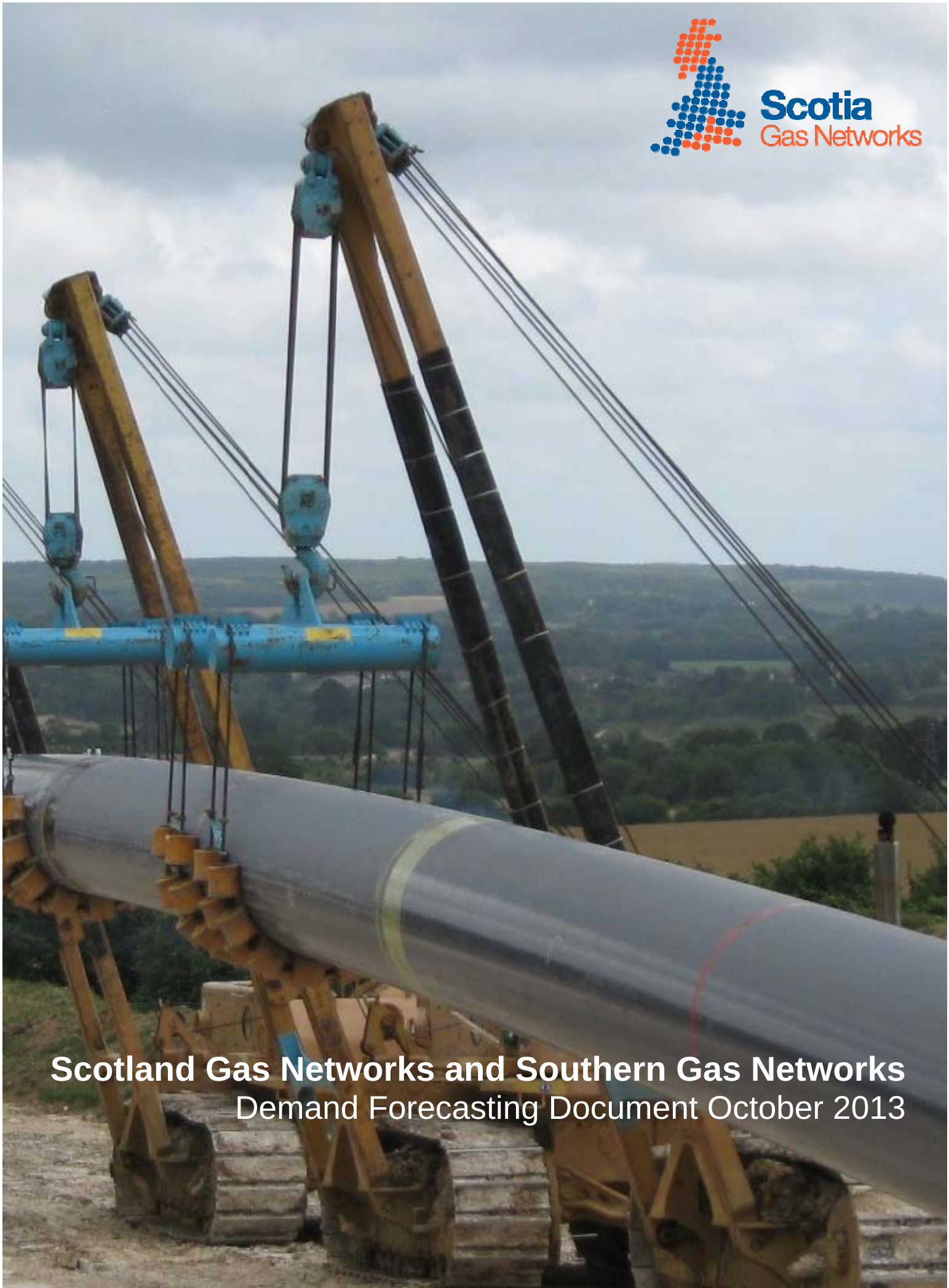

Scotland Gas Networks and Southern Gas Networks

Demand Forecasting Document October 2013

Disclaimer

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This document is intended be read in conjunction with the SGN Long Term Development Statement 2013.

Photographs

Front cover – Major pipeline construction project pipelaying in operation.

FOREWORD

Paul Denniff – Network Director

This 2013 Demand Forecasting Document (DFD) is produced by Scotia Gas Networks Limited in accordance with Standard Licence Condition 25 and Standard Special Condition D3 of Scotland Gas Networks plc's and Southern Gas Networks' plc's respective Gas Transporter Licence.

This year we have again chosen to present the information that was previously in two documents which can be read separately or together. The Demand Forecasting Document (DFD) includes the tables and graphs representing the actual year-on-year predicted load growth of annual and daily demands. In addition, it explains the background and methodology used to reach the forecasts. In comparison the LTDS contains essential information on the planned major reinforcement projects and associated investment, significant completed projects and other developments within our networks.

I hope you will find our 2013 Demand Forecasting Document and Long Term Development Statement informative.

With a view to developing the document, we would welcome any comments on the style and content. You can leave comments using the stakeholder engagement form or you can contact me at network.capacity@sgn.co.uk , paul.denniff@sgn.co.uk or 01293 818 365.

Paul Denniff
Network Director
Scotia Gas Networks
October 2013

Contents

Introduction

Context

This document provides an overview of our ten-year forecast of annual and peak day demands. The data and assumptions used to develop 2013 forecasts were collated and compiled in the first half of the year.

The Demand Forecast Document is developed to be read in conjunction with our Long Term Development Statement (LTDS). They have been produced together in accordance with Scotland Gas Networks' and Southern Gas Networks' obligations in their Gas Transporter Licence and Section O of the Uniform Network Code; Transportation Principal Document.

Development of the SGN transportation networks is primarily demand driven. The overall UK supply position and security of supply assessment is covered in detail by National Grid in its Ten Year Statement for the National Transmission System and in its various publications and consultations associated with the Transporting Britain's Energy 2013 process.

The Uniform Network Code; Offtake Arrangements Document (OAD), sets out the framework for exchanging the necessary information to assist transporters to generate long-term demand forecasts. The publication of our Demand Forecasts forms part of this process.

The timescales for the development of the Annual and Peak Demand Forecasts are included as part of Chapter 1.

IMAGE REDACTED
FOR SECURITY PURPOSES

Image 1;SGN's Gas Control Room

Chapter 1 – Summary and Document Scope

1.1 Summary

We expect there to be a small decrease in annual and peak day demands over the ten-year period 2013-22, albeit with small increases in 2013-15 due to slow economic recovery. In the period 2016-22, demand is expected to decrease as the effect of increased efficiencies and renewable incentives take effect.

The percentage demand reductions are shown in Table 1 below.

Changes in overall demand in period 2013-22			
	Scotia	Scotland	Southern
Annual Demand	-2.80%	-2.39%	-3.02%
Peak Day Demand	-1.28%	-0.47%	-1.63%

Table 1; Overall change in demands

1.2 Overview of the Demand Forecasting Process

The production of the Demand Forecasting Document and Long Term Development Statement are essentially the output of the planning process for the current annual cycle.

The key input to the planning process is the demand forecasts, which are produced using data procured from recognised industry sources and through consultation with our stakeholders. These demand forecasts are used by ourselves to analyse the performance of the Local Transmission Systems (>7Barg) to predict flows, pressures, offtake capacity and storage requirements. From this data appropriate investment decisions can be made.

The Uniform Network Code provides for consultation between the Distribution Networks and National Grid Transmission in the demand forecasting process within the gas year, which is shown in the timeline in Table 2 below

1.3 Structure of Document

The document has been structured such that the main body of the document, Chapters 1 to 4, provides an assessment of the previous year's forecasting performance and sets out the key drivers and uncertainties affecting demand.

- Chapter 2 shows a Local Distribution Zone (LDZ)-specific outlook for the key factors that influence demand growth.
- Chapter 3 describes the forecasting methodology used this year.
- Chapters 4 details the annual and peak demand forecasts.

The Appendices provide details of the figures used for the forecasts, the actual flows encountered last year and general information useful for understanding the document.

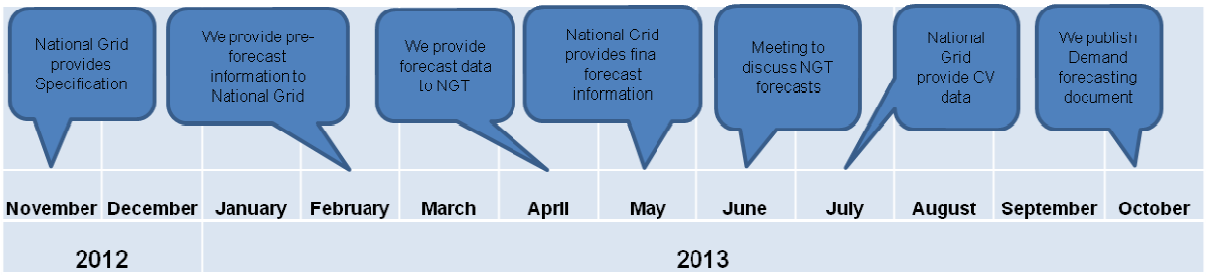


Table 2; Timetable of forecasting process

Chapter 2 - Outlook for 2013

2.1 Medium to Long-Term LDZ Economic Outlook

This section provides a general overview of the UK economy to give some context to the regional data provided in this document. It also outlines some of the key econometric assumptions used to develop the forecasts.

2.1.1 Inflation

During the majority of 2011 the UK had a relatively high Consumer Price Index (CPI) but in 2012 CPI has shown a steady decline with a small increase at the end of the year (see Figure 1 below).

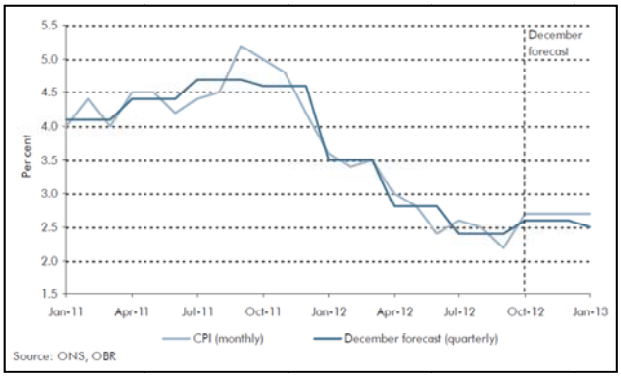


Figure 1; Consumer Price Index (CPI)

The CPI forecast for the fourth quarter of 2013 as provided by the Office of Budget Responsibility (OBR) in March 2013 is 3%. This is expected to slowly decline during 2014 and 2015.

2.1.2 UK Gross Domestic Product (GDP) and Gross Value Added (GVA)

GVA measures the contribution to the economy of each individual producer, industry or sector in the United Kingdom, and GVA is used in the estimation of Gross Domestic Product (GDP). GDP is a key indicator of the state of the whole economy and equates to GVA plus taxes on products minus subsidies on products. A significant decline in GDP occurred during 2008/9 set against a long period of growth from 1992. However there has been some small recovery in GDP since that time.

The latest economic figures included in the following Figure 2, taken from the Office of National Statistics, show a declining economy during 2012 with the latest figures showing a small recession in the last quarter of 2012 of -0.3%. This is despite a substantial recovery in the third quarter of 2012.

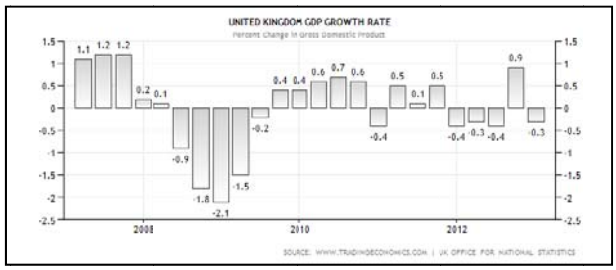


Figure 2; Change in GDP

The current GDP trend shows that the economy may not show any signs of significant recovery until the end of 2013. The Office for Budget Responsibility (OBR) published their median forecast in March 2013 which is shown below in Figure 3

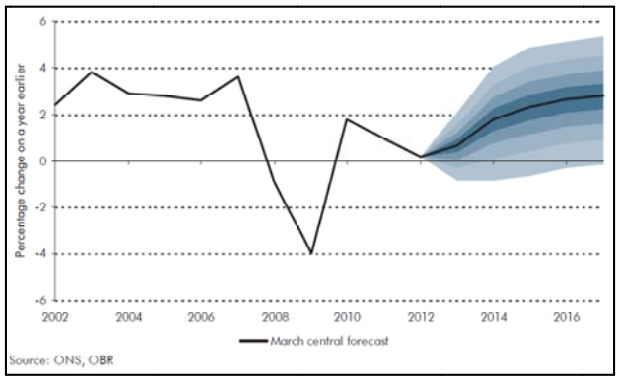


Figure 3; Predicted GDP growth

2.1.3 Gross Disposable Household Income (GDHI)

This can be used as an indicator of householders' ability to absorb rising energy prices and provides a reasonable indication of how affluent households are in a particular area. The source of this data is the Office for National Statistics (ONS).

There have been reports of a decline in GDHI in real terms. This is borne out by the figures from the ONS which quote a national decline in 2010 of -0.2% and a forecast for 2011 of -1.4%.

2.1.4 Manufacturing Output

Manufacturing Output trends provide an assessment of how this type of industry is performing. There was a significant downturn in manufacturing during 2009 but it has been showing some recovery in 2010 and 2011. Outputs declined again in 2012 and into 2013 as the figures for the Manufacturing Index and Production Index from the Office of National Statistics (ONS) illustrate (Figure 4 below).

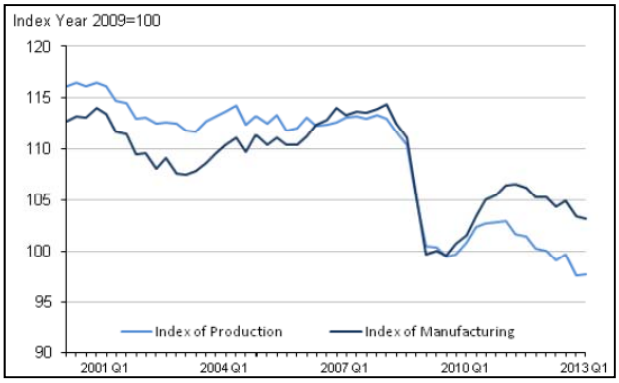


Figure 4; Manufacturing and Production Indices

2.1.5 Household Numbers

The historical data used in the modelling is based on the Department for Communities and Local Government (DCLG) website reported data (mid-year) adjusted to year end and is consistent with historical data used last year. Regional data has been derived from the figures for Unitary Council Authorities (UCA) and have been assigned to each LDZ based on a geographical match.

The forecasts of household numbers produced by the DCLG are considered overly optimistic as there has been a significant slowdown in housing construction in the short-term. We have therefore adjusted the forecast of households within the LDZs to take account of this.

Another influence on household numbers is UK Government policy. At the time of publication the recent Help to Buy mortgage guarantee schemes could act as a major stimulus for house building. It is, however, too early to tell and opinion is divided so no account has yet been taken of any impact.

2.1.6 Employment

After a steady rise in employment for nearly 20 years, there had been a decline in numbers between 2007 and 2010. However the latest figures for March 2013 show that there has been a significant increase in the numbers over the last year (160,000 jobs of which 86,000 were employee jobs as opposed to self-employed). This pattern is mirrored in the commercial/services sector with growth in this sector contributing to the overall growth in numbers and compensating for losses in other sectors. Manufacturing has seen a steady decline since 1998 after a period of small growth from 1992 to 1998. The figures for March 2013 do show a very small increase over the previous year's figures of around 3,000 jobs.

Future employment levels in the commercial/service sector anticipate that the sustained rise in the number of jobs created in 2012 will be reflected into the level of private employment. This will compensate for the losses seen in the public sector that will continue to have an impact for 2013 and beyond. The employment levels in manufacturing are expected to make a very small recovery. This is due to signs that the UK is starting to re-establish itself as a manufacturing centre for certain specialised products such as chemicals and pharmaceuticals.

2.1.7 Gas and Fuel Price

All prices in all markets have shown significant rises from 2002 for households and from 1999 in the non-domestic market. This has been driven by the wholesale gas price rises, which has in turn been driven by rising oil prices. While there are commentators that suggest that the link to oil is being decoupled, there is still limited evidence of that at the moment.

Last year gas prices did generally follow movements in the oil price and gas prices are expected to rise again during 2013 based on forward wholesale gas prices. This is still a little uncertain as the oil price is expected to remain reasonably stable and may even fall in the second half of the year, due to lower demand.

Image 2; Stakeholder engagement suggests that gas has a positive image as a safe, reliable fuel source

2.1.8 Wholesale Price

There has been some significant fluctuation in the wholesale gas price over time as represented by the UK National Balancing Point (NBP) price but the general trend has been upwards.

2.1.8.1 Domestic Retail Price

There has been a steady rise in the price of domestic gas although there has been some significant fluctuation as a result of the impact of the wholesale price variation which has an impact on a proportion of the costs incurred by domestic suppliers. There is currently an ongoing dialogue with energy suppliers regarding the price of gas and electricity and the number of tariffs that they should

publish. There are concerns that this could result in many customers seeing a rise in their bills. This will create some uncertainty in the level of tariffs compounded by uncertainty in the wholesale price. We have assumed that all the major suppliers will increase prices in 2013 through to 2014.

2.1.8.2 Non-Domestic Retail Price

There has been a steady rise in the price of industrial gas prices for many years but with significant fluctuations in line with the variation in wholesale prices. This fluctuation is particularly felt by those customers with large annual consumptions as the wholesale price will be a much greater proportion of their charges from their supplier. The forecast price rises are anticipated to continue to reflect the variation in wholesale prices.

2.1.9 Efficiency Improvements

Our experience, particularly in the 0-73Mwh load band, is that there is no need to make a specific assumption about future changes in energy efficiency. There has been a steady decline in average consumption per customer, driven by the rising trend in current gas price, but there are some signs that this is slowing down.

There are occasions when gas demand drops significantly over a year, but this is not specifically linked to a physical change to the premises (loft and cavity wall insulation for example) but a change in behaviour in response to either a step change in gas price or a sudden loss of income.

It has been noted that gas demand has been declining in recent years, but it is difficult to separate the impact of efficiency improvements from the impact of variations in gas prices and the effects of variations in the number of supply points. In fact, there are some signs of small growth in some sectors.

There has been a steady and substantial programme of gas-fired domestic boiler replacement for several years now and the high levels of efficiency achieved with these new boilers is a possible contributory factor in the decline in gas demand. However the increases in efficiency could have been used to provide higher comfort levels, especially in winter. There has also been a concerted effort by gas suppliers and other parties to encourage the use of loft and cavity wall insulation. This has been extensively used to reduce household consumption.

For insulation, the Department for Energy and Climate Change (DECC) published the position as of the end of 2012 as being 66% of homes with lofts have loft insulation and 69% of homes with cavities have cavity wall insulation. This is a significant increase from 2011 when the levels were 60% and 59% respectively.

However, other schemes such as solid wall insulation requires substantial investment and disruption to install and does not currently provide an economic solution to those households that pay their own energy bills and could benefit from savings made. DECC statistics at the end of 2012 show that there are only 2% of homes with solid wall insulation.

2.1.10 Energy Act 2011

There is a range of provisions in the Act to encourage energy efficiency and to remove barriers to investment in energy efficiency measures. One provision in particular is the Green Deal, which is a new financing framework to enable the provision of improvements to the energy efficiency of households and non-domestic properties, funded by a charge on energy bills that voids the need for consumers to pay upfront costs. The Green Deal encompasses the following:

- Powers to set parameters around the use of this facility to ensure consumer protection for both the originator of the work and subsequent occupiers;
- Powers to limit access to the financial mechanism in the framework to the installation of measures that are expected in order to deliver savings exceeding the level of the charge;
- Obligations on energy companies to administer the charges and pass monies to the appropriate party.

Energy suppliers will be exempt from the Consumer Credit Act requirement to gain a credit licence when they collect Green Deal payments. Green Deal Providers will also be exempt from the requirement to hold a consumer credit licence in respect of Green Deal Finance offered to smaller businesses, to avoid segmenting the non-domestic market.

The Green Deal is now operating and evidence to date is that there have been many enquiries but that there has been limited interest in using the energy saving benefits to repay the loan costs.

2.1.11 Energy Company Obligation (ECO)

This is the Government's new domestic energy efficiency programme which has replaced the existing CERT and CESP programmes, both of

which came to a close at the end of 2012. ECO works alongside the Green Deal to provide additional support for packages of energy efficiency measures. ECO also provides insulation and heating packages to low-income and vulnerable households and insulation measures to low-income communities.

ECO imposes a legal obligation on energy suppliers to improve the energy efficiency of households through the establishment of distinct targets:

- The Carbon Emissions Reduction Obligation (20.9 million lifetime tonnes of carbon dioxide). Focusing on hard to treat homes and, in particular, measures that cannot be fully funded through the Green Deal

- The Carbon Saving Community Obligation (6.8 million lifetime tonnes of carbon dioxide). Focusing on the provision of insulation measures and connections to district heating systems to domestic energy users that live within an area of low income

- The Home Heating Cost Reduction Obligation (£4.2bn of lifetime cost savings). Requiring energy suppliers to provide measures which improve the ability of low-income and vulnerable households (the 'Affordable Warmth Group') to affordably heat their homes

- Amendment of the Energy Performance of Buildings (Certificates and Inspections) (England and Wales) Regulations 2007 to enable the removal of unnecessary restrictions on access to data

- Establish powers for the Secretary of State to demand energy companies provide information on the cheapest tariff on energy bills.

As high level principles, the provisions cannot be seen as providing the only solution to cutting carbon emissions to the target levels. Relatively low-cost measures to improve efficiency, such as boiler replacement and cavity wall and loft insulation, could benefit from the Green Deal proposals, but higher-cost solutions like renewable heat or solid wall insulation would need to allow protracted payback periods (approaching 50 years or more) to be viable, unless a significant subsidy is introduced.

2.1.12 Smart Meters

It was observed by Ofgem in their report for the Energy Demand Research Project (EDRP) from December 2010 that there is evidence to suggest that smart meters can be a vehicle for effective action to reduce domestic energy demand. However there was no distinction between gas and electricity meters.

In the final reports produced in June 2011, the following conclusion was reached with respect to the impact of smart meters on gas consumption:

> "The smart meter itself (e.g. the information provided on consumption and cost) or some aspect of the experience of getting a smart meter appears to be a positive mechanism, resulting in savings of around 3%. E.ON found that these effects were persistent into the first quarter of the second in-trial year (i.e. for 15 months) and for one or two further quarters in some groups. The literature and other EDRP findings indicate that this effect may require support over time from other interventions (e.g. advice or billing information) to be sustained for longer periods."

This report was expected to provide information on seasonal variations. This was inconclusive as the following comment on seasonal smoothing reflects:

> "The E.ON findings also demonstrated an important issue with comparing data between smart and non-smart meters. The smart meter groups show greater seasonal extremes than the non-smart control groups for both electricity and gas, with significantly lower consumption than the control group in almost every spring/summer quarter in every group, sometimes outweighing higher consumption in autumn/winter quarters. This may be entirely due to "smoothing" of the non-smart data because of the need to interpolate infrequent readings over each quarter. If so, then analysis at sub-annual level would be valid only when comparing smart meter trials with smart-meter-only groups treated as control groups. In the current assessment, it is assumed that smoothing is a sufficient account of this seasonal variation but this needs to be better understood for any future trials."

The latest news on the roll-out programme is that it has been delayed until autumn 2015, compared to the original date of summer 2014.

2.1.13 Carbon Neutral Housing

The previous Government policy on carbon neutral new housing, sometimes called "zero carbon" housing, has been interpreted by some as being taken literally from the headline title. But the actual policy makes it clear that although carbon neutral is an objective for new housing, the proposed standards published in November 2009 are aimed at reducing energy consumption as much as possible and using renewable sources where possible. Given that this will come into force in 2016 and that gas consumption has already fallen significantly amongst the much larger existing

housing market, it should not be necessary to make any specific adjustments to forecasts of household demand, but to keep this area under review for future forecasts.

2.1.14 Renewable Assumptions and Impacts

In March 2011, the government announced that there would be a Renewable Heat Incentive Scheme (RHI)[1].

The original RHI documentation is still considered to be a primary source of information for any study on renewables until analysis has been carried out on the effectiveness of RHI and the level of adoption of renewable energy (no suitable data is currently available to assess adoption levels as published data on renewables focuses almost entirely on electricity generation). The RHI was aimed at helping to accelerate deployment of renewable heat sources by providing a financial incentive to install renewable heating in place of fossil fuels. Initially, in the first phase, long-term tariff support was targeted at the big emitters in the non-domestic sector. This sector, which covers everything from large-scale industrial heating to small business and community heating projects, was anticipated to provide the vast majority of the renewable heat needed to meet the targets and represents the most cost-effective way of increasing the level of renewable heat.

In March 2012, the Government announced further plans for the delivery of the RHI including a timetable setting out what they intend to do and when for both the domestic and non-domestic sectors. There was a consultation in September 2012 which considered the expansion of the scheme to include the following:

- Air Source Heat Pumps (ASHP), Biomass Direct Air Heating (BDAH), deep geothermal, medium and large biogas combustion, and a specific tariff for biomass and bioliquid combined heat and power (CHP).

To date there has been no decision to include these sources, they simply wanted to indicate the likely tariffs.

To ensure the success of the non-domestic scheme (that launched in November 2011), priority was given to the delivery of a cost control regime. In April 2013 the Renewable Heat Incentive Scheme (Amendment) Regulations 2013 came into effect to control expenditure on the scheme. There is a current consultation on the review of RHI tariffs which is aimed at increasing the uptake of certain technologies that have not been particularly successful in attracting interest under the RHI scheme. The consultation proposes to increase tariffs for Ground Source Heat Pumps (GSHP) and large biomass boilers. Small and medium biomass boilers remain unchanged.

RHI is not currently available for domestic properties, however, as part of the first phase, the Government introduced Renewable Heat Premium Payments (RHPP) for the domestic sector. It is only in the second phase, which opened on the 1 May 2012, that homes not heated by mains gas will be the only households that can apply for grants for air-to-water-source and ground and water source heat pumps and biomass boilers. All householders can apply for grants for solar thermal.

Our forecasts have analysed the impact of renewable energy sources on both annual and peak demand and can provide a range of possible outcomes depending on the level and phasing of take up by consumers and the energy source that the renewable source is replacing. The focus has been on renewable heat sources for this analysis. Specific adjustments can be made to the annual and peak forecasts to take account of renewable energy and could result in changes to the annual/peak relationship over time.

Factors that have been considered in developing the potential impact of renewable energy include:

- The payback period for different types and the likelihood that subsidies or renewable heat incentives will be available or that the Green Deal will provide sufficient support to justify installation
- Restrictions in using biomass in many locations due to the Clear Air Act
- Any circumstances where gas will still be needed as a back up to support renewable sources that cannot guarantee supply in winter, or are too expensive to run in winter (e.g. solar, wind and air and ground source heat pumps)
- Assumed that oil and coal users will be the target for early adoption on the basis that these are the most polluting, followed by either gas or current electricity users depending on what the objective becomes. If it's purely environmental, then gas should be first but the economics without subsidy favour gas over electricity

Recent developments in the RHI and RHPP have not changed our analysis in any way as the 2020 targets have not been changed.

[1] DECC Renewable Heat Incentive – March 2011

2.2 Regional Economy

2.2.1 Scotland

Scotland LDZ possesses a strong commercial and services sector base, accounting for around 77% of the Scottish economy, just below the UK figure of 81%. Financial and business services growth, underpinned by the presence of many leading financial institutions in Edinburgh and Glasgow, ranks Scotland LDZ as the fifth largest in GVA terms in the UK behind London and the South East[2], but with the third highest GVA per head indicating the comparative high calibre of work undertaken. However, the recent economic downturn could have a negative effect as banks consolidate offices and functions in the future. Conversely, an increase in the service sector in Scotland could occur following any consolidation process undertaken by the banks and financial services industry as they relocate certain activities to Scotland.

Scottish GDP does lag slightly below UK GDP but it can be seen from Figure 6 there are signs that this gap is narrowing slowly over time.

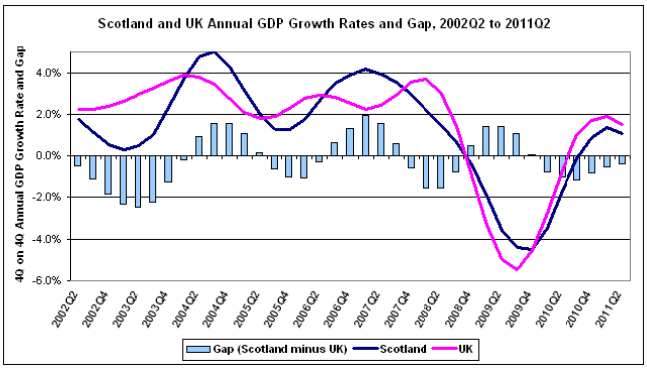


Figure 5 Scotland and UK GDP comparison

Offshore call-centres in low-cost countries have previously constrained future employment prospects in Scotland, despite new initiatives such as the International Financial Services District in Glasgow. To date this has attracted over 15,500 jobs of which over 1,000 were newly created.

The Scottish manufacturing base is also strong delivering 12% of Scotland's GVA, higher than the UK figure of 11%. The sector has, however, performed well showing a reasonable increase in 2011 compared to a small decline in 2009 (latest figures available) in line with the rest of the UK. Scottish exports performed strongly in 2011 with growth of 6.7%, but this is showing a small slowdown in the first quarter of 2012. There is good diversity with the top five exporting industries in 2011 being food and beverages at 18%, chemicals (including refined petroleum products) \t 15%, computer, electronic, optical manufacture \t 6%, financial and insurance at 6% and the mechanical engineering sector at 6%. In addition, the importance of the whisky industry should not be understated as an employer outside of the central belt of Glasgow to Edinburgh.

Scotland has a heavy reliance on exports to the EU (37% in 2012) which could be affected by any long-term impacts of the current problems in the Eurozone.

The latest population projections draw on the estimate of Scotland's population at 30 June 2010. These projections, based on existing trends and making no allowance for the future impact of government policies and other factors, show the total population of Scotland rising from 5.29 million in 2011 to 5.76 million in 2035. Longer term projections show the population continuing to rise.

Heavy reliance on public services (23% of employment in 2013, down from 24% in 2012) may also be problematic as the UK Government continues to cut its spending plans in order to meet borrowing targets and reduce the budget deficit. Employment levels across the whole of Scotland have risen in the first quarter of 2013 by 2.1% with job cuts in the public sector accounting for a 0.3% reduction. This does mean that there is some steady growth in sectors outside the public sector which is counteracting the losses in the public sector, but will still leave the Scottish Economy heavily reliant on public services in the near future. Scottish Parliament reports have highlighted that the Scottish economy is probably over reliant on a small number of overseas markets and would be well advised to exploit opportunities in the BRIC (Brazil, Russia, India and China) countries.

In the medium-term, the Scottish economy may have development opportunities in renewable technology with the Scottish Parliament targeting a potential 40,000 new job opportunities in these emerging areas of employment. It is stated by the UK Government that 11,000 jobs have been created already in this sector in Scotland by 2012.

2.2.2 South East

In South East LDZ, the strong representation in financial and business services and transport and communications, the best-performing sectors of the national economy, are further encouraged by favourable demographics. However, the current economic downturn is still a real threat to the banking industries. This will be especially significant should confidence in London as a banking stronghold be adversely affected by the enquiries

[2] ONS; regional economic profiles June 2013

into the banking sector and proposed changes in regulation.

The pattern of growth and development remains unbalanced, with economic hot and cold spots in the region. Manufacturing is still a significant element of the South East economy at 9% with some growth in 2010. However, it remains the lowest manufacturing base outside London. The impact on this sector of the economic downturn could still be significant if there were to be a very slow recovery. The sector that has generally weathered the economic downturn the best appears to be the wholesale and retail sector (13% of South East GVA), which was only marginally affected by the recession, and in 2010 showed growth after a small decline in 2009. It is unclear how sustainable this position will be, especially if the UK, EU and world economies continue to be adversely affected by the prevailing economic downturns in some countries.

Strong expansion of tourism, both internal and international provides opportunities for South East region, given London's attraction as a tourist centre and the positive impact from the Olympics in 2012. The specific impact of the Olympics on the South East economy is yet to be communicated by the ONS.

There are opportunities in the agriculture industry with efforts to buy local produce, encouraging supermarkets to source high value fruit and vegetables in the UK. Of particular note for gas demand forecasting is a number of companies, which supply the construction sector, primarily brickworks, which are operating differently to minimise costs. With the construction sector still in significant decline, albeit at a slower rate than in 2010, the demand for bricks will be depressed until this sector recovers. Many companies have shut down for long periods and have now restarted but are using short term manufacturing or transfers of staff to alternative locations for specific contract work.

Housing development is still forecast to grow by Government in the South-East. For example there are signs of growth within the Greenwich Peninsula developments, which are part of the Thames Gateway regeneration project, where there are plans to build river side and park side homes over the next 20 years.

2.2.3 South

In South LDZ, the rail, sea and airport links provide a favourable environment for investment opportunities and employment growth. This combined with a reasonably broad mix of commerce, industry, housing and tourism should create the ideal opportunity for sustained economic growth. The south coast and rural areas of South LDZ continue to attract visitors boosting the local economies at a time when there has been some downturn in other areas. The latest figures from a small economy car manufacturer sales show a rise of 5.8% in 2012, with the capacity of the production line now becoming a limiting factor.

Further cuts by the Ministry of Defence will have some effect on the local economies in the vicinity of current naval and MoD facilities of which there are several in the South LDZ. The effect could be negative with base closure but could be positive as the British Army returns from Germany. The impact of the cuts in public sector employment is not clear at this stage, but it is anticipated that it will have an impact on the South LDZ economy. Further job losses for London-based public sector employees will have a knock-on effect within South LDZ where people living in the Thames Valley are within commuting distance of London.

Although the region has many pockets of thriving economic growth, there are some threats to certain areas as a result of changes in other parts of the country. Many high-tech industries could still face the threat from the growing economies of India and China. Other factors that may constrain growth are the fact that there are many localities within the area that are protected from development; witness the lack of onshore wind farms in the area. In addition the road infrastructure has already reached its capacity limits, particularly the M4.

The Government forecasts housing development to grow, which will be boosted by the fact that money raised from the Right to Buy scheme for council houses will be used to build replacement houses. It is not clear how this will impact on the number of new homes given that the substantial discounts being offered to potential buyers will reduce the revenue. Also constraints on development and infrastructure could further dilute the growth in new housing.

Chapter 3 – Forecasting Methodology

3.1 Annual Demand; General Assumptions

The starting point for production of the full set of demand forecasts is the annual average demand. The following general assumptions were used to assist in the development of the annual forecasts.

- All forecasts are seasonal normal demands calculated using the latest Seasonal Normal Composite Weather Variable basis [known as EP2]
- Historic annual demand data is provided on the same basis and daily demand data is available broken down by load band
- SIU demand and Borders (supplied by NGN) is not incorporated into the Scotland LDZ numbers
- Shrinkage was forecast on a fixed daily basis irrespective of demand levels to be consistent with UNC
- Retail gas price forecasts that are used as part of the demand modelling process
- Load band 0-73MWh is assumed to consist predominantly of households and that the behaviour patterns are linked to household behaviour
- Load band 73 to 732MWh is considered to be predominantly small commercial/retail premises with some small industrial properties. Although there are some households within this band, it is assumed that the behaviour patterns will be linked to predominantly commercial/retail behaviour
- The load bands >732MWh and Interruptibles will be predominantly industrial and commercial premises and therefore exhibit behaviour related to these types of load

3.2 General Methodology

Our service provider has refined the forecasting models for the different load bands over a number of years. The underlying principle is that the models make specific linkages between the load bands and traditional market categories like households and industrial and commercial customers. These models are tailored specifically to each LDZ although the underlying approach is the same across the whole of our networks.

An important factor affecting recent demand levels has been the variation in the price of gas over the twelve to eighteen months creating some uncertainty in energy costs for some customers. More recently, there has been a steady loss of non-domestic customer numbers resulting in reduced demand, although there are some areas where growth is being seen. This may be partially a result of the fluctuations in the economy and gas prices. These fluctuations have been a fairly recent event and when combined with the effects of large scale public sector cutbacks we may see more fluctuations in the economy as the private sector attempts to fill the gaps left by the cutbacks.

The latest economic figures taken from the Office of National Statistics show a declining economy during 2012 with the latest figures showing a small recession in the last quarter of 2012 of -0.3%. This is despite a substantial recovery in the third quarter of 2012.

On the basis of the current trend, the economy may not show any signs of significant recovery until the end of 2013. The Office for Budget Responsibility (OBR) published their median forecast in March 2013 which is shown below. But this does appear to be a bit optimistic given the fact that the first quarter of 2013 saw a provisional estimate of growth of around 0.3%.

With regard to energy efficiency, we believe that further analysis is needed to develop a view on the impact in different sectors. Efficiency savings are already occurring but the extent is masked by the impact of gas price on demand. This is further complicated by the potential effects of the fluctuating energy prices as increased or decreased comfort levels are used in households, and in industry the decision to vary production as energy prices change. All these aspects were considered when developing a view on energy efficiency.

A further factor influencing annual demand is the gradual introduction of renewable sources of energy but the extent of this is not fully known at this stage.

3.2.1 0 to 73MWh Annual Demand

The primary driver in this sector is still believed to be the behaviour of households. Annual demand growth has traditionally been driven by the number of houses that are being built and completed, the number that subsequently on completion are occupied and of that population how many of these occupied properties will be using gas.

Data was collected on all aspects of the housing market and regression analysis was carried out to establish if there is any need to amend the models

from last year. In last year's analysis the best fit was a relationship between average consumption per gas customer and the current retail price.

Average consumer gas bills have risen in 2012 and are expected to rise again in 2013. The UK gas market remains well supplied with gas having major capacity of import infrastructure.

To ensure that the methodology from last year is still appropriate the models were re-examined to test the validity of the current model.

Variables that were reviewed include:

- Total households
- Average household consumption
- Average consumption per customer
- Current and real retail gas prices
- Household disposable income
- Efficiency improvements
- GDP

It was concluded that the same model can be used as last year.

As with last year, models were tailored to each LDZ, as customer behaviour proved to be materially different in each LDZ. Our service provider has developed a current retail gas price forecast specifically for the purposes of this process each year.

The impact of efficiency gains were not incorporated separately in this year's model as these are assumed to be driven by gas price.

3.2.2 73 to 732MWh Annual Demand

It has been assumed that this sector is generally influenced by energy prices and economic drivers. As a result of detailed evaluation of alternative econometric models as part of last year's analysis, the best fit was achieved by using a multi-variable model that related annual gas consumption to a combination of national GDP and retail gas price for this sector (using a one-year lag on both drivers). All LDZs displayed a better fit to national GDP than regional GVA.

We repeated the analysis this year with the new data from 2012. The following drivers were re-examined as part of this year's analysis.

- Current and real retail gas prices for this type and size of load
- Average non-domestic retail gas price
- GDP indices, actual GDP (seasonally adjusted) and GDP growth, regional GVA
- Manufacturing Output
- Consumption per unit of GDP
- Efficiency improvements
- Impact of renewables

3.2.3 >732MWh Annual Demand

This sector can be significantly affected by the behaviour at a small number of large loads and therefore the forecasts continue to be split into two elements. The Large Loads are forecast individually and separately from the rest of the market sector. The remaining demand is forecast as a whole.

3.3 Peak Demand Forecasts; General Assumptions

The traditional primary basis for calculating the peak day demand in any market is the relationship between average daily demand and peak day demand, typically known as the load factor, where

Peak Day Demand = Average Daily Demand divided by Load Factor.

The following assumptions were made when producing the 1 in 20 peak day demand.

- It is assumed that the modelling method results in no additional requirements for demand diversity analysis
- The use of 1 in 20 CWVs, provided by xoserve to calculate the 1 in 20 peak day meets the requirements of the licence and UNC with respect to the specified methodology for determining 1 in 20 peak day demand
- No allowance will be made in calculating the base case 1 in 20 peak day for the differences between the calculated peak demand and the SOQ booked by shippers for larger loads
- No demand reduction will be allowed associated with demand management products offered by Shippers
- No allowance will be made to take account of any capacity buy-back contracts that may have been negotiated between SGN and its customers

3.3.1 LDZ Specific Assumptions

All the general assumptions are applied across all the LDZs and there were no specific assumptions that relate to the individual LDZs that were used in this analysis, unless the weather demand analysis suggests that this should be considered.

3.3.2 Methodology

Forecast base case peak day demands were calculated from projections of annual demands by using the following relationship:

Peak demand = (Annual demand/365)/load factor

The relationship was applied in each of a number of different market sectors, for which the load factor may be assumed to be constant over the forecast period. The following market sectors have been used as the starting point for the production of the base case peak day forecasts:

- NDM Firm 0 to 73.2MWh
- NDM Firm 73.2 to 732MWh
- NDM Firm >732MWh
- DM Firm Consumption
- Interruptible Consumption

Load factors for each market sector were estimated from historical daily demand and other data sources.

Chapter 4 - Forecasts

4.1 Forecast Demands

This section provides an overview of our latest annual and peak gas demand forecasts through to 2022/23. A more detailed view can be found in Appendix 2, which includes the forecasts for both annual and peak demand on a year-by-year and LDZ basis. These forecasts have been developed around the Uniform Network Code load band categories and relate only to gas that is transported through SGN systems.

4.1.2 Growth in Annual Gas Demand Forecast (2013–22)

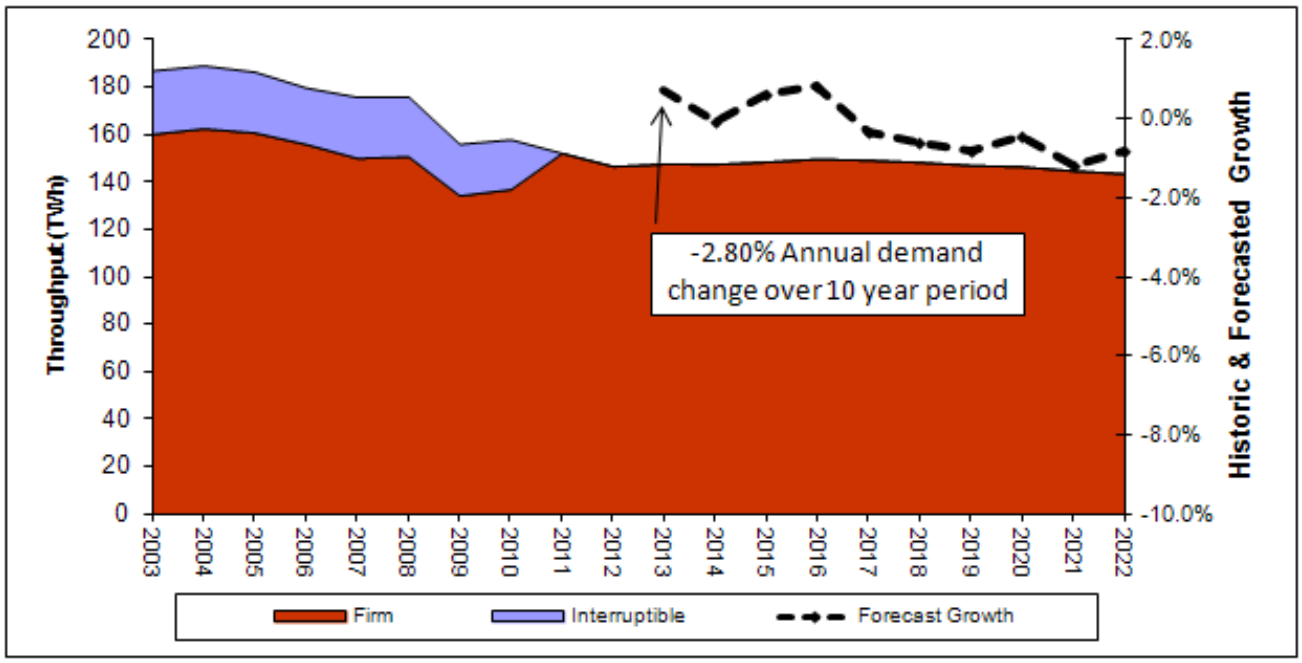
Table 3; Change in Annual Demand over period

	Scotia	Scotland	Southern
Demand Growth	-2.80%	-2.39%	-3.02%

4.1.3 Annual Demand

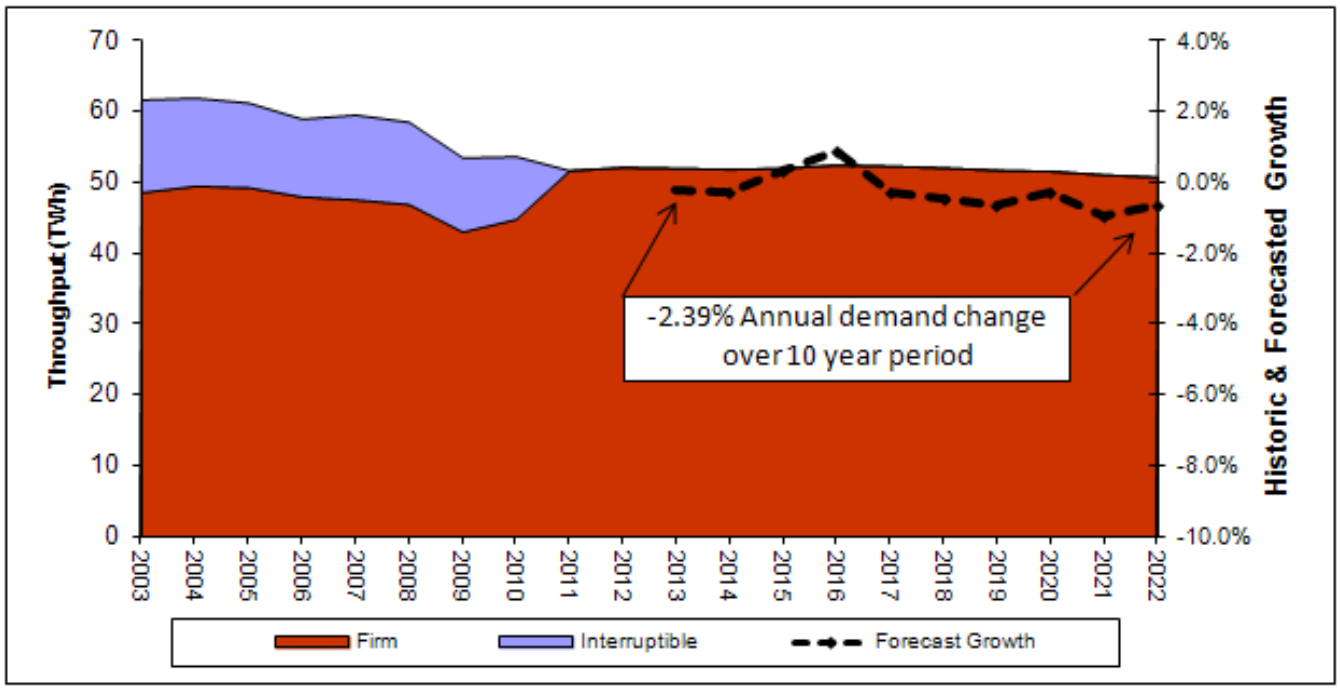
The graphs below shows historical gas demand growth and the forecast going forward. Note specifically the sudden demand reduction in historical demand in 2009 followed by a minor recovery in 2010 and then a further decline in 2011 and 2012. Scotland LDZ did however show a small increase for 2012. There are two sets of information on the same graph with the throughput referencing the Y axis on the left and the growth referencing the Y axis on the right. It is important to realise that while we forecast an overall decrease of 2.39% to 3.02% this does not infer a year on year decrease of the same magnitude. Specifically we actually forecast small increases in demand in 2013-15 driven by economic recovery. This is then followed by a period of annual demand decreasing driven by efficiency measures, renewable technology and UK Government policy.

FIGURE 4.1.3A – Historic Demand and Forecast Growth of Annual Gas Demand for Scotia Gas Networks



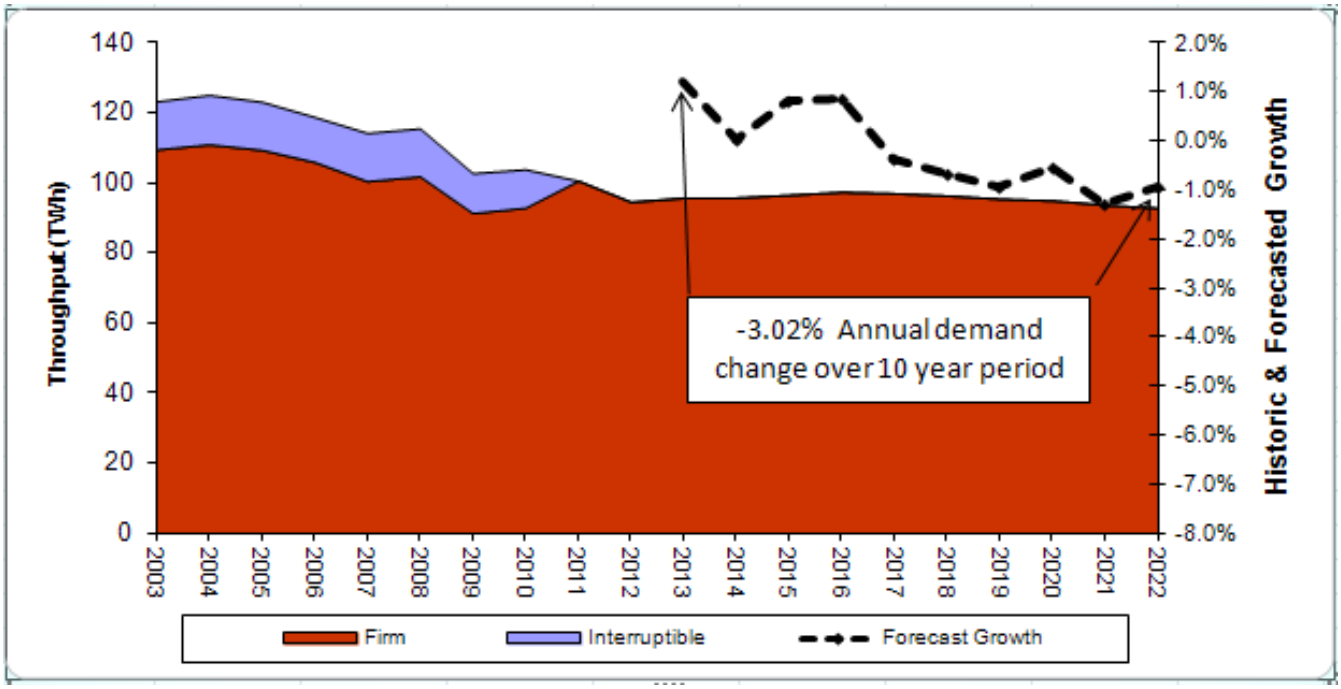
- Shaded areas are measured on the left hand side and represent throughput
- Forecast growth is measured on the right hand side as a line
- It is assumed that in the period 2013-15 there is a small increase in demands associated with economic recovery as shown in the forecast growth
- It is assumed that the UK Government will meet its 2020 carbon target hence from the period 2016-22 there is a decrease in demands associated with increased energy efficiency measures and the uptake of renewable technology

FIGURE 4.1.3B – Historic Demand and Forecast Growth of Annual Gas Demand for Scotland Gas Networks



- See graph above for commentary

FIGURE 4.1.3C – Historic Demand and Forecast Growth of Annual Gas Demand for Southern Gas Network



- See graph above for comments

4.2 Growth in Peak Demand Forecast (2012-13 to 2022-23)

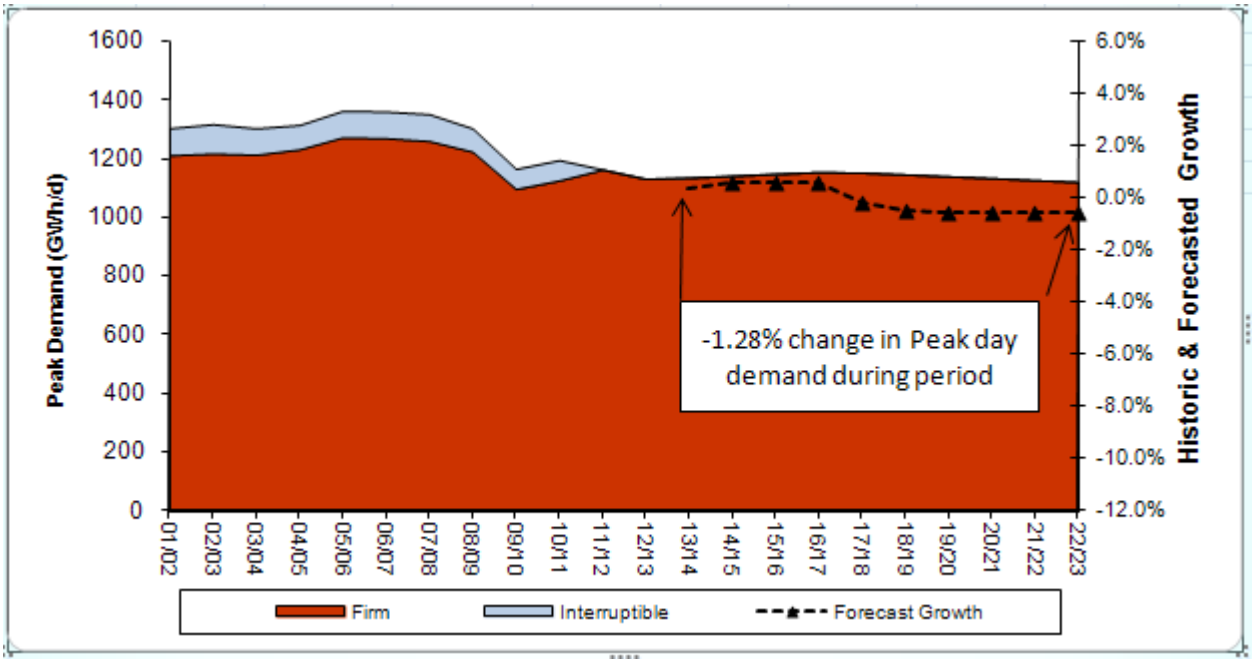
Table 4; Change in Peak demand during period

	Scotia	Scotland	Southern
Peak Demand Growth	-1.28%	-0.47%	-1.63%

4.2.1 Peak Demand

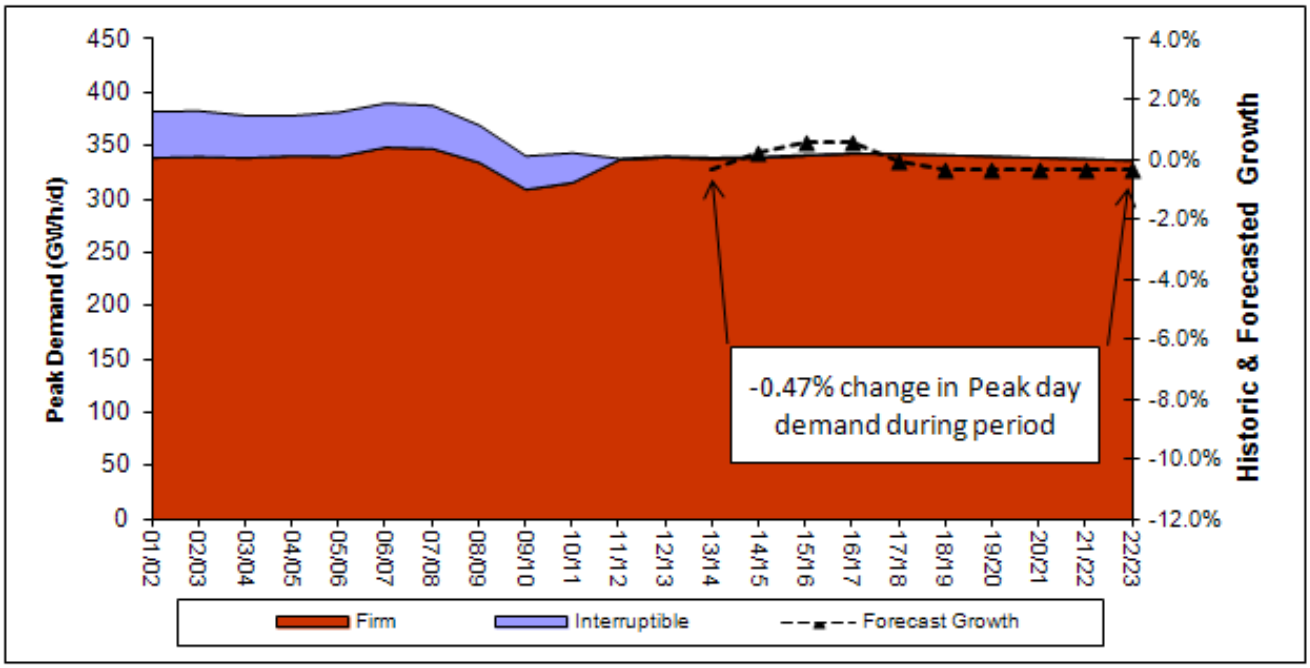
Figures 4.2.1A to 4.2.1C illustrate peak demand, the key driver for investment in our networks. Note again the down turn in historic demands in 2009-10 due to the recession followed by a recovery in 2010-11 followed by a steady decline in 2011/12 onwards. Again as pointed out in the previous section it is important to realise there is a distinction between the decrease during the ten year period and the year-on-year values depicted in the graphs below. Specifically we assume again a small increase in 2013-15 driven by economic recovery followed by a decrease driven by energy efficiency measures and renewable technology.

FIGURE 4.2.1A – Historic Demand and Forecast Growth of Peak Gas Demand for Scotia Gas Networks



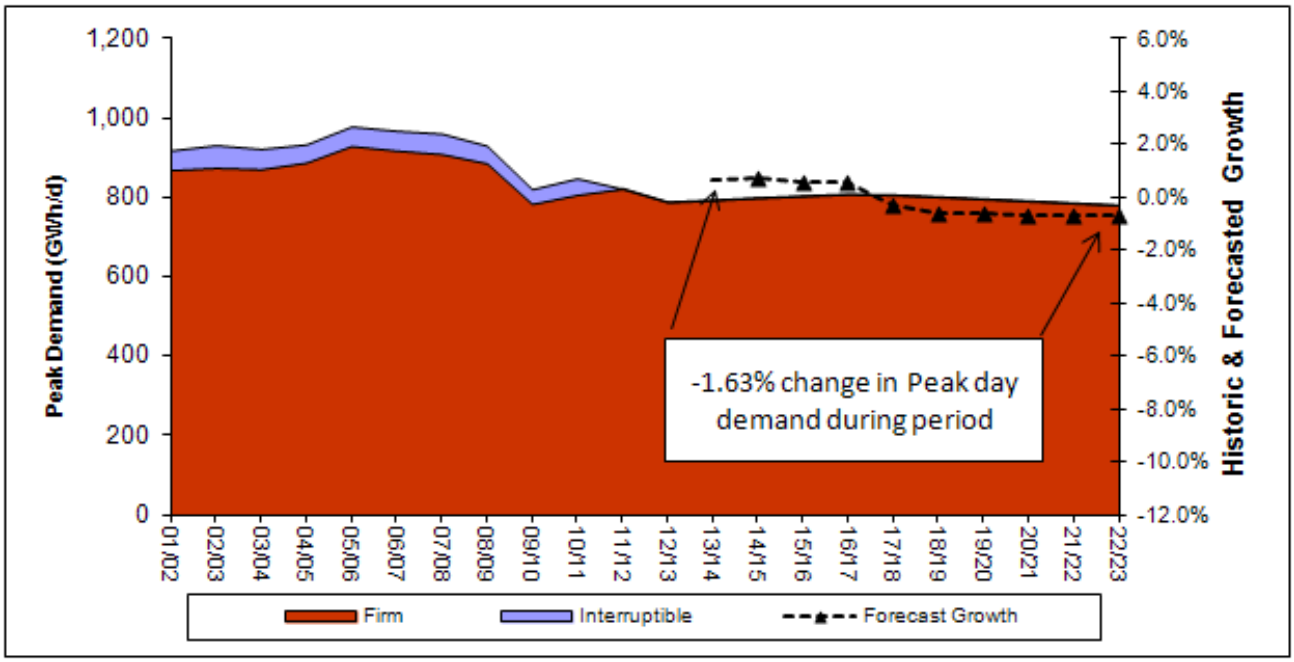
- Shaded areas are measured on the left hand side and represent throughput
- Forecast growth is measured on the right hand side
- It is assumed that in 2013-15 there is a small increase in demands associated with economic recovery
- It is assumed that the UK Government will meet its 2020 carbon target hence from the period 2016-22 there is a decrease in demands associated with increased energy efficiency measures and the uptake of renewable technology

FIGURE 4.2.1B – Historic Demand and Forecast Growth of Peak Gas Demand for Scotland Gas Network



- See previous graph for commentary

FIGURE 4.2.1C – Historic Demand and Forecast Growth of Peak Gas Demand for Southern Gas Network



- See previous graph for commentary

4.3 Forecast Comparisons

The following charts provide a comparison of the current forecasts with those that were produced in 2012.

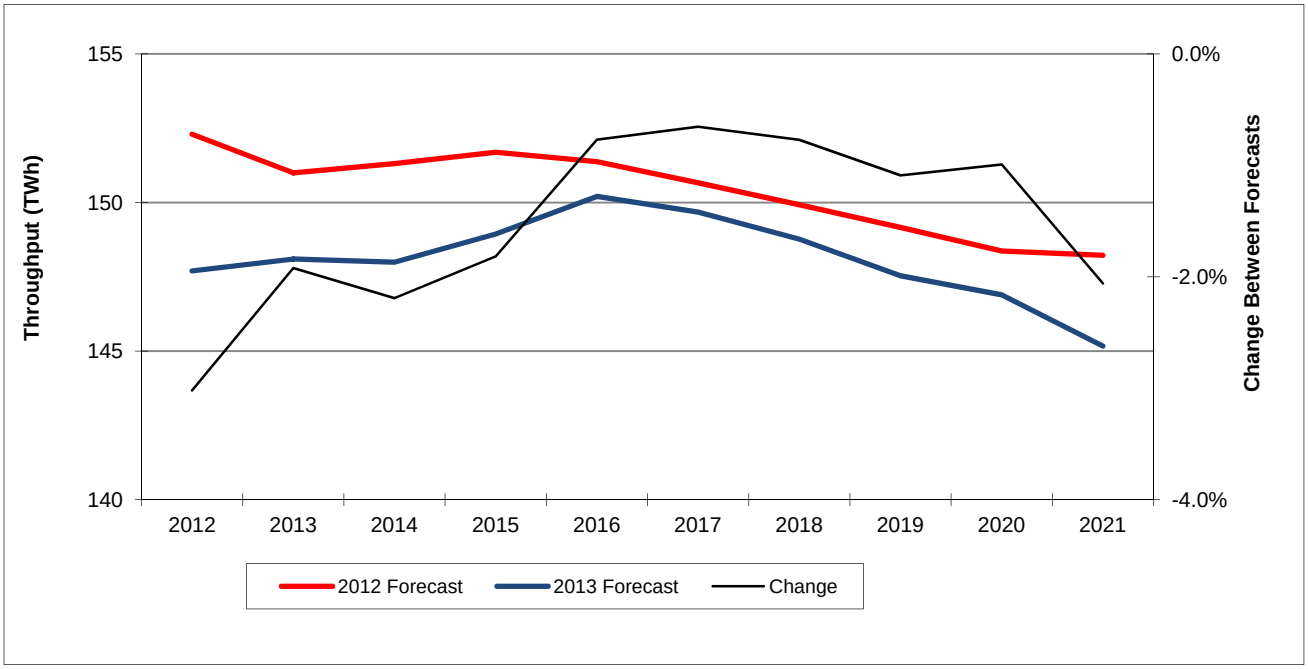
The latest annual demand forecasts are generally lower over the period of the plan than last year's with the exception of the Scotland LDZ. The driver for the difference in the forecasts is partly due to the fact that the 2013 forecasts have taken account of the difference between the forecast for 2012 and the actual demand on 2012.

There is further reduction in certain sectors as a result of higher gas price forecasts, slower economic recovery than expected and lower levels of housing growth. There is forecast a modest decline in demands throughout the forthcoming forecast period.

Greater consumer awareness on environmental issues and their 'carbon footprint' will also have an effect on the annual gas demands during the forecast period. Typical measures for domestic consumers include double glazing, loft insulation, cavity wall insulation and energy efficient boilers. These are administered in the UK Government domestic energy efficiency programme, CERT (Carbon Emissions Reductions Target) and community programme, CESP (Community Energy Saving Programme). The forecast rise in fuel prices will affect all markets along with National and Local Government initiatives. Also of importance is the effect of UK and EU renewable energy targets such as 20 - 20 - 20 Targets. This European Directive is to reduce the European Union's Greenhouse gas emission by 20% below 1990 levels, ensure 20% of energy is generated from renewable sources and reduce primary energy use 20% by improving energy efficiency. These initiatives could have an impact on non-domestic and domestic demand as gas is used more efficiently and have a positive impact as new types of business are created to cope with emerging industrial opportunities.

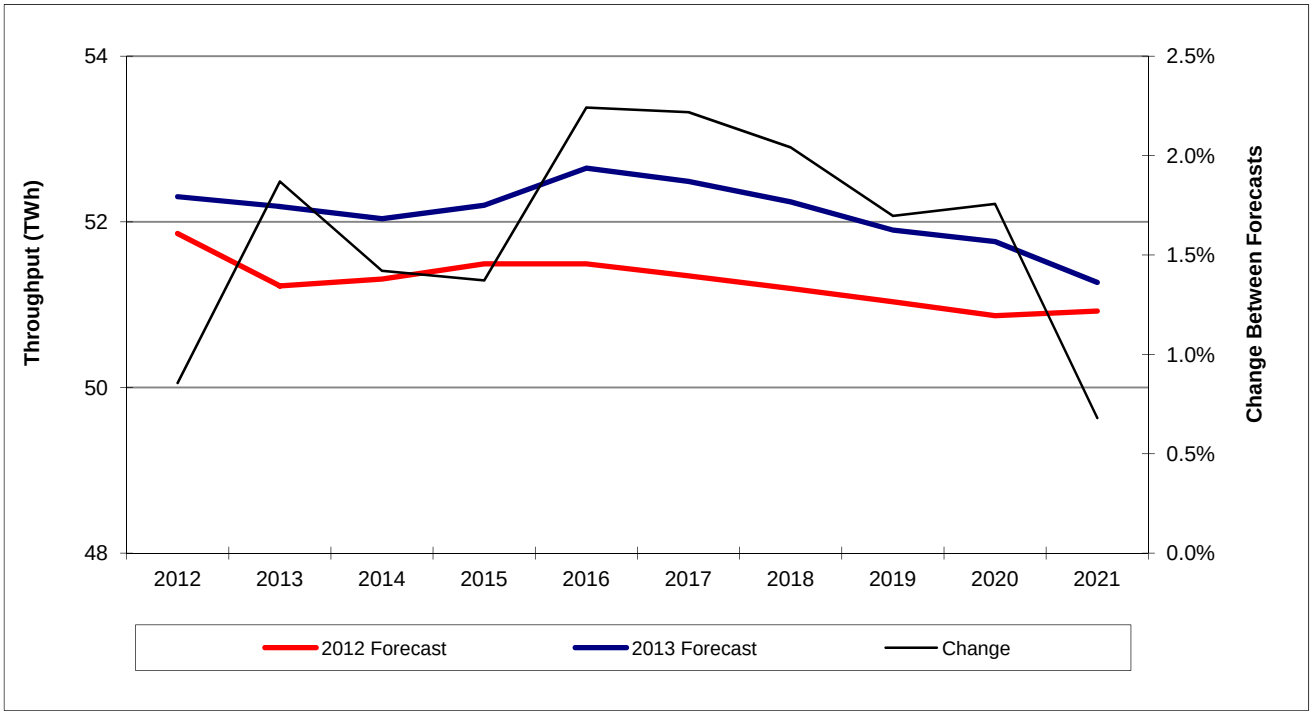
This could have a substantial impact on consumption year to year or may not materialise in the near or possibly even mid-term future.

FIGURE 4.3A – Comparison of Total Firm and Interruptible Annual Demand Forecasts – Scotia Gas Networks



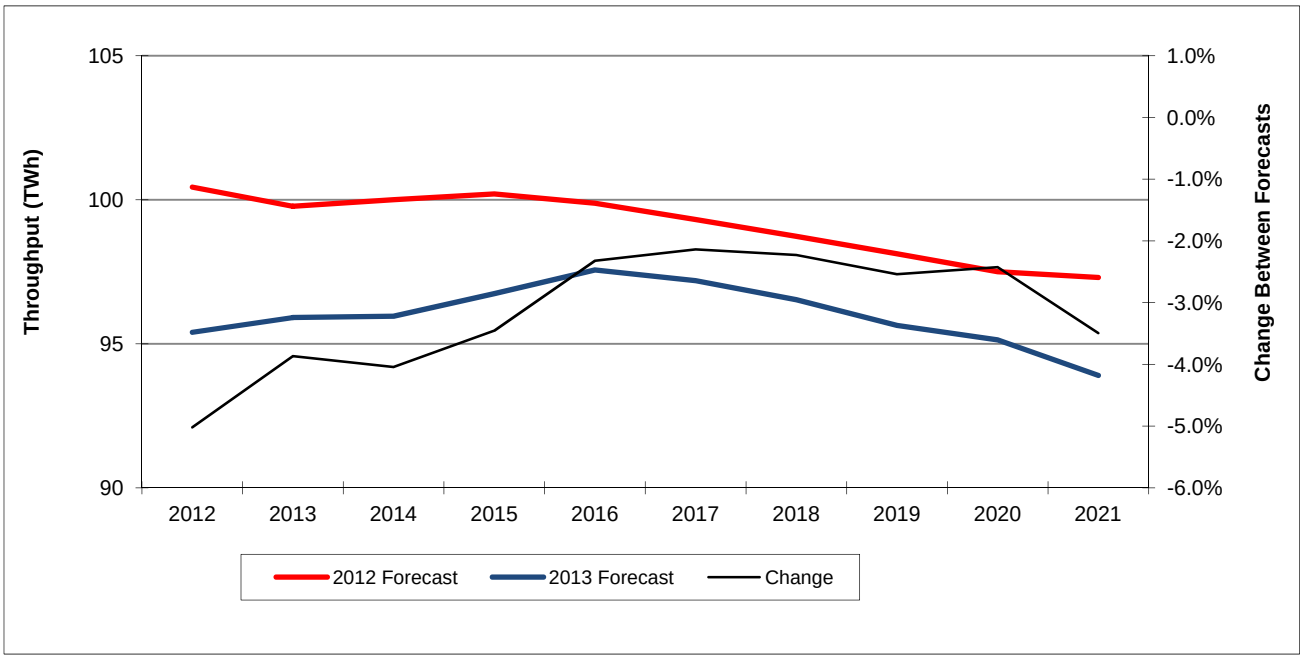
- 2012 and 2013 forecasts are measured on the left hand side
- The change between years' forecast demands are measured on the right hand side so on the above example a decrease in demand of 159TWh to 152TWh is a decrease of 4%

FIGURE 4.3A1 – Comparison of Firm and Interruptible Annual Demand Forecasts – Scotland Gas Network



- 2012 and 2013 forecasts are measured on the left hand side
- The percentage change between years' forecasts is measured on the right hand side

FIGURE 4.3A2 – Comparison of Firm & Interruptible Annual Demand Forecasts – Southern Gas Network



- 2012 and 2013 forecasts are measured on the left hand side
- The percentage change between years' forecasts is measured on the right hand side

Appendix 1 – Annual Demand

TABLE A1.1 – Forecast Annual Demand – Scotia Gas Networks Load Categories (TWh)

Calendar Year	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
0 - 73.2 MWh	90.7	88.6	88.1	88.7	89.7	89.6	89.2	88.6	88.3	87.2	86.6
73.2 - 732 MWh	12.5	12.2	11.8	11.9	12.2	12.2	12.1	12.0	11.8	11.7	11.5
732 - 2196 MWh	6.7	6.6	6.5	6.5	6.5	6.4	6.4	6.3	6.3	6.2	6.1
2196 - 5860 MWh	4.7	4.6	4.6	4.6	4.6	4.5	4.5	4.4	4.4	4.4	4.3
Total Small User	114.6	112.0	111.1	111.7	113.0	112.9	112.2	111.3	110.9	109.5	108.5
Firm >5860 MWh	7.2	7.1	7.0	7.0	7.0	7.0	6.9	6.8	6.8	6.7	6.6
DM Firm Consumption	24.7	28.0	28.8	29.2	29.1	29.0	28.8	28.6	28.4	28.1	27.9
DM Interruptible Consumption	0.3	0.2	0.2	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0
Total Large User	32.2	35.2	36.0	36.4	36.3	36.0	35.7	35.4	35.2	34.8	34.6
Total LDZ	146.8	147.2	147.1	148.1	149.3	148.8	147.9	146.7	146.0	144.3	143.1
Firm Shrinkage	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
Interruptible Shrinkage	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Shrinkage	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
Total Throughput	147.7	148.1	148.0	148.9	150.2	149.7	148.8	147.5	146.9	145.2	144.0
Gas Supply Year	11/12	12/13	13/14	14/15	15/16	16/17	17/18	18/19	19/20	20/21	21/22
Total Throughput	148.4	149.3	149.9	150.8	150.6	149.9	148.8	148.2	146.6	145.6	144.6
Total Firm Demand	148.9	149.9	150.1	151.0	152.1	151.9	151.0	149.9	149.3	147.6	146.5
Total Interruptible Demand	0.3	0.2	0.2	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0

TABLE A1.2 – Forecast Annual Demand – Scotland Gas Networks Load Categories (TWh)

Calendar Year	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
0 - 73.2 MWh	29.9	29.7	29.7	29.9	30.2	30.2	30.1	30.0	30.0	29.7	29.5
73.2 - 732 MWh	4.4	4.3	4.1	4.2	4.3	4.3	4.3	4.2	4.2	4.2	4.2
732 - 2196 MWh	2.6	2.6	2.7	2.6	2.7	2.6	2.6	2.6	2.6	2.5	2.5
2196 - 5860 MWh	1.9	2.0	2.0	2.0	2.0	1.9	1.9	1.9	1.9	1.9	1.9
Total Small User	38.8	38.6	38.5	38.6	39.1	39.1	38.9	38.7	38.6	38.3	38.0
> 5860 MWh	3.4	3.4	3.4	3.4	3.4	3.4	3.3	3.3	3.3	3.2	3.2
DM Firm Consumption	9.5	9.8	9.8	9.8	9.7	9.8	9.7	9.7	9.6	9.5	9.4
DM Interruptible Consumption	0.3	0.2	0.2	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0
Total Large User	13.2	13.3	13.3	13.3	13.3	13.2	13.1	13.0	12.9	12.8	12.7
Total LDZ	52.1	51.9	51.8	52.0	52.4	52.2	52.0	51.7	51.5	51.0	50.7
Firm Shrinkage	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Interruptible Shrinkage	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Shrinkage	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Total Throughput	52.3	52.2	52.0	52.2	52.6	52.5	52.2	51.9	51.8	51.3	50.9
Gas Supply Year	12/13	13/14	14/15	15/16	16/17	17/18	18/19	19/20	20/21	21/22	22/23
Total Throughput	52.3	52.1	52.1	52.6	52.5	52.3	52.0	51.9	51.4	51.0	50.7

TABLE A1.3 – Forecast Annual Demand – Southern Gas Networks Load Categories (TWh)

Calendar Year	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
0 - 73.2 MWh	60.8	58.8	58.4	58.8	59.5	59.4	59.1	58.6	58.4	57.6	57.1
73.2 - 732 MWh	8.1	8.0	7.7	7.7	7.9	7.9	7.9	7.7	7.6	7.5	7.3
732 - 2196 MWh	4.1	3.9	3.9	3.9	3.9	3.8	3.8	3.7	3.7	3.7	3.6
2196 - 5860 MWh	2.8	2.7	2.6	2.6	2.6	2.6	2.6	2.5	2.5	2.5	2.5
Total Small User	75.8	73.4	72.6	73.1	73.9	73.8	73.3	72.6	72.2	71.2	70.5
Firm >5860 MWh	3.8	3.7	3.7	3.6	3.6	3.6	3.6	3.5	3.5	3.5	3.4
DM Firm Consumption	15.1	18.2	19.0	19.4	19.4	19.2	19.0	18.9	18.8	18.6	18.5
DM Interruptible Consumption	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Large User	19.0	21.9	22.7	23.1	23.0	22.8	22.6	22.4	22.3	22.1	21.9
Total LDZ	94.8	95.3	95.3	96.1	96.9	96.6	95.9	95.0	94.5	93.3	92.4
Firm Shrinkage	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
Interruptible Shrinkage	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Shrinkage	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
Total Throughput	95.4	95.9	96.0	96.7	97.6	97.2	96.5	95.6	95.1	93.9	93.0
Gas Supply Year	11/12	12/13	13/14	14/15	15/16	16/17	17/18	18/19	19/20	20/21	21/22
Total Throughput	148.4	149.3	149.9	150.8	150.6	149.9	148.8	148.2	146.6	145.6	144.6
Total Firm Demand	87.3	88.2	88.4	89.2	89.9	89.6	89.1	88.3	87.9	86.8	86.1
Total Interruptible Demand	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

TABLE A1.3a – Forecast Annual Demand – South Eastern LDZ Load Categories (TWh)

Calendar Year	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
0 - 73.2 MWh	37.0	36.0	35.8	36.0	36.4	36.3	36.1	35.8	35.7	35.2	34.9
73.2 - 732 MWh	4.7	4.7	4.5	4.5	4.7	4.7	4.6	4.5	4.5	4.4	4.3
732 - 2196 MWh	2.2	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.0	1.9	1.9
2196 - 5860 MWh	1.5	1.4	1.4	1.4	1.4	1.4	1.3	1.3	1.3	1.3	1.3
Total Small User	45.4	44.2	43.8	44.0	44.5	44.4	44.1	43.7	43.4	42.8	42.4
Firm >5860 MWh	1.7	1.6	1.6	1.6	1.6	1.5	1.5	1.5	1.5	1.5	1.4
DM Firm Consumption	8.4	11.6	12.4	12.8	12.8	12.7	12.6	12.5	12.5	12.4	12.3
DM Interruptible Consumption	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Large User	10.0	13.2	14.0	14.4	14.4	14.2	14.1	14.0	13.9	13.8	13.7
Total LDZ	55.4	57.4	57.8	58.4	58.9	58.6	58.2	57.7	57.4	56.6	56.1
Firm Shrinkage	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
Interruptible Shrinkage	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Shrinkage	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
Total Throughput	55.8	57.7	58.2	58.8	59.2	59.0	58.6	58.1	57.7	57.0	56.5
Gas Supply Year	12/13	13/14	14/15	15/16	16/17	17/18	18/19	19/20	20/21	21/22	22/23
Total Throughput	56.9	58.2	58.7	59.2	59.1	58.7	58.2	57.9	57.2	56.6	56.1

Total Firm Demand	47.8	50.0	50.7	51.3	51.6	51.4	51.1	50.7	50.5	49.9	49.5
Total Interruptible Demand	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

TABLE A1.3b – Forecast Annual Demand – South Eastern LDZ Load Categories (TWh)

Calendar Year	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
0 - 73.2 MWh	23.8	22.8	22.6	22.8	23.1	23.1	23.0	22.8	22.7	22.4	22.2
73.2 - 732 MWh	3.4	3.3	3.2	3.2	3.3	3.3	3.2	3.2	3.1	3.1	3.0
732 - 2196 MWh	1.9	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.7	1.7	1.7
2196 - 5860 MWh	1.3	1.3	1.3	1.3	1.3	1.2	1.2	1.2	1.2	1.2	1.2
Total Small User	30.4	29.2	28.8	29.0	29.4	29.4	29.2	28.9	28.8	28.4	28.1
Firm >5860 MWh	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.0
DM Firm Consumption	6.8	6.6	6.6	6.6	6.6	6.5	6.4	6.4	6.3	6.3	6.2
DM Interruptible Consumption	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Large User	8.9	8.7	8.7	8.7	8.7	8.6	8.5	8.4	8.4	8.3	8.2
Total LDZ	39.3	37.9	37.5	37.7	38.1	37.9	37.7	37.3	37.1	36.7	36.3
Firm Shrinkage	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Interruptible Shrinkage	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Shrinkage	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Total Throughput	39.6	38.2	37.8	38.0	38.3	38.2	37.9	37.6	37.4	36.9	36.5
Gas Supply Year	11/12	12/13	13/14	14/15	15/16	16/17	17/18	18/19	19/20	20/21	21/22
Total Throughput	39.2	39.1	39.0	39.1	39.0	38.8	38.6	38.4	38.1	38.0	37.8

Total Firm Demand	39.6	38.2	37.8	38.0	38.3	38.2	37.9	37.6	37.4	36.9	36.5
Total Interruptible Demand	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Appendix 2 – Peak Demand

TABLE A2.1 – Forecast 1 in 20 Peak Day Firm Demand (GWh per day)

LDZ	**12/13**	**13/14**	**14/15**	**15/16**	**16/17**	**17/18**	**18/19**	**19/20**	**20/21**	**21/22**	**22/23**
Scotland	340	339	340	342	344	343	342	341	340	339	337
South East	449	459	464	466	469	467	464	461	458	455	452
South	341	335	336	339	341	340	338	336	334	332	330
Scotia Gas Networks	**1,130**	**1,134**	**1,140**	**1,147**	**1,153**	**1,151**	**1,145**	**1,139**	**1,132**	**1,126**	**1,119**

TABLE A2.2 – Forecast 1 in 20 Peak Day Firm Demand Scotia Gas Networks (GWh/day)

Gas Year	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23
0 - 73.2 MWh	797.6	789.6	793.9	800.0	806.0	804.9	800.2	795.3	790.3	785.0	779.7
73.2 - 732 MWh	107.0	102.9	102.5	104.5	106.5	106.4	105.5	104.6	103.6	102.6	101.7
732 - 2196 MWh	53.6	53.2	53.1	52.9	52.4	52.0	51.5	51.0	50.5	50.0	49.6
2196 - 5860 MWh	33.2	32.9	32.8	32.7	32.5	32.2	31.9	31.6	31.3	31.0	30.7
> 5860 MWh	41.5	40.8	40.9	40.9	41.4	41.6	41.7	41.9	42.1	42.2	42.4
Total NDM Consumption	1032.8	1019.4	1023.1	1031.1	1038.9	1037.0	1030.8	1024.4	1017.8	1010.9	1004.1
DM Firm Consumption	93.7	110.9	113.6	112.4	111.9	111.5	111.7	111.8	112.1	112.3	112.6
Total Firm Consumption	1126.5	1130.3	1136.7	1143.5	1150.8	1148.5	1142.5	1136.2	1129.8	1123.2	1116.7
Firm Shrinkage	2.4	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3
Total Firm Demand	1128.9	1132.6	1139.1	1145.8	1153.1	1150.9	1144.8	1138.6	1132.2	1125.6	1119.0
DM Interruptible Consumption	0.9	0.9	0.9	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Interruptible Shrinkage	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Interruptible Demand	0.9	0.9	0.9	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total DM Consumption	403.9	415.2	419.3	420.7	421.9	420.9	419.0	417.1	415.2	413.1	411.1
Total Shrinkage	2.4	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3
Total LDZ Demand	1129.8	1133.5	1140.0	1146.7	1153.1	1150.9	1144.8	1138.6	1132.2	1125.6	1119.0

TABLE A2.3 – Forecast 1 in 20 Peak Day Firm Demand Scotland Gas Networks (GWh/day)

Gas Year	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23
0 - 73.2 MWh	223.2	222.5	223.5	225.3	227.0	227.1	226.4	225.5	224.7	223.8	222.9
73.2 - 732 MWh	32.2	31.0	31.0	31.7	32.3	32.4	32.3	32.2	32.1	32.0	31.9
732 - 2196 MWh	18.9	19.0	18.9	18.9	18.7	18.6	18.5	18.3	18.2	18.0	17.9
2196 - 5860 MWh	13.0	13.1	13.0	13.0	12.9	12.8	12.7	12.6	12.5	12.4	12.3
> 5860 MWh	18.4	18.4	18.5	18.5	18.6	18.7	18.7	18.8	18.8	18.8	18.9
Total NDM Consumption	305.8	304.0	305.0	307.3	309.6	309.6	308.5	307.4	306.3	305.0	303.8
DM Firm Consumption	32.8	33.3	33.1	32.8	33.3	33.1	33.0	32.9	32.9	32.8	32.8
Total Firm Consumption	338.6	337.3	338.1	340.1	342.9	342.7	341.5	340.4	339.1	337.9	336.6
Firm Shrinkage	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Total Firm Demand	339.3	338.0	338.8	340.8	343.6	343.3	342.2	341.0	339.8	338.5	337.3
DM Interruptible Consumption	0.9	0.9	0.9	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Interruptible Shrinkage	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Interruptible Demand	0.9	0.9	0.9	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total DM Consumption	33.7	34.2	34.0	33.7	33.3	33.1	33.0	32.9	32.9	32.8	32.8
Total Shrinkage	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Total LDZ Demand	340.2	338.9	339.7	341.7	343.6	343.3	342.2	341.0	339.8	338.5	337.3

TABLE A2.4 – Forecast 1 in 20 Peak Day Firm Demand Southern Gas Networks (GWh/day)

Gas Year	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23
0 - 73.2 MWh	574.3	567.1	570.4	574.7	579.0	577.8	573.9	569.8	565.6	561.2	556.8
73.2 - 732 MWh	74.7	71.9	71.5	72.9	74.2	74.1	73.2	72.4	71.5	70.7	69.8
732 - 2196 MWh	34.7	34.2	34.1	34.0	33.7	33.4	33.0	32.7	32.4	32.0	31.7
2196 - 5860 MWh	20.1	19.8	19.8	19.7	19.5	19.3	19.2	19.0	18.8	18.6	18.4
> 5860 MWh	23.1	22.3	22.4	22.4	22.8	22.9	23.0	23.1	23.3	23.4	23.5
Total NDM Consumption	727.0	715.3	718.2	723.8	729.2	727.4	722.3	717.0	711.5	705.9	700.2
DM Firm Consumption	60.9	77.6	80.5	79.6	78.6	78.4	78.6	78.9	79.2	79.5	79.8
Total Firm Consumption	787.9	793.0	798.6	803.3	807.9	805.9	800.9	795.9	790.7	785.4	780.0
Firm Shrinkage	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
Total Firm Demand	789.6	794.7	800.3	805.0	809.6	807.5	802.6	797.6	792.4	787.0	781.7
DM Interruptible Consumption	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Interruptible Shrinkage	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Interruptible Demand	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total DM Consumption	370.2	381.0	385.3	387.0	388.6	387.8	386.0	384.2	382.3	380.3	378.3
Total Shrinkage	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
Total LDZ Demand	789.6	794.7	800.3	805.0	809.6	807.5	802.6	797.6	792.4	787.0	781.7

TABLE A2.4a – Forecast 1 in 20 Peak Day Firm Demand South East LDZ (GWh/day)

Gas Year	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23
0 - 73.2 MWh	338.0	334.7	336.3	338.4	340.6	339.7	337.3	334.9	332.3	329.7	327.1
73.2 - 732 MWh	43.1	41.4	41.2	42.0	42.9	42.8	42.3	41.7	41.2	40.7	40.1
732 - 2196 MWh	17.5	17.1	17.1	17.0	16.9	16.7	16.5	16.3	16.1	15.9	15.8
2196 - 5860 MWh	10.0	9.8	9.8	9.7	9.6	9.5	9.4	9.3	9.2	9.1	9.0
> 5860 MWh	9.2	9.0	9.0	9.1	9.2	9.3	9.4	9.5	9.6	9.6	9.7
Total NDM Consumption	417.7	412.0	413.3	416.3	419.2	418.0	414.9	411.7	408.4	405.1	401.7
DM Firm Consumption	30.3	46.5	49.5	49.0	48.4	48.4	48.5	48.7	49.0	49.2	49.4
Total Firm Consumption	448.1	458.4	462.8	465.3	467.7	466.4	463.4	460.4	457.4	454.2	451.1
Firm Shrinkage	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Total Firm Demand	449.1	459.5	463.8	466.3	468.7	467.4	464.5	461.5	458.4	455.2	452.1
DM Interruptible Consumption	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Interruptible Shrinkage	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Interruptible Demand	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total DM Consumption	30.3	46.5	49.5	49.0	48.4	48.4	48.5	48.7	49.0	49.2	49.4
Total Shrinkage	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Total LDZ Demand	449.1	459.5	463.8	466.3	468.7	467.4	464.5	461.5	458.4	455.2	452.1

TABLE A2.4b – Forecast 1 in 20 Peak Day Firm Demand South LDZ (GWh/day)

Gas Year	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23
0 - 73.2 MWh	236.3	232.5	234.1	236.3	238.4	238.1	236.5	234.9	233.2	231.5	229.7
73.2 - 732 MWh	31.7	30.4	30.3	30.8	31.3	31.3	31.0	30.7	30.3	30.0	29.7
732 - 2196 MWh	17.2	17.1	17.0	17.0	16.8	16.7	16.5	16.4	16.2	16.1	15.9
2196 - 5860 MWh	10.1	10.1	10.0	10.0	9.9	9.8	9.7	9.7	9.6	9.5	9.4
> 5860 MWh	13.9	13.3	13.4	13.4	13.5	13.6	13.6	13.7	13.7	13.8	13.8
Total NDM Consumption	309.3	303.3	304.8	307.4	310.0	309.4	307.4	305.3	303.1	300.8	298.5
DM Firm Consumption	30.5	31.2	31.0	30.6	30.2	30.0	30.1	30.2	30.2	30.3	30.4
Total Firm Consumption	339.9	334.5	335.8	338.0	340.2	339.5	337.5	335.4	333.3	331.1	328.9
Firm Shrinkage	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Total Firm Demand	340.5	335.2	336.5	338.7	340.9	340.2	338.2	336.1	334.0	331.8	329.6
DM Interruptible Consumption	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Interruptible Shrinkage	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Interruptible Demand	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total DM Consumption	339.9	334.5	335.8	338.0	340.2	339.5	337.5	335.4	333.3	331.1	328.9
Total Shrinkage	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Total LDZ Demand	340.5	335.2	336.5	338.7	340.9	340.2	338.2	336.1	334.0	331.8	329.6

Appendix 3 – Actual Flows

This appendix describes annual and peak flows during the calendar year 2012. Where relevant, more accurate data from the subsequent winter period has been included to provide gas supply year figures.

A3.1 Annual Flows

Forecasts of annual demand are based on average weather conditions. Therefore, when comparing actual demand with forecasts, demand must be adjusted to take account of the difference between actual weather conditions and seasonal normal weather. The result of this adjustment is the weather corrected demand.

Recent winters have included some of the warmest of any in the weather data history employed for demand modelling, dating back to 1928-29, and consequently the basis of the average weather condition used for demand forecasting purposes has been adjusted to better reflect these conditions. Anecdotal evidence to the contrary is based on specific days or weeks and not the entire winter period. As a result of this, the 2012 weather corrected annual demands and forecasts are based on the industry's current view based on research in cooperation with the Hadley Centre, which is part of the Met Office.

Tables A3.1A to A3.1D provides a comparison of actual and weather corrected demands during the 2012 calendar year with the forecasts presented in the 2012 LTDS. Annual demands are presented in the format of LDZ load bands/categories, consistent with the basis of system design and operation.

TABLE A3.1A – Annual Demand for 2012(TWh) – Scotia Gas Networks

	Actual Demand	Weather Corrected Demand	2012 LTDS Forecast Demand
0 - 73.2MWh	96.4	90.9	90.7
73 - 5860MWh	25.1	23.9	23.9
>5860MWh Firm	32.5	32.2	32.2
Total LDZs	154.0	147.1	146.8
Shrinkage	1.0	1.0	0.9
Total Throughput	309.0	295.2	294.5

Notes: Figures may not sum exactly due to rounding.

TABLE A3.1B – Annual Demand for 2012 (TWh) – Scotland LDZ

	Actual Demand	Weather Corrected Demand	2012 LTDS Forecast Demand
0 - 73.2MWh	31.8	30.1	29.9
73 - 5860MWh	9.4	9.0	9.0
>5860MWh Firm	13.3	13.3	13.2
Total LDZs	54.5	52.4	52.1
Shrinkage	0.3	0.3	0.3
Total Throughput	109.3	105.0	104.4

Notes: Figures may not sum exactly due to rounding.

TABLE A3.1C – Annual Demand for 2012 (TWh) – South East LDZ

	Actual Demand	Weather Corrected Demand	2012 LTDS Forecast Demand
0 - 73.2MWh	39.4	37.0	37.0
73 - 5860MWh	8.8	8.4	8.4
>5860MWh Firm	10.1	10.0	10.0
Total LDZs	58.3	55.4	55.4
Shrinkage	0.4	0.4	0.4
Total Throughput	117.0	111.3	111.3

Notes: Figures may not sum exactly due to rounding.

TABLE A3.1D – Annual Demand for 2012 (TWh) – South LDZ

	Actual Demand	Weather Corrected Demand	2012 LTDS Forecast Demand
0 - 73.2MWh	25.2	23.8	23.8
73 - 5860MWh	6.8	6.5	6.5
>5860MWh Firm	9.1	8.9	8.9
Total LDZs	41.2	39.3	39.3
Shrinkage	0.3	0.3	0.3
Total Throughput	82.6	78.9	78.9

Notes: Figures may not sum exactly due to rounding.

A3.2 LDZ Winter Severity Statistics

TABLE – A3.2 Scotia Gas Networks 6 month Winter Severities per LDZ

LDZ	1 in N
Scotland	>1 in 84, warm
South East	1 in 67, warm
South	1 in 78, warm
National	>1 in 84, warm

Notes: Sourced from National Grid report on Winter severity statistics 2011/2012 of May 2013.

A3.3 Peak & Minimum Flows

A3.3.1 Maximum and Peak Day Flows

Table A2.3 below shows actual flows for each individual LDZ on the maximum demand day for gas year 2011/12 compared to the forecast peak flows.

TABLE A3.3A – Actual Flows on the Maximum Demand Day of Gas Year 2011/12

LDZ	Maximum Day 2011/2012	1 in 20 Forecast Peak for 2011/12 (% of peak)
Scotland	25.04 mscmd (2 February 2012)	33.07 mscmd (75.72%)
South East	35.89 mscmd (4 February 2012)	46.137 mscmd (77.39%)
South	24.64 mscmd (3 February 2012)	34.79 mscmd (70.82%)

A3.3.3 Minimum Day Flows

TABLE A3.3B – Actual Flows on the Minimum Demand Day of Gas Year 2011/12

LDZ	Minimum Day 2011/12
Scotland	5.26 mscmd (18 August 2012)
South East	4.72 mscmd (19 August 2012)
South	3.20 mscmd (27 July 2012)

Appendix 4 – Gas Transportation System

Appendix 4 consists of diagrams of the general arrangement of the major pipelines and associated assets we operate. Please note that there is not a specific scale in use due to the differences in size between the areas covered by the differing LDZ. However the names of towns and cities are included as a means of reference. In addition we have published larger, more legible versions of the same schematics on our website which are intended to be printed at A3 size.

Should you require further information on the location of our assets please contact our plant control department at plant.location@sgn.co.uk

Scotland LDZ Schematic

IMAGE REDACTED - PLEASE REFER TO
https://www.linesearchbeforeudig.co.uk
FOR ANY PLANT LOCATION INFORMATION

South East LDZ Schematic

IMAGE REDACTED - PLEASE REFER TO
https://www.linesearchbeforeudig.co.uk
FOR ANY PLANT LOCATION INFORMATION

South LDZ Schematic

IMAGE REDACTED - PLEASE REFER TO
https://www.linesearchbeforeudig.co.uk
FOR ANY PLANT LOCATION INFORMATION

Appendix 5 – Glossary

Annual Quantity (AQ)
The AQ of a supply point is its annual consumption over a 365 or 366-day year, under conditions of average weather.

Bar
The unit of pressure that is approximately equal to atmospheric pressure (0.987 standard atmospheres). Where bar is suffixed with the letter g, such as in barg or mbarg, the pressure being referred to is gauge pressure, i.e. relative to atmospheric pressure. One-millibar (mbarg) equals 0.001 bar.

Biomethane
Biogas that has been cleaned in order to meet GSMR requirements.

Climate Change Levy (CCL)
Government tax on the use of energy within industry, commerce and the public sector in order to encourage energy efficient schemes and use of renewable energy sources. CCL is part of the government's Climate Change Programme (CCP).

Composite Weather Variable (CWV)
A single measure of weather for each LDZ, incorporating the effects of both temperature and wind speed. A separate composite weather variable is required for each LDZ and has been designed to provide a linear relationship with demand.

Connected System Exit Point (CSEP)
A connection to a more complex facility than a single supply point. For example a connection to a pipeline system operated by another Gas Transporter.

Cubic Metre (m3)
The unit of volume, expressed under standard conditions of temperature and pressure, approximately equal to 35.37 cubic feet. One million cubic metres (mcm) are equal to 10^6 cubic metres, one billion cubic metres (bcm) equals 10^9 cubic metres.

Daily Metered Supply Point
A supply point fitted with equipment, for example a data-logger, which enables meter readings to be taken on a daily basis. Further classified as SDMC, DMA, DMC or VLDMC according to annual consumption. Of these the most relevant is VLDMC which is defined further on.

Distribution Network (DN)
An administrative unit responsible for the operation and maintenance of the local transmission system (LTS) and <7barg distribution networks within a defined geographical boundary, supported by a national emergency service organisation.

Distribution System
A network of mains operating at three pressure tiers: intermediate (7 to 2barg), medium (2barg to 75mbarg) and low (less than 75mbarg).

Diurnal Storage
Gas stored for the purpose of meeting within day variations in demand. Gas can be stored in special installations, such as gasholders, or in the form of linepack within transmission, i.e. >7barg pipeline systems.

DECC
Department of Energy and Climate Change

Embedded Entry Points
Entry point which is not an offtake from NTS. Can be a biomethane or other unconventional source of gas.

Formula Year
A twelve-month period commencing 1st April predominantly used for regulatory and financial purposes.

Gas Transporter (GT)
Formerly Public Gas Transporter (PGT). GTs such as SGN, are licensed by Ofgem to transport gas to consumers.

Gasholder
A vessel used to store gas for the purposes of providing diurnal storage.

Gas Supply Year
A twelve-month period commencing 1st October also referred to as a Gas Year.

Gross Domestic Product (GDP)
Basic indication of a country's wealth. Monetary value of goods and services produced within a set period, generally one year.

Interconnector
This is a pipeline transporting gas from or to another country.

Interruptible Supply Point
A supply point that offers lower transportation charges where SGN can interrupt the flow of gas to the supply point and that is prepared to be interrupted if the Transporter needs to.

Kilowatt hour (kWh)
A unit of energy used by the gas industry. Approximately equal to 0.0341 therms. One Megawatt hour (MWh) equals 10^3 kWh, one

Gigawatt hour (GWh) equals 10^6 kWh and one Terawatt hour (TWh) equals 10^9 kWh.

Linepack
The usable volume of compressed gas within the National or Local Transmission System at any time.

Local Distribution Zone (LDZ)
A geographic area supplied by one or more NTS offtakes. Consists of High Pressure (>7 barg) and lower pressure distribution system pipelines.

Local Transmission System (LTS)
A pipeline system operating at >7barg, that transports gas from NTS offtakes to distribution systems. Some large users may take their gas direct from the LTS.

National Balancing Point (NBP)
An imaginary point on the UK gas supply system through which all gas passes for accounting and balancing purposes

National Transmission System (NTS)
A high-pressure system consisting of terminals, compressor stations, pipeline systems and offtakes. Designed to operate at pressures up to 85barg. NTS pipelines transport gas from terminals to NTS offtakes.

National Transmission System Offtake
An installation defining the boundary between NTS and LTS or a very large consumer. The offtake installation includes equipment for metering, pressure regulation, etc.

Non-Daily Metered (NDM)
A meter that is read monthly or at longer intervals. For the purposes of daily balancing, the consumption is apportioned using an agreed formula, and for supply points consuming more than 73.2MWh pa reconciled individually when the meter is read.

Odorisation
The process by which the distinctive odour is added to gas supplies to make it easier to detect leaks. Odorisation is provided at all network entry points.

Office of Gas and Electricity Markets (Ofgem)
The regulatory agency responsible for regulating the UK's gas and electricity markets.

Offtake
An installation defining the boundary between NTS and LTS or a very large consumer. The offtake installation includes equipment for metering, pressure regulation, etc.

ONS
Office for National Statistics

Operating Margins
Gas used to maintain system pressures under certain circumstances, including periods immediately after a supply loss or demand forecast change, before other measures become effective and in the event of plant failure, such as pipe breaks and compressor trips.

Own Use Gas (OUG)
Gas used to operate the transportation system. Includes gas used for preheating and the control of regulating systems.

Peak Day Demand (1 in 20 Peak Demand)
The 1 in 20 peak day demand is the level of demand that, in a long series of winters, with connected load held at the levels appropriate to the winter in question, would be exceeded in one out of 20 winters, with each winter counted only once.

Price Control Review
Ofgem's periodic review of transporter-allowed returns; the most recent set returns for the period April 2008 to March 2013. The next period has been called RIIO and will cover April 2013 to March 2021.

PRI
Pressure Regulating Installation. The replacement term for PRS, district governor and all other local terms (such as STRS or TRS) when IGEM standard TD13 was introduced.

PRS
Pressure Regulating Station. Generic term in Southern Gas Networks for an installation which reduces the supply pressure as gas passes either between different pressure rated tiers of the LTS or from the LTS to the below 7barg network or between different pressure tiers of the <7barg network.

Seasonal Normal Demand (SND)
The Demand experienced for a day/year under seasonal normal weather conditions.

Seasonal Normal Composite Weather Variable (SNCWV)
The seasonal normal value of the CWV for a LDZ on a day is the smoothed average of the values of the applicable CWV for that day in a significant number of previous years.

Seasonal Normal Temperature (SNT)
Seasonal Normal Temperature is the average temperature that might be expected on any particular day, based on historical data.

Shipper or Network Code Registered User (System User)
A company with a Shipper Licence that is able to

buy gas from a producer, sell it to a supplier and employ a GT to transport gas to consumers.

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.

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 Hourly Quantity (SHQ)
The maximum hourly consumption at a supply point.

Supply Offtake Quantity (SOQ)
The maximum daily consumption at a supply point.

Supply Point
A group of one or more meters at a site.

Therm
An imperial unit of energy. Largely replaced by the metric equivalent: the kilowatt hour (kWh). 1 therm equals 29.3071 kWh.

Transporting Britain's Energy (TBE)
National Grid's annual industry-wide consultation process encompassing the Ten Year Statement, targeted questionnaires, individual company and industry meetings, feedback on responses and investment scenarios.

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

Uniform Network Code (UNC)
The Uniform Network Code covers the arrangements between National Grid, shippers and the DNs following the selling off of four of the Networks.

Unitary Council Authority (UCA).
Successor to old county councils. Covers non city areas such as Kent but not London.

UK-Link
A suite of computer systems that supports Uniform Network Code operations. Includes supply point administration; invoicing, and the sites and meters database.

VLDMC
Very Large Daily Metered Site. A site which uses greater than 50,000,000 therms per annum.

Appendix 6 – Conversion Matrix

To convert from the units on the left hand side to the units across the top multiply by the values in the table.

	GWh	Mcm	Million Therms	Thousand toe
GWh	**1**	**0.092**	**0.034**	**0.086**
Mcm	**10.833**	**1**	**0.37**	**0.932**
Million Therms	**29.307**	**2.71**	**1**	**2.52**
Thousand toe	**11.63**	**1.073**	**0.397**	**1**

Note: all volume to energy conversions assume a CV of 39Mc/m^3

GWh = Gigawatt Hours

Mcm = Million Cubic Metres

Thousand toe = Tonnes of Oil equivalent