assumed to have improving energy efficiency (from modern building standards and heating equipment) and also to allow for a change in consumer patterns and occupancy.

FIGURE 3.2 RESIDENTIAL SECTOR ANNUAL GAS DEMAND FORECAST



01	02	03	04	05	06	06/07	07/08	08/09	09/10	10/11	11/12	12/13	13/14
510	503	569	704	684	731								
						892	947	1,034	1,083	1,129	1,171	1,210	
						838	880	916	969	1,016	1,049	1,078	1,123

3.4.2 Industrial and Commercial Gas Demand

The industrial and commercial sector comprises daily metered (DM) and large daily metered (LDM) customers, of consumption above 0.5mscm per annum, and the non-daily metered (NDM) customers with consumption below 0.5mscm annually.

The underlying demand growth in this sector is generally driven by growth in real GDP[26] and the demand projections of the previous Statement have been updated with reference to recent economic reviews. Additional information sources include the industry questionnaire issued by the Commission to I&C customers, actual gas demand in 2006 and the number of enquiries for new connections to the network for large loads.

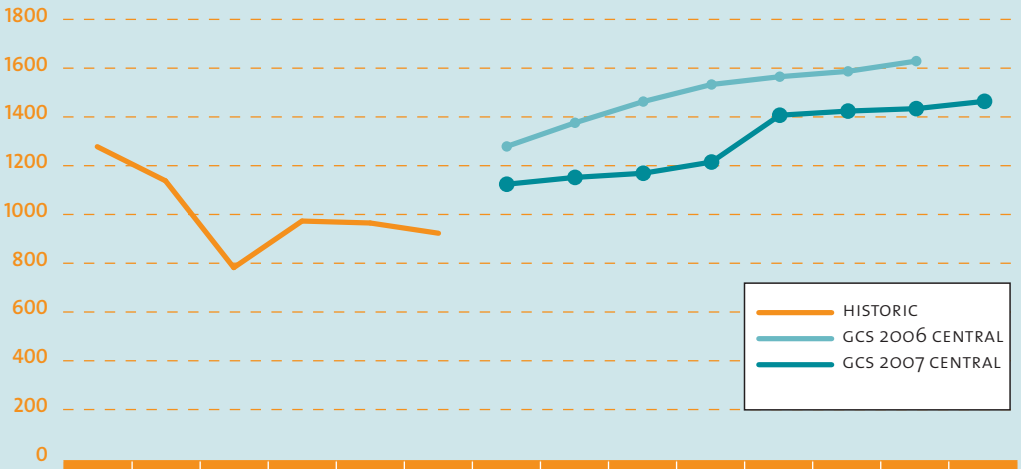
Recent reviews of economic growth expectations forecast a reduced rate of GDP growth for 2007 and 2008, although there a range of views expressed by different commentators.[27] [28] The growth assumptions for the I&C sector have been adjusted to reflect a reduced GDP growth rate in 2007 and 2008 with the central growth figures from the ESRI Medium Term Review [29] used for 2009 onwards as for the 2006 Gas Capacity Statement.

A total of 772 new connections were established for the industrial and commercial customers in the 2005/06 Gas Year for both NDM and DM/LDM classifications. This growth was countered with the

25 Based on recent Bord Gáis Networks data
26 Fitzgerald, J., Hore, J., Kearney, I. "A Model for Forecasting Energy Demand and Green house Gas Emissions in Ireland" August 2002, ESRI, Dublin.
27 Davy Research Report: Irish Economy, March 2007.
28 Quarterly Economic Commentary, Spring 2007, ESRI, Dublin
29 Fitz Gerald et al, "Medium Term Review: 2005-2012", ESRI, 2005.

closure of a number of large loads and the total connected customers were 19,868 at the end of the 2005/06 year. This is one factor that resulted in a lower annual gas demand in 2006 compared with 2005, as shown in Figure 3.3 below, in spite of wholesale gas prices reducing from the 2005 level.[30] The projected gas demand in this sector has also included information pertaining to new large loads with lead times of up to three years for connection to the network.[31]

FIGURE 3.3 INDUSTRIAL & COMMERCIAL SECTOR – ANNUAL GAS DEMAND FORECAST



01	02	03	04	05	06	06/07	07/08	08/09	09/10	10/11	11/12	12/13	13/14
1,278	1,138	782	973	965	923								
						1,279	1,376	1,463	1,553	1,565	1,587	1,629	
						1,124	1,152	1,169	1,215	1,407	1,424	1,434	1,464

3.4.3 Power Generation

Growth in electricity demand is also determined by forecasts of economic growth as described in the EirGrid Generation Adequacy Report (2007-2013) (GAR). The GAR has been used as the basis for updating the previous demand projection for this sector together with the generator's responses to the Commission's annual industry questionnaire. The addition of gas fired power generation to the gas transmission system represents the single biggest step change in demand on the Irish gas network and therefore the EirGrid GAR was reviewed in meetings with the key industry stakeholders, along with their questionnaire responses, to consider the possible capacity requirements for this market sector.

Since 1998 the use of natural gas in power generation has risen from about 48% of the total annual consumption to about 62% in 2006 (Table 3.1) and is projected to grow over the period of this Statement. The electricity Transmission System Operator (EirGrid) forecast peak export capacity required to meet annual electricity demand to grow by about 4.3% per annum in 2007 falling to about 3% in 2013, which is in line with long-term GDP growth rates.

In addition, the most recent EirGrid GAR forecast potential power deficits from 2010 and allows for two new power stations to meet the demand growth within the period of this Statement. In addition, a further 400MW will be required. It is also assumed that 1300MW of old generating plant will face closure and 2443MW of wind powered generating capacity will be available by 2013. The GAR discusses the impact of the north-south electricity interconnector (2012) and an east-west interconnector to Great Britain (also from 2012) and the effect of a single electricity market and its effect in terms of an All-Island adequacy assessment.

30 BGÉ Annual Report 2006

31 Combined Heat and Power (CHP) demand and forecast are included in I&C DM/LDM sector except for the Aughinish CHP plant where gas for electricity production has been included in the power generation demand forecast.

These factors, included in the GAR forecast, were cited by some industry respondents in relation to an increasing uncertainty with regard to providing an individual power station annual generation forecast. These medium-term uncertainties combined with gas price variation increase uncertainty regarding gas volumes in this sector and could have the effect of depressing capacity bookings in the power generation sector in Ireland. However, following discussion with industry stakeholders a set of assumptions concerning the commissioning dates of new gas fired plant and reasonable expectations for operation of existing plant were compiled for the demand projections for this Statement.

The following table compares the assumptions concerning new gas plant commissioned over the Statement period in the 2006 central demand scenario and this year's central demand scenario.

TABLE 3.2 CENTRAL DEMAND – NEW POWER GENERATION

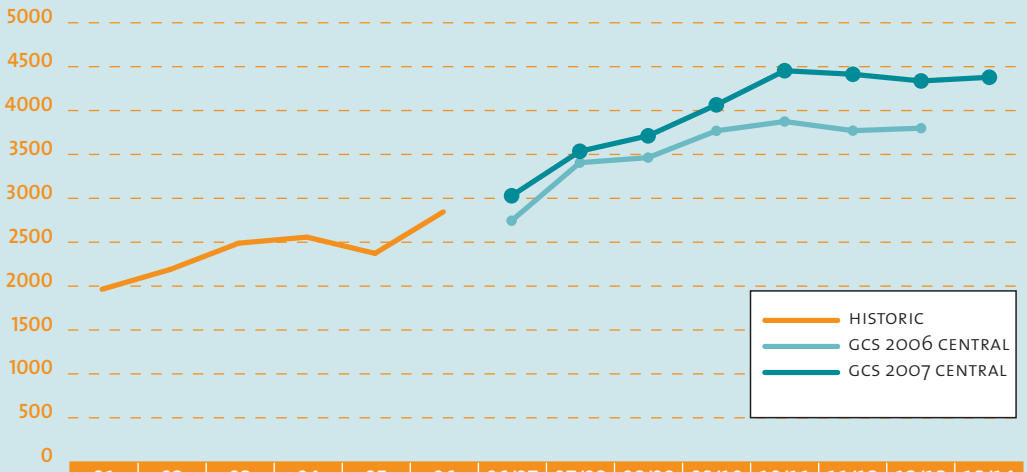
Gas Year	Central Demand 2007	Central Demand 2006	
2005/06	150 MW 400 MW	150 MW 400 MW	Aughinish Tynagh
2006/07	0	0	
2007/08	400 MW	400 MW	Huntstown phase II
2008/09	0	400 MW	IPP in Cork area
2009/10	*440 MW	0	IPP in Cork area
2010/11	440 MW	400 MW	IPP in Cork area
2011/12	0	0	
Total MW	**1,830 MW**	**1,750 MW**	

** GAR notes, 430 mw of export capacity. This study uses 440 mw of plant capacity, with respect to gasload connection data for power generating plant.*

The Aughinish CHP and Tynagh combined cycled plants are shown on-line from last year and the Huntstown Phase II combined cycled plant is expected to come on-line towards the end of 2007, or for the 2007/08 gas year, as shown in last year's Statement. From the review of questionnaire responses from the power generation sector and consideration of the EirGrid GAR, it is assumed that the first of two new 400 MW combined cycled plants will be commissioned in the second half of 2009, therefore available for winter 2009/10, and the second built for early in 2010 and available for winter 2010/11.

Annual gas consumption figures used in the demand projection are taken from the questionnaire responses with an added assumption of gas-fired plant being required to replace a percentage of the wind generated electricity capacity. This is to allow for gas-fired plant as back-up for situations when the wind is too great, or too little, for power generation. These assumptions have been applied to the 2006 demand projections to form the central planning forecast for the power generation sector in this year's Statement as shown in Figure 3.4.

FIGURE 3.4: POWER GENERATION SECTOR – ANNUAL GAS DEMAND FORECAST



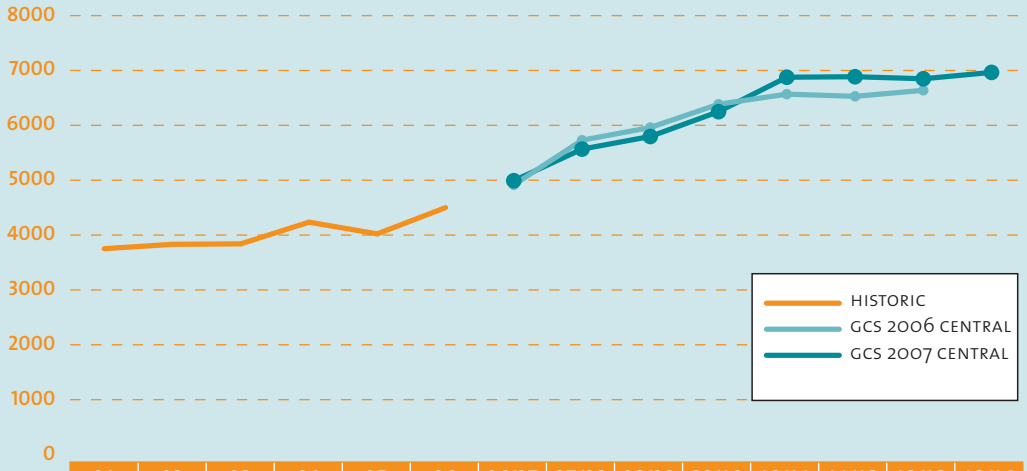
01	02	03	04	05	06	06/07	07/08	08/09	09/10	10/11	11/12	12/13	13/14
1,964	2,190	2,489	2,558	2,373	2,846								
						2,745	3,406	3,464	3,769	3,875	3,771	3,779	
						3,029	3,536	3,712	4,065	4,454	4,413	4,337	4,379

**Note to table * GAR notes 430MW of export capacity. This study uses 440MW of plant capacity with respect to gas load connection data for power generating plant.*

3.4.4 Total Gas Demand in Ireland

The central demand forecast of the total gas demand in Ireland is formed by aggregating the projections for the three market sectors. Figure 3.5 shows the historical data to 2006 (actual consumption) with the central demand forecast from last year's Statement compared with this year's central planning forecast.

FIGURE 3.5: TOTAL GAS DEMAND



01	02	03	04	05	06	06/07	07/08	08/09	09/10	10/11	11/12	12/13	13/14
3,752	3,831	3,840	4,235	4,022	4,500								
						4,196	5,729	5,961	6,385	6,569	6,,529	6,638	
						4,991	5,567	5,797	6,249	6,877	6,886	6,849	6,965

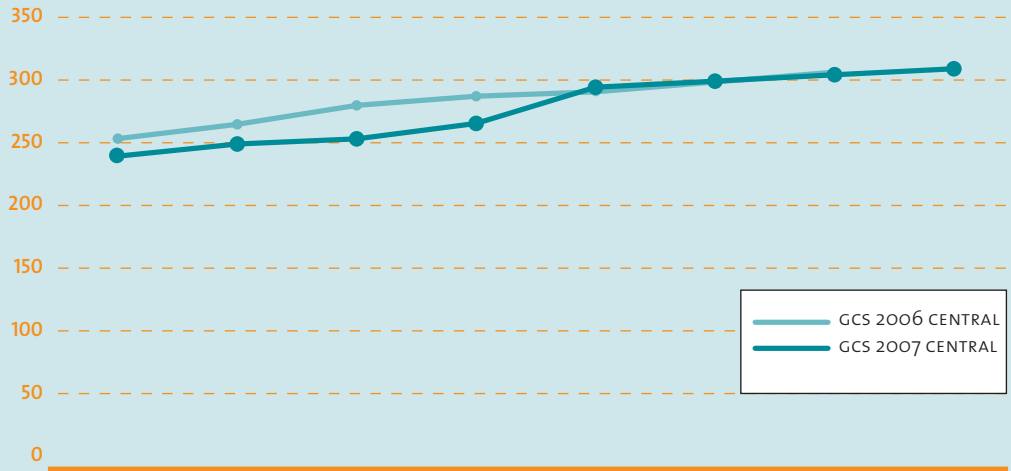
The updated forecast for total gas demand in Ireland developed for this Statement is very similar to the 2006 study but differs slightly in the growth profile. The central planning forecast is slightly lower than last year's Statement for the first half of the plan period. This reflects the views of a slight downturn in the rate of economic growth at the beginning of the plan-period and a reduction in the baseline level of the industrial load (due to the aforementioned closure of large process loads). The second half of the plan-period shows a higher projected level of demand that is mainly due to increased forecast volumes in the power generation sector.

3.5 PEAK DEMAND AND MINIMUM DEMAND CONDITIONS

In order to test the adequacy of the gas transmission system under extreme conditions it is necessary to determine the load of maximum or minimum demand with reference to peak winter criteria for temperature driven market sectors. As for the annual forecasts, the peak-day demand projections have been developed from an update of the projections of the 2006 Statement for each market sector and aggregated to form the total peak-day demand forecast.

The Commission's questionnaire requests both forecast capacity booking and annual demand over the review period. The response to the questionnaire is used to develop the central demand scenario for annual consumption and peak capacity requirements to which is added information such as capacity bookings, actual measured maximum demands and large load daily profiles. The central planning forecast scenario for peak-day demand is compared with the central and high peak-day forecast from last year's Statement in Figure 3.6 below.

FIGURE 3.6: PEAK-DAY DEMAND FORECAST

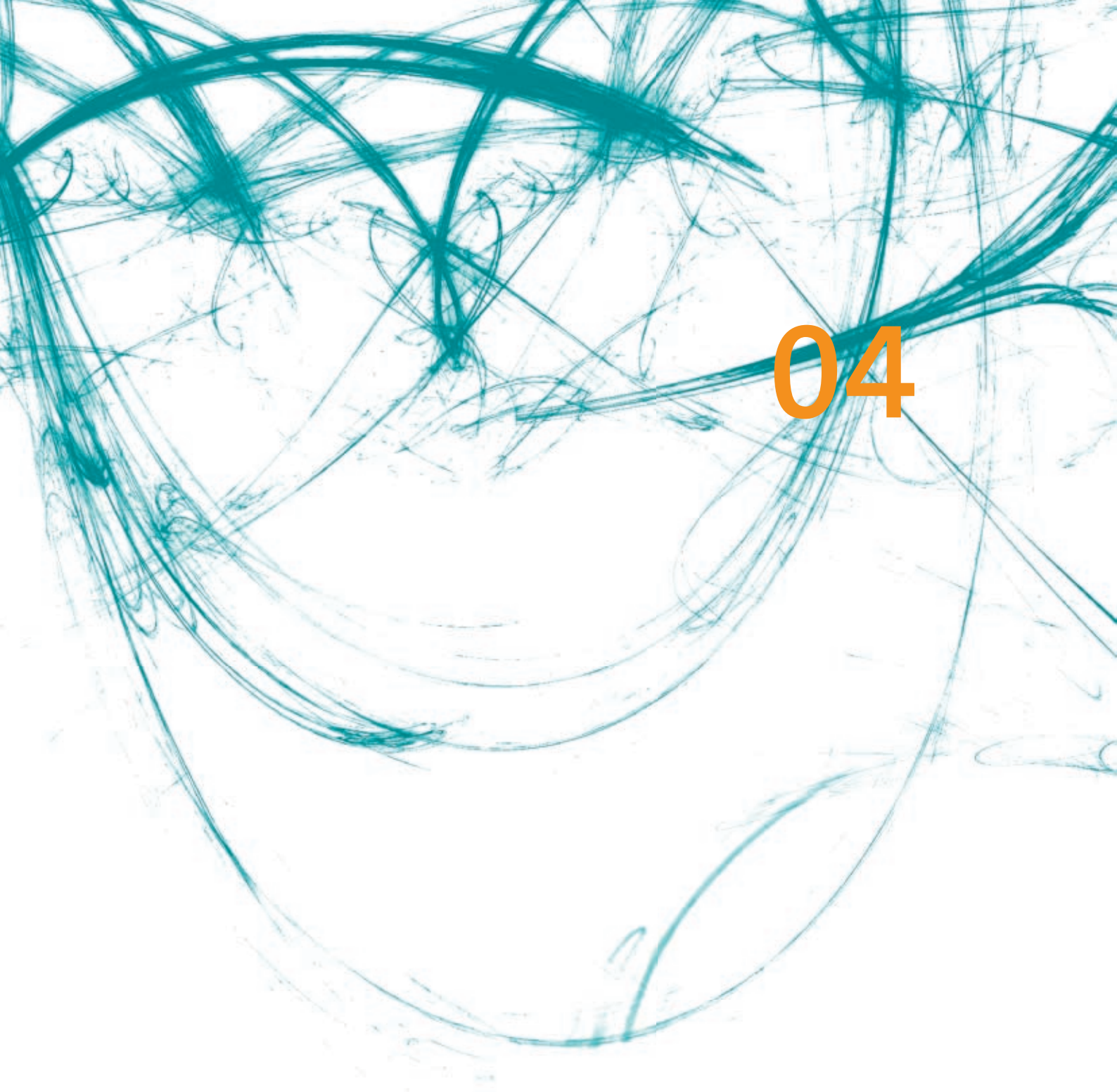


	06/07	07/08	08/09	09/10	10/11	11/12	12/13	13/14
GCS 2006 CENTRAL	253.3	264.7	279.8	287.1	290.6	295.8	306.3	
GCS 2007 CENTRAL	239.3	249.0	253.1	265.4	294.3	299.1	304.2	309

The peak-day demand forecast developed for this year's Statement is similar to that derived in last year's study. That is, over the period of the plan the overall increase in peak-day transmission capacity is around 305GWh/day, or about 27% for this year's forecast from 2006/07 to 2013/14. The profile of the peak demand growth in Figure 3.6 emphasises the changes in the planning assumptions from last year's forecast and shows a lower peak demand forecast in the first half of the plan period, rising in the second half of the plan period with the addition of 800MW of new power station load.

To determine lower load levels on the network the methodology of the previous Statements is used. The minimum load level for the residential, industrial and commercial sectors with temperature driven demand components was determined from the output from the Bord Gáis Networks forecasting allocation and reconciliation (FAR) process and a turn-down. For the power generation sector, the previous forecast of merit order is reviewed on the minimum day taking into account of the industry respondents' views on the price of competing fuels, load factor and efficiency.

For the purposes of this study it has been assumed that new power stations will be on-line in the winter-peak of the commissioning year and have a 100% load factor on the winter peak-day. A major demand sensitivity to consider is therefore the possible event of a power station planned to be commissioned in Q1 of 2010 being coincident with a demand-level associated with severe weather late in the winter period (say March).



04

Gas Supply

04 Gas Supply

4.1 INDIGENOUS GAS PRODUCTION

The Kinsale Head and Ballycotton gas fields have delivered gas to the Inch terminal near Cork from the 1970s. These fields, however, are now in decline similar to many European sources. The addition of gas production from the Seven Heads field (also off the Cork coast) from December 2003 has contributed to the indigenous supply albeit at significantly lower rates than originally projected and overall production has continued to decline as shown in Table 4.1.

TABLE 4.1 HISTORICAL GAS SUPPLY IN IRELAND

MSCM/YEAR	1998	1999	2000	2001	2002	2003	2004	2005	2006
Indigenous Production	1,570	1,231	1,069	735	756	607	851	530	420
Storage	–	–	–	–	–	–	–	–	88
Import Supply	1,464	1,987	2,599	3,068	3,148	3,287	3,442	3,546	4,157
TOTAL GAS DEMAND	**3,034**	**3,218**	**3,668**	**3,803**	**3,904**	**3,894**	**4,293**	**4,076**	**4,665**
% Imported	48%	62%	71%	81%	81%	84%	80%	87%	91%

From its initial position of total supply, indigenous gas production supplied just over 50% of the market in Ireland in 1998 but this has since declined resulting in imports via the interconnectors from Scotland now accounting for over 90% of gas supply in 2006.

Other sources of supply are the Marathon[19] gas storage facility (see below) and the Corrib gas field currently being developed off the west coast of Mayo with projected supply delivery for the winter peak of 2009/10.

Any additional potential indigenous gas sources are viewed as longer term supply prospects and not commercially viable within the time period addressed by this study.

19 'Marathon' refers to Marathon Oil Ireland Limited

4.2 STORAGE

The Southwest Kinsale gas field commenced physical operations as a storage facility from June 2006. This facility allows for gas to be injected during the summer period at rates of up to 1.6mscmd with a space of about 198mscm. Gas may be delivered from storage at rates of up to 2.8mscmd. These parameters are typical for the storage facility but will vary over the season depending upon the amount of stored volume and cushion gas in the field.

This facility enables shippers to stock gas during the low summer demand period to enable withdrawal of additional winter supply at times of peak demand. The storage facility is therefore treated as a source of supply on the peak-day, but is a demand on the minimum day with injection into storage requiring gas to be moved from the onshore transmission network to the offshore facility.

The availability of this facility is currently linked to the ongoing production operation at the Kinsale Head gas field and its viability is dependent upon the gas market in Ireland.

The Commission has been advised that Marathon is evaluating the feasibility of expanding the storage facility by between 30% and 40% and enabling a stand-alone operation. This, Marathon advised, would require access to the European internal market for the expansion project to be viable and includes an assessment of the required volume (and value) of cushion gas required for the field to operate as a larger gas store.

For the purposes of this study it is assumed that the gas storage facility is available and utilised by shippers with deliverability and injection parameters as given for normal commercial operation. However, due to the uncertainties about the long-term viability of the service a sensitivity case is considered when no storage gas is available for delivery to the system. This study has not addressed any emergency condition that may enable additional deliverability or access to cushion gas that would involve arrangements beyond normal commercial operation envisaged for gas storage.

4.3 GAS IMPORT

4.3.1 Interconnectors

Since 1993 the gas transmission system has been linked to supply routes via Scotland by means of the sub-sea interconnector, IC1. The interconnector was twinned in 2002 with the construction of IC2. The system includes onshore-Scotland pipeline and compressor stations as described in Section 2.

The interconnectors provide a secure link to the European gas sources via the connection in Scotland to the National Grid (NG) exit point at Moffat. In 2006, over 90% of the demand in Ireland was met by imported gas via the interconnectors. With additional investment in capacity for the onshore-Scotland system it would be possible to expand the import capacity of the combined IC1 and IC2 system to nearly 50mscmd from the current limit of 23mscmd.[20]

The reliance on the interconnectors will continue as demand in Ireland grows and indigenous supplies are only short-term or declining. The decline of indigenous resources is mirrored in the Dutch and UK sectors of the North Sea and European markets are becoming more dependent upon longer distance supplies from the Norwegian sector in addition to imports by pipeline (from Russia) and LNG ship. However, the access to European markets depends also upon the commercial arrangements at the NG exit point and the availability of NG transmission system capacity. Possible changes to the transmission exit capacity booking arrangements are discussed in Section 6.

20 The limit of 23mscmd is imposed by Brighouse Bay compression in the onshore-Scotland system.

4.3.2 Liquefied Natural Gas

A liquefied natural gas (LNG) import terminal is currently being developed by Shannon LNG.[21] The terminal, to be located on the south bank of the Shannon Estuary between Tarbert and Ballylongford in County Kerry, will offer gas supply to the Irish market from 2012.

The terminal is initially designed to deliver 16.99mscmd. However, expansion is possible to a capacity of up to 28.32mscmd of peak-day send-out capacity and with additional storage capacity of about 0.5bcm of natural gas should there be a market requirement.

For the purposes of this study it is assumed that the LNG supply will be available for the first winter peak of supply year 2012/13.

4.4 GAS SUPPLY SCENARIOS

For the purposes of this study a central supply scenario is developed based upon the information obtained from responses from gas producers to the questionnaire issued as part of the process for preparing this Statement. The central case supply scenario assumes that:

- Gas production at Kinsale, Ballycotton and Seven Heads are in decline over the Statement period;
- Marathon Storage is offered to shippers and full peak-day supplies are available over the Statement period;
- Corrib gas comes on-stream in 2009 and is therefore available for winter peak 2009/10.
- Shannon LNG is operating in 2012 and is therefore available for winter peak 2012/13.
- Demand for gas is met by indigenous production, LNG and storage, and then import via interconnectors.

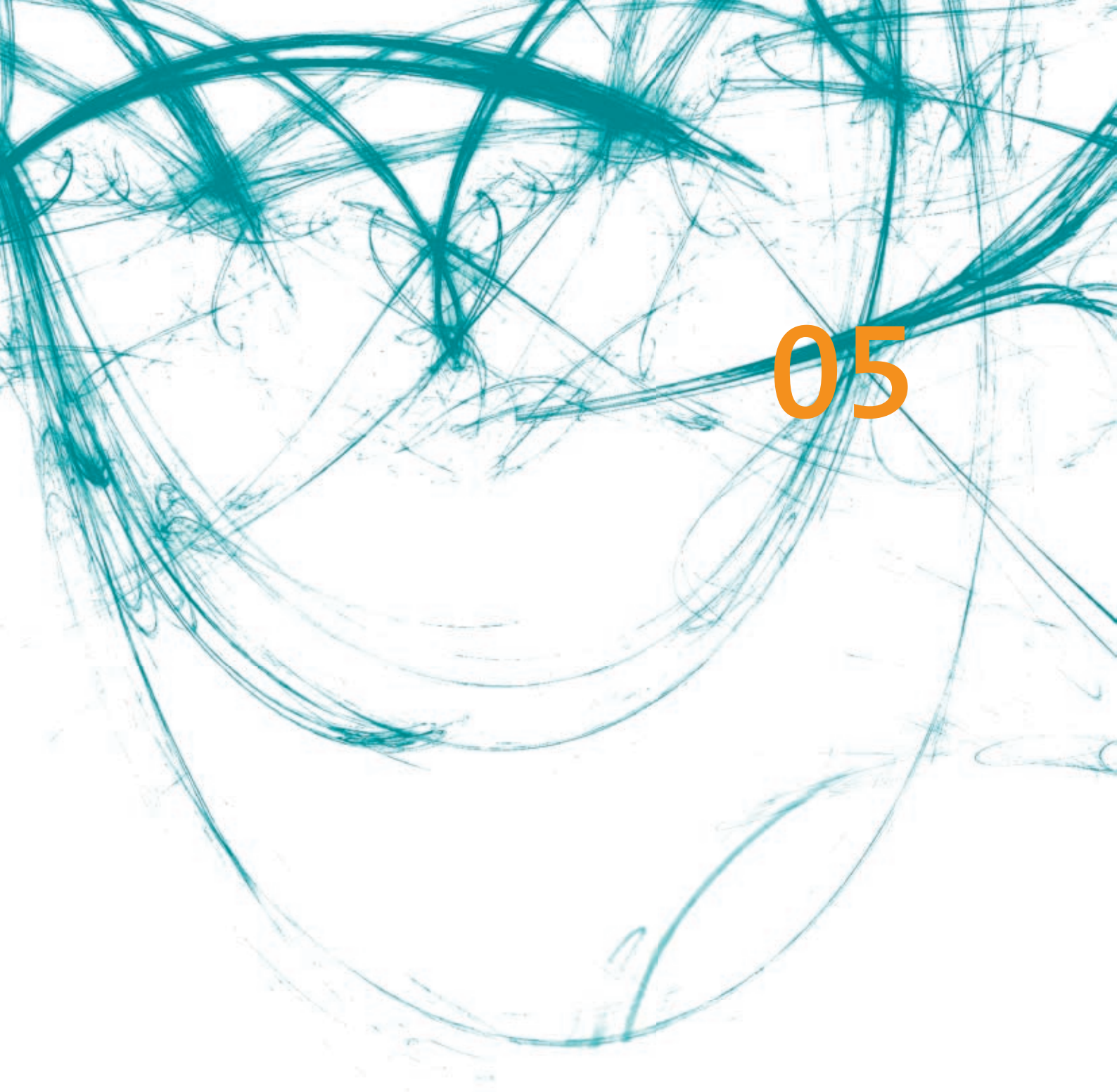
The major sensitivities to be explored in relation to gas supplies are potential delays to new supplies (i.e. Corrib production) and the possibility of no storage service. As the storage volume and availability is intrinsically linked to the variation in gas markets a number of possible scenarios could be investigated for stored gas. However, for the purposes of this study the extreme case of no storage service was considered to evaluate the system capacity to transmit supplies from other sources. The key assumptions of the low supply scenarios were:

- The Corrib project slips to 2010 and is therefore only available to meet peak demand from the winter of 2010/11.
- Kinsale storage facility ceases operations in May 2008 with gas from storage not available for the peak-day.
- Demand for gas is met by indigenous production, LNG and then import via interconnectors.

In each case it is assumed that the demand for gas is met by interconnector flows after indigenous production has been taken into account.

Detailed figures for indigenous and imported gas supply under each supply scenario are set out in the scenario data sets in Appendix A.

21 Shannon LNG Limited



05

Supply & Demand Scenarios

05 Supply & Demand Scenarios

5.1 TRANSMISSION NETWORK CAPACITY MODELLING

The ability of the transmission system to meet the forecast demand levels was modelled for the range of years from 2006/07 to 2013/14 inclusive. The modelling was undertaken using transient modelling software to simulate the operation of the gas transmission network in response to a set of boundary conditions. The boundary conditions are the inputs of supply availability and the outputs of peak-day demand on the system. In addition, a range of data are input to simulate the physical network conditions including the pipeline lengths, compressor powers, gas quality and supply pressures.

Supply and Demand Scenarios and Sensitivities

Previous Statements undertook network simulations for a series of supply and demand scenarios to investigate the capacity requirements for a range of possible situations. This study has followed the methodology used in last year's study of identifying sensitivities in relation to the demand and supply conditions that might depart from the central planning assumption.

TABLE 5.1 SUMMARY OF SUPPLY AND DEMAND SCENARIOS MODELLED

DEMAND \ SUPPLY	CENTRAL PLANNING SCENARIO
CENTRAL PLANNING SCENARIO - Residential demand growth determined by the number of new connections is initially over 6% for the 2006/07 Gas Year reducing to just over 3% per annum by 2013/14 - Industrial and commercial demand increases in relation to GDP growth over the period - 1200MW of new gas-fired power stations are added in the plan period. 400MW of Huntstown II in 2007/08 and two stations in the Cork area in years 2009/10 and 2010/11, each of 440MW electricity generating capacity	Central Demand & Central Supply

CENTRAL PLANNING SCENARIO
- Gas production at Seven Heads, Ballycotton and Kinsale is in decline over the period.
- Marathon storage is available to shippers for all years.
- Corrib gas comes on-stream in 2009 and is available for the 2009/10 winter.
- Shannon LNG comes on-stream in 2012 and is available for the 2012/13 winter.

The major sensitivities or departure from the central planning assumptions that result in an increased requirement for gas transmission capacity were identified for supply and demand. The sensitivities identified were:

- Indigenous supply reduction:
  – Corrib peak availability delayed to 2010/11
  – Gas from storage unavailable on the peak-day

- Demand increase:
  – Cork area industrial and power generation loads at Whitegate advanced one year from 2010/11 to 2009/10

The combination of the supply and demand sensitivities formed specific cases of high capacity requirements sufficient to test the performance of the system. Detailed analysis of the minimum day scenario was not repeated this year but to test the network performance in relation to a change of operating conditions a "May Day" case was devised for close study. This day is to simulate the situation of the Inch supply switching to a demand for the first day of injection to the gas storage facility while there is still a reasonably high demand on the network.

The sensitivity cases modelled were:
- Corrib delayed to 2010/11 and the Whitegate loads advanced to 2009/10
- Corrib delayed to 2010/11 and no flow available from storage and the Whitegate loads advanced to 2009/10
- A "May Day" case in 2009/10 with the Whitegate loads advanced and the requirement for full rate injection to the storage facility at Inch

Beattock Supply Pressure
A significant parameter influencing the performance of the onshore-Scotland system is the inlet pressure at the Beattock compressor station. The 2006 Gas Capacity Statement reported the ANOP[19] would be higher than the 40barg Pressure Maintenance Agreement with National Grid. For the purposes of this study it has been assumed that a minimum delivery pressure of 45barg to the inlet of the compressor station at Beattock will be available in all years of the plan period.

Compressor Capacities and Interconnector Pipeline Performance
Performance testing of the onshore-Scotland transmission system was in progress at the time of writing last year's Statement with testing of the compressors planned for 2007. BGE anticipate the development of HYSYS models for the compressor stations to be completed by the end of the year. The models will determine the capacity and performance limits of the compressors as-built compared with their original design limits.

Flow performance trials conducted on the pipelines in Scotland and the sub-sea interconnectors have yielded operational data to support the friction factors currently used in the network modelling. However, demand conditions at the time of the tests were not sufficiently high to test the system at peak flows and BGÉ intend to carry out further trials under higher flow conditions.

For the compressor capacity, the expected operational maximum throughput of the Beattock and Brighouse Bay compressor stations are given as 31mscmd and 23mscmd respectively and used in the modelling for this study. A recent study has been carried out on Beattock compressor station to evaluate the effect of an inlet pressure of 45barg and it is anticipated that the outcome of the study and the results of the compressor performance testing will be to confirm these maximum throughput capabilities and possibly identify low cost capacity developments at each of the stations that will enhance the flow characteristics without a detrimental effect on the service provided to shippers.

19 The Anticipated Normal Operating Pressure (ANOP) represents the lowest pressure at which the Transporter expects that, under normal operating conditions, gas will be made available for off-take at a Supply Meter Point.

The connected systems for gas delivery to Northern Ireland and the Isle of Man have been considered as point loads on the transmission network and no account has been taken of the system details downstream of the connection points.

5.2 RESULTS OF THE NETWORK MODELLING

The transmission system model simulates operation of the pipeline network for a range of demands. The demands are matched by the assumed indigenous supply availability and imports via the interconnectors from Scotland. The results of the modelling indicate where the pipeline capacity becomes constrained or exceeded due to, either an increase in load on onshore Ireland, or due to an increase in the volume of imports in the supply route from Scotland.

5.2.1 Central Demand and Central Supply

In the base case for the central supply and central demand scenario the modelling of the network showed results similar to last year's Statement and no additional capacity was needed for the transmission system in Scotland for the forecast gas imports.

Although the reported start date for Corrib supplies is now 2009/10 (a slippage of one year from last year's assumption) the total peak-day demand levels are also lower than those used in the 2006 Gas Capacity Statement. Provided the Corrib supply is available for the winter peak of 2009/10 the gas flows through the compressor stations at Beattock and Brighouse Bay are comfortably within the current defined capacity limits of those sites.

5.2.2 Other Scenarios and Sensitivity Cases

Delayed Corrib and Advanced Whitegate Loads

Analysis was undertaken for the case when a delay in the arrival of gas from the Corrib field (from 2009/10 to 2010/11) is in conjunction with the Whitegate loads being advanced by one year to 2009/10. This sensitivity was considered for the cases with and without delivery of storage gas from Marathon into the system via Inch.

In the case when storage gas is available at Inch the requirement is for imports via the Scottish system that just exceed 32mscmd. Although the 45barg minimum inlet pressure assumed at Beattock improves system pressures, the flow limit is exceeded for this compressor station and also at Brighouse Bay and a capacity enhancement is required to meet the demand level.

For the case when no storage gas is available at Inch additional supplies are required via the Scottish system. In this case, imports via the Scottish system approaches 35mcmd and the Beattock flow limit is exceeded and the system pressures cannot be maintained. The effect of this is to cause both the flow and pressure constraints at Brighouse Bay to be exceeded and the pressure at Twynholm (for delivery to the NI system) to be extremely close to the contractual minimum. This situation can be rectified by modelling the reinforcement of the onshore-Scotland system in the Beattock compressor, duplication of the pipeline from Cluden to Brighouse Bay and at the Brighouse Bay compressor station. However, these options are expensive engineering projects and would not be required in this scenario except for year 2009/10 after which the delivery of Corrib gas and then Shannon LNG reduce the need for import capacity via the Scotland route.

It was also noted that the system pressures in the Cork area were near the minimum requirement. This indicates that in later years there could be a need for additional capacity in the Cork area at peak demand if the storage facility is not available.

May Day Demand and Storage Injection

A May Day demand level was considered for the 2009/10 year of the central supply and demand scenario. This scenario is to simulate the operation of the network on the first day of gas injection to the storage field at Inch. At this time of year the two new gas fired power stations are assumed

to be on full load, as the most efficient generating plant, and there is a reasonably high demand in the Cork area. This configuration tests the capability of the onshore system to deliver high volumes of gas to the Cork area.

The results of the network analysis of this scenario showed that the system pressure at Midleton drops to below the minimum operating pressure as a result of the high pressure drop in the Curraleigh West to Midleton pipeline. This situation arises due to the very large flow in a north-south direction in the trunk main that was originally designed for flows south to north from Cork to Dublin. This problem is alleviated in the system by modelling a duplicate pipeline from Curraleigh West to Midleton.

Additional Power Station Load
Major changes in the power generating industry during the period of this Statement include the closure of 1300MW of older plant and the addition of 2443MW of wind powered electricity generating capacity. Should there be a need for additional gas fired power generating plant there is sufficient capacity in the Irish gas transmission system to accommodate the new plant where required with the possible exception of the Cork area where two new stations are already planned.

The timing of commissioning of new plants on the system is not yet confirmed due to connection issues, the impact of the north-south electricity interconnector (2012) and an east-west electricity interconnector to Great Britain (also from 2012) and the effect of a single electricity market and its effect in terms of an All-Island adequacy assessment. However, additional power generating demand can be accommodated within all planning scenarios considered in this study due to the high supply availability from both Corrib and Shannon LNG from 2011 onwards with the exception of the Cork area, this additional demand can be accommodated anywhere on the high pressure transmission system.

5.2.3 Capacity of the 40barg and 19barg systems

The lower pressure tiers of the transmission system supply gas from the main 85barg/70barg pipelines to the main cities and towns in Ireland. These supply systems using the latest demand figures have been modelled in detail in other studies but have also been included in the pipeline network model used in this analysis.

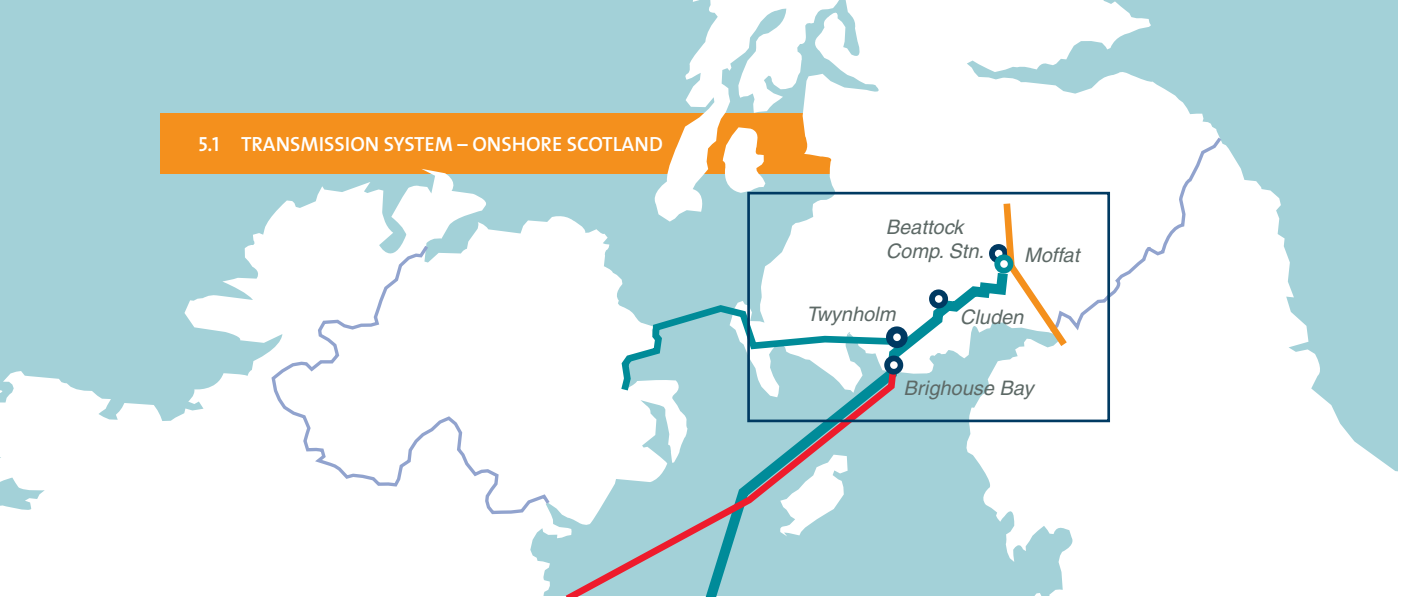
The systems currently being studied for reinforcement projects are:
- The 19barg system supplying Cork
- The 19barg system supplying Dundalk
- The 19barg system to Clonmel (this currently operates at 7barg)
- The 19barg system to Waterford
- The 40barg system in Dublin (supply to Wicklow).

Plans to reinforce the Cork, Dundalk and Clonmel systems are well advanced as they are required to meet demand growth in the period of the plan. The local reinforcement projects are demand led and each system is analysed in detail to optimise the engineering solution before commitment to the pipeline projects. Currently, the Waterford reinforcement is likely to be programmed toward the end of the plan period although potential new load developments in the Waterford area could advance the need to reinforce this part of the system. The latest forecast of demand for the Wicklow area is lower than previous forecasts and the projects for this locality have been slipped to beyond the plan period considered in this study.

5.3 NETWORK DEVELOPMENT

Transmission System – Onshore Scotland

The capacity assessment undertaken for this study shows that there is sufficient capacity in the onshore Scotland transmission system to meet all import requirements in the central planning scenario. Additional capacity is only required for additional imports in the case of both a delay to the Corrib and no storage service at Inch. In this case reinforcement is required along the onshore



Scotland system at Beattock compressor station, the pipeline from Cluden to Brighouse Bay and at Brighouse Bay compressor station, see Figure 5.1.

In addition to the Corrib indigenous gas field development, the possibility of LNG importation at Shannon reduces the likely need for these projects further. Any large scale reinforcement would only be required for a short period prior to gas supplies being delivered into Ireland by two new routes. The current performance studies being undertaken by BGÉ to obtain operating performance improvements at the Beattock and Brighouse Bay compressor stations should confirm the capacity limits with respect to the compressors and also indicate if there is any possibility for incremental enhancement of the components of the onshore Scotland system rather than full duplication of the compressor sites and pipeline.

Transmission System – Onshore Ireland

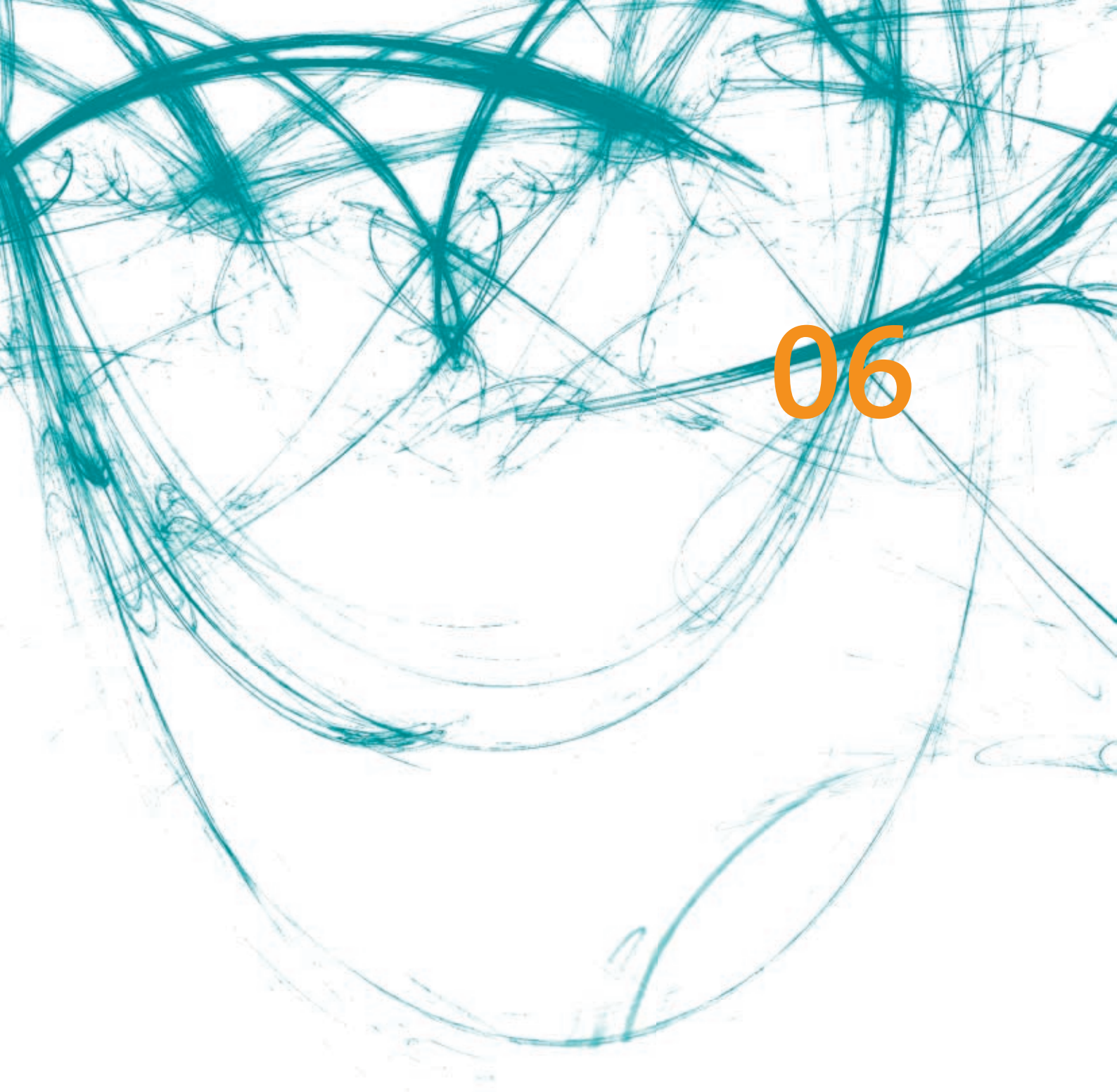
Reinforcement of the onshore transmission systems is required during the plan period in response to local demand growth with the Cork, Dundalk and Clonmel localities under consideration for reinforcement in the near future.

A detailed study of the transmission system in the Cork area was completed recently and showed that the Cork 19barg system needed to be reinforced before the 2009/10 winter as a result of the load growth in that locality. The study showed that the most effective solution for reinforcement was the construction of a 5.4km by 8" (and 70barg) pipeline from the West Cork Pipeline to a new AGI at Lehenaghmore.

Underlying demand growth and the addition of two large CCGT power stations raises the need for additional transmission capacity to the Cork area. The results of the analysis in this study show that for the long term growth in the Cork area the eventual supply route will be predominantly north-south in the original (1982) Cork Dublin trunk line. This will be the case for whether the gas supply is from Shannon LNG, Corrib or import via IC1 and IC2.

This study showed that the 450mm pipeline from Curraleigh West to Midleton on the transmission system became overloaded by 2010/11 if there was no production from Inch and deliverability from storage. Also, the May Day case required reinforcement to enable supplies to be transported for storage injection and to the new power station loads in the 2009/10 year. The injection to the storage field is a large flow increase in the north-south direction on that part of the system albeit at off-peak conditions. Therefore a reinforcement in this location will be needed as pressure problems will occur either when filling the storage or at peak-day demand levels. Currently BGÉ are planning gas transmission reinforcement in this location of 44.4km of 600mm pipeline by 2009/10 based on a detailed analysis of the local system.

To cater for demand growth in the Dundalk area, a 3km of 200mm pipeline from a connection point on the new south–north pipeline is one option under review. This study, however, considered the NI demand as point loads and therefore did not model potential south-north pipeline configurations. The solution proposed for the enhancement of the system near Clonmel is to upgrade the transmission AGI to supply a new PE distribution system reinforcement for the local load growth.



06

Discussion & Conclusions

06 Discussion & Conclusions

6.1 DEALING WITH UNCERTAINTIES AFFECTING DEMAND AND SUPPLY

The natural gas importation system to Ireland has a physical capacity of about 344GWh, limited by the import capacity via Moffat in Scotland, and currently has firm capacity booking levels of only 285GWh.[19] There is sufficient capacity for short term growth in the market but the purpose of this Statement is to provide a timely indication of the need for new investment in gas transmission for the medium and longer term.

The methodology this year has been to create a main supply/demand scenario by reviewing and updating last year's data after which specific sensitivities were developed that may be expected to stretch the gas transmission system under certain circumstances. The use of previous detailed models updated with the latest industry information provides a robust demand forecast against which the system peak-day capacity can be modelled.

With regard to the supply forecast the major changes from last year's study are the deferment of the Corrib start date by one year to 2009/10 and the introduction of LNG at the Shannon terminal. This has a major impact on views of security of supply, the reliance on imported gas via the interconnectors to Scotland and the potential influence of the global gas market.

The sustained growth of the Irish economy underpins the growth in total demand for gas. Ireland's gas dependence in the total energy portfolio is expected to increase from current levels and with respect to power generation the gas share is also projected to increase further, driven partly by environmental considerations. Other considerations influencing the demand forecast are growth in new house building and the level of economic growth that has an influence on the growth in electricity demand and on demand in industrial and commercial sector. The relative prices of gas compared to other fuels will continue to affect the growth mainly in the industrial sector and power generation sectors where it is easier to switch fuel sources to take advantage of changing price differentials.

The central demand scenario produced for this statement, described in section 3, is very similar to the forecast for the 2006 Statement. The growth in annual consumption is slightly higher over the period of the Statement but is slightly lower than last year's Statement for the first half of the plan period. The pattern is similar for the peak-day demand forecast but with a more pronounced reduction from last year's planning figures in the first half of the period and a rapid increase in peak capacity requirement with the addition of two 400MW power stations in consecutive years of 2009 and 2010. This reflects the views of a slight reduction in the rate of economic growth at the beginning of the plan period and a reduction of the baseline level of the industrial load (due to the closure of large process loads). The second half of the plan period shows a higher projected level of peak-day demand that is mainly due to forecast volumes in the power generation sector.

To address uncertainties within the demand forecast a sensitivity case was studied this year that advanced a major load increment. This enables an assessment of capacity availability should a higher than expected growth actually occur in the short term. With regard to supply uncertainties, the possibility that the Corrib indigenous gas field incur a one year delay from its planned availability for 2009/10 was assessed.

19 BGÉ website, 1st June 2007

Last year's Statement included the minimum demand day scenario and reported minimum system pressures for the Cork area in the network simulation with gas injection into storage at Inch. This scenario was replaced this year with a May Day demand to test the capacity of that part of the system when the storage would be prepared for maximum rate of injection and a reasonably large demand was experienced in the Cork area.

6.2 ASSESSING THE NEED FOR REINFORCEMENT

Previous Statements indicated a possible requirement for additional capacity in the onshore Scotland transmission system. The central planning case and sensitivities considered for this Statement indicated that there is no need for additional capacity in this part of the network within the plan period for most situations.

The capacity of the onshore Scotland system was only exceeded for the case when Corrib was delayed, major loads were advanced and no stored gas was delivered from the Marathon field to Inch. This would only be a short term deficit for one year until the Corrib supply was delivered and only another two years for supplies from LNG at Shannon. It is likely that large scale reinforcement projects on this part of the network face indefinite deferment unless they are needed to improve the security of supply on an all-island basis.

It should be noted that the effect of load advancement for this scenario was equal to a 10% increase in the peak-day and that the capacity deficit was a similar order. It is recommended that the performance testing of this part of the network (reported last year) is completed and that alternative operational improvements are pursued. It is anticipated that the outcome of the project will be to confirm the maximum throughput capabilities of the compressor stations and possibly identify alternative incremental developments that will enhance the flow characteristics and operational performance without a detrimental effect on the service provided to shippers.

This year's analysis revealed the need for onshore reinforcement of the transmission system. In particular, underlying demand growth in the Cork area and two new power stations on the same part of the transmission system cause the need for peak-demand reinforcement. In addition, the May Day case showed that the injection to storage at Inch could not be sustained combined with the demand in the Cork area and therefore transmission system reinforcement is needed in this part of the system.

The network modelling did not include the connected system of NI and the south-north interconnector. By modelling the linked systems it may be possible to identify operational configurations that improve capacity utilisation and increase the potential peak-day capacity available in the medium-term. Similarly, additional short-term capacity could be made available by utilising the system linepack in sub-sea pipelines. This, however, requires a viable commercial mechanism such as the Interconnector Inventory Product to be operable.

The forecasting of the demand on the system has assumed a 1 in 50 winter security level and the basis of the network modelling has included all loads as potentially firm, including the injection to storage. The Commission is of the view that commercial means should continue to be considered to overcome any potential short term capacity deficit.

6.3 SECURITY OF SUPPLY

The assessment of the transmission capacity undertaken for this Statement assumes that all supplies have the same level of reliability. The identification of system reinforcement arises due to demand growth or a particular set of boundary conditions exposing a constraint on a supply route. It might be argued, however, that the transmission system should be able to cope with periods when a source

of gas supply may be unavailable, especially for extended periods of time. Therefore a decision to invest in transmission, or storage, capacity might be considered justified on the grounds of security of supply as distinct from meeting peak gas demands.

A joint study has been commissioned by the Department of Communications, Marine and Natural Resources (DCMNR) and the Department of Enterprise and Investment for Northern Ireland (DETINI) entitled "Study on Common Approach on Natural Gas Storage and LNG on an all-Island Basis". This study will examine many alternative options for ensuring all-Island security of supply and make recommendations. Both the Commission and BGÉ have been consulted during this study and any future network development options will need to be consistent with the outcome of this study.

6.4 EXTERNAL FACTORS INFLUENCING IRELAND

There are a number of factors that may either influence the availability of gas supply to Ireland or that have a direct impact on the future planning and operation of the Irish network. The three areas of ongoing development that have been identified with respect to this year's Statement are:

- Requirements under Article 5 of the EU Gas Directive – 2003/55/EC;
- Reform of the exit capacity regime in the GB market;
- The supply demand position in the UK market (supply deficit or surplus).

6.4.1 EU Directive

Article 5 of the EU Gas Directive 2003/55/EC specifies reporting requirements relating to the monitoring of security of supply. All aspects are contained within this document in the previous five sections, apart from the specific requirement of stating "quality and level of maintenance of the networks, as well as measures to cover peak demand and to deal with shortfalls of one or more suppliers". The joint study mentioned in section 6.3 above will be making specific recommendations on all-Island security of supply but this section describes the current arrangements to meet the requirement of the Directive.

The measures that are taken for covering peak demand with respect to gas are essentially those provided for by gas suppliers in Ireland, who purchase a combination of gas supplies over a range of different periods from spot-gas to long term arrangements. This is combined with the utilisation of storage services within Ireland and from the GB market and other commercial solutions to ensure that they meet the demands of their customers.

The transmission system is designed to provide 1 in 50 peak-day capacity for non-daily metered customers and the maximum capacity requirements for daily metered customers. This ensures sufficient capacity is installed to meet the consumer requirements in severe winter conditions. The transmission system is designed to internationally comparable Standards and Codes of Practice. To ensure the integrity of the system, and maintenance is carried out to ISO 9001 accredited procedures, which are subject to external and internal audits annually.

In the event of supply failure there is specific provision for alternative fuel supply at most power plants (the major users of gas in Ireland) to ensure that gas supplies can be sustained to the smaller users, by shutting down the gas supplies to power plant as required and running the curtailed plant on alternative fuels. All the sites with alternative fuel arrangements also have storage facilities for the alternative fuel that can be refilled to provide extended periods of gas supply shutdown.

No indigenous gas production facilities have additional delivery capability over and above the contractual limits. The deliverability from the Kinsale storage facility could be increased above the normal commercial operating capacity for short durations depending upon the time of year and volume of stored and cushion gas available. In the event of emergency conditions it would be possible to access cushion gas from the Kinsale storage field.

6.4.2 GB Exit Capacity Reform

In last year's GCS the proposed reform of the GB exit capacity arrangements was highlighted as having major impacts on the Irish market. Following the submission of a number of GB Network Code modification proposals by National Grid Gas Transmission and GB Shippers, Ofgem (the GB Energy Regulator) directed the implementation of the full regime. However a referral was made to the UK Competition Commission by a GB Shipper.

The UK Competition Commission overturned Ofgem's decision on reforming gas exit capacity rules as well as its decision to not implement the alternative proposals from the shippers. The current regime for acquiring capacity at exit from NG's system will therefore continue until new proposals are published for consultation.

6.4.3 UK Supply Demand Match

The assumptions made in this Statement with regard to future gas supplies is that there will always be sufficient gas available from the GB market in order to meet demand requirements in Ireland. The recent forecast shortage of peak supplies has now been transformed into a significant peak surplus as a result of a number of new import projects supplying into the GB market. This surplus is currently forecast to be sustained until around 2014. It is necessary to keep a watching brief on the situation as the future GB peak supply position is dependant on the successful commissioning of a number of new import and storage projects, whilst the UK continental shelf (UKCS) production continues to decline. There have been several projects that have recently been declined planning permission and have gone to public enquiry; however the UK government is seeking to remove some of the obstacles to market driven investments in large scale energy infrastructure via the 2007 Planning White Paper.

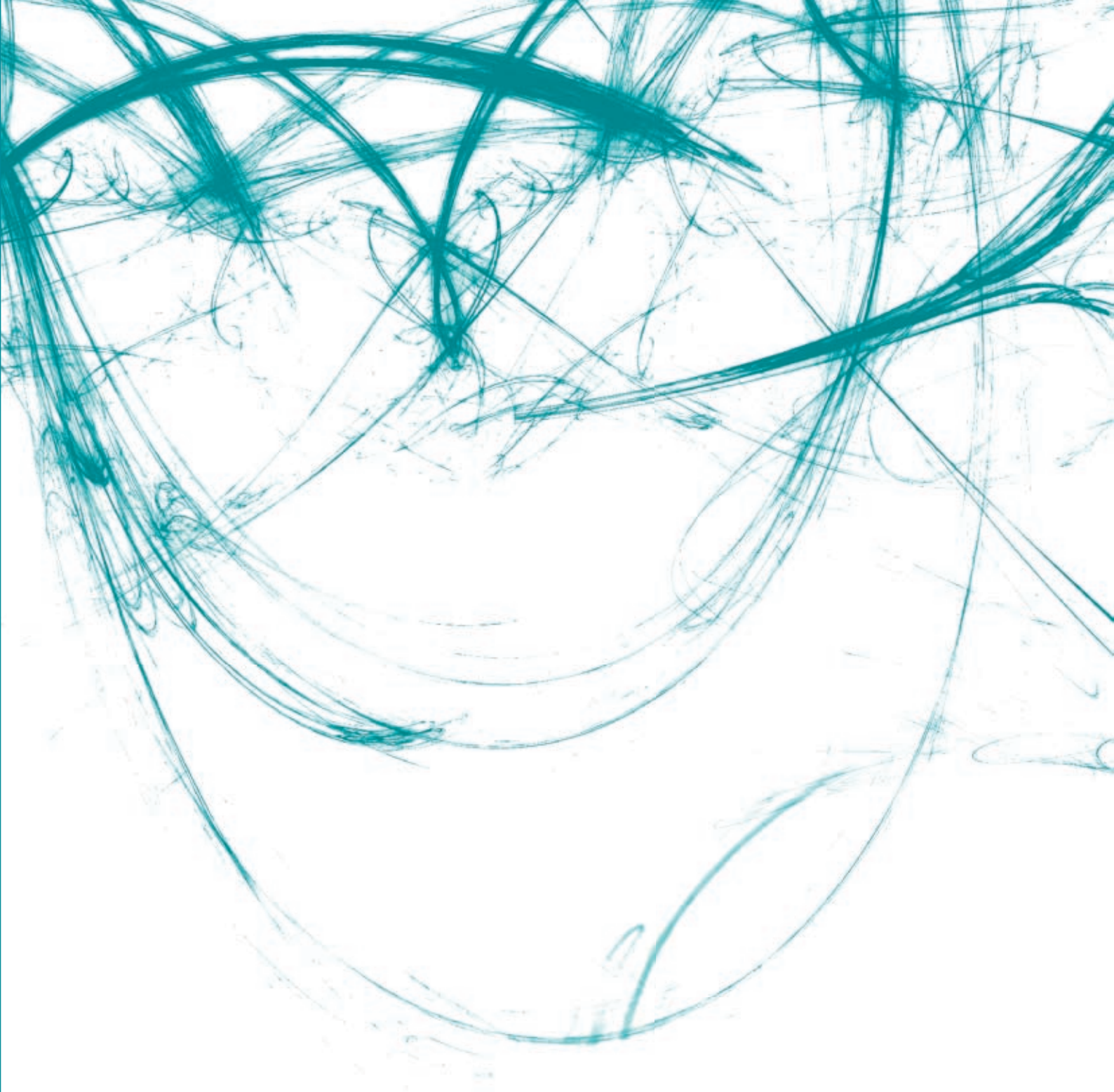
6.5 CONCLUSIONS AND RECOMMENDATIONS

- The natural gas transmission system has sufficient import capacity to meet reasonable expectations of demand growth under most conditions for the period of this Statement.

- There is a need for demand led reinforcement of the Irish onshore-network in response to high demand growth in a number of localities. In particular, reinforcement of the system in the Cork area is needed in relation to the injection of gas into storage and to reflect potential increases in capacity bookings for power generation.

- The timing and availability of new indigenous gas supplies remains a significant source of uncertainty This uncertainty may impact certain contractual obligations for BGÉ Networks, necessitating physical, operational or commercial solutions or a combination of these.

- The proposed delivery of LNG at Shannon will have a significant influence on the Irish gas market in terms of security of supply and the relationship with adjacent markets through physical and commercial interconnectedness. The Irish market is becoming increasingly affected by the gas markets outside of Ireland which can have an impact on security of supply and the ability to develop the Irish transmission system efficiently. It is recommended that close attention is paid to the developments in the UK and Europe regarding arrangements for system interconnection and security of supply.



Appendices

Scenario Data Sets - A

Glossary - B

Appendix A

SCENARIO DATA SETS

The data sets for the principal scenarios modelled in this Statement for the Peak Day are included in the Tables of this Appendix. The Tables show the peak-day gas demand and supply for each of the key scenarios studied with all figures given in GWh . The scenarios modelled were:

- Central Demand and Central Supply - the base case
- Central Demand Sensitivity 1 and Central Supply Sensitivity 1
- Central Demand Sensitivity 1 and Central Supply Sensitivity 2
- May Day case study using Central Demand and Central Supply

For each of the scenarios modelled the demand is matched with supply on the basis of maximizing the use of available indigenous gas initially and any remainder is balanced by imports through the interconnectors.

Shrinkage is assumed to be 0.5% of all throughput on the transmission system, excluding compressor fuel. An additional 1.9% of shrinkage is included in the distribution tier loads for Pressure Reduction Station (PRS) heating and losses on that system.

TABLE A1 CENTRAL DEMAND AND CENTRAL SUPPLY

Peak Day Data

Scenario Parameters

Gas production at Kinsale, Ballycotton and Seven Heads are in decline over the Statement period;
Marathon Storage is available on the peak-day;
Corrib gas comes on-stream in 2009 and is available for winter 2009/10;
Residential demand is determined by the number of new connections which is initially 6.1% p.a. reducing to 3.3% p.a. over the period of the Statement.
Industrial and commercial demand increases in proportion to real GDP growth over the period;
A total of 1,200MW of new gas fuelled electricity generating capacity.

PEAK DAY DEMAND GWH/DAY	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14
Residential	69.8	73.4	76.6	79.5	82.5	85.4	88.3	91.2
I&C	52.9	54.2	55.2	56.5	62.8	63.8	64.8	65.8
Power Generation	117.2	121.9	121.9	130.0	149.7	149.7	149.7	149.7
NI supplied via S/N	0.0	0.0	0.0	0.0	0.0	0.9	2.1	3.0
Shrinkage (exc. Compressor fuel)	1.2	1.2	1.3	1.3	1.5	1.5	1.5	1.5
Peak Demand in Ireland	241.1	250.8	255.0	267.4	296.4	300.4	304.3	308.3
SNIP & IoM Demand	90.8	91.5	96.3	98.2	98.9	103.4	104.6	105.5
PEAK SUPPLY GWH/DAY	**2006/07**	**2007/08**	**2008/09**	**2009/10**	**2010/11**	**2011/12**	**2012/13**	**2013/14**
Inch	12.0	10.5	7.4	5.6	4.2	3.2	2.4	1.9
Bellanaboy	–	–	–	104.2	104.2	92.6	71.8	55.5
Shannon LNG	–	–	–	–	–		98.9	134.4
Storage Delivery	30.9	31.0	31.0	30.5	30.1	30.2	30.4	30.2
Interconnector	288.9	300.8	312.8	225.3	256.8	277.8	205.5	191.8
Imports	198.2	209.3	216.5	127.1	157.9	174.3	100.9	86.3
Peak Supply to Ireland	241.1	250.8	255.0	267.4	296.4	300.4	304.3	308.3

FIGURE A1 CENTRAL DEMAND AND CENTRAL SUPPLY

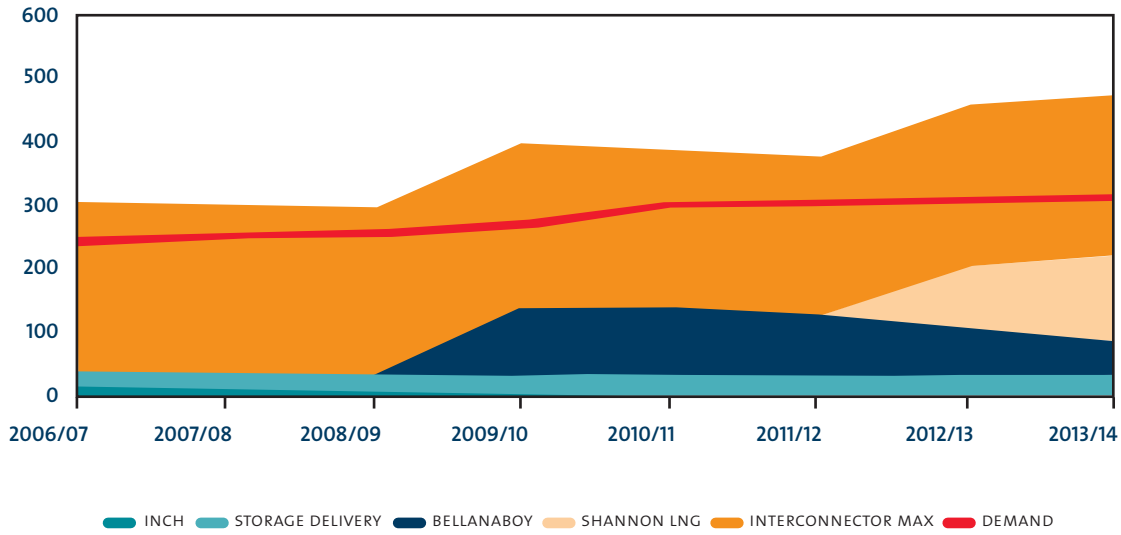


TABLE A2 CENTRAL DEMAND SENSITIVITY 1 AND CENTRAL SUPPLY SENSITIVITY 1

Peak Day Data

Scenario Parameters

Gas production at Kinsale, Ballycotton and Seven Heads are in decline over the Statement period;
Marathon Storage is available on the peak-day;
Corrib gas comes on-stream in 2010 and is available for winter 2010/11;
Residential demand is determined by the number of new connections which is initially 6.1% p.a. reducing to 3.3% p.a. over the period of the Statement.
Industrial and commercial demand increases in proportion to real GDP growth over the period;
I&C loads at Whitegate offtake are advanced one year to 2009/10;
A total of 1,200MW of new gas fuelled electricity generating capacity.

PEAK DAY DEMAND GWH/DAY	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14
Residential	69.8	73.4	76.6	79.5	82.5	85.4	88.3	91.2
I&C	52.9	54.2	55.2	61.5	62.8	63.8	64.8	65.8
Power Generation	117.2	121.9	121.9	149.7	149.7	149.7	149.7	149.7
NI supplied via S/N	0.0	0.0	0.0	0.0	0.0	0.9	2.1	3.0
Shrinkage (exc. Compressor fuel)	1.2	1.2	1.3	1.3	1.5	1.5	1.5	1.5
Peak Demand in Ireland	241.1	250.8	255.0	292.0	296.4	300.4	304.3	308.3
SNIP & IoM Demand	90.8	91.5	96.3	98.2	98.9	103.4	104.6	105.5
PEAK SUPPLY GWH/DAY	**2006/07**	**2007/08**	**2008/09**	**2009/10**	**2010/11**	**2011/12**	**2012/13**	**2013/14**
Inch	12.0	10.5	7.4	5.6	4.2	3.2	2.4	1.9
Bellanaboy	–	–	–	–	104.2	104.2	92.6	71.8
Shannon LNG	–	–	–	–	–		98.9	134.4
Storage Delivery	30.9	31.0	31.0	30.5	30.1	30.2	30.4	30.2
Interconnector	288.9	300.8	312.8	354.2	256.8	266.2	184.7	175.6
Imports	198.2	209.3	216.5	255.9	157.9	162.8	80.1	70.0
Peak Supply to Ireland	241.1	250.8	255.0	292.0	296.4	300.4	304.3	308.3

FIGURE A2 CENTRAL DEMAND SENSITIVITY 1 AND CENTRAL SUPPLY SENSITIVITY 1

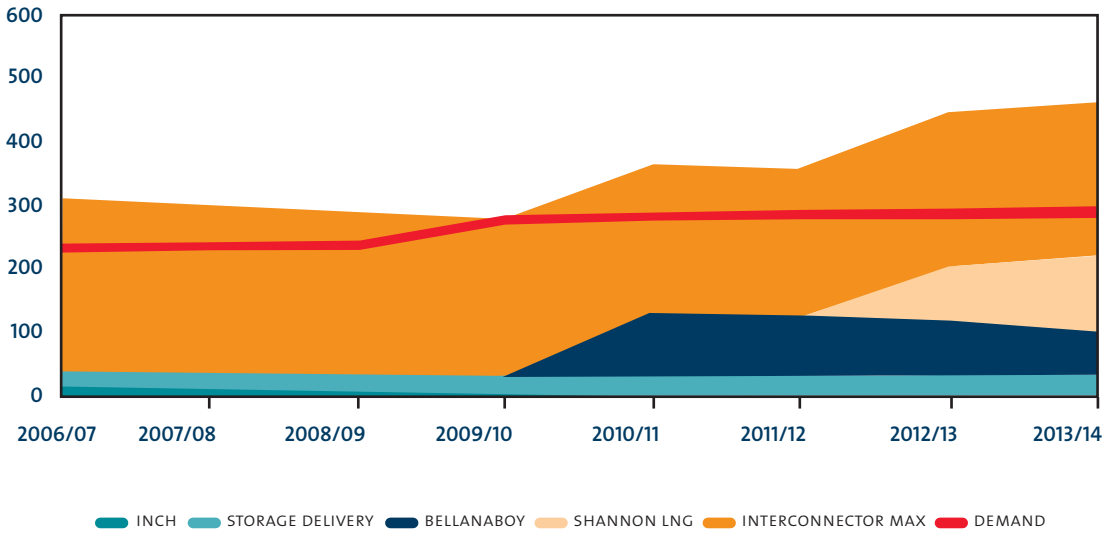
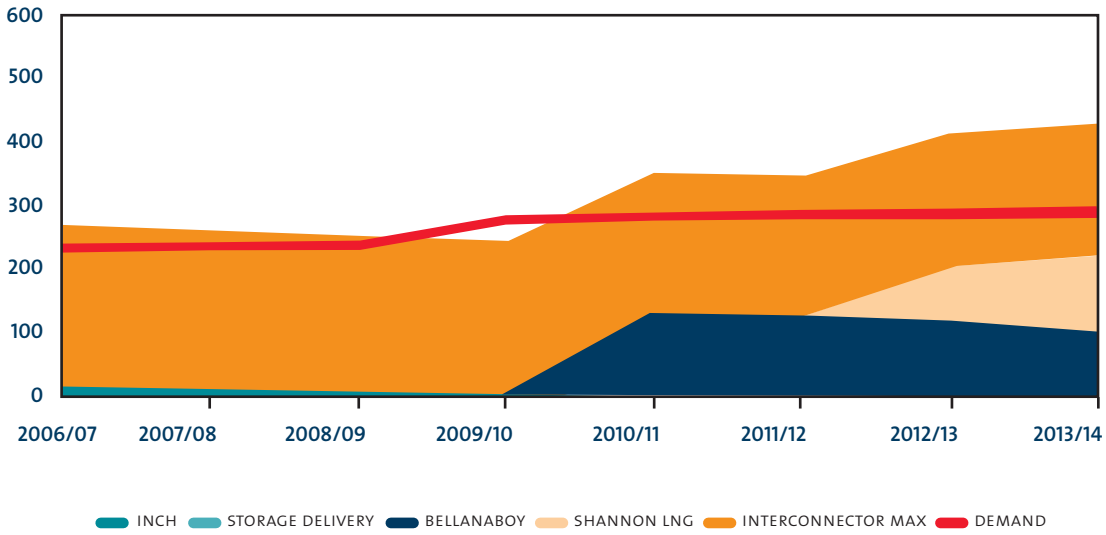


TABLE A3 CENTRAL DEMAND SENSITIVITY 1 AND CENTRAL SUPPLY SENSITIVITY 2

Scenario Parameters
Gas production at Kinsale, Ballycotton and Seven Heads are in decline over the Statement period;
Marathon Storage is not available on the peak-day;
Corrib gas comes on-stream in 2010 and is available for winter 2010/11;
Residential demand is determined by the number of new connections which is initially 6.1% p.a. reducing to 3.3% p.a. over the period of the Statement.
Industrial and commercial demand increases in proportion to real GDP growth over the period;
I&C loads at Whitegate offtake are advanced one year to 2009/10;
A total of 1,200MW of new gas fuelled electricity generating capacity.

PEAK DAY DEMAND GWH/DAY	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14
Residential	69.8	73.4	76.6	79.5	82.5	85.4	88.3	91.2
I&C	52.9	54.2	55.2	61.5	62.8	63.8	64.8	65.8
Power Generation	117.2	121.9	121.9	149.7	149.7	149.7	149.7	149.7
NI supplied via S/N	0.0	0.0	0.0	0.0	0.0	0.9	2.1	3.0
Shrinkage (exc. Compressor fuel)	1.2	1.2	1.3	1.3	1.5	1.5	1.5	1.5
Peak Demand in Ireland	241.1	250.8	255.0	292.0	296.4	300.4	304.3	308.3
SNIP & IoM Demand	90.8	91.5	96.3	98.2	98.9	103.4	104.6	105.5
PEAK SUPPLY GWH/DAY	**2006/07**	**2007/08**	**2008/09**	**2009/10**	**2010/11**	**2011/12**	**2012/13**	**2013/14**
Inch	12.0	10.5	7.4	5.6	4.2	3.2	2.4	1.9
Bellanaboy	–	–	–	–	104.2	104.2	92.6	71.8
Shannon LNG	–	–	–	–	–	–	98.9	134.4
Storage Delivery	–	–	–	–	–	–	–	–
Interconnector	319.9	331.7	343.8	384.6	286.9	296.4	215.1	205.7
Imports	229.1	240.2	247.6	286.4	188.0	193.0	110.4	100.2
Peak Supply to Ireland	241.1	250.8	255.0	292.0	296.4	300.4	304.3	308.3
Interconnector Max	355.52	355.52	355.52	355.52	355.52	355.52	355.52	355.52

TABLE A3 CENTRAL DEMAND SENSITIVITY 1 AND CENTRAL SUPPLY SENSITIVITY



Appendix B

GLOSSARY

Bar: The unit of pressure that is approximately equal to atmospheric pressure (0.987 standard atmospheres). One millibar equals 0.001 bar.

Calorific Value (CV): The ratio of energy to volume measured in Mega joules per cubic meter (MJ/m3) which for gas is measured and expressed under standard conditions of temperature and pressure.

Combined Cycle Gas Turbine (CCGT): A unit whereby electricity is generated by a gas powered turbine and also a second turbine. The hot exhaust gases expelled from the first turbine are fed into the heat exchanger to generate steam which powers the second turbine.

Combined Heat and Power (CHP): The simultaneous generation of electricity and heat for use within buildings or processes, by recovery of the heat produced in the power generation process. As such, CHP represents the highest efficiency means of generating electricity.

Compressor Station: An installation that uses gas turbine driven gas compressors to boost pressures in the pipeline system. Used to increase transmission capacity and move gas through the network.

Commission: Commission for Energy Regulation

Cubic Metre (m3): The unit of volume, approximately equal to 35.34 cubic feet. One million cubic metres (mscm) equals 106 cubic metres; one billion cubic metres (bcm) equals 109 cubic metres.

Cushion Gas: The gas remaining in the storage reservoir after all of the stored gas has been withdrawn.

Customer: Customer in relation to natural gas means a final consumer of natural gas.
Daily Metered (DM) Customer: A customer that has a meter that is read daily by remote means.

Degree Day: A measure of the variation of one day's temperature against a standard reference temperature of 15.5°C.

Distribution: Distribution in relation to natural gas means the transport of natural gas through local or regional pipelines at pressures below 16 bar with a view to its delivery to customers.

Entry Point: A point at which natural gas is transferred from a connected system to the Transportation system.

ESRI: The Economic and Social Research Institute.

Flow Rate: The instantaneous rate of flow of natural gas normally expressed in kW.

GAR: Generation Adequacy Report published by the Electricity Transmission System Operator.

Gas Year: The Gas Year is the year between 1st October and 30th September of the following year.

Interconnector: A transmission line which crosses or spans a border between Member States for the sole purpose of connecting the national transmission systems of these Member States.

IPP: Independent Power Producer.

Kilowatt hour (kWh): The unit of energy used by the gas industry. Approximately equal to 0.0341 therms. One Megawatt hour (MWh) equals 1,000kWh, one Giga watt hour (GWh) equals 1,000,000kWh, and one Terawatt hour (TWh) equals 1012kWh.

Linepack: The storage of gas by compression in gas transmission and distribution pipelines.

Load Factor: The ratio of the average daily demand to the peak-day demand. The load factor is used to estimate the peak-day demand from the forecast annual demand.

Load Duration Curve: A representation of an annual demand profile re-ordered from maximum to minimum day loads.

Natural Gas System: The system of pipelines and liquefied natural gas and storage facilities, excluding upstream pipelines, used for the transmission, distribution, storage and supply of natural gas to, from or within the state.

Non-Daily Metered (NDM): A meter that is read monthly or at longer intervals.

Open Cycle Gas Turbine (OCGT): A unit whereby electricity is generated by a gas powered turbine and no use is made of the hot exhaust gases.

Own Use Gas (OUG): Gas used by Bord Gáis to operate the transportation system. Includes gas used for compressor fuel, heating and venting.

Peak Day Demand (1 in 50 Peak Demand): The Irish transmission system is designed to meet a 2% or 1 in 50 year requirement. Such a year's weather pattern has a 2% probability of occurring and, as such, would be expected to be exceeded only once in 50 years.

Shipper: Any person having an entitlement by way of contract with the Transporter through a STA to transport natural gas through the Transportation System or any part thereof or offtake at an Exit Point, whether for its own use or for use by a third party as an End User.

Shipping: The introduction into, the conveyance by means of, or take off from the natural gas system of natural gas by persons other than the operator of the relevant pipeline or facility being used for the purpose of introducing, conveying or taking off natural gas.

Shrinkage: Gas that is input to the system but is not delivered to consumers or injected into storage. It is either Own Use Gas or Unaccounted for Gas.

SNIP: The Scotland-Northern Ireland Pipeline.

Storage: The stocking of natural gas by a natural gas undertaking in a facility specifically designed for this purpose.

Supplier: A company with a Supplier's Licence contracts with a shipper to buy gas which is then sold to consumers. A supplier may also be licensed as a shipper.

Supply: The delivery or sale of natural gas, including liquefied natural gas, to customers, and includes shipping.

System: See Natural Gas System.

TPER: Total Primary Energy Requirement. This is a measure of all energy consumed in Ireland, including that consumed and lost in transformation and distribution processes. These processes include electricity generation transmission and distribution and oil refining.

Transmission: The transport of natural gas through a high pressure pipeline, other than an upstream pipeline, with a view to its delivery to customers.

Transportation System: BGÉ Networks transmission system (including the onshore Scottish transmission system, the interconnector pipelines, the onshore Ireland transmission system and all associated facilities).

Transporter: Bord Gáis Éireann acting in its capacity as an owner/operator of the Transportation System and providing transportation services to Shippers.

Therm: An imperial unit of energy. Largely replaced by the metric equivalent: the kilowatt hour (kWh). One therm equals 29.3071kWh.

Turn-down Ratio: The ratio of the minimum day demand to the average daily demand. The turndown ratio is used to estimate the minimum day demand from the forecast annual demand.

Unaccounted for Gas (UAG): Gas lost during transportation. Includes leakage, theft and losses due to the method of calculating the Calorific Value.

Upstream pipeline: Any pipeline or network of pipelines operated and/or constructed as part of an oil or gas production project, or used to convey natural gas from one or more such projects to a processing plant or terminal or final coastal landing terminal.

Commission for Energy Regulation

An Coimisiún um Rialáil Fuinnimh

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