

# **ANNEX 1**

# CASE STUDY ON OWNER OCCUPIED GAS CONNECTIONS IN GREATER BELFAST

19 December 2017



# **About the Utility Regulator**

The Utility Regulator is the independent non-ministerial government department responsible for regulating Northern Ireland's electricity, gas, water and sewerage industries, to promote the short and long-term interests of consumers.

We are not a policy-making department of government, but we make sure that the energy and water utility industries in Northern Ireland are regulated and developed within ministerial policy as set out in our statutory duties.

We are governed by a Board of Directors and are accountable to the Northern Ireland Assembly through financial and annual reporting obligations.

We are based at Queens House in the centre of Belfast. The Chief Executive leads a management team of directors representing each of the key functional areas in the organisation: Corporate Affairs; Electricity; Gas; Retail and Social; and Water. The staff team includes economists, engineers, accountants, utility specialists, legal advisors and administration professionals.



## Abstract

The Case Study of Greater Belfast was to gather further evidence on considering what an appropriate non-additionality figure was.

The time frame for this study was mainly around the last 10 years (ie from 2007 -2016)

This considered the following areas and the effect that they had on connections and any implications on non-additionality:

- Profile of connections,
- Adverting and marketing,
- Boiler replacement and other government schemes,
- Oil prices,
- Retail Competition
- Housing Market
- Income Levels

The evidence suggests that a number of factors, both directly and indirectly have a role in influencing consumers deciding to connect to natural gas. Although direct marketing has a role, it would appear, based on all the other factors in play, to have a limit as to its influence.

Considering all the evidence from the Greater Belfast Area and attempting to quantify mathematically an appropriate non-additionality figure (%) it is difficult to draw definitive conclusions based on the large number of potential variables and the small dataset / sample.

## Audience

The licensee affected, other regulated companies in the energy industry, government, other statutory bodies and consumer groups with an interest in the energy industry.

## **Consumer Impact**

The overall impact on consumers will be expected to be minimal; however the process will impact on future activities and price control allowances.

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# **1** Purpose of Case Study

- 1.1 The UR has undertaken this case study on the Greater Belfast Area so as to provide some further analysis to inform its revised decision on non-additionality for Firmus Energy (FE). This Annex provides one aspect of analysis which the UR has taken account of in its consultation on non-additionality.
- 1.2 Non-additionality is one element of the GD17 Connection Incentive (a monetary allowance to the gas distribution companies to incentivise it to connect new customers and grow its network). Non-additionality refers a certain number of OO connections that would occur in any event without any direct marketing or selling to those customers. As these connections are 'non-additional' in nature, the company does not receive a per connection allowance for them.
- 1.3 In GD17, the non-additionality rate for FE was set at 25% by the UR. However following appeal to the CMA, the UR has been tasked by the CMA with undertaking further analysis (on Ground 2B), in non-additionality. The Connection Incentive, non-additionality and the CMA remedies are discussed in greater detail in the main non-additionality consultation document.
- 1.4 This case study focused on Phoenix Natural Gas Ltd's (PNGL's) historic connection levels in the Owner Occupier sector as the UR considers that PNGL is one of the best comparators for FE. Like FE, PNGL is based in Northern Ireland and faced the challenge of developing a network and a market for natural gas from scratch.
- 1.5 PNGL have been developing their natural gas network for the past twenty years (since 1996). It is fair to say that PNGL in the last decade or so were at a similar level of maturity as FE are currently (FE licence granted in 2005).
- 1.6 Therefore, while acknowledging that some differences exist, we wish to explore if we may be able to draw conclusions on the effect of advertising on the Greater Belfast Area and on potential ranges for non-additionality rates in the Firmus Area. As the Greater Belfast Area is also funded with the Connection Incentive, it is difficult to isolate the impact of the mechanism from the impact of other potential factors.<sup>1</sup>
- 1.7 It should be recognised that this case study is somewhat explorative and investigative; it therefore should be considered in conjunction with other additional research which has been undertaken (see consultation paper for details).

<sup>&</sup>lt;sup>1</sup> In scientific study, you would typically compare a 'treatment group' with a 'control group'.

# **2** Factors Leading to Gas Connections

- 2.1 The Northern Ireland energy market enables customers to choose between various means in which to heat their homes (natural gas, oil, electricity and solid fuel etc). According to Northern Ireland's Department for Communities, the percentage of homes with central heating has risen from 95% in 2001 to 99% in 2011. Gas has seen the largest increase in installations, increasing almost five-fold from 2001 to 2011. The numbers of solid fuel, electric and dual system heating systems have decreased over the period.<sup>2</sup>
- 2.2 This case study will focus on Phoenix Natural Gas Ltd's (PNGL's) historic connection levels in the Owner Occupier (OO) sector as the UR considers that PNGL is one of the best comparators for FE. PNGL is based in Northern Ireland and like FE faced the challenge of developing a network and a market for natural gas from scratch. PNGL is more commonly referred to as Phoenix, or Phoenix Gas.

![](_page_5_Figure_3.jpeg)

![](_page_5_Figure_4.jpeg)

2.3 PNGL have stated that at the time of its launch in 1996, that the Phoenix project was one of the largest greenfield, private sector-led integrated gas transmission, distribution and supply investments in Western Europe. The PNGL network currently extends to over 3,300 kilometres of pipeline which distributes natural gas to a Licensed Area (Greater Belfast) representing around 40% of the population of Northern Ireland.

<sup>&</sup>lt;sup>2</sup> <u>https://www.communities-ni.gov.uk/sites/default/files/publications/communities/ni-housing-stats-15-16-full-copy.pdf</u>

<sup>&</sup>lt;sup>3</sup> https://www.uregni.gov.uk/market-overview-1

- 2.4 The Greater Belfast area includes: Belfast, Lisburn, Bangor, Holywood, Donaghadee, Groomsport, Millisle, Newtownards, Carryduff, Comber, Newtownabbey, Carrickfergus and Larne.<sup>4</sup>
- 2.5 There will be a number of contributory factors and interrelated reasons for why Owner Occupiers connect their property to gas, and each factor cannot effectively be isolated. It is important to note that any apparent correlation between the various factors identified by the UR and connection levels does not necessarily imply causation, either directly or indirectly, in every case. With regards to PNGL, it is difficult to establish a counterfactual of what connections would have been if the Connection Incentive was not in place.
- 2.6 As illustrated in the graph below, PNGL undertook a quite rapid expansion of the distribution network in the first 10 years of their operations, followed by a more gradual expansion of the network in the second 10 years. In conjunction, solid progress was made over the past 20 years in terms of OO connections. This is forecast to continue in the GD17 period (the red dashed line, taken from Table 11 of the GD17 final determination).
- 2.7 The UR uses a concept of 'properties passed' to describe the number of properties *"which could reasonably be expected to be able to be connected with a gas service after the installation of new gas mains"* <sup>5</sup> due to the fact that a gas distribution main 'passes' the properties.<sup>6</sup>

<sup>5</sup> See page 176 of the GD17 RIGS: <u>https://www.uregni.gov.uk/sites/uregni.gov.uk/files/media-files/2015-05-14 Business Plan RIGS - FINAL.pdf</u>

<sup>&</sup>lt;sup>4</sup> PNGL is currently expanding its network to the East of County Down.

<sup>&</sup>lt;sup>6</sup> A property passed is considered to be a connection when the service and meter for this property have been put in place, a supplier has been assigned and the downstream installation has been completed. See page 161 of GD17 RIGs: <u>https://www.uregni.gov.uk/sites/uregni.gov.uk/files/media-files/2015-05-14\_Business\_Plan\_RIGS\_-\_FINAL.pdf</u>

![](_page_7_Figure_0.jpeg)

Figure 2: PNGL cumulative OO connections & properties passed

- 2.8 In 2016, there was around 200,000 customers connected to the PNGL network. Of these around 100,000 were Owner Occupiers. Approximately 205,000 Owner Occupied properties were passed by a PNGL gas main; therefore, around 50% of potential OO properties were connected to the gas network in the Greater Belfast Area. This penetration rate is forecast to increase to over 60% by the end of GD17.
- 2.9 In the years immediately after 1996, the number of Owner Occupied customers increased rapidly (triple and double digit annual growth rates), before settling into a lower (single digit) average growth rate of around 9% per annum for the period 2005 to 2016. For the GD17 period however, the UR is effectively assuming a growth rate of less than 5% per annum for the Owner Occupied sector (5,000 properties or less per year).
- 2.10 Also included in the graph above are the UR's inherent assumption of 'non-additional connections (red dotted line) during the GD17 period. This is a relatively small number of connections. For example, in 2017 this works out as only around 1,650 Owner Occupiers in that year,<sup>7</sup> out of a possible 100,000 homes that could connect (<2% therefore) i.e. gas has passed their property, but have not availed of natural gas, as yet.<sup>8</sup>
- 2.11 Although the general trend of OO connections to the PNGL gas network has been solid, the years 2010 to 2016 saw a rise and then fall in the number of connections.

<sup>&</sup>lt;sup>7</sup> UR's non-additionality rate for PNGL in GD17 was 33%. Dotted line in graph calculated as 33% of the connection numbers in Table 11 of GD17 Final Determination. See page 126 of GD17 Final Determination: https://www.uregni.gov.uk/sites/uregni.gov.uk/files/media-

See page 126 of GD17 Final Determination: <u>https://www.uregni.gov.uk/sites/uregni.gov.uk/files/media-</u> <u>files/2016-09-15 GD17 Final Determination - final 0.pdf</u>

<sup>&</sup>lt;sup>8</sup> 100,000 figure is approximate. Calculated as OO properties passed figure, minus OO connected properties.

This is shown in the graph below along with the UR's assumption in GD17 of the number of properties which will connect during the six years of the price control. PNGL did not appeal any of the GD17 decisions, including the non-additionality rate (33% for PNGL) and the UR's connection numbers.

![](_page_8_Figure_1.jpeg)

Figure 3: Annual PNGL connection levels for Owner Occupiers <sup>9</sup>

- 2.12 According to PNGL, connections rose from 1996 to a high annual level in 2003 due to a culmination of factors. PNGL stated that connection levels were influenced by the level of network construction and 'early adopters' who had been persuaded of the benefits of natural gas and were keen to take advantage of the availability of a new fuel. PNGL pointed to considerable promotional and canvassing activity and high level of network construction activity which helped stimulate Owner Occupied connections.<sup>10</sup>
- 2.13 For about 7 to 8 years following this period, connections settled into an approximate range of 4,000 to 7,000 connections per year, before connections then rose again, to even higher levels in 2013 and 2014.
- 2.14 For the purposes of this analysis, the UR will focus on what it considers as the most relevant and comparable time period, namely PNGL's connection levels from 2005 to 2016. We have selected the last 10 years from PNGL, as we believe this is similar to the FE development cycle.<sup>11</sup>
- 2.15 By examining the period 2005 to 2016, we will be attempting to understand how connection levels performed in a comparator GDN (namely PNGL), at a similar level of maturity that FE are currently. The UR considers that examining the time before 2005 may be less valuable, as a different incentive regime existed, and PNGL were

<sup>&</sup>lt;sup>9</sup> Includes Housing Association.

<sup>&</sup>lt;sup>10</sup> Summarised from PNGL response to GD17 Information Request IR-1.

<sup>&</sup>lt;sup>11</sup> The time period chosen marked around 9 to 20 years since the licence was granted to PNGL to convey natural gas. The UR considers that this is of most relevance to FE, given that the GD17 period of 2017 to 2022 marks around 12 to 17 years after FE's licence was granted. Ten Towns conveyance licence first granted in March 2005 to Bord Gais Eireann.

still in very early stages of development. In addition, it is relatively difficult to obtain a spectrum of consistent statistical and expenditure data which extends back to 1996.

2.16 PNGL have described to the UR the market conditions which led to the increase in connections in 2011 onwards, as unique. PNGL stated the following in their GD17 Business Plan submission:

"Despite the challenging economic environment during 2011 and 2012, the level of owner occupiers expressing an interest and the numbers of owner occupiers connecting to PNGL's network was higher than the anticipated normalised level of c.4,000 connections per year.

A range of factors contributed to the increase; however we believe (i) the collapse of the housing market; (ii) the decline of the new build market; and (iii) the level of promotional activity and positive publicity following the introduction of domestic supply competition in the natural gas market coupled with the negative publicity surrounding oil, are the main contributing factors', and 'Individually each factor may have only had a small impact; however performance in 2011 and 2012 was the result of an unprecedented culmination of a range of factors which created the conditions for previously 'uncommitted' owner occupiers to have a more specific interest in installing natural gas. We believed that these set of influencing factors were unique and not repeatable and that the levels of interest experienced would drop to the normalised level of c.4,000 connections as these factors were removed.

2013 and 2014 produced the highest owner occupied connections levels since the peak in 2003. We believe these performance levels were the result of (i) a continuation of many of the market conditions experienced between 2011 and 2012; (ii) the impact of the introduction of the Northern Ireland Executive Boiler Replacement Allowance in September 2012; and (iii) the rapidly rising cost of home heating oil and the associated publicity. We believe that the removal of these short term market conditions support a return to the consistent level of 4,000 owner occupied connections per year across GD17 as experienced between 2006 and 2010.

PNGL agrees that the costs of developing the market should decrease as the development moves through the cycle from a fledgling business to maturity, however, neither PNGL nor the Northern Ireland market for natural gas can yet be considered mature. In the meantime an appropriate level of market development expenditure will be required to ensure that PNGL's current business model can be achieved." <sup>12</sup>

- 2.17 The UR recognises that there will be some inherent natural volatility in connection levels
- 2.18 It can therefore be seen that a local gas networks company are themselves accounting for a significant number of their connections down to 'other factors'. How 'unique' these factors are, is a matter of debate.

<sup>&</sup>lt;sup>12</sup> See page 121 of GD17 Final Determination:

https://www.uregni.gov.uk/sites/uregni.gov.uk/files/media-files/2016-09-15\_GD17\_Final\_Determination\_-\_final\_0.pdf

### Advertising, Marketing & Public Relations (AMPR)

- 2.19 The connection incentive is a per connection allowance to encourage the connection of domestic Owner Occupied properties. This is unique to NI and was created due to initial difficulties in driving gas connections.<sup>13</sup> It is up to the GDN's how they spend the allowance but it tends to cover the sales teams, advertising and marketing, direct customer incentives and associated overheads.
- 2.20 The UR has made a significant opex allowance of millions of pounds for PNGL to spend on Advertising, Marketing and Public Relations (AMPR) as part of the GD17 price control. PNGL has undertaken significant, sustained spending on AMPR in the past, which we consider will have a cumulative effect.
- 2.21 The graph below shows how AMPR spend for PNGL was relatively flat over the last seven years (around £2m to 3m per year). It is difficult to be conclusive as to the exact impact of AMPR, especially as there may be a time-lag between the activity arising from the expenditure and connections.

![](_page_10_Figure_4.jpeg)

Figure 4: PNGL Advertising, Marketing & PR (AMPR) expenditure <sup>14</sup>

<sup>&</sup>lt;sup>13</sup> It is reported that a number of companies such as Krispy Kreme and GoPro grew their customer base considerably without much advertising and marketing activity. <u>https://thenextweb.com/entrepreneur/2014/10/29/4-brands-built-empires-without-traditional-</u> advertising/#.tnw\_Tc8Cby7I

Sustained advertising and marketing is deemed not necessary for some established companies such as Rolls Royce and Zara.

http://www.huffingtonpost.com/2013/08/26/companies-dont-use-advertising n 3768504.html

<sup>&</sup>lt;sup>14</sup> 2010 and 2011 less comparable with future years as Connection Incentive introduced in PNGL12.

2.22 PNGL note that the rise in Owner Occupied connections coincided with the aftermath of the credit crunch and subsequent recession. PNGL also note that their AMPR activity was largely constant.

"The economic environment in Northern Ireland experienced a downward trend between 2011 and 2014 with rising unemployment, business closures and less disposable income. However the level of owner occupiers expressing an interest and in turn connecting to PNGL's network was higher than anticipated, despite no significant change in PNGL's investment in communications or approach to the marketplace." <sup>15</sup>

- 2.23 The UR considers that as a product becomes available (i.e. the availability of natural gas) a number of households will want to connect to avail of the benefits of gas. This includes existing Owner Occupiers that may wish to switch from their current heating methods, such as oil boilers for example.
- 2.24 The UR would contend that it is not just information barriers which the public face but also barrier in the form of upfront installation costs, the potential 'hassle factor' etc. However, despite these, customers in a free market will almost inevitably choose natural gas given the benefits over other sources and heating systems. Natural gas appears to be the preferred choice, if available, and it is fair to say only a small number of homes have actively switched away from natural gas once it was installed.
- 2.25 An examination of all possible factors which may impact on gas connection levels are outlined below.

### **Boiler Replacement and other Government Schemes**

2.26 Heating accounts for about 60% of what a household spends in a year on energy bills.<sup>16</sup> The Energy Saving Trust promotes the benefits from replacing an old inefficient heating system with a modern condensing version.

"Modern boilers are more efficient for several reasons, but their main advantage is that they are all condensing boilers. All well-maintained boilers burn their fuel very efficiently, but they inevitably lose some heat in the hot gases that escape up the flue. A condensing boiler has a larger heat exchanger, so it recovers more heat, sends cooler gases up the flue and is more efficient."<sup>17</sup>

2.27 Although running costs can be lower with a new boiler, up-front costs can be significant. For example, while costs for replacing a boiler will vary, a straightforward oil boiler replacement plus thermostatic radiator values will typically cost about £3,000.<sup>18</sup> The cost of an installation can be smoothed however, if paid for in instalments, such as an interest-free loan.

<sup>&</sup>lt;sup>15</sup> PNGL - GD17 Owner Occupied Connections Paper (June 2015). PNGL viewed the market conditions which led to the 'spike' in connections as "unique" and "not repeatable".

<sup>&</sup>lt;sup>16</sup> Energy Saving Trust.

<sup>&</sup>lt;sup>17</sup> <u>http://www.energysavingtrust.org.uk/home-energy-efficiency/boiler-replacement</u>

<sup>&</sup>lt;sup>18</sup> http://www.energysavingtrust.org.uk/home-energy-efficiency/boiler-replacement

- 2.28 The operating costs a customer then faces are a function of the price of energy, the frequency of use (related to weather and household lifestyles) and the energy intensity of the appliance.<sup>19</sup> Other relevant factors include the size and configuration of the accommodation and the insulation levels of the property.<sup>20</sup> A customer who connects will normally have effectively undertaken at least a rudimentary cost / benefits analysis involving some form of intertemporal choice, in addition to discounted utility and budgetary considerations.<sup>21</sup> Government grants are a means of overcoming the high installation costs which can act as a barrier to conversions, and this is explored in greater detail below.
- 2.29 It is worth remembering that the Northern Ireland gas market is structured in such a way for domestic households who decide to connect, to benefit:
  - Free connection to the gas network, as long as it is a straightforward connection
  - Tariff profiled with 'levelised' prices, with continued growth in connections
  - Choice of credit or pre-payment meter arrangement, subject to status
- 2.30 A significant outlay of expenditure was undertaken by the NI Executive on various 'social schemes' to assist customers in modernising their heating systems and insulating their homes. These schemes operated throughout all of Northern Ireland, including the Greater Belfast Area. This is in addition to GDNs' AMPR spend.
- 2.31 One such scheme is the Boiler Replacement Allowance. The scheme is open to Owner Occupiers whose household income is less than £40,000 and who have an inefficient boiler of at least 15 years old. You are only be eligible to replace your existing gas boiler if the gas connection to your property was made at least 15 years ago. The allowance does not apply to Economy 7 heating, stoves used only for cooking, back boilers or room heaters.
- 2.32 The grant of up to £1,000 dependent on total gross annual income is available to help with replacing an inefficient boiler with a more energy efficient condensing oil or gas boiler; switching from oil to gas; or switching to a wood pellet boiler.<sup>22</sup> The customer needs to submit a Boiler Replacement Application Form to begin the process.<sup>23</sup>
- 2.33 Between September 2012 and March 2016 grants for 31,255 replacement boilers were approved under the Boiler Replacement Scheme, amounting to £21.4 million. This equates to an average grant of £684 per household. Of these, 25,855 replacements

Journal/2005/Energy%20economics/v27su1.9.pdf

<sup>&</sup>lt;sup>19</sup> C. Fischer (2005): <u>http://opac.vimaru.edu.vn/edata/E-</u>

<sup>&</sup>lt;sup>20</sup> See paragraph 1.5 of Transforming Northern Ireland's Heating Systems: A Plan to Retrofit Dwellings (2014):<u>http://www.brysonenergy.org/downloads/publications/RETROFIT\_MAIN\_REPORT\_2014\_%28</u> <u>Morris%29.pdf</u>

<sup>&</sup>lt;sup>21</sup> According to behavioural economics, even if a particular outcome would be net beneficial, customers can suffer from 'faulty discounting' if benefits are not immediate. Complexity and risk can also be a factor as consumers can be sceptical as to whether benefits will continue to accrue in (an uncertain) future – for example, any favourable oil/gas price differential may only be temporary. There can also be a form of rebound effect, where energy usage increases as day-to-day running costs decrease.

<sup>&</sup>lt;sup>22</sup> <u>https://www.nidirect.gov.uk/articles/grant-to-replace-your-boiler</u>

<sup>&</sup>lt;sup>23</sup> <u>https://www.nihe.gov.uk/boiler\_replacement\_leaflet.pdf</u>

have been completed. <sup>24</sup> According to NI Housing Executive data, over 8,000 installations were of new natural gas boilers, installed to replace LPG or oil.

	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16
Boiler Replacement Approvals	NA	NA	7,305	9,454	9,251	5,245
Works completed	NA	NA	3,530	8,992	8,399	4,934
Total payments authorised	NA	NA	2,081	9,782	7,931	6,148
Annual spend	NA	NA	£1.3m	£7.0m	£5.5m	£3.5m

#### Table 1: Number of Boiler Replacement Approvals (NI-wide, includes non-gas)<sup>25</sup>

- 2.34 Other schemes in operation include the Northern Ireland Sustainable Energy Programme (NISEP) and the Warm Home Scheme / Affordable Warmth Scheme<sup>26</sup> as well as other miscellaneous schemes.
- 2.35 NISEP is funded from a sum of money collected from all electricity customers through tariffs. It is used to provide funding for energy efficiency schemes. The strategic objectives of NISEP are to contribute to the achievement of efficiency in the use of energy; socially and environmentally sustainable long-term energy supplies; and providing the above at best value to customers whilst also having due regard to vulnerable customers.
- 2.36 The majority of the funding (80%) is ring-fenced for spend on vulnerable customers (known internally as the Priority Sector). NISEP funding for schemes aimed at Priority Sector customers typically provide a package of measures that includes insulation, heating system replacement (including fuel switching and heating controls), radiator panels, energy monitors, hot water cylinder jackets etc.

	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16
Economy 7 to gas	602	415	463	384	409	738
Economy 7 to oil	15	9	53	33	13	6
Solid fuel to gas	199	133	137	213	343	491
Solid fuel to oil	65	21	80	54	13	9
LPG to gas	15	18	24	8	14	1
LPG to oil	NA	NA	NA	1	NA	NA
Oil to gas	313	679	1,235	752	358	219
No heating to gas	57	135	117	117	274	317
No heating to oil	123	250	137	94	77	62
Back Boiler Unit to Gas	NA	NA	NA	NA	3	NA
E7 to Quantum	NA	NA	NA	NA	260	NA
Gas to gas	NA	NA	NA	NA	NA	2
Oil to oil	NA	21	NA	NA	NA	1
Oil to Biomass	NA	23	NA	NA	NA	NA
TOTAL - ALL HEATING REPLACEMENTS	1,389	1,704	2,246	1,656	1,764	1,846
TOTAL - REPLACEMENTS TO GAS	1,186	1,380	1,976	1,474	1,401	1,768

<sup>&</sup>lt;sup>24</sup> <u>https://www.communities-ni.gov.uk/sites/default/files/publications/communities/ni-housing-stats-15-16-full-copy.pdf</u>

<sup>&</sup>lt;sup>25</sup> <u>https://www.communities-ni.gov.uk/sites/default/files/publications/communities/ni-housing-stats-15-</u> 16-full-copy.pdf

<sup>&</sup>lt;sup>26</sup> https://www.nihe.gov.uk/index/benefits/affordable\_warmth\_scheme.htm

#### Table 2: Number of NISEP Heating Replacements (NI-wide) <sup>27</sup>

- 2.37 The principle behind NISEP is that the schemes operate on a not-for-profit basis and for the achievement of strategic objectives.
- 2.38 Since 2013 NISEP has been rolled forward on an annual basis pending the outcome of the Department for the Economy's review of energy provision in Northern Ireland. In July 2017, following discussions with the Department for the Economy and the UR, it was agreed that NISEP should be extended for a further year (to March 2019).<sup>28</sup> Both Housing Advice NI<sup>29</sup> and the UR<sup>30</sup> refer the general public to these NISEP schemes.
- 2.39 PNGL have supplied the UR with data on the approximate number of households which obtain 'heating measures' through a social scheme grant.
- 2.40 The graph below shows how many schemes / grants were approved each year and this works out around 2,000 approvals per year on average. Overall, around 30-40% of Owner Occupiers who connected in the Greater Belfast Area, availed of some of the various government funded schemes on offer.

![](_page_14_Figure_5.jpeg)

Figure 6: OO connections via 'social scheme' / grant in Greater Belfast <sup>31</sup>

2.41 According to estimates provided by PNGL, total grant expenditure on a number of schemes such as NISEP, Warm Home Scheme / Affordable Warmth and the Boiler Replacement Scheme has been significant, with around £2.8m spent in 2014 and

<sup>&</sup>lt;sup>27</sup> From Northern Ireland Sustainable Energy Programme (NISEP) Annual Reports: <u>https://www.uregni.gov.uk/sites/uregni/files/media-files/NISEP%20Annual%20Report%202015-2016.pdf</u>

<sup>&</sup>lt;sup>28</sup> <u>https://www.uregni.gov.uk/sites/uregni/files/media-</u>

files/NISEP%20Framework%20Document%202018-2019\_0.pdf

<sup>&</sup>lt;sup>29</sup> <u>https://www.housingadviceni.org/sites/default/files/documents/NISEP-schemes-1718.pdf</u>

<sup>&</sup>lt;sup>30</sup> <u>https://www.uregni.gov.uk/publications/nisep-list-schemes-2017-18</u>

<sup>&</sup>lt;sup>31</sup> Social scheme data provided by PNGL to the UR.

around £2.6m (estimated) in 2015 in the Greater Belfast Area alone.<sup>32</sup> Equivalent expenditure data for 2016 and 2017 is still unknown to the UR.

- 2.42 According to the NI Housing Executive, 72,500 people obtained guidance on the Boiler Replacement Allowance province-wide in 2015-16, while 100,000 obtained advice in 2014-15. <sup>33</sup>
- 2.43 If we take 20 years as a reasonable estimate of boiler life expectancy, assuming a uniform distribution of boiler replacements over time, this means that 5% of properties which use oil fuel will need to replace their boiler every year. The various government schemes on offer, coupled with the fact that a proportion of oil boilers will need replaced each year, may incentivise people to seek out information on gas availability and its benefits.

#### Comparison with Ten Towns (FE) Area

- 2.44 The FE Area has seen a steady rise in the number of Owner Occupied properties passed as the FE network has expanded. For GD17, this will continue with substantial infill programme consisting of further connections off the network infrastructure already built and further roll-out of their network infrastructure.<sup>34</sup>
- 2.45 In 2016, around 16% of potential OO properties were connected to the gas network in the FE Area (as a % properties passed). This penetration rate is forecast to increase to around 24% by the end of GD17.
- 2.46 Also included in the graph below are the UR's inherent assumption of 'non-additional connections (purple dotted line) for FE during the GD17 period. This is a relatively small number of connections for example in 2017 this works out as only 617 Owner Occupiers in that year, <sup>35</sup> out of a possible 60,000 homes that could connect (1%) i.e. gas has passed their property, but have not availed of natural gas as yet. <sup>36</sup>

 <sup>&</sup>lt;sup>32</sup> Figures relate to grant expenditure on heating measures for those connecting to PNGL's network.
 <sup>33</sup> <u>https://www.nihe.gov.uk/2016\_annual\_report.pdf</u>

https://www.nihe.gov.uk/2015\_annual\_report.pdf

<sup>&</sup>lt;sup>34</sup> See Firmus Energy: GD17 Business Plan, October 2015, p.12. https://www.firmusenergy.co.uk/images/uploads/publications/firmus\_energy\_GD17\_Business\_Plan\_2\_015.pdf

<sup>&</sup>lt;sup>35</sup> Dotted line in graph calculated as 25% of the revised connection numbers.

For example for  $2017 = 2,468 \times 0.25 = 617$ . This is added to total connections to give cumulative figure. <sup>36</sup> 60,000 figure is approximate. Calculated as OO properties passed figure, minus OO connected properties.

![](_page_16_Figure_0.jpeg)

Figure 7: FE cumulative OO connections & properties passed

- 2.47 The UR has also examined the uptake of social schemes in the Ten Towns Area and the results are similar to the Greater Belfast Area.
- 2.48 Shown on the graph below is the number of customers in the FE (10 Towns Area) receiving a grant under the various social schemes in operation.

![](_page_16_Figure_4.jpeg)

Figure 8: OO connections receiving BRS / NISEP grant in FE Area <sup>37</sup>

<sup>&</sup>lt;sup>37</sup> NISEP OO connections (calendar year basis) provided by FE, while Boiler Replacement Scheme data (financial year basis) relating to gas boilers is from NIHE. Boiler Replacement Scheme data from NIHE matched by UR against FE properties passed database (provided by FE to UR on 1 Oct 2017).

- 2.49 The data shows that around **50%** of Owner Occupiers which connected to the FE network since 2009 received a Boiler Replacement Scheme grant or a NISEP grant. Our latest data for 2017-18 from NIHE on the Boiler Replacement Scheme shows<sup>38</sup> that, thus far, uptake of the scheme in the FE Area is similar to the previous year. This is informative as the time period of the latest data covers part of the first year of GD17.
- 2.50 It can also be seen that the number of annual Owner Occupier connections in the FE Area has increased relatively steadily since the FE licence was granted. During the GD17 period the annual number of connections is expected to increase further, partly due to the rise in the number of passed properties as the FE network grows.
- 2.51 In addition to overcoming the financial barrier to switching to gas, it is important to note these government boiler replacement grants may also have the effect of informing customers that it is possible to switch to gas, from a previous alternative fuel source. As explored in other sections below, government information is only one example of how a gas distribution company can 'free-ride' on awareness generated by a third party.

### **Oil Prices**

- 2.52 Given that oil central heating accounted for 68% of heating system types in Northern Ireland in 2011, some of those who switched will have previously used heating oil.<sup>39</sup> Heating oil can run out, requires a tank for storage and can be more difficult for households to budget for (as requires periodic deliveries of a sizeable number of litres of oil as a minimum). Some households in Northern Ireland have been known to use heating oil drums. However, this is regarded as a relatively expensive means of procurement.
- 2.53 Market forces and household economics will have a strong effect for causing customers to switch to a new product such as natural gas. Customers undertake their own cost / benefit analyses and may be influenced on the relative costs of energy prices and may decide a new gas boiler is a longer-term saving worth making, despite its initial installation cost and stability in terms of prices that gas offers. If oil increases in price, then people may switch to gas. This is not to overlook the so-called 'lifestyle' benefits of switching to gas however, which are also important considerations.<sup>40</sup>
- 2.54 The graph below illustrates ONS data on how heating oil costs have fluctuated since 2005. Costs are in nominal terms.

<sup>39</sup> An estimated 515,000 homes in Northern Ireland used oil central heating in 2011. <u>https://www.communities-ni.gov.uk/sites/default/files/publications/communities/ni-housing-stats-15-16-</u> full-copy.pdf

<sup>&</sup>lt;sup>38</sup> Latest data covers Mar 2017 to Sep 2017

<sup>&</sup>lt;sup>40</sup> Relates to lower emissions than oil, easier for households to budget, a constant supply (i.e. will not need refilled), an oil tank becomes unnecessary so creates extra outside space etc.

![](_page_18_Figure_0.jpeg)

#### Figure 9: Pence per litre of burning oil <sup>41</sup>

- 2.55 It can be seen that heating oil prices increased relatively steadily from 2005 (with a spike in 2008), before seeing a pronounced fall after 2014.
- 2.56 It should be noted that not all customers who connected to gas will have switched from oil. Some will have used electricity (such as Economy 7), solid fuel, a back boiler, or perhaps LPG. A small number may not have had any form of central heating previously.

### **Retail Competition**

- 2.57 In November 2010, the UR opened the Greater Belfast Area to gas supply competition amongst domestic customers. This encouraged a new entrant, namely Firmus Energy Supply into the domestic customer market, which competed against the incumbent company on price and service.
- 2.58 A large number of customers have made the switch to Firmus Energy Supply, which gained a sizeable market share from Phoenix Supply (now SSE Airtricity).<sup>42</sup>

 <sup>&</sup>lt;sup>41</sup> <u>https://www.gov.uk/government/statistical-data-sets/oil-and-petroleum-products-monthly-statistics</u>
 2005 to 2016 are annual figures. 2017 is the July monthly figure (i.e. around mid-year 2017).
 <sup>42</sup> <u>https://www.uregni.gov.uk/news-centre/regulator-comments-purchase-phoenix-supply-ltd-by-sse-plc-airtricity</u>

- 2.59 Firmus Energy Supply currently have 48,411 domestic customers in the Greater Belfast Area, compared to 140,493 for SSE Airtricity.<sup>43</sup> This works out as a 26% market share for Firmus Energy Supply (Greater Belfast) for domestic customers.
- 2.60 The UR considers that a large number of switches were as a result of the visible advertising and marketing campaign undertaken by Firmus Energy's supply business in Greater Belfast. Firmus Energy's campaign to encourage customers to switch received widespread publicity at the time, as exemplified by the BBC undertaking a specific news report on the issue.<sup>44</sup>
- 2.61 PNGL have stated to the UR that the "level of promotional activity and positive publicity following the introduction of domestic supply competition in the natural gas market" was a factor in the increase of connections evident in 2011 to 2015.
- 2.62 When the UR considers whether this hypothesis has merit, we can observe from our data that there may be some degree of association between the opening up of the market to supply competition and gas connections, but this effect appears to fall off over time.
- 2.63 The graph below illustrates how a large number of customers switched in the initial period of market opening (around 19,000 in 2012 alone), but has settled down somewhat in more recent years (to less than 2,000 switches in 2015 and less than 1,000 in 2016). This coincided (to some degree) with the 'spike' in connections seen during these years.
- 2.64 We can observe therefore, that there was a large number of switches, and this coincided with the large Firmus Energy campaign.
- 2.65 The UR has seen some information publicised by the advertising industry in Northern Ireland which provides both context and some monetary figures on various aspects of the FE campaign. Information released by billboard advertiser JCDecaux for example has noted that Firmus Energy was in the top ten of outdoor advertisers in Northern Ireland in Q1 2011. <sup>45</sup> According to PML group, Firmus Energy in 2011 spent over £480,000 in terms of display value (billboards etc). <sup>46</sup> This does not include other forms of advertising which may have been carried out.

<sup>&</sup>lt;sup>43</sup> Calculated from page 20 of UR's Quarterly Transparency Report. <u>https://www.uregni.gov.uk/sites/uregni/files/media-files/2017-08-</u> <u>31%20Transparency%20Report%202017%20Q2%20FINAL%20%281%29.pdf</u>

<sup>44</sup> http://www.bbc.co.uk/news/uk-northern-ireland-14980291

<sup>&</sup>lt;sup>45</sup> <u>http://www.jcdecaux.ie/q1-2011-ni-outdoor-advertising-spend-released/</u>

<sup>&</sup>lt;sup>46</sup> <u>http://www.pml-ni.com/img/pdf/PML%20Group%20\_%20Posterwatch%202011.pdf</u>

![](_page_20_Figure_0.jpeg)

#### Figure 10: Domestic switches in Greater Belfast Area 47

- 2.66 In undertaking this case study, the UR is mindful of potential 'spillover effects' onto the Ten Towns Area where FE operate their distribution business. While all the supply company activity is in order for switches in the Greater Belfast Area, this activity may reach customers in the rest of Northern Ireland. This is due to the fact that Northern Ireland is a small province many people travel will travel to its economic centre, in Belfast, from the Ten Towns Area to study, work and shop.
- 2.67 Advertisements and marketing from the following firms may be witnessed by potential customers in the Ten Towns Area, and may be considered to have a potential 'spillover effect' on the Ten Towns Area:
  - FE's supply business for Greater Belfast Area; 48
  - PNGL's distribution business in the Greater Belfast Area
  - SSE Airtricity's supply business for Greater Belfast Area
- 2.68 PML Group have stated that PNGL were in the top three Out-Of-Home advertisers in Northern Ireland, in the first half of 2016.<sup>49</sup> It may be naive to believe that such information relating to Greater Belfast's natural gas industry can be 'ring-fenced' within the Greater Belfast Area, and that households in the Ten Towns Area would not be aware of the availability of natural gas in Northern Ireland, at least as a general concept, by proxy.
- 2.69 Retail competition is another example of how a gas distribution company can 'free-ride' on awareness generated by a third party. In addition to the above mentioned publicity

 <sup>&</sup>lt;sup>47</sup> It should be noted that domestic switches are not restricted solely to Owner Occupiers. 2017 is a calculated estimate based on half year's data. Data provided by UR's Retail Directorate.
 <sup>48</sup> Not subject to price control.

<sup>&</sup>lt;sup>49</sup> http://www.pml-ni.com/img/pdf/Posterwatch%20NI%20H1%202016.pdf

drives, consumer bodies such as the CCNI provide readily available information about gas in Northern Ireland.<sup>50</sup>

2.70 The Northern Ireland government has publically supported the extension of the natural gas network (in the 2010 Strategic Energy Framework for Northern Ireland).<sup>51</sup> The Department for the Economy's website includes information indicating the benefits of natural gas.<sup>52</sup>

### **Housing Market**

- 2.71 The UR considers that a number of macroeconomic factors such as the housing market, employment levels, wages etc. will all have an impact on each individual household's decision to connect.
- 2.72 With respect to the housing market, the UR has shown figures in the graph below on the number of house sale transactions in Northern Ireland. House sale transactions in the region have decreased by 44% in the last decade (from 2006 to 2016).

![](_page_21_Figure_5.jpeg)

Figure 11: House sale transactions in Northern Ireland <sup>53</sup>

2.73 Also shown (on the second graph below) is how house prices have changed in Northern Ireland since 1996. Of note is the steady rise in average prices, followed by a sharp fall. Northern Ireland's house price crash has been widely reported as one of the most severe in Europe. According to Department of Finance's House Price Index there was a -57% change in average prices between 2007 Q3 and 2013 Q1.

<sup>&</sup>lt;sup>50</sup> <u>http://www.consumercouncil.org.uk/energy/gas/</u>

<sup>&</sup>lt;sup>51</sup> https://www.economy-ni.gov.uk/sites/default/files/publications/deti/sef%202010.pdf

<sup>&</sup>lt;sup>52</sup> <u>https://www.economy-ni.gov.uk/topics/energy/gas</u>

<sup>&</sup>lt;sup>53</sup> Data from DoF: <u>https://www.finance-ni.gov.uk/publications/ni-house-price-index-statistical-reports</u>

![](_page_22_Figure_0.jpeg)

Figure 12: Average house prices in Northern Ireland <sup>54</sup>

- 2.74 From the graphs above we can see that if there is a relationship between the housing market and connections, it may be an inverse relationship (if any). Some anecdotal evidence from PNGL points to the collapse in the housing market in Northern Ireland around 2008 and 2009 being a factor in the surge of connections. The depressed housing market then led to fewer house sales and this consequently led to Owner Occupiers not upsizing etc. but staying put.<sup>55</sup> A number of these home owners decided to improve and modernise their property by installing new gas boilers. This may also improve the property's saleability and rental potential.<sup>56</sup>
- 2.75 House price growth continues to be relatively moderate (by historic standards) in the province, with some evidence that growth has slowed somewhat of late. If this trend continues, it may mean that a sizeable number of people are likely to stay in their existing home and modernise it.

### **Income Levels**

2.76 Another potential factor as to whether a household connects to gas, is the level of wage growth and income levels more generally, and the cost of living. According to research published by Energy Economics, households with low levels of disposable income

<sup>&</sup>lt;sup>54</sup> Data from DoF. 2017 is an estimate based on latest data: <u>https://www.finance-ni.gov.uk/publications/ni-house-price-index-statistical-reports</u>

<sup>&</sup>lt;sup>55</sup> Owner Occupiers in a weak housing market can face property chain issues as they struggle to sell their house, when attempting to purchase another. They may also experience negative equity. <sup>56</sup> <u>http://www.phoenixnaturalgas.com/community/latest-news/article/heating-up-home-improvement-</u> month/

prefer appliances with lower up-front costs, but which may in-turn have higher day-today operating costs.<sup>57</sup>

- 2.77 To explore this, the UR has examined gross disposable household income (GDHI) across Northern Ireland, as estimated by the Office for National Statistics (ONS). GDHI is the amount of money that all of the individuals in the household sector have available for spending or saving after they have paid direct and indirect taxes and received any direct benefits. GDHI is a concept that is seen to reflect the "material welfare" of the household sector. <sup>58</sup>
- 2.78 ONS take total GDHI estimates in millions of pounds (£ million) and divide by the resident population of a region to give GDHI per head in pounds (£). Per head data take account of the entire resident population of regions, sub-regions and local areas. The working population and the economically inactive are included, therefore GDHI per head are estimates of values for each person, not each household. This can be a useful way of comparing regions of different sizes.
- 2.79 The graph below shows how GDHI per head of population varies depending on the different sub-area of Northern Ireland. As expected, the population in the East of Northern Ireland (including Belfast) have a higher disposable income than those in the West (although the spread between richest area and poorest area of Northern Ireland is currently less than £3,000). It is interesting to note that GDHI per head has generally increased steadily over the last 20 years, across Northern Ireland. These estimates are produced at current prices, which means the effect of inflation has not been removed.
- 2.80 The concepts used in the calculation of regional GDHI are consistent with those used in the UK National Accounts. In National Accounts terms there is a set of Household Accounts. GDHI is the resulting balance from two of the household accounts: the distribution of primary income account and the secondary distribution of income account. The components of these two accounts can be referred to as resources (incomings) and uses (outgoings) of the household sector. Regional GDHI estimates are compiled from the national incoming and outgoing components of these two accounts.
- 2.81 A 'top-down' approach is used for the production of regional GDHI estimates, whereby the national aggregate, consistent with the National Accounts Blue Book, is allocated to regions using a regional indicator dataset. Regional estimates are produced mainly at NUTS3 level and aggregated up to obtain NUTS2 and NUTS1 level estimates. These estimates are compiled on a residence basis, i.e. incomes of individuals are allocated to the region in which they live.

<sup>&</sup>lt;sup>57</sup> According to C. Fischer (2005): "Low-income households have higher internal discount rates, and they prefer appliances with lower up-front costs and higher operating costs." <u>http://opac.vimaru.edu.vn/edata/E-Journal/2005/Energy%20economics/v27su1.9.pdf</u>

https://www.ons.gov.uk/economy/regionalaccounts/grossdisposablehouseholdincome/bulletins/regionalgrossdisposablehouseholdincomegdhi/2015

![](_page_24_Figure_0.jpeg)

Figure 13: Gross Disposable Household Income (GDHI) per Head <sup>59</sup>

### **Other Potential Factors**

- 2.82 A number of specific factors have been outlined in the sub-chapters above in our Greater Belfast Case Study as a potential contributory reasons why a household connects to the as network. AMPR expenditure, the Boiler Replacement Scheme, oil prices, retail competition, housing market and the wider economy were all explored in this case study as potential factors in accounting for connection levels.
- 2.83 In addition, there may be other factors which may arguably impact or at least have a contributory impact (some of these were documented above). However, for completeness, we have summarised these and the other factors below.
- 2.84 **Word of mouth** from friends, family and work colleagues may be a factor in informing potential customers about the availability of natural gas, the benefits of natural gas and in practical terms, how to get it installed in the home. This can be viewed as a positive

<sup>59</sup> 

https://www.ons.gov.uk/economy/regionalaccounts/grossdisposablehouseholdincome/datasets/regionalgrossdisposablehouseholdincomegdhibylocalauthorityintheuk

feedback loop. Potential customers may notice neighbouring houses in the process of getting connected to the gas network.

- 2.85 As noted in the subsections above, it will be the case that **old oil boilers will need replaced** on a natural continuous cycle. This will be somewhat perpetual in nature, with a certain number of boilers in the province naturally needing replaced each year as they reach the end of their useful life.
- 2.86 **Tradesmen** such as plumbers, (plus suppliers of products like radiators, boilers etc.) tend to feature content within their adverts that they can install natural gas.<sup>60</sup>
- 2.87 **Gas installation and in-fill activity** in various towns will result in signage when contractors move in to dig, brand livery on work vans will be noticed by the local population, and there may be local newspaper reports on the issue.<sup>61</sup>
- 2.88 **Consumer bodies** such as Consumer Council for Northern Ireland (CCNI) provide readily accessible information about gas in Northern Ireland. <sup>62</sup>
- 2.89 **Other associated gas industry advertising** activity in other licenced areas may lead to customers outside of these areas being informed about gas' availability in the province. PNGL's marketing activities that get regional coverage are likely to be noticed by those who reside in the Ten Towns Area.
- 2.90 **Lifestyle and amenity benefits** can be considered by potential customers, such as a constant supply of fuel, removal of oil tank and possible removal of a hot water tank. It is also well known that natural gas is one of the cleanest and most efficient fossil fuels. Installing natural gas may make your house more saleable, and/or easier to rent. <sup>63</sup>
- 2.91 There is now a greater **range and availability of products** which use natural gas, such as gas fires, range cookers and natural gas tumble dryers for example.<sup>64</sup>

<sup>&</sup>lt;sup>60</sup> For example, typing Firmus into the online Yellow Pages yields multiple adverts, as a number of businesses (boiler installers, general hardware suppliers) proactively advertise their expertise in dealing with natural gas.

<sup>&</sup>lt;sup>61</sup> The introduction of Gas to the West of Northern Ireland was publicised in the local newspaper: <u>http://ulsterherald.com/2015/03/05/natural-gas-to-omagh-area-within-two-years/</u>

<sup>&</sup>lt;sup>62</sup> <u>http://www.consumercouncil.org.uk/energy/gas/</u>

https://www.nwnatural.com/AboutNWNatural/PressRoom/2016PressReleases/HomebuyerPreference/ <sup>64</sup> http://www.phoenixnaturalgas.com/why-natural-gas/natural-gas-appliances/

# **3 Conclusions**

- 3.1 The UR has examined connections levels in the PNGL area and have considered the impact of a number of possible contributory factors which would be broadly similar in comparison to the FE area. We consider that the closeness of the PNGL area in terms of geographic location and maturity levels, provides a fair representation of the future outlook for the FE area.
- 3.2 The analysis focused on what we consider as the most relevant and comparable time period, namely PNGL's connection levels from 2005 to 2016. We consider that the last 10 years provides a reasonable gauge of future FE connection levels.
- 3.3 When we review the main aspects that influence consumers' decisions to connect to gas, we consider that oil prices, income levels, credit availability, housing market, retail competition, government grants for replacement boilers and other associated schemes all have a potential impact. We are of the opinion that additional factors, such as influence of friends and family, replacement heating systems, house renovations, environment benefits, convenience, time-lags in making decisions etc could also play a part for PNGL area connection levels. These factors would be similar for the FE area.
- 3.4 The evidence suggests that a number of factors, both directly and indirectly have a role in influencing consumers deciding to connect to natural gas. Although direct marketing has a role, it would appear, based on all the other factors in play, to perhaps have a finite limit as to its influence.
- 3.5 Considering all the evidence from the Greater Belfast Area and attempting to quantify mathematically an appropriate non-additionality figure (%) is difficult. At the present time it is virtually impossible to draw definitive conclusions based on the large number of potential variables and the small dataset / sample
- 3.6 It should be acknowledged that this case study is somewhat explorative and investigative; it therefore should be considered in conjunction with other additional research which has been undertaken (see consultation paper for details).