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The impact of public sector gas uptake

1 Introduction

The following paper provides a range of background information that goes some way toward answering the question – What would the impact on the retail price of gas be if public sector gas use was increased within areas where gas is currently available?ⁱ

It does this in three ways – by outlining the Utility Regulator’s response to that very question, by comparing the use and cost of gas and oil in the public sector, and by outlining historic trends in the retail price of each fuel.

2 Increasing gas use in public buildings – Utility Regulator Comments

In preparing this paper the Utility Regulator was asked to comment on the impact increasing public sector use of gas for heating would have on the overall retail price of the fuel.

The Regulator’s comments outlined what it sees as the general benefits of increasing the uptake of gas in the public sector, stating:

The Utility Regulator has a duty to promote the development and maintenance of an efficient, economic and co-ordinated gas industry in Northern Ireland and although it would depend on individual circumstances, we believe it may be highly beneficial for those in the public sector estate to make the switch to gas. The more properties which connect and use gas in Northern Ireland, the greater the economic and environmental benefits which will accrue for both the individual customer as well as wider societyⁱⁱ.

Drilling down into the specific benefits of increasing gas usage, the Regulator pointed to positive impacts in three areas: lower costs, economies of scale in distribution and emissions reductions.

On the issue of cost, the Regulator stated:

It usually makes good economic sense to switch to gas. Although there is normally an up-front cost in converting heating appliances to gas, with the lower cost of gas compared to some other fuels, the payback period can be relatively short. Cost savings can be even greater if the switch is made from out-dated inefficient heating systems to modern highly efficient gas systems. It would be recommended however for the public sector body involved to undertake a quantitative analysis of the estimated costs and benefits in Net Present Value (NPV) terms of switching to gas.ⁱⁱⁱ

On economies of scale in distribution the Regulator noted:

In technical terms, increasing the number of customers and volume of gas used in a supply area should lead to lower average costs per customer due to the fact that much of the distribution network infrastructure is already in place. As such there would be economies of scale by having more customers (especially high volume consumers as may be the case in the public sector), meaning the cost per connection in the area should fall. This would benefit customers in the distribution area in the form of lower bills than what would have been the case without the new customers.^{iv}

On the third positive impact, the Regulator concluded:

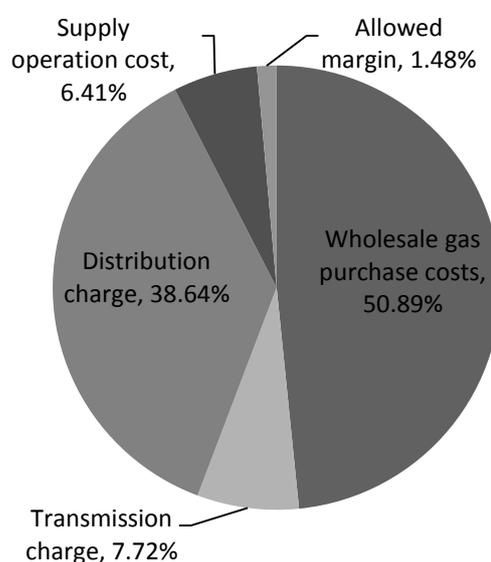
Burning 1000 kWhs of natural gas will emit 204 kgs CO₂, compared with 265 kgs CO₂ for 1000 kWhs of gas oil and 311 kgs CO₂ for 1000 kWhs of coal. Natural gas is therefore the cleanest burning fossil fuel and produces 23% less CO₂ than oil and 34% less CO₂ than solid fuel. For large estates in the public sector, the CO₂ savings (carbon displacement) could run into thousands of tonnes of carbon dioxide per year. Additionally, natural gas provides cleaner combustion, improved controllability, a reduction in sulphur dioxide (SO₂) and particulates emissions.^v

These statements suggest that there is a strong case to be made in favour of encouraging greater penetration of gas heating within the public sector. However, for

the purposes of this paper, it is the second statement, regarding economies of scale in distribution, which is perhaps the most significant. In the absence of a detailed impact assessment, this statement confirms, in a theoretical sense at least, that increasing number of high volume customers upon the distribution network in a specific area will lead to a lower cost per connection in that area, which will in turn lead to lower overall consumer bills.

To provide some context to the statements above, Figure 1 (below) provides a breakdown of the various costs that make up the final gas price. It is evident from the figure that distribution charges make up a substantial proportion (38.6%) of final cost. Please note that percentages outlined in Figure 1 refer to Phoenix Supply Ltd domestic tariff and are, as such, indicative only.

Figure 1: Constituent parts of an average domestic customer's bill^{vi}



Source: Northern Ireland Utility Regulator

3 The public estate heating bill in Northern Ireland

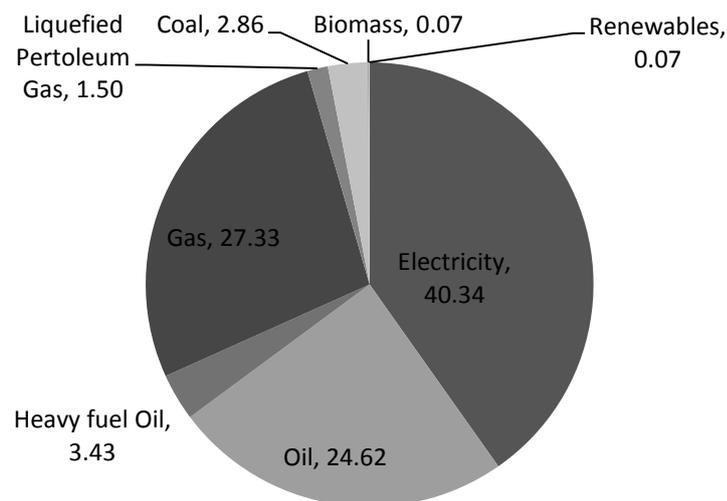
In 2008, the Department of Finance and Personnel published an assessment of energy consumption within the public sector (Annex 1 maps public sector uptake of gas as of October 2009). The paper took a broad view of Northern Ireland's public estate, defining it as *'those buildings occupied by the eleven Northern Ireland Departments and the Northern Ireland Office (NIO), their associated bodies, agencies, boards, executives and trusts; including both the health and education estates'*. District councils and Non Departmental Public Bodies were also included in Department's assessment. Given the date of the publication the recently devolved Department of Justice was not included in the analysis. In addition, the report did not include *'property occupied by GB departments such as HM Revenue and Customs (HMRC), the*

Northern Ireland Court Service, the Identity & Passport Service, MoD etc.; except insofar as they are minor tenants of NI central department buildings'.^{vii}

This section presents a selection of data sourced from the Departments' assessment, with particular attention paid to the public estate's heating bill. To begin with and to provide context, the total fuel bill for Northern Ireland's public estate, as defined above, in 2007/08 was approximately £135m.^{viii}

Figure 2 outlines the proportion of energy consumption attributed to various fuel types for 2007/08 (figures include energy consumed for non-building use). From this figure it is evident that electricity, at 40.34%, made the largest contribution to the public sector's total fuel consumption. Somewhat surprisingly gas, at 27.33% made the second largest contribution to total fuel consumption, exceeding oil which contributed 24.62%. Gas' higher placing was a relatively recent occurrence as demonstrated in Figure 3.

Figure 2: Energy consumption by fuel type as a proportion of total consumption 2007/08 – includes non-building use^{ix}



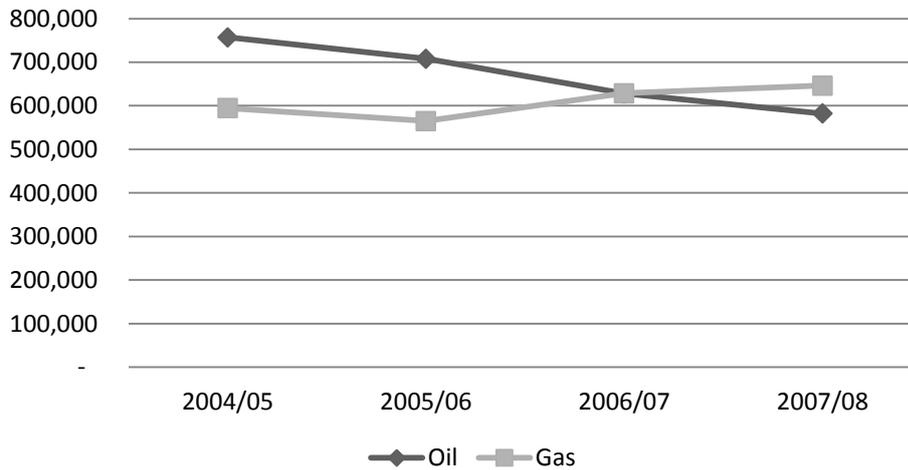
Source: Department of Finance and Personnel

Figure 3 plots trends in public sector gas and oil consumption between 2004/05 and 2007/08. The overall trend (based on this small sample of figures available) suggests increased penetration of gas and decrease in the use of oil. 2006/07 marks the point when gas overtakes oil as more widely used of the two fuels.

Figure 4 plots trends in total cost by fuel type between 2004/05 and 2007/08. The figure shows (again based on a small sample size) an overall upward trajectory for the total cost of both fuel types (except for gas in the final year which was flat, and oil in the penultimate year which fell). In the year in which gas overtook oil (2006/07) as the more widely used fuel type the overall cost of gas was greater than the overall cost of oil. In the following year (2007/08), when the total amount of oil used fell and the total amount of gas increased, the total cost of oil used was greater than that of gas. Figure

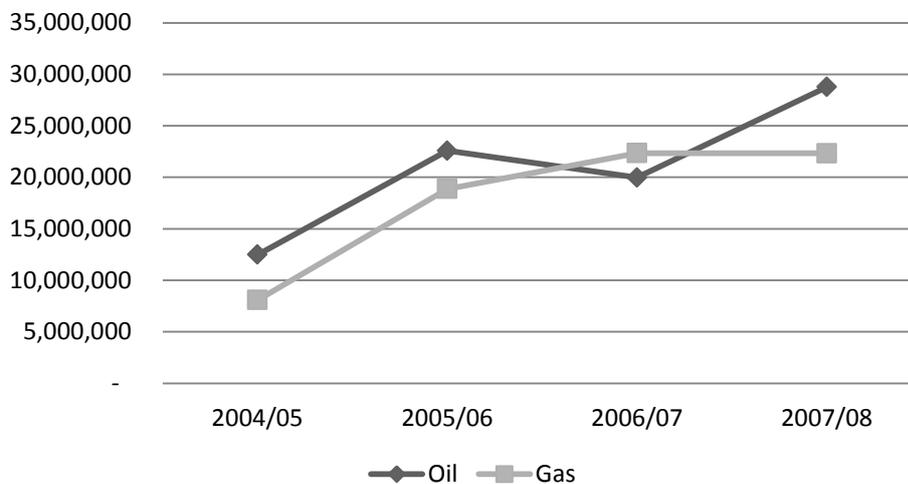
4 should perhaps carry a caveat, in that it does not fully express the wider movements of fuel prices and market developments in the period covered. Decontextualized from the wider market as it is, it should be read as indicative only.

Figure 3: Total public sector gas and oil consumption (MWh) 2004/05 to 2007/08 – including non-building use



Source: Department of Finance and Personnel

Figure 4: Total cost public sector gas and oil consumption (£) 2004/05 to 2007/08 – including non-building use



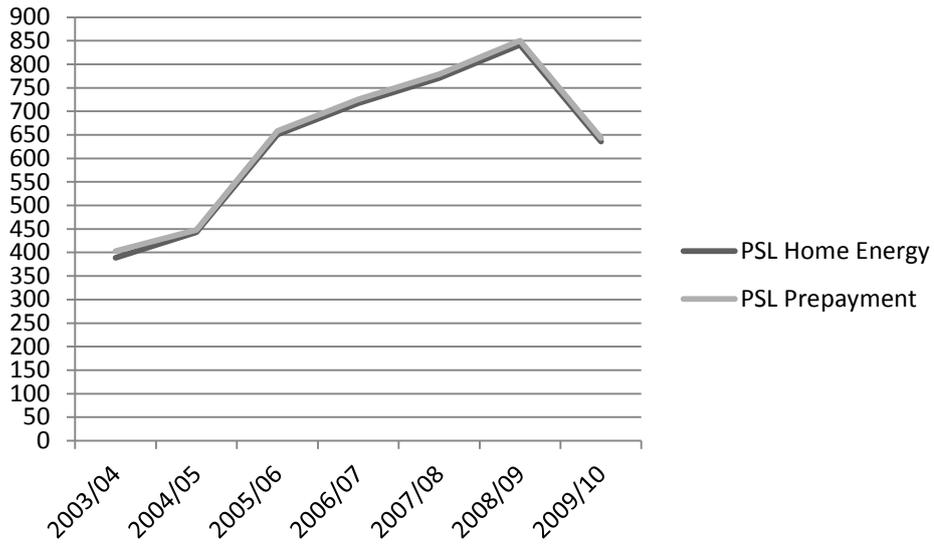
Source: Department of Finance and Personnel

4 Trends in heating prices

To provide further context, Figure 5 tracks recent trends in the retail price of gas, while Figure 6 looks at trends in oil price. Figure 5 outlines changes to the average domestic gas bills, from 2003/04 to 2009/10, for customers on the Phoenix Home Energy and Prepayment tariffs. The figure does not include business gas rates or rates paid by Firmus customers and is therefore indicative only (Table 1 goes some way to redressing this, showing the average cost of gas for both Phoenix and Firmus customers in 2010, according to household size). What Figure 5 does show is gas prices rising on both tariffs until 2008/09 when there is a steep decline. The figure does not take into account Phoenix's recent price rise which saw a 39% increase in the cost of gas in April 2011.^x

Figure 6 utilises data sourced from the Consumers Council's oil watch^{xi}, which has collected the lowest, highest and average cost of 300, 500 and 900 litres of oil in Northern Ireland every Tuesday and Thursday since January 2009 (data covers January 2009 to May 2011). The data shows not only the volatility of oil price, but also the steady increase over the last two years. Recent data, however, suggests that prices are decreasing after a number of peaks in the first quarter of 2011.

Figure 5: Average domestic Phoenix gas bill (£/year) 2003/04 to 2009/10^{xii}



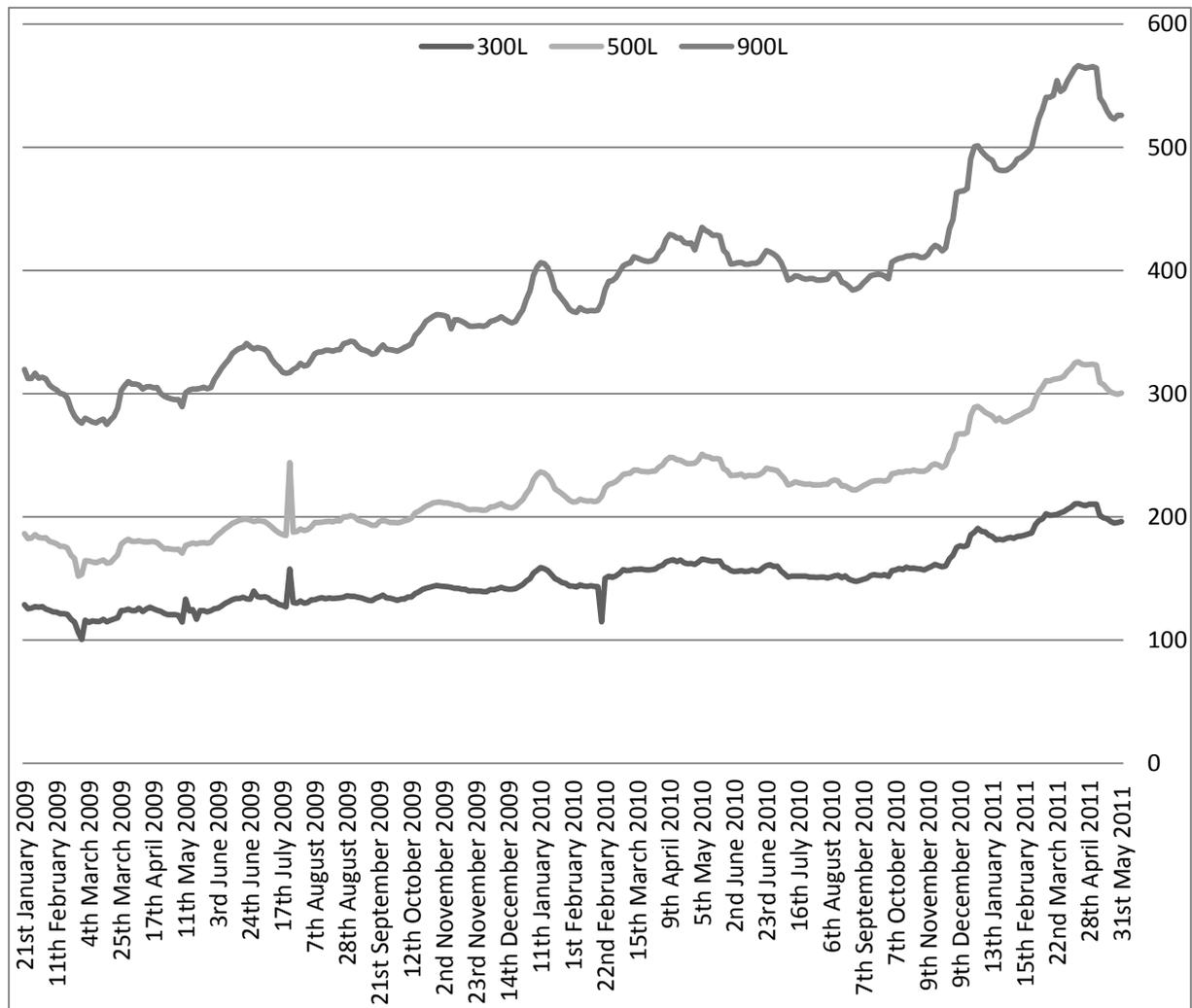
Source: Northern Ireland Utility Regulator

Table 1: Phoenix and Firmus average domestic bill 2010 by household size

Fuel	Type of Boiler	Annual cost (£) for 2 bed house	Annual cost (£) for 3 bed house	Annual cost (£) for 4 bed house
Natural Gas				
Phoenix Natural Gas	Condensing	613	800	1129
Firmus Energy	Condensing	578	753	1060

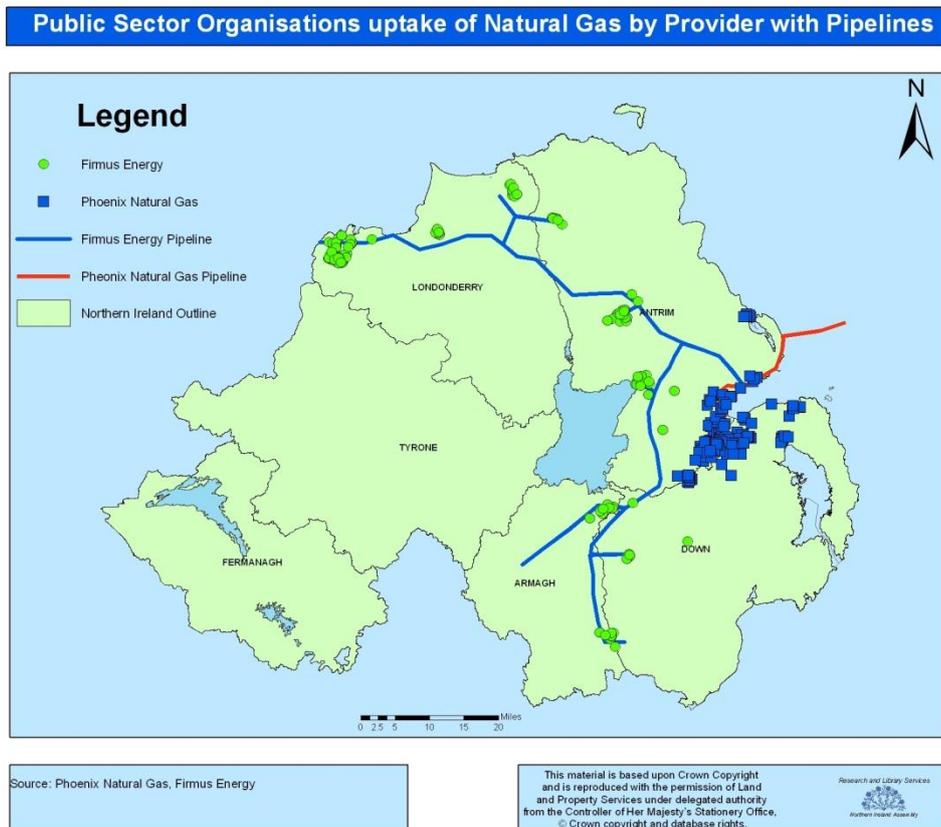
Source: National Energy Action

Figure 6: Average NI oil price by purchase size Jan 2009 to May 2011



Source: Consumer Council for Northern Ireland

Annex 1



ⁱ Greater Belfast, Larne and the 'ten towns'

ⁱⁱ Email correspondence with Utility Regulator 26 May 2011

ⁱⁱⁱ *Ibid*

^{iv} *Ibid*

^v *Ibid*

^{vi} Utility Regulator Northern Ireland *Energy Retail Report 2010* (2010)

http://www.uregni.gov.uk/uploads/publications/2nd_ERR_20101109.pdf (accessed 20/05/11)

^{vii} Department of Finance and Personnel *Public Sector Energy Campaign – energy consumption and progress against targets for the public sector in Northern Ireland* (2008) http://www.dfpi.gov.uk/psec_2007-2008_final_report_2.pdf (accessed 01 June 2011)

^{viii} *Ibid*

^{ix} *Ibid*

^x BBC Northern Ireland *Phoenix Gas puts prices up by 39% in Belfast and Larne* (21 April 2011)

<http://www.bbc.co.uk/news/uk-northern-ireland-13147146> (accessed 02/06/11)

^{xi} The Consumer Council for Northern Ireland *Oil Survey* <http://www.consumercouncil.org.uk/oil-price-watch/> (accessed 01/06/11)

^{xii} Utility Regulator Northern Ireland *Energy Retail Report 2010* (2010)

http://www.uregni.gov.uk/uploads/publications/2nd_ERR_20101109.pdf (accessed 20/05/11)