GD23

BUSINESS PLAN

2023 - 2028

taking natural gas further

firmus energy

Contents

We will deliver value for money

11% drop in network tariffs for current and future customers

CO_2 savings* of 1.7 tonnes in GD23 period

*Estimate based on converting from inefficient oil boiler to efficient gas boiler and assuming annual average fuel consumption.

Customers, past & present, including the vulnerable, are front and centre

Positioning our network to optimal contribution for Northern Irelands journey to net zero carbon energy by 2050

Continued commitment to the safe operation of our network

Growing our customer base by a further 55% in the GD23 period

1 Executive Summary

Who we are and who we serve

Our History

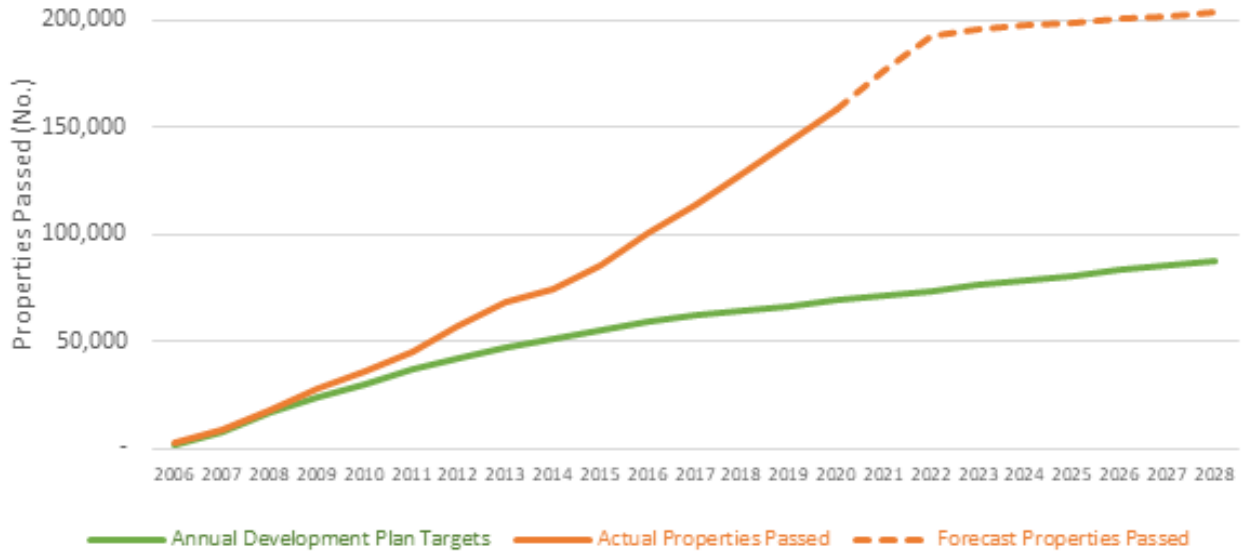
firmus energy was established in March 2005, having been awarded a licence to develop the natural gas distribution network in ten principal towns and cities across Northern Ireland – the 'Ten Towns' area. Our 'Ten Towns' network is a largely rural area, and is illustrated in Figure 1.1.

Our network is now over 1,800 km long and extends to more than 30 villages, towns and cities across Northern Ireland. Over the last 16 years, firmus energy has invested over £220m in the development of our natural gas network and gained regulatory approval to extend our original licence to include nine additional areas. Our network Licensed Area covers 5,800 km and currently delivers over 65 million therms of natural gas per annum to the 55,200 customers we are proud to be serving.

Figure 1.1 The firmus energy network area

The development of firmus energy's network has greatly outperformed that which had been anticipated by the Utility Regulator at the time of our licence award for the 'Ten Towns' network in 2005. This is illustrated in terms of the number of properties we have made natural gas available to (i.e. 'properties passed') in Figure 1.2.

Figure 1.2 firmus energy's performance vs. 'Ten Towns' Licence Development Plan



firmus energy is based in Antrim and employs a highly skilled workforce of 120 people, of whom 70 are currently dedicated to the safe and efficient operation of our growing gas distribution business. In addition to our direct workforce, our work supports the jobs of c.300 people, employed indirectly by contractors. Our workforce is our most prized asset, and we are proud to be accredited with "Investors In People", Gold status.

In February 2019, firmus energy was acquired by Equitix, from iCON Infrastructure Partners II L.P.

Our network is relatively immature

We operate within a Licensed Area that is still in the early stages of growth, with our network development focused upon the conversion of households to natural gas. Whilst continuing to grow connections to our network in GD23, our focus will widen in order to ensure we optimise our contribution to Northern Ireland's journey to net zero carbon.

Our Licensed Area is considerably smaller in size and scale when compared to the four gas distribution networks in Great Britain (GB).

There are four gas networks covering separate geographical regions of GB and three gas networks in Northern Ireland. firmus energy is the second smallest of these networks, as illustrated in Figure 1.3, below.

Figure 1.3 UK Gas Distribution Network Operators (DNOs)

Area	Network Operator	Area Covered	Connections	Length of Mains (km)	Employees
GB	Cadent Gas	West Midlands, North West, East of England and North London	11 million	132,000	4,000+
GB	SGN	Scotland and Southern England (Including South London)	5.9 million	75,000	3,000+
GB	Northern Gas Networks	North East England (including Yorkshire and Northern Cumbria)	2.7 million	37,000	1,300
GB	Wales & West Utilities	Wales and South West England	2.5 million	35,000	1,300
NI	Phoenix Natural Gas	Greater Belfast and gas to the East	222,000	3,650	122
NI	firmus energy Distribution	Ten Towns	55,200	1,800	70
NI	SGN Natural Gas	Gas to the West	568	165	20

Note: firmus energy is highlighted. Data estimated at the end of 2020.

Because our network is relatively immature, our network penetration rate is significantly below that of our GB counterparts. As we enter GD23, our network penetration (i.e. those properties who are connected to the network as a percentage of properties who could readily connect to the network) will be 37.8%. The GB networks typically have penetration rates of around c.85%. This difference has profound implications for our business. For some time, the GB networks have had a primary focus on maintenance and asset replacement. In contrast, our focus remains the continued development of our network, specifically, the requirement to continue to grow the number of connections to our network. In GD23, this focus will support the immediate and longer-term contribution our customers and our infrastructure can make to Northern Ireland's journey towards net zero carbon, as our local landscape is expected to have changed markedly by the end of the current price control period, in 2028.

Our customers, particularly our largest I&C customers, are telling us of their plans to decarbonise future energy requirements. In GD23, we will support these plans and preparations to decarbonise, for example, by ensuring firmus energy is at the forefront of conveying renewable fuels (such as biomethane or hydrogen) within our network infrastructure. Our growth, particularly in domestic connections, will provide future access to renewable energy for the almost 104,000 customers who will be connected to our network by the end of the GD23 period.

The market within which we operate

Market conditions remain challenging

In addition to our ambitions to ensure we are best placed to contribute to decarbonisation in Northern Ireland, continued customer growth is a key focus for us during the GD23 period. By the end of this period, almost 104,000 customers connected to our network will be making an important contribution to the decarbonisation of Northern Ireland's environment.

Our forecast growth in connections by the end of 2028 is a stretching and ambitious target, but it is one we are willing to commit to, in the interests of our customers and the broader economy and environment in Northern Ireland. Challenges to achieving this target include;

1. Our core build-out of network mains will be complete in the first year of GD23

Within the first year of GD23, our core build-out of network mains will be complete. As such, the vast majority of owner occupied properties in GD23 will have had natural gas available to them for more than 12-months, and perhaps up to 17 years (i.e. since our network construction commenced).

The rate of connection is highest amongst owner occupied properties which have become connectable to the natural gas network within the previous 12-month period. We would expect c.10% of properties passed within the previous 12-month period to connect to natural gas within the same timeframe. Thereafter, the connection rate decreases annually, reaching a longer term rate of c.2%-3%, annually.

Our ambitious GD23 connection targets have been based upon a run rate of 4.35% of available properties passed. As we will not be passing new properties, post 2023, our 4.35% for the GD23 period is ambitious, when compared to the typical longer term run rate of 2%-3% per annum.

This highlights the increased necessity for marketing and incentivisation of owner occupied households to connect to natural gas. Successful delivery of our connection targets is dependent upon the allowances we have requested to support our ambitions. Furthermore, our marketing and incentivisation activities will be focused on our 'harder to reach' customers (i.e. those who have already been in receipt of our marketing activity), so they will require more effort and resource to acquire throughout the GD23 period.

2. COVID-19 will reduce the willingness to spend

2020 saw the outbreak of the global Covid-19 pandemic, which has had, and will continue to have, a devastating impact upon Northern Ireland's economy and society. According to EY's Spring 2021 forecast, "the economic damage will last long after the pandemic passes".[1]

Many households have already experienced a material reduction in disposable income, and for many others, job security, in particular, has introduced significant reluctance to increase household expenditure.

At the beginning of our GD17 price control period, Northern Ireland's unemployment rate ('claimant count') was c.3.5%, as at October 2016. This compares to c.7% in October 2020. The number of annual proposed redundancies has increased by the same magnitude (i.e. almost doubled) over the same time frame.[2] In Northern Ireland, 117,000 people were furloughed at the beginning of 2021. This equates to 13% of the level of employment, pre-pandemic, however, this number rises to 20% when supports for the self-employed are included.[3]

Prior to Covid-19, prospective customers have been telling us that the costs of conversion present the greatest barrier to connecting to natural gas. This has been supported in our enhanced market of 2021 (obviously following the Covid-19 outbreak).

Whilst we are optimistic that the health and social impacts of Covid-19 will have improved by the outset of GD23, Northern Ireland's economic recovery and cautious customer spending behavior (i.e. unwillingness to spend) will be a challenge likely to linger for firmus energy and our prospective customers, throughout the GD23 period.

[1] EY Spring 2021 forecast, page 2 https://www.ey.com/en_ie/strategy-transactions/recovery-but-at-what-price-economic-eye-spring-forecast-2021
[2] Report by Conor Lambe, Chief Economist at Danske Bank, December 2020 https://danskebank.co.uk/-/media/danske-bank/uk/business/advantage/unlearn-2021-disruptive-change-with-graeme-codrington.pdf?rev=d8a6aa4763e2469689f041d5b729a7a4&hash=02012040B19505E4520C55E1023E7E70
[3] EY Spring 2021 forecast https://www.ey.com/en_ie/strategy-transactions/recovery-but-at-what-price-economic-eye-spring-forecast-2021
[4] Based upon analysis of NISEP supported connections in our network area during 2019 and 2020
[5] Office for National Statistics: Gross disposable household income, UK and constituent countries and regions, 2018; UK average of £21,109, compared to Northern Ireland average of £17,340 https://www.ons.gov.uk/economy/regionalaccounts/grossdisposablehouseholdincome/bulletins/regionalgrossdisposablehouseholdincomegdhi/1997to2018
[6] Office for National Statistics; Derry City and Strabane Council featured in the bottom 10 gross disposable household income local areas in the UK in 2016 https://www.ons.gov.uk/economy/regionalaccounts/grossdisposablehouseholdincome/bulletins/regionalgrossdisposablehouseholdincomegdhi/1997to2016

3. Conversion costs

As stated above, our prospective customers consistently tell us that financial considerations are the greatest barrier to a household converting to natural gas. We need to address and support this challenge for our prospective customers, not least those who may be financially vulnerable and living in fuel poverty. We will continue to support government schemes (such as NISEP and the Boiler Replacement Scheme) in order to make the benefits of natural gas affordable to as many people as possible within our communities, and maximise our contribution to Northern Ireland's journey to net zero carbon energy by 2050.

The cost for each household to convert to natural gas is, typically, c.£3,000 per household.[4]

Disposable household income levels in Northern Ireland are less than the UK average, and this is more pronounced in key areas of firmus energy's network, i.e. our market place. The UK average disposable household income, per head, is 22% higher than in Northern Ireland.[5]

Derry / Londonderry is Northern Ireland's second largest city, after Belfast, and is the largest city in firmus energy's network area. Derry / Londonderry is already home to our greatest number of customers and presents significant opportunity for customer growth throughout the GD23 period. This council area (Derry City and Strabane), however, has one of the lowest levels of disposable household income within the UK.[6]

The cost of conversion will remain a significant expenditure for prospective customers and will act as a drag on new connections, which will need to be counteracted by sufficiently attractive incentives in the GD23 period.

Communication will play an important role

For the reasons explained above, direct engagement with our prospective customers will play an important role, (alongside marketing activities), in the successful delivery of our ambitious plans for connections growth in GD23, and in particular, our forecast growth in owner occupied connections.

Our approach to marketing will need to adapt. In the past, our research has indicated that brand awareness has been primarily derived from construction activity, and vehicles associated with our construction activity. With completion of the core build-out of our network, this type of activity will markedly decrease in the GD23 period. We will need to expand the use of other marketing channels to generate brand awareness, sales enquiries, and ultimately, connections. Our requested allowances will be required to increase direct engagement with our communities and prospective customers, in order to ensure we are educating those within our network on the important contribution to be made by natural gas (in the short to medium term) and the longer term importance of our network infrastructure to decarbonisation in Northern Ireland.

Our accredited corporate social responsibility (CSR) activities create opportunities to communicate with our communities. For example, we have established a strong working relationship with Social Enterprise NI over the last number of years. This relationship is focused upon what we can offer social enterprises within our network, beyond arms-length sponsorship. We offer support in areas such as business planning, or IT, where we can draw upon the expertise of our own employees to provide non-financial support. Whilst marketing is not a primary objective of our engagement with social enterprises, it does offer an important opportunity to engage directly within the communities we serve, and ensures we are continuing to build value and awareness of our brand.

1.4 How the Utility Regulator can enable our plans

This is our business plan - we recognise that responsibility for delivery rests on our shoulders. That said, the Utility Regulator has an important role to play in creating the right environment for us to succeed. There are five principle areas where we consider the Utility Regulator can contribute to the way we deliver success for customers in GD23, and beyond.

Owner Occupied (OO) Connection Incentive

We have set ourselves ambitious connection growth targets for GD23, as detailed further in Part 5, however, these targets are contingent on allowances commensurate with the magnitude of our challenge. An appropriate owner occupier incentive allowance is essential to support our ambitious connection targets.

Opex – Manpower and Maintenance allowances

Our plan is contingent on having access to appropriate resources.

At present (2021), our manpower requirement is 70.5 FTEs to support our GD17 activities. In GD23, our average manpower requirement for the period is 73 FTEs and we are confident that our requested manpower allowances reflect continued value for money for our natural gas consumers, particularly as our customer base is forecast to expand by 55% over the six year period. Part 6 of this document details our manpower plans for the six-year period, and in particular, where changes have been made from GD17. We also outline our annual salary benchmarking activities, which ensure we are best placed to attract the talent required to support our business operations, whilst doing so at competitive rates.

The continuing growth in our customer base, combined with the introduction of our meter replacement programme in 2026, will place greater significance upon the importance of appropriate maintenance cost allowances throughout the GD23 period. Part 6 and Part 8 of this document provide detail on the maintenance activities to be undertaken by us throughout the GD23 period.

Innovation – supporting firmus energy's contribution to Northern Ireland's Energy Transition

There is no doubt the energy landscape in Northern Ireland will evolve over the period of GD23, and our plans for 'no-regrets' innovation will place us front and centre of Northern Ireland's energy transition.

As well as the significant contribution to decarbonisation presented by our forecast growth in connections, our plans for innovation serve to expedite and optimise the important role firmus energy's infrastructure will play in Northern Ireland's journey towards net zero carbon emissions by 2050.

Customers have, and continue to, pay for our infrastructure and it is part of our role to safeguard that investment and ensure it delivers the best value to current and future customers. As such, it is clearly in our customers' interest that we maximise the potential for their investment to continue to deliver services to them in a decarbonised economy. Customers, particularly our larger I&C customers, are telling us of their intentions to decarbonise their energy requirements. Whilst they remain keen to work with firmus energy to do so, we cannot afford to be left behind in the journey to net zero carbon. firmus energy and the wider natural gas industry has critical role to play in achieving net zero carbon in Northern Ireland, and innovation is a vital element to optimising our significant contribution.

In February 2020, Ofgem launched it's 'Decarbonisation Programme Action Plan', which recognises the challenges of decarbonisation and sets out the (regulatory) steps which will be required to address these challenges "on an urgent but decades-long journey towards next zero." [7]

We are keen for the Utility Regulator to support the opportunities we have identified, and are excited at the prospect of delivering this innovation in Northern Ireland. We are committed to responsible and 'no regrets' innovation and we believe this is demonstrated in the suite of projects we have outlined for the Utility Regulator's consideration in GD23.

A fair rate of return for continued investment

As outlined at Part 1.11, we are proposing a weighted average cost of capital (WACC) for the GD23 period of 3.16%. Our assessment of a fair rate of return for continued investment in GD23, and beyond, has been supported by Frontier Economics. This fair rate of return has been assessed using the Weighted Average Cost of Capital (WACC) approach, taking into account regulatory (including CMA) precedent, recent statements the Utility Regulator has made with regards to its approach for GD23 and the current context for firmus energy.

As stated in Part 1.11, Northern Ireland will require significant inward investment to support the delivery of net zero carbon energy by 2050. As such, Northern Ireland must be considered an attractive place to invest for private capital.

1.5 We are proud of our achievements

We are proud of and will draw on our achievements through the GD17 period.

We have delivered significant annual growth

Our growth plans for GD23 are ambitious, however, we believe them to be achievable, given the right support. Since the award of our license to develop the 'Ten Towns' network in 2005, we have delivered significant annual growth.

This growth is set to continue for the remainder of GD17 and throughout the GD23 price control periods. In successfully delivering growth safely and efficiently, we have superseded the development targets anticipated at the time of our license award.

[7] Ofgem's decarbonisation programme action plan, February 2020; https://www.ofgem.gov.uk/system/files/docs/2020/02/ofg1190_decarbonisation_action_plan_revised.pdf

Customers are our Number 1 priority

Our GD23 Business Plan continues to place our customers, and future customers, front and centre of our network development.

We take great pride in the standard of customer service we offer and are continually seeking ways to improve and adapt this service in line with the needs of our customers, particularly those more vulnerable in the communities we serve.

Customer service is embedded in our culture - from our mission statement, to our values, and to each employees' commitment to these values. This begins as early as the recruitment process for every role within the company.

We consider our regulatory obligations, including our regulatory Codes of Practice, as baselines to the superior levels of service we continually strive to offer for our customers. Over the last 16 years, we have surpassed all our overall standards of service obligations for our customers, and since the introduction of the Utility Regulator's Standards of Performance in 2014, we have consistently exceeded service level targets, delivering impressive Guaranteed Standards of Performance (GSS). These metrics are described in more detail in Part 14 of this document.

We have always 'given back' to those communities in which we have been, and will be, developing our natural gas network. We are currently accredited CORE Silver status by "Business In The Community" (BITC), for our Corporate Social Responsibility (CSR) activities. In two of the four years of GD17 to-date, we have been shortlisted for BITC's most responsible business in Northern Ireland.

We are committed to working with our stakeholders to identify actionable data and metrics which will further improve the service we offer to our customers. During GD17, we have proactively engaged with the Utility Regulator, to establish the Consumer Engagement Working Group (CEWG), and we look forward to further engagement at this forum with the Utility Regulator, consumer bodies, and our peers, throughout the GD23 period.

Part 14 of this document contains further information in relation to our customer service levels.

In order to support network usage tariffs for current and future customers, we must continue to secure connections (and their associated volumes) to our network. Our customers have told us that financial constraints are the number one barrier to conversion to our network, and our Business Plan includes proposals to support our customers in addressing such barriers.

We have delivered productivity gains

Our GD23 Business Plan provides evidence to support our view that we are efficient. This is detailed in Part 10 of this document.

Since our inception in 2005, we have worked tirelessly to deliver value for money. This approach has progressed hand-in-hand with the safe development and maintenance of our infrastructure and operations.

We have embraced opportunities for innovation and lead the way when it comes to continual improvement, and to delivering our network growth as safely and efficiently as possible.

An early example of this is the trenchless laying of mains pipeline.

Our GD23 Business Plan builds upon our drive for continuous improvement and continues the trend of doing 'more for less'. Our efforts have ensured final tariffs for current and future natural gas customers have, and will be, as low as possible.

Our GD23 Business Plan will deliver a reduction in network conveyance tariffs of 11%, throughout the GD23 period, and in the period forecast until 2045.

Safety remains paramount

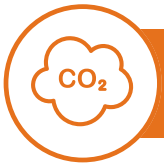
As discussed further in Part 9 of this document, our strategic and operational commitment to safety provides a pillar upon which the success of our operations has been built over the past 16 years and will continue to be developed through the GD23 period.

Safety is the foundation upon which we have successfully grown our business. Our GD23 Business Plan seeks to continue our growth and output delivery, whilst ensuring we do so safely.

Our focus on safety includes safety for our employees, our customers, and the general public. Anticipated costs for ensuring the continued safe development of our network have been derived from industry best practice, experience, and our drive for continuous improvement.

In the GD17 period to-date, we have experienced zero Lost Time Incidents (LTI) at firmus energy.

1.6 The challenge of delivering Net Zero Carbon



The government has set a challenging Net Zero target

In 2019, the UK government set in law its 2050 target of net zero carbon emissions, and in April 2021, announced its intention to set in law the even more ambitious target of cutting emissions by 78% by 2035, compared to 1990 levels. Whilst Northern Ireland does not have specific Climate Change legislation, the Climate Change Act 2008 extends to the region and it is therefore implicit that Northern Ireland contributes to the UK net zero carbon target. The Committee on Climate Change has advised that Northern Ireland will need to cut emissions by at least 82% by 2050 (compared to 1990 levels) to support the overall UK target. However, Northern Ireland's carbon emissions from energy is targeted at net zero by 2050.[8]

There is also an emphasis on securing a green recovery

As part of the UK government's response to the Covid-19 pandemic, the Prime Minister has pledged a 10-point plan to help kick-start the nation's green recovery. This plan aims to support up to 250,000 green jobs by 2030, whilst also providing £5 billion to support the green recovery.

[8] Energy Strategy for Northern Ireland, Consultation on Policy Options, page 5. https://www.economy-ni.gov.uk/sites/default/files/consultations/economy/energy-strategy-for-NI-consultation-on-policy-options.pdf

Our plan needs to be aligned with emerging NI energy policy

In March 2021, the Northern Ireland Department for the Economy (DfE) published a consultation on policy options for an Energy Strategy for Northern Ireland, which will be fundamental in shaping the energy policy within which we will operate.

In line with the rest of the UK, the DfE has set the ambitious target of achieving net zero carbon energy by 2050. This implies a removal of 'all, or almost all, fossil fuel heating sources in Northern Ireland by 2050', and the DfE also recognises the important role that gas will play as an interim solution, and the longer term role our network infrastructure will play in supporting the transition to net zero.

The DfE has signalled an intention to:

- Make energy simple for everyone in society, protecting customers through the energy transition;
- Continue to promote energy efficiency;
- Provide economic opportunities which create new jobs and grow a low carbon skills base through innovation; and
- Create a flexible, smart and digitised energy system.

As we set out below, our plan is consistent with all of these aims. We will promote the connection of new customers to our network, which will provide immediate carbon emissions savings of at least 48% from each household we connect,[9] and we will explore innovative solutions to decarbonise our network in the medium to longer term. The regulatory framework within which we operate provides robust protection for our customers, and we will work with the Utility Regulator and consumer bodies to further develop these protections throughout the GD23 period, and beyond. We will continue our work to promote energy efficiency, including retention of our status as the only UK energy provider to have 100% of staff (City and Guilds) accredited in energy efficiency. We will place emphasis on employing local skills and on innovation, and contributing towards the 'green' economy. firmus energy is currently working with the Utility Regulator and wider industry on a next generation metering solution for Northern Ireland, to ensure our service provision is best positioned to meet the flexible, smart and digitised demands of our energy landscape, throughout the GD23 period and beyond.[10]

1.7 We have an important role to play

The GD23 price control will be of critical importance in Northern Ireland's progression towards a carbon net zero target. GD23 is set to witness the most significant changes to energy in the history of the region.

Together with the wider natural gas industry, we have a central role to play in this journey.

Whilst our GD23 Business Plan has been developed to safely and efficiently promote the development of our natural gas network, it also seeks to optimise the contribution of natural gas and our asset infrastructure in the decarbonisation of Northern Ireland throughout the GD23 period, and beyond. In doing this, it will support the Utility Regulator's third strategic objective of "Enabling security of supply and a low carbon future." [11]

[9] See Part 5, Figure 5.5
[10] The Gas Meter Solutions Group (GMSG) was established in 2020. DNOs in Northern Ireland have been tasked with sourcing a next generation metering solution across our networks, prior to the beginning of the GD23 period. This project will be delivered with the consultation and support of gas suppliers and consumer groups in Northern Ireland.
[11] Utility Regulator's Corporate Strategy 2019 – 2024, https://www.uregni.gov.uk/sites/uregni/files/media-files/Corporate%20Strategy%202019-24%20final%20for%20web.pdf

The GD23 period will realise a number of key challenges for all energy consumers. We believe natural gas has a significant contribution to make to Northern Ireland's energy transition:

- In the short term, (i.e. throughout the GD23 horizon), conversion of heating within our network area, from home heating oil to natural gas, has the potential to deliver immediate and significant reductions in Northern Ireland's CO_2emissions. Natural gas for energy results in fewer emissions of nearly all types of air pollutants and particulates (including CO_2), when compared to coal or home heating oil. The dominant fuel in Northern Ireland remains home heating oil (kerosene), which is used in c.60% of properties, compared to just 23.8% in the rest of the UK. Choosing natural gas over coal or home heating oil (kerosene) delivers domestic carbon emission savings of over 60%[12]AND 48%[13] respectively. Since the beginning of our network development in 2005, our customers have already saved over 2.3m tonnes of CO_2 from entering Northern Ireland's atmosphere.[14]
  The use of natural gas for heating produces negligible amounts of sulphur, mercury, and particulates, particularly when compared to the use of coal and home heating oil. Reductions in such emissions have a real and positive impact for public health in Northern Ireland, as these pollutants have been linked with problems such as asthma, bronchitis, lung cancer, and heart disease.
- By the end of the GD23 period, we will have connected almost 104,000 properties to our network, and our customers will be saving at least 300,000 tonnes of CO_2per annum from entering Northern Ireland's atmosphere. Over the GD23 horizon alone, our Business Plan will deliver almost 1.7m tonnes of CO_2 savings.
- We have presented to the Utility Regulator, a number of example projects which we are keen to progress during the GD23 period. These projects explore innovative solutions to decarbonise our network, and the wider natural gas industry in Northern Ireland. Our projects are 'no regrets' proposals to ensure firmus energy, and our wider industry, is optimally positioned to maximise our contribution towards Northern Ireland's journey towards net zero carbon.

In the longer term, our modern infrastructure, constructed principally from polyethylene (PE) plastic, is suitable for the introduction of net zero carbon alternatives to natural gas, such as biomethane and hydrogen.

In preparing our GD23 Business Plan, we recognise the parallel work of the DfE to develop a new strategy to decarbonise the Northern Ireland energy sector by 2050. We are a key participant and stakeholder in the progression of this strategy and we will continue to support the DfE and all other stakeholders to develop and deliver this strategy.

However, the timeline for delivery of the new Energy Strategy presents challenges for both firmus energy and the Utility Regulator. This has been acknowledged by the Utility Regulator's Approach to GD23, published in November 2020.[15] We have prepared our GD23 Business Plan in alignment with the Utility Regulator's prevailing principle objective in its regulation of gas, specifically, "…to promote the development and maintenance of an efficient, economic and co-ordinated gas industry in Northern Ireland…"[16] and we acknowledge and welcome the Utility Regulator's intention to provide appropriate flexibility for the out-workings of Northern Ireland's Energy Strategy.[17]

[12] See Part 5, Para 5.2.3
[13] See Part 5, Figure 5.5
[14] 2,339,416 tonnes of CO_2 as at the end of 2020
[15] Para 4.6 of the UR's Approach To GD23 (published November 2020) https://www.uregni.gov.uk/sites/uregni/files/media-files/2020-11-6%20GD23%20Final%20Approach-%20Final.pdf
[16] Article 14, The Energy (Northern Ireland) Order 2003, https://www.legislation.gov.uk/nisi/2003/419/article/14
[17] Para 4.8 of the UR's Approach To GD23 (published November 2020) https://www.uregni.gov.uk/sites/uregni/files/media-files/2020-11-6%20GD23%20Final%20Approach-%20Final.pdf

We look forward to the clarity and 'direction of travel' which will become apparent upon publication of the DfE's Energy Strategy for Northern Ireland, and we acknowledge the subsequent need for developing policy, legislation and regulation which will follow.

In the interim, we believe we must progress with our shared regulatory objective to promote the natural gas industry, whilst ensuring the GD23 price control framework is sufficiently flexible to accommodate projects and innovation which will be necessary to develop, if not expedite, Northern Ireland's journey toward net zero carbon emissions.

Shell is one of the largest companies in the world, with material interests in fossil fuels. However, as recently as March 2021, Carlos Maurer, (Executive Vice President, Sectors and Decarbonisation) delivered a key note speech outlining the role Shell will play in the decarbonisation of energy. Specifically, Carlos Maurer outlines his role in helping "our customers decarbonise, sector by sector". [18]

Decarbonisation is a global focus, and innovation is the key to unlock and optimise firmus energy's significant contribution to decarbonisation of energy across our network, and in Northern Ireland more generally. It will be expected by our customers and stakeholders, and our large I&C customers in particular are already sharing with us the need to decarbonisation their energy requirements, and their support for this requirement being met by their connection to our network.

We welcome the Utility Regulator's commitment to ensure there is sufficient flexibility within our GD23 Final Determination to support out-workings of the DfE's Energy Strategy,[19] which is due to be published in November 2021. We would welcome further discussion on the nature of such flexibility (e.g. price control re-openers) with the Utility Regulator, ahead of embarking upon the GD23 price control period.

Potential for additional growth and decarbonisation

In our ambitions to bring the benefits of natural gas to as many properties as possible across our Licensed Area, continue to promote and develop the natural gas network in Northern Ireland, and identify areas which can benefit from a decarbonised fuel alternative, we have worked to determine and assess further areas which could benefit from accessibility to our network.

As detailed in Part 7 of this document, firmus energy has identified 10 potential 'New Areas' for network expansion which have not previously formed part of our core network build. All 10 opportunities are within, or in close proximity to, firmus energy's Ten Towns Licensed Area, and we would propose to develop these 10 new areas as 4 regional projects.

The length of mains required to make our network accessible to a further 18,659 properties is 203.5km. Figure 1.4 provides an overview of the 4 regional projects;

Figure 1.4 New Areas for potential development

Region	Areas Covered	Network Length	Properties Passed
1	Eglinton Ballykelly Greysteel	45 km	3,551
2	Portrush Castlerock	58.7 km	6,128
3	Crumlin Kells Glenavy	41.3 km	4,172
4	Kilkeel Rostrevor	58.5 km	4,808
Total		**203.5 km**	**18,659**

The total investment required to extend our network to the 10 new areas outlined in Figure 1.4 is £19m. In line with the Utility Regulator's current economic threshold for securing approval to extend our network, we have not included these 10 potential opportunities within our forecasts for GD23. We do, however, look forward to the publication of the DfE's new Energy Strategy for Northern Ireland and the clear road map which this will provide for Northern Ireland's journey to net zero carbon. We anticipate this road map will present an opportunity to progress the immediate and longer-term decarbonisation potential offered by extending our network to the 10 new areas which we have identified. Inclusion of this investment within the GD23 period would continue to deliver a material reduction in network tariff for current and future customers of 8%, throughout the GD23 period, and beyond.

[18] https://www.shell.com/business-customers/lubricants-for-business/news-and-media-releases/2021/the-future-of-downstream-decarbonisation-collaboration-and-digitalisation.html
[19] Paragraphs 4.7 and 4.8 of the UR Final Approach to GD23 document, published November 2020.https://www.uregni.gov.uk/sites/uregni/files/media-files/2020-11-6%20GD23%20Final%20Approach-%20Final.pdf

1.8 Customers have been placed "front and centre"

Customer and stakeholder engagement has been, and will remain, a critical component of our success.

We have an ongoing programme of market research and customer engagement with both domestic and business customers. Throughout the GD17 period, we have actively engaged and listened with our current and future customers. We strive to ensure we are fully informed and aware of what our prospective customers believe to be barriers to connection, and perhaps more importantly, we work to address these challenges.

As we have developed our GD23 Business Plan, we have worked hard to understand the needs of our current and future customers, and in particular those who are more vulnerable within our communities.

1. Customers have a desire to connect to natural gas

Customers have a desire to connect to natural gas. We will deliver this by connecting more than 36,600 additional customers to our network by 2028, which we will support through the various incentives and initiatives we offer our customers, as outlined throughout our plan.

2. Customers want affordability

Customers want affordability. We will deliver this by giving current (and future) customers a real reduction in their tariffs, by 11%. We will also continue to support grant funding schemes (e.g. NISEP) and provide incentivisation, in order to encourage prospective customers to connect to our network. For those more financially vulnerable customers, we will build upon our relationship with organisations such as Advice NI, to ensure we are providing the highest levels of support for our customers.

Our plan has also been built on the back of ongoing, constructive and proactive, dialogue with our stakeholders and industry peers. We have undertaken a number of enhanced engagements, such as focus groups and additional market research surveys, in preparing our GD23 Business Plan.

Feedback from our engagement with customers has provided three key areas which our domestic customers have identified as challenges within the GD23 period - all of which we intend to address in delivering our GD23 Business Plan:

3. Customers want to help the environment

Customers want to help the environment, but our research suggests an unwillingness of customers to pay. We will deliver this by increasing efficiency and continuing our decarbonisation efforts with innovation projects. We have set ourselves ambitious connections targets which will deliver immediate and significant environmental savings for our customers, prospective customers and Northern Ireland as a whole.

In delivering what our customers want, we must also make sure that we are able to balance our competing priorities. For example, our customers have let us know that they want us to decarbonise, but that they want us to do so at little to no cost.
We have enhanced our engagement efforts in preparing our GD23 Business Plan, with focus groups and further surveys of customers and non-customers. Our enhanced customer engagement consisted of four focus groups and surveys to 250 customers and non-customers. This is a representative sample size and will allow us to make informed decisions on our operations.
As discussed in Part 1.2, I&C customers are telling us of their plans to decarbonise future energy requirements. In GD23, we will support these plans and preparations to decarbonise, for example, by ensuring firmus energy is at the forefront of conveying renewable fuels (such as biomethane or hydrogen) within our network. Our growth, particularly in domestic connections, will provide future access to renewable energy for the almost 104,000 customers who will be connected to our network by the end of the GD23 period.

1.9 Our ambition

Our Business Plan guided by strong values

We have four core values, which are embedded within our culture and are "front and centre" of each employee's role within our organisation. These values are the pillars upon which we have developed, and will deliver, our GD23 Business Plan:

Empathy:
Perhaps best illustrated by our extensive, and continual dialogue with customers and stakeholders.

Clarity:
Our Business Plan has been developed transparently, with supporting narrative and supplementary papers presented to the Utility Regulator, to outline our approach in each area.

Integrity:
We have presented our GD23 Business Plan with evidence and substantiation to support the cost allowances we believe are necessary to deliver our ambitious GD23 targets.

Teamwork:
Preparation of our GD23 Business Plan has involved all of our departments. Furthermore, throughout the GD23 price control review, we wish to work closely and collaboratively with the Utility Regulator to deliver our shared objectives, including the continued development of our natural gas network and preparations to ensure we are optimally positioned to contribute to Northern Ireland's Energy Transition.

Within firmus energy, we have a staff committee (our 'Values Committee'), which is dedicated to the ongoing promotion of our values. Whilst the Values Committee provides oversight and guidance for all employees, ultimate responsibility for ensuring our values are embedded into our culture resides with our Managing Director, supported by the Board.

Our Purpose, Mission and Vision

Our Purpose
To optimise return from our investment in the gas network and other technologies in order to facilitate transition to net zero carbon.

Our Mission
To deliver social and shareholder value, by being energy and environmentally market-led, profitable, innovative, efficient, sustainable and socially responsible in light of transition to a zero carbon economy.

Our Vision
To become the gas provider of choice in the Northern Ireland energy market, remove oil dependency, decarbonise and be a key energy influencer (for the consumer, business, utility regulator, government and other stakeholders).

Our Strategic Priorities

At the end of GD23 we will have:

- Optimised the opportunity to connect as many customers as possible to our network in the most efficient and economic manner possible. Continued customer growth is a key focus for us during the GD23 period. By the end of this period our plan is to have almost 104,000 customers connected to our network, with each of these connected properties making an important contribution to the decarbonisation of Northern Ireland's environment.
- Continued to deliver efficiency improvements that ensure our services remain affordable. In continuing to connect customers to our network, we want to ensure that our operations are focused around achieving this in the most efficient and economic manner possible.
- Delivered exceptional customer service, including to vulnerable customers. We will continue to deliver the level of service our customers expect of us and will continue to listen to, and respond to, the changing needs of our customers, current and future.
- Maximised the immediate opportunity to contribute towards the journey to net zero - Northern Ireland's journey towards net zero is of critical importance. We will maximise all immediate opportunities to contribute to this journey within the GD23 period. To do so, we will be exploring exciting and innovative renewable opportunities.
- Tested opportunities to deliver through innovation. We have identified five innovation projects which will test alternative paths to net zero.
- Pursued our ambition in an environmentally sensitive way. We will be a responsible corporate citizen, minimising our own environmental footprint.

1.10 Our Commitments

As with the evolving energy landscape, we too need to evolve. The role that we played yesterday will be different to the role that we will play tomorrow.

We have identified the many areas in which our role will change, for the better, and in doing so, we will be able to deliver a service that is sufficiently flexible to adapt to changing demands throughout the GD23 period, and beyond.

Optimising the opportunity to connect

We are committed to the goal we share with the Utility Regulator, "...to promote the development and maintenance of an efficient, economic and co-ordinated gas industry in Northern Ireland..." [20] We commit to increasing the number of properties connected to our network from c.67,000 at the end of 2022, to c.104,000 at the end of 2028 - an increase in our customer base of 55%.

Delivering efficiency improvements

We are setting ourselves challenging efficiency targets.

Our plan includes annual efficiency gains of 0.85% per annum in (controllable) opex and 0.75% per annum in capex. We will continue to deliver better value for money by working to improve the efficiency of our operations throughout GD23.

Our GD23 Business Plan will reduce distribution tariffs on our network by 11%, when compared to GD17.

Delivering exceptional service, including to vulnerable customers and our communities

We commit to delivering the same consistently high levels of customer service, remaining above regulatory targets. We plan to bolster this through our ongoing consumer engagement activities, which will ensure continued delivery of our shared goals, not least, by listening and responding to the needs of our customers and stakeholders.

We will provide access to government schemes, which will allow vulnerable customers to receive the funding they need to better access to our networks.

We will continue our JAM card training, to ensure we are equipped to provide our excellent customer service to vulnerable customers.

We will continue to work with organisations such as the Royal Institute for the Blind, and Advice NI to ensure we are supporting the widest spectrum of vulnerability and transient vulnerability challenges for customers across our network area. Our written materials will continue to be made available in braille or audio CD, and our relationship with Advice NI will provide access to up c.70 further organisations supporting those more vulnerable within our communities.

We commit to ensuring our fuel poor customers have access to natural gas. We will do this by continuing our initiative of supporting access to NISEP funding for customers in our network.

We commit to supporting local initiatives. One way in which we are currently doing, and will continue to do this is in partnership with Social Enterprise NI, by supporting community enterprises such as 'Cycle Recycle' in Newry, who refurbish bicycles and sell them at low cost to our disadvantaged community members.
We commit to supporting our local businesses, customers, and communities. We propose to support them by employing 120[21] people directly, supporting a supply chain of c.300 jobs and investing in the communities in which we operate.

[20] Article 14, The Energy (Northern Ireland) Order 2003, https://www.legislation.gov.uk/nisi/2003/419/article/14
[21] C.70 of whom are employed by firmus energy (Distribution) Ltd, and the remaining employed by firmus energy (Supply) Ltd

Maximising the immediate opportunity to contribute towards the journey to net zero

Our GD23 Business Plan will contribute significantly to the decarbonisation of energy in Northern Ireland, with annual displacement of CO_2 emissions rising from 247,450 tonnes in 2022 to 295,996 tonnes in 2028, representing a 20% increase in annual CO_2 savings over the GD23 period.

We commit to ensuring our staff understand the benefits of energy efficiency. We will do this by continuing our status as the UK's only energy business, with 100% of staff trained and City and Guilds accredited in energy efficiency, or in the process of being so.

We will promote and facilitate the use of green gas by actively engaging in regulatory work streams (with Utility Regulator, DNOs and GMO) to enable biomethane injection.

At firmus energy, we recognise our responsibility to educate our customers, and prospective customers, in the role of natural gas, our infrastructure, and wider energy matters, such as energy efficiency and decarbonisation of fuel, throughout the GD23 period. Our enhanced survey feedback from March 2021 suggests customers are keen to be 'environmentally friendly', but generally, do not understand what is meant by 'decarbonisation'. In GD23, our marketing materials will adapt to ensure we are informing our customers in what is set to be a more complex and evolving energy landscape throughout the GD23 period and beyond, and ensuring they are fully aware of the immediate, and positive opportunity to contribute towards Northern Ireland's journey to net zero energy by 2050.

Testing opportunities to deliver through innovation

Our 'Sustainability Committee', established in 2021, will help us identify areas of innovation.

We have outlined five key example projects for the Utility Regulator's consideration. Each project is focused on progressing decarbonisation within our network.

If progressed and successful, our projects could prove fundamental to our contribution to Northern Ireland's Energy Policy. These innovation projects span across our GD23 plan and are as follows:

Hydrogen blend trial 1:

A trial of natural gas/hydrogen blend (80/20) to a small number of properties, to showcase the feasibility of hydrogen use in our networks.

Hydrogen blend trial 2:

A trial of transporting a blend of methane and hydrogen on an isolated section of our network.

100% Hydrogen Town:

Decarbonising towns across our energy network by a full transition to hydrogen (subject to success of hydrogen blend trials and other emerging technologies in this area).

Biomethane Grid Injection:

Injecting bio-methane from anaerobic digestion plants into our network, with the potential to decarbonise a significant percentage of our energy network.

Synthetic methane grid injection:

A trial to explore the feasibility of injecting methane into the firmus gas network.

As discussed further in Part 5.2.2., feedback provided by some of our largest I&C customers demonstrates a focus on both energy efficiency and decarbonisation of fuel, and reflects the ambitions of many other customers connected to our network. Innovation is a key enabler which to delivering the longer term sustainability of our network. As discussed throughout Part 1, we have a critical role to play in Northern Ireland's journey to net zero carbon, and innovation is a key element of maximising the potential offered by our modern infrastructure.

Being environmentally sensitive

Our GD23 Business Plan captures the significant contribution we will make to improving Northern Ireland's environment. Our customers tell us they want to be 'environmentally friendly'.

Our plan will be delivered in an environmentally sensitive manner. We will continue to build upon our robust environmental credentials and conduct our business activities in the most environmentally friendly way.

Forecast growth in connections to our network throughout the GD23 period will displace almost 1.7m tonnes of CO_2. firmus energy, and the wider natural gas industry has a critical role to play in Northern Ireland's Energy Transition.

Again, we are seeking to expedite and enhance our contribution to Northern Ireland's journey to net zero carbon through innovative projects, as outlined above.

We commit to improving Northern Ireland's environment by continually improving our ISO 14001 accredited Environmental Management System. This ensures that we have identified all aspects of our environmental responsibilities and have plans in place to minimise adverse impacts on them.

1.11 How we will address key challenges

We have come a long way since our inception, but we don't want to stop here. It is essential that we constantly improve, to ensure we meet our goal of becoming the gas provider of choice in Northern Ireland.

However, our journey to reach this goal will not be easy, and we will have to overcome significant challenges.

Aside from the obvious challenge of decarbonisation, we have identified a number of barriers that we will face in this price control period, and how we will overcome them:

Cost to covert

As previously mentioned, the cost to convert away from oil to natural gas is significant. This bears heavily on the ability of our customers to access the natural gas that they desire, and impedes our ability to deliver it to them. We have devised a number of ways to overcome this, such as real reductions in tariffs, sustained participation in external schemes and working with our supply chain to ensure a thorough and high-quality service.

Natural gas (media messages and renewable solutions)

Natural gas has the ability to make an immediate impact on decarbonisation and it will be vital in our journey to net zero. However, it is only a temporary solution and we must ensure that our customers realise this too. We must ensure that we are educating our customers in the role of natural gas, and perhaps more importantly, the role our infrastructure will play, in Northern Ireland's journey to net zero energy. As we embark upon GD23, the options available to energy consumers are likely to grow. As such our competition for customer growth will also become more challenging, and will require the support we believe necessary to achieve our connection targets.

Sustaining gas volumes conveyed

In order to sustain downward pressure on our tariffs, we must ensure continued growth in volumes conveyed within our network. Volumes are directly related to customers connected to our network. We have set ourselves ambitious connections targets in GD23, however, we recognise the importance of ensuring we continue to put downward pressure on tariffs for customers and we optimise our decarbonisation opportunity. We will work to ensure our communication and engagement activities address the wider, more complex, energy landscape which is set to develop throughout the GD23 period, and beyond, and we will continue to listen to our prospective customers and address what they believe to be barriers to connecting to our network.

Energy strategy timeline

Energy Strategy timeline – As we prepare our GD23 Business Plan, we have had sight of the DfE's consultation on policy options, published on 31st March 2021. We are very encouraged by the recognition given to the role of natural gas within the energy transition, and the longer term role which will be played by our asset infrastructure (e.g. conveying renewable energy fuels). However, the energy strategy and its subsequent policies, legislation and regulation are matters which are unlikely to be determined prior to the beginning of our GD23 price control period. We do not want to stand still with our ambitions to increase and expedite our contribution to achieving net zero carbon energy in Northern Ireland. We are keen to engage with the Utility Regulator, and wider stakeholders, to ensure the context in which our GD23 Final Determination is made, remains dynamic and fit-for-purpose throughout the GD23 period, and supports our role in the evolving energy landscape which will develop throughout this horizon.

1.12 How we will finance our activities

We are proposing a weighted average cost of capital (WACC) for the GD23 period of 3.16%. Our consideration of WACC has been informed and supported by Frontier Economics.

Our WACC of 3.16% for GD23 compares to 4.32%, as determined by the Utility Regulator in our GD17 price control review. We believe this WACC supports the financeability of our GD23 Business Plan and will continue to secure the investment anticipated in our network during GD23, particularly at a time of an evolving energy landscape in Northern Ireland.

Furthermore, Northern Ireland (like GB) will require significant inward investment to deliver net zero carbon energy by 2050. To secure this significant contribution from private capital, Northern Ireland must be seen as an attractive place to invest in. We believe 3.16% sends a signal that responsible investors, with long term commitment, will earn fair returns and will help incentivise inward investment that a small economy, like Northern Ireland, could find difficult to attract.

1.13 Summary of our Plan

Part 1

Part 1 of our GD23 Business Plan outlines firmus energy's commitment to deliver our ambitious plans over the six year price control period (2023 – 2028). We provide an overview of the key features and context of our Business Plan, including our overarching business ambitions, positioning ourselves for Northern Ireland's future energy landscape, the market place in which we will work to deliver our targets, and particular areas where the Utility Regulator can support the successful delivery of our GD23 Business Plan.

Part 2

firmus energy's performance in GD17 (2017 – 2022) is described in Part 2 of our Business Plan. We reflect upon our actual performance from 2017 – 2020 and forecast performance in the years 2021 and 2022. In general, we have used 2020 as the base year for mapping costs throughout the GD23 period, then adjusting accordingly for required amendments, atypical expenditure, and forecast efficiencies. firmus energy will experience significant growth over the GD17 period. By the end of 2022, we will have increased the number of properties where gas is available to over 193,000, and will have increased the number of connections to our network to over 67,000. We will have achieved this growth efficiently and by continuing to do 'more for less'.

Part 3

In Part 3 of our GD23 Business Plan we provide our strategic outlook for the price control period, and beyond. Northern Ireland's (new) Energy Strategy is due to be published in November 2021, and will outline Northern Ireland's journey towards net zero carbon energy by 2050. Our Business Plan describes the critical role and significant contribution to be made by natural gas, and our infrastructure, in the decarbonisation of Northern Ireland. In the GD23 period, firmus energy is planning to connect an additional 36,612 properties to our network, and achieve annual CO_2 savings of c.300k tonnes, within our network area by the end of the six year period.

Part 4

Part 4 provides a financial overview of our Business Plan. Our Business Plan has been submitted with a rate of return (weighted average cost of capital, WACC), which we believe is a fair reflection of what is required to secure continued investment in our network, and deliver the ambitious targets we have set for ourselves over the six year period.

Part 5

Volumes and customer numbers are addressed in Part 5 of our Business Plan submission. Volumes are directly related to connections to our network, and in turn, directly related to the amount of CO_2 savings we will deliver for Northern Ireland, from those properties connected to our network. A key focus of our connection activities in GD23 will be OO properties. Our plans for increased connections to our network are ambitious, and are dependent on securing those allowances necessary to support delivery of our targets. Our connections growth will support network tariffs for all existing and future customers, whilst CO_2 savings made from connections to our network will support a cleaner environment for the whole of Northern Ireland, and contribute to our journey towards net zero carbon energy by 2050.

Part 6

Operating expenditure (opex) in the GD23 period is detailed in Part 6 of our Business Plan. In Part 1, we have outlined two key aspects of opex, specifically, manpower and maintenance where we believe the Utility Regulator's support is essential. Both these resources are vital to support our ambitious plans for the period. Our opex has been carefully planned to build upon previous experience, whilst continuing to deliver efficiency for our current and future customers.

Part 7

Capital expenditure (capex) in the GD23 period is detailed in Part 7 of our Business Plan. In Part 1, we have outlined two key aspects of capex within, specifically, domestic services and meters where we believe the Utility Regulator's support is essential. In order achieve our ambitious connection targets in GD23, we must secure allowances which will support delivery of these targets. As with opex, our capex has been carefully planned to build upon previous experience, whilst continuing to deliver efficiency.

Part 8

Part 8 of our network plan addresses the Utility Regulator's requirements with respect to network assets. Given the material growth in our assets through GD17, and our planned growth in GD23, maintenance of our network assets will be a particular area of focus for the GD23 period and beyond. Notably, firmus energy's 20 year meter replacement programme will commence in 2026.

Part 9

Throughout our Business Plan we describe the significant benefits that natural gas provides to our customers, not least, the significant contribution natural gas will make to the decarbonisation of Northern Ireland's environment. Part 9 of our Business Plan captures key facts and figures which quantify these benefits. We also describe firmus energy's approach to decreasing our business-related carbon footprint and how this will be developed during the GD23 period.

Part 10

Part 10 of our Business Plan discusses real price effects (RPEs) and efficiencies. Our GD23 Business Plan has been prepared to deliver our ambitious targets effectively and efficiently. Our forecast costs have been based on experience and our drive for continuous improvement.

Part 11

Special factors and atypical expenditure within our GD23 Business Plan are outlined in Part 11. firmus energy is of significantly different scale by comparison to any of the GB GDNs, and this must be considered when undertaking benchmarking, or any other such comparisons. Similarly, there are distinguishing factors to be considered when making comparison to the other DNOs in Northern Ireland, e.g. rurality of firmus energy's network. These matters are discussed further in Part 11.

Part 12

Part 12 provides an overview of our organisation and describes any organisational changes anticipated during the GD23 period. Most notably, firmus energy's licence states that upon the connection of 100,000 prôperties to our network, our Distribution and Supply businesses must separate. Our GD23 forecasts anticipate 100,000 connections to our network in 2028.

Part 13

In Part 13, we provide technical information with respect to the operation of our price control formulae. This includes our assessment of those adjustments which are anticipated under the GD17 uncertainty mechanism, and the determination of our opening TRV position for GD23.

Part 14

Part 14 of our GD23 Business Plan captures additional information on our business and our operations, presently and as they are anticipated throughout the GD23 period. We provide details of our levels of customer service and the consumer engagement undertaken as part of our GD23 preparations.

Our GD23 Business Plan will contribute significantly to the decarbonisation of energy in Northern Ireland, with annual displacement of CO_2 emissions rising from 247,450 tonnes in 2022 to 295,996 tonnes in 2028, representing a 20% increase in annual CO_2 savings over the GD23 period.

2 GD17 Review

Utility Regulator Guidance

- Key overall messages on GD17 spend to date versus allowances with reference to workload.
- Key outputs delivered during the GD17 price control period to date in the context of the overall price control period.
- Key overall messages on forecast delivery of outputs for the overall GD17 price control period with reference to forecast spend.
- Outlook on overall GD17 price control period.

Introduction

Part 2 provides an overview of our actual and projected performance against key allowances and outputs for GD17, including volumes, connections, opex, capex and customer service standards. We also identify and explain key areas in which we have out-performed or under-performed against the objectives and allowances set for us by the Utility Regulator within the GD17 Final Determination.

Finally, we describe a number of key points of reference arising from our GD17 experience that we have used to inform our approach to GD23. In particular, we provide further detail on the following areas:

- How firmus energy has optimised the Utility Regulator's properties passed incentive to efficiently build out the network faster than forecast throughout GD17, thus greatly reducing the forecast infill mains forecast for the GD23 period
- Owner occupied connection targets for GD17 have proved challenging, despite being boosted by increased new infill area mains laying activity
- The importance of setting achievable annual owner occupied connection targets, aligned to the overall annual owner occupied connection incentive spend
- Milder weather conditions and improved tri-aging of emergency calls in the GD17 period to-date have resulted in the actual number of emergency response jobs being lower than forecast
- As a regulated entity, appropriate professional and legal fees are essential for ensuring ongoing compliance and supporting ongoing regulatory engagement
- The uncertainty mechanism will need to make adjustments to our GD23 opening position in respect of the acceleration of our mains laying activities, extensions to our development area to connect larger I&C customers, and a number of other retrospective adjustments within the GD17 period, which we detail further in Part 13 of this document.

2.2 Performance Against GD17 Objectives

2.2.1 Price Control Period

The following section provides analysis broken down by expenditure area. As the GD17 Price Control period began in January 2017 and runs until December 2022 the figures outlined in this section are based on actual results for 2014 to 2020, further reflected in the Annual Cost Reporting submissions made to the Utility Regulator for each of these years.

Data provided for 2021 and 2022 are forecasts, based on historical results and information available at the date of this submission. It is therefore reasonable to expect the outturn actuals for the remainder of the GD17 period to vary from these 2021 and 2022 forecasts. We anticipate that this will, in turn, affect our forecast GD23 opening position.

2.2.2 GD13 Capex Performance

Figure 2.1 GD17 Other Mains Allowance (Excluding New Build) – Actual compared to Determined

GD17 Other Mains Determined	2017	2018	2019	2020	2021	2022	Total
	Determined	Determined	Determined	Determined	Determined	Determined	
Mains Cost (£'000)	8,934	8,625	8,462	8,425	8,493	8,509	**51,499**
Properties Passed	11,366	11,071	11,528	10,414	10,765	11,673	**66,817**
Km of Mains	113	112	110	109	111	112	**667**
Meters Per Property Passed	10	10.1	9.6	10.4	10.3	9.6	**10**
Cost Per Metre (£)	79	77	77	77	76	76	**77**

GD17 Other Mains Actual/Forecast	2017	2018	2019	2020	2021	2022	Total
	Actual	Actual	Actual	Actual	Forecast	Forecast	
Mains Cost (£'000)	7,798	8,875	9,785	10,287	13,099	15,509	**65,353**
Properties Passed	11,622	12,386	13,820	14,368	16,108	15,094	**83,398**
Km of Mains	117	135	145	155	172	173	**897**
Meters Per Property Passed	10.1	10.9	10.5	10.8	10.7	11.5	**10.8**
Cost Per Metre (£)	67	66	68	66	76	90	**73**

Acceleration of infill mains programme

For our GD17 submission we prepared detailed plans (in the form of 621 projects) to extend our network to the natural boundaries of the towns in our licence area, passing an additional 92,344 existing properties. We proposed to pass 67,304 (73%) of these properties in GD17 with the remainder passed in the early years of the next price control (GD23).

These proposals were largely accepted by the Utility Regulator and the GD17 allowances were determined on the basis of these forecast properties passed.

The Utility Regulator also included a properties passed incentive mechanism for the GD17 period, whereby firmus energy was incentivised to pass additional properties in the period, with a reward of £20 per additional property over the target.

As can be seen from the Figure 2.1, above, we have accelerated our infill mains programme in the GD17 period, to optimise the properties passed in the period and to make additional owner occupied homes accessible to our network.

Of the mains included in our GD17 submission (945km to be laid over the GD17 and GD23 periods), it is now forecast that we will have laid over 95% [22] of this by the end of GD17, leaving 35km to be built in the first year of the GD23 Price Control period.

2.2. Capex Unit Costs Comparison

GD17 Determined Unit Rates	2017	2018	2019	2020	2021	2022	Average
	Determined	Determined	Determined	Determined	Determined	Determined	
Average Cost per Metre of Other Mains	79	77	77	77	76	76	**77**
Average Cost per Meter of New Build Mains	55	54	54	54	53	53	**54**
Average Cost per Domestic Meter and Service	1,090	1,090	1,088	1,087	1,084	1,082	**1,086**

GD17 Actual/Forecast Unit Rates	2017	2018	2019	2020	2021	2022	Average
	Actual	Actual	Actual	Actual	Forecast	Forecast	
Average Cost per Metre of Other Mains	67	66	68	66	76	90	**73**
Average Cost per Meter of New Build Mains	20	25	25	19	32	32	**25**
Average Cost per Domestic Meter and Service	910	994	980	973	1,096	1,097	**1,011**

[22] In our GD17 submission it was forecast that 70% would be built in the GD17 period, leaving 278km (30%) to be constructed in the GD23 period

As can be seen from Figure 2.2, above, we have been able to operate within the GD17 determined unit rate allowances, resulting in overall savings in capital expenditure compared to allowances.

This is a great news story for customers, and supports the 11% downward pressure in our tariffs for GD23 and beyond, as the capital rolling incentive mechanism ensures customers share any benefit of this outperformance.

In GD23, the focus of our capex expenditure is domestic services and meters. As outlined in Part 1, this is a key area where the Utility Regulator can enable the successful delivery of our GD23 plan.

There will be upward pressure on these rates in GD23, not least, due to the diseconomies of scale associated with the material decrease in our mains laying activity. We have set ourselves ambitious targets for growing connections, particularly domestic connections, to firmus energy's network in the GD23 period. Our successful delivery of forecast connections growth in GD23 will be fully dependent upon our ability to fund each domestic service and meter requirement. Further details of our GD23 requirements are provided in Part 7.

Traffic Management Act (TMA)

As part of the GD17 process, in order to address the potential introduction of the TMA legislation during the period, an uplift of 10% was allowed for those capex cost items that would be impacted.

As TMA legislation has not yet come before the Northern Ireland Assembly, and in recognition of legislative timeframes, we do not anticipate the introduction of TMA by the end of 2022. Therefore, a retrospective adjustment will be required. This uncertainty adjustment is detailed in Part 13 of this document.

Licence Extensions

We are continually seeking opportunities to bring the benefits of natural gas, and the longer term opportunities of being connected to our infrastructure, to as many households and businesses as possible in our licence area. In GD17 period to-date, we have identified two network development opportunities, providing natural gas to two major manufacturers.

Network extensions have been granted by the Utility Regulator to provide natural gas to Ulster Farm By-Products Limited, in Crumlin and to a second distillery at The Old Bushmills Distillery, in Bushmills.

Ulster Farm By-Products was connected to our network in November 2020, and the second distillery at The Old Bushmills Distillery was connected to our network in May 2021.

These two new connections will increase volumes in firmus energy's network by over 3 million therms per annum, compared to those forecast in GD17. Whilst capex to fund these significant projects was not included in GD17 forecasts, the increased volumes, will again, sustain downward pressure on tariffs for our current and future customers in the GD23 period, and beyond.

2.2.3 GD17 Connections

Figure 2.3 GD17 Connections - Actual vs. Determined

GD17 Connections Determined	2017	2018	2019	2020	2021	2022	Total
	Determined	Determined	Determined	Determined	Determined	Determined	
Owner Occupied	2,468	2,808	3,134	3,401	3,655	3,934	**19,400**
New Build	800	800	800	800	800	800	**4,800**
NIHE/Housing Association	800	800	800	800	800	800	**4,800**
Industrial and Commercial	150	150	150	150	150	150	**900**
Total	**4,218**	**4,558**	**4,884**	**5,151**	**5,405**	**5,684**	**29,900**

GD17 Connections Actual/Forecast	2017	2018	2019	2020	2021	2022	Total
	Actual	Actual	Actual	Actual	Forecast	Forecast	
Owner Occupied	2,224	2,395	3,115	2,605	3,695	3,961	**17,995**
New Build	1,469	1,594	1,519	1,175	1,000	1,000	**7,757**
NIHE/Housing Association	1,249	1,219	1,695	1,632	1,000	1,000	**7,795**
Industrial and Commercial	128	152	131	142	150	150	**853**
Total	**5,070**	**5,360**	**6,460**	**5,553**	**5,845**	**6,111**	**34,399**

Figure 2.3 above details our actual connections 2017 to 2020 and forecast connections for 2021 to 2022. Our actual connections (2017 to 2020) have been submitted to the Utility Regulator as part of our Annual Cost Reporting (ACR) requirements. The figures demonstrate that we fell short of our owner occupied connections targets in each of the four years of GD17, to-date, (noting that we are forecasting to be in line with determined targets for 2021 and 2022).

Despite outperforming on properties passed targets, our owner occupied connections performance indicates that other factors, including the falling oil price and continued impact of the economic downturn on Northern Ireland, are having a significant impact upon our ability to convert households to natural gas. Of particular note is the impact of Covid-19 in 2020, when Energy Advisors were prevented from continuing their activities for approximately 2 ½ months as a result of government restrictions.

The overarching challenge in GD17 demonstrates the necessity to retain and enhance the connections incentive mechanism to support future customer connections and network development from within the owner occupied sector.

Connections across our other market sectors have been strong throughout the period, with new build, Northern Ireland Housing Executive (NIHE) and Housing Association well in excess of our GD17 targets. These figures reflect the current desire of new build developers and social housing landlords to offer natural gas heating systems, coupled with the additional benefits that natural gas brings, such as space saving for new build developments, instant hot water, budgeting and savings on carbon emissions. As outlined within this document, changes in Northern Ireland's energy landscape will be significant throughout the GD23 period. We are committed to supporting and delivering net zero carbon energy for Northern Ireland by 2050, however, the manner in which will do so will become clearer upon publication of the DfE's Energy Strategy in November 2021.

At present, oil is (and has always been) our key competitor. In the coming years, as Northern Ireland's Energy Transition gathers momentum, competition from other fuel types will accelerate. As such, we cannot rely upon the preferences of new build developers and/or social housing landlords to be sustained into the future. In Part 3, we discuss our strategic outlook for the GD23 period and beyond. In the short term, converting to natural gas (from solid fuel or oil) has an immediate and positive impact on CO_2 emissions and in the medium to longer term our infrastructure is optimally placed to convey renewable fuels to each household connected to our network. We are confident in the contribution firmus energy can make to Northern Ireland's journey to net zero, however, we will need to ensure our customers (current and future) and stakeholders are brought on this journey with us.

2.2.4 GD17 Volumes

Figure 2.4 GD17 Volumes - Actual compared to Determined

GD17 Volumes Determined (mTherms)	2017	2018	2019	2020	2021	2022	Total
	Determined	Determined	Determined	Determined	Determined	Determined	
Domestic - P1	11,203	12,702	14,327	16,062	17,896	19,830	**92,021**
SME - P2 & P3	14,716	15,224	15,720	16,206	16,681	17,145	**95,691**
Large I&C - P4, P5 & P6	36,036	32,440	32,440	32,440	32,440	32,440	**198,236**
Total	**61,955**	**60,366**	**62,487**	**64,708**	**67,017**	**69,415**	**385,948**

GD17 Volumes Actual/Forecast (mTherms)	2017	2018	2019	2020	2021	2022	Total
	Actual	Actual	Actual	Actual	Forecast	Forecast	
Domestic - P1	11,380	13,745	15,819	18,033	19,892	24,566	**103,434**
SME - P2 & P3	14,223	15,424	14,693	14,524	15,265	14,877	**89,006**
Large I&C - P4, P5 & P6	32,604	32,113	31,125	31,313	31,321	33,185	**191,659**
Total	**58,207**	**61,282**	**61,636**	**63,869**	**66,478**	**72,627**	**384,099**

Overall volumes are forecast to be in line with GD17 Final Determination forecasts, noting that early underperformance in larger I&C volumes (due to unforeseen business closures such as Michelin and Banah) has been offset by increased domestic volumes. This reflects the outperformance in overall domestic connections compared to GD17 Final Determination targets.

Large I&C volume at the end of the GD17 period is forecast to be above determined levels as a result of increased volumes from Ulster Farm By-Products and Old Bushmills Distillery (i.e. the new connections outlined in paragraph 2.2.2, above).

2.2.5 GD17 Opex

Figure 2.5 GD17 Opex - Actual vs. Determined

GD17 Opex Determined (£'000)	2017	2018	2019	2020	2021	2022	Total
	Determined	Determined	Determined	Determined	Determined	Determined	
Work Management	1,219	1,220	1,220	1,222	1,223	1,226	**7,329**
Work Execution	1,696	1,806	1,838	1,997	2,209	2,521	**12,067**
Business Support	2,381	2,272	2,285	2,303	2,323	2,343	**13,906**
Advertising & Market Development	2,032	1,978	2,092	2,137	2,192	2,217	**12,648**
Total	**7,328**	**7,275**	**7,435**	**7,659**	**7,947**	**8,306**	**45,951**

GD17 Opex Actual/Determined(£'000)	2017	2018	2019	2020	2021	2022	Total
	Actual	Actual	Actual	Actual	Forecast	Forecast	
Work Management	1,237	1,242	1,146	1,168	1,253	1,295	**7,341**
Work Execution	1,236	1,276	1,353	1,732	1,987	2,117	**9,701**
Business Support	2,854	3,105	2,848	2,750	3,464	3,304	**18,325**
Advertising & Market Development	1,575	1,606	1,695	1,561	1,942	1,953	**10,333**
Total	**6,901**	**7,230**	**7,042**	**7,211**	**8,646**	**8,670**	**45,700**

As can be seen in Figure 2.5, above, our overall opex is forecast to be broadly in line with regulatory allowances for the GD17 period. In certain, key areas, our allowances for the GD17 have fallen below what has (and will be) required to efficiently and effectively deliver our regulatory outputs for the period.

This challenge has been mitigated significantly by emergency response costs (due to reduced response jobs caused by milder weather conditions and improved tri-aging of emergency calls). Figure 2.6, below, outlines GD17 expenditure for emergency response costs.

Figure 2.6 GD17 Emergency Costs - Actual vs. Determined

GD17 Emergency Costs (£'000)	2017	2018	2019	2020	2021	2022	Total
Determined	779	840	902	964	1,027	1,092	**5,604**
Actual	461	558	538	808	737	800	**3,901**
Variance	**317**	**282**	**364**	**157**	**291**	**291**	**1,702**

The two key areas where GD17 Final Determination allowances have been insufficient to support our efficient activities in the GD17 period are Audit, Finance & Regulation and IT & Telecoms.

The reason for the difference between the GD17 determined allowances and our actual expenditure in these areas is, principally, a result of variances between the efficient ongoing costs of these activities, and the costs incurred in 2014, upon which the Utility Regulator derived the GD17 opex allowances.

Legal and Professional

Legal and professional fees in 2014 were atypical and considerably lower than the efficient actual costs required for these activities in the period 2017 to 2020 (and forecast in the years 2021 and 2022).

The GD17 Final Determination of legal and professional fees also omitted consultancy costs associated with the preparation, submission and support of price control reviews. Price controls are a feature of the regulatory framework within which firmus energy operates, and are fundamental to our ability to adhere to our licence obligations. As such, these activities must be appropriately funded. The Utility Regulator's requirements for price control submissions is extensive, granular, and in places, requires the support of specialists (e.g. in review and submission of rate of return).

We believe the benefits and value of price control consultancy support extends beyond firmus energy. Consultancy support appointed by a regulated company can provide significant and valuable input into the Utility Regulator's review and assessment of expenditure, outputs and efficiencies, which in turn, supports the service, delivery and value for money offered to current and future customers. Consultancy support also avoids an ongoing internal cost which would come from having such expertise in-house.

Figure 2.7 GD17 Audit, Finance and Regulation - Actual vs. Determined

GD17 Audit, Finance & Regulation (£'000)	2017	2018	2019	2020	2021	2022	Total
Determined	452	448	445	442	439	436	**2,661**
Actual	490	564	538	645	1,098	804	**4,138**
Variance	**(38)**	**(116)**	**(93)**	**(203)**	**(659)**	**(368)**	**(1,477)**

IT & Telecoms

At the time of preparing our GD17 submission, firmus energy did not have any previous experience of operating our IT and telecoms activities on a 'stand-alone' basis. In 2014, our IT and telecom costs were embedded within a parental recharge for corporate support within the structure of our ownership at that time. As such, this was the first opportunity for firmus energy to assess the necessary requirements to support IT and telecoms activities for the GD17 period. In undertaking our IT and telecoms activities in GD17, we have remained cognisant of our allowed expenditure in this area, however, in working to ensure the efficiency and reliability of our operations, our levels of expenditure in GD17 reflect the minimum investment which has been required in this area to support our business activities.

Building upon our GD17 experience, particular aspects of IT and telecoms which have become increasingly important and will continue to be so in the GD23 period include GDPR and cyber security. Part 6 and Part 7 of this document detail our forecast IT and telecoms expenditure in the GD23 period, and outline the critical nature of ensuring a robust, resilient IT infrastructure to support our business operations, as well as the safety and security of service expected by our customers and stakeholders.

Figure 2.8 GD17 IT & Telecoms - Actual vs. Determined

GD17 IT & Telecoms (£'000)	2017	2018	2019	2020	2021	2022	Total
Determined	387	384	381	378	375	373	**2,227**
Actual	601	604	465	488	636	685	**3,479**
Variance	**(215)**	**(220)**	**(84)**	**(110)**	**(261)**	**(312)**	**(1,202)**

In addition to the two areas outlined above, an area where our opex expenditure has materially varied to the GD17 Final Determination, is owner occupied connection incentive allowances.

Whilst we have not exceeded GD17 Final Determination allowances in this area, when compared to adjusted allowances, as our owner occupied connections have been lower than determined, our connection incentive costs have been revised proportionately. Actual costs are therefore lower than those originally determined.

Part 5 of this Business Plan outlines our plans for, and the challenges we anticipate, in relation to owner occupied connections during the GD23 period.

2.2.6 Other GD17 Outputs - Customer Service Metrics

firmus energy continues to offer a high standard of customer service, with a focus on reducing the time taken to connect customers, improving our interaction with vulnerable customers and minimising disruption caused by any damages to the network.

Throughout the GD17 period to-date, firmus energy has continued to deliver high standards of service to all customers across our network. This is particularly evident in our low levels of payments made under the Guaranteed Standards of Service (GSS). The GSS Regulations stipulate and monitor our standards of performance in areas including; complaint resolution, appointments, meter disputes, connection quotations and reinstatement of property.

With our growing customer base and increased connections we have consistently delivered this high standard to all our customers throughout the GD17 period, as shown in Figure 2.9. Our average number of GSS payments has been 1 per month for the GD17 period to-date.

Figure 2.9 Guaranteed Standards of Service in GD17

	2017	2018	2019	2020
GSS Payments	7	9	14	18
Year End Connections (cumulative)	37,293	46,636	49,062	54,615

firmus energy has also exceeded our Overall Standards of Service in each of the years 2017 to 2020. Our obligations regarding overall standards of service are included within our licence and include standards regarding customer correspondence, complaints, replacing and exchanging meters, gas escapes, and restoration of supply. The requirements set out in our licence provide a guide and minimum standard expected from firmus energy. In GD17 to-date, we have consistently exceeded these targets, which have been detailed in Part 14 of this document.

Public Reported Gas Escapes ('PREs')

Public Reported Gas Escapes form an important element of our overall standards of performance.

In this area, we have maintained consistently high standards. For uncontrolled gas escapes, we have achieved a 100% performance (against a 97% target) for each of the 4 years in GD17 to-date (i.e. 2017 to 2020).[23]

[23] In our GD17 submission it was forecast that 70% would be built in the GD17 period, leaving 278km (30%) to be constructed in the GD23 period

Our learnings from GD17 have informed our GD23 Business Plan. Our activities to manage and further reduce PREs during the GD23 period are detailed in Part 9 of this document.

2.2.7 Covid-19

The outbreak of the Covid-19 pandemic in 2020 was an exceptional, global event. This event has changed the ways of working for many businesses, and with the evolving landscape of this pandemic we have adapted our policies and procedures to ensure both continuous operation and employee safety. Our business continuity arrangements were put to the test in 2020, and our response demonstrated the resilience and agility of our business.

Impact to Connection Activity

The most material impact to our performance in 2020 was our level of owner occupied connections. Our performance in 2020 reflects our necessity to adhere to government restrictions, and particularly, to suspend our Energy Advisor activities for a period of time in Q2 2020. Figure 2.10 depicts our owner occupied connection profile in 2020.

Figure 2.10 Owner Occupied Connections 2020

Impact to Engineering Activity - Business Preparations 'Lockdown'

In March 2020 firmus energy held meetings with our construction contractor, and the other DNOs in Northern Ireland to ensure prevailing business continuity arrangements were adequate to cover emergency response, and agree communication channels and sharing of resources, should the need arise through the pandemic. This lead to the adoption of specific procedures for first response engineers in order to limit any unnecessary exposure and to ensure that the limited resource continued to be available for critical safety works.

escape is controlled, which is when the meter control valve has been turned off and this has stopped the gas escape."

Public Reported Escapes (PRE's)

We experienced fewer calls in 2020 compared to 2019, and this was most likely a result of the introduction of government restrictions in spring 2020. The restrictions meant fewer Industrial and Commercial premises were using gas and occurrences of PRE's decreased accordingly.

Emergency Response Personnel

firmus energy's emergency call rota continued to operate with a full team of first response engineers, supervising engineers, customer liaison and engineering managers, each of whom was fully trained, equipped and experienced to deal with any situation which might have arisen during the lockdown period.

Personal Protection Equipment (PPE)

We sourced and issued additional PPE to our engineering and Energy Advisors team in March 2020, and this requirement continues. We have incurred unanticipated costs for PPE, which has been in the region of £8,000 in the period until May 2021. Our GD23 Business Plan anticipates a continued requirement for PPE to provide items such as extra hand-wipes, gloves, hand-gel, disposable suits and breathing apparatus, which are now embedded within the safety of our operations.

Network Construction

All core construction activities ceased on Friday 3rd April 2020, with our contractor placing a number of staff on furlough. All mains and services work ceased until late May 2020, at which point a phased return commenced following completion of risk assessments on construction activities, sharing of vans and interaction with our customers and the general public.

Planned Maintenance Activities

firmus energy's annual meter inspection and maintenance visit is necessary every twelve months in order to ensure ongoing compliance with the Pressure System Safety Regulations (PSSR - 2000); the inspection includes testing of the primary safety device on the pressure reduction and metering rig serving the site.

In order to sustain these inspections, particularly at critical sites such as hospitals, healthcare and food manufacturing facilities, we issued specific guidelines (developed through a process of risk assessment) to our governor team, to support safe operations while entering, working and leaving third party customer sites.

Non-essential inspections and maintenance

In mid-March 2020, we decided to cease non-essential maintenance works which were deemed to present a higher risk of spreading Covid-19. This included medium pressure regulator inspections, pre-payment battery exchanges and inspections on completed NISEP funded installations. These recommenced following risk assessment at the beginning of June 2020.

2.3 Key Messages for GD23

2.3.1 Capex Allowances for domestic connections

Northern Irelands energy landscape is set to evolve significantly throughout the GD23 period. The DfE's Energy Strategy is due to be published in November 2021, and this will provide the route to Northern Irelands journey to net zero carbon in Northern Ireland. Natural gas and firmus energy's modern infrastructure, particularly in the medium to longer term, will play a key role in supporting this journey to net zero. We believe the energy landscape in 2028 (i.e. the end of our GD23 price control period) will be markedly different from when we embark upon GD23, and we are preparing to ensure we best placed to contribute to the evolving energy transition in Northern Ireland.

In particular, the conversion of domestic households from oil to natural gas has taken on a higher priority in the context of reducing carbon emissions than in any previous price control review.

firmus energy has invested over £33m in providing domestic connections to our network during the GD17 period, and we are forecasting costs of c.£47m in the GD23 period.

Adequate allowances to support domestic services are a critical component of our ability to deliver our ambitious connection targets in GD23, and optimise the contribution of our network to Northern Ireland's target of net zero carbon.

2.3.2 Opex Allowances

It is in the best interests of our customers, our stakeholders, the Utility Regulator, and firmus energy itself that the operation costs we incur are efficient and reasonable.

The costs incurred in 2017 to 2020 have been incurred efficiently and reasonably, relying on internal and statutory procurement processes.

In several key line items, namely Legal & Professional fees and IT & Telecoms costs, these efficiently incurred costs have exceeded GD17 Final Determination allowances.

In order to ensure regulatory and statutory compliance, and to maintain and refresh the resilience and efficiency of our IT and telecoms infrastructure, it is vital that our GD17 expenditure is appropriately assessed as a basis for which we are forecasting costs for the GD23 period. Details supporting our GD23 forecast costs are included in Part 6 of this document.

2.3.3 New Connections

Owner occupied connections have proved challenging throughout the GD17 period. Without the necessary allowances to cover the costs of energy advisors, advertising and marketing, incentives and support costs, our ability to achieve future connections - particularly our ambitious GD23 targets - will be significantly and adversely impacted.

In the context of a price sensitive market, where customers have increasingly more options and where natural gas has recently seen its competitive advantage diminishing, it would be hugely damaging to achieving connections and the immediate benefits of reduced CO_2 emissions, should this incentive allowance be decreased. Conversely, it is the view of firmus energy that the incentive must be (marginally) increased for the GD23 period, from a GD17 forecast in 2022 of £465 per connection to £506 per connection. Our rationale for this requirement is further discussed Part 5 of this document.

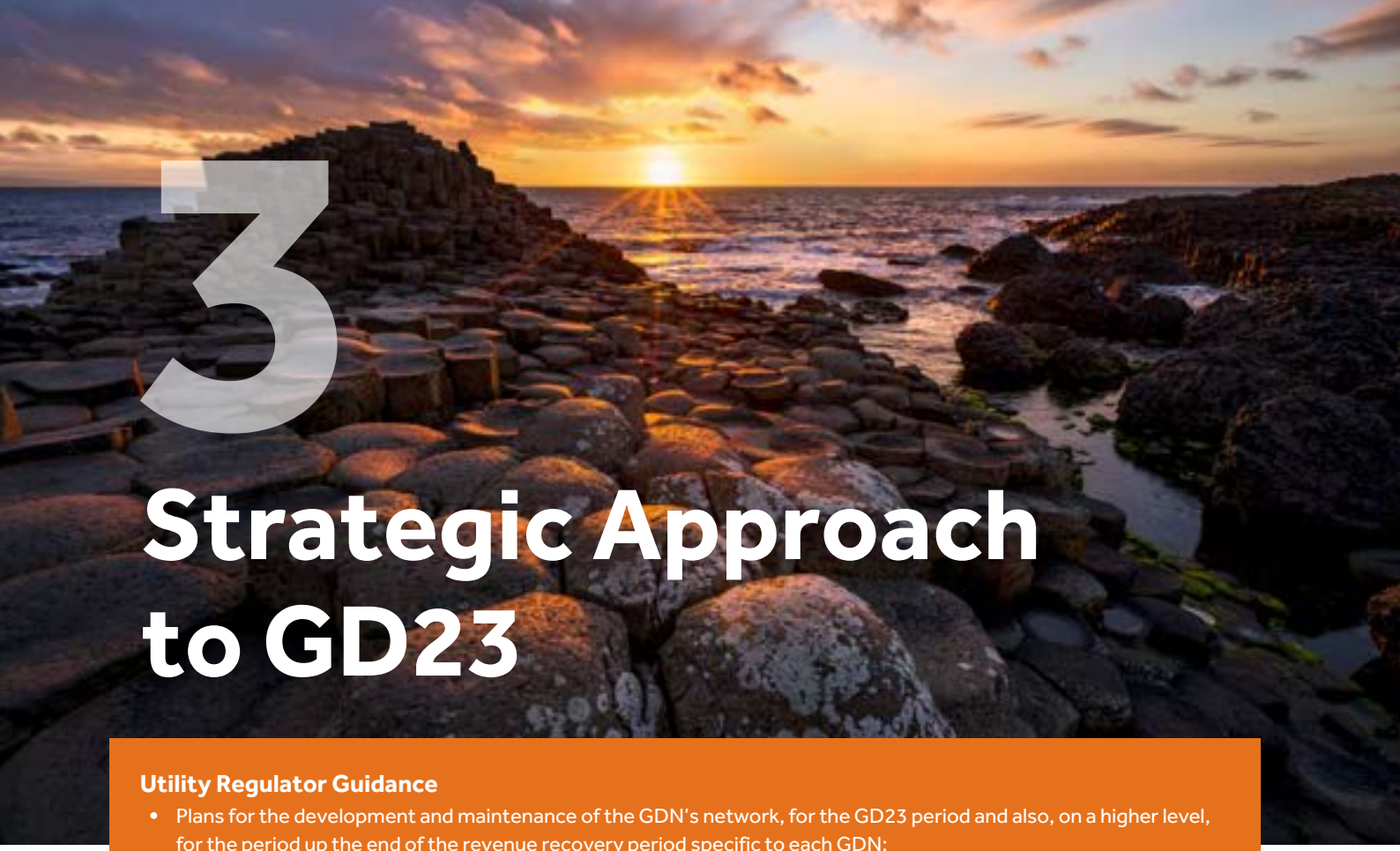
2.3.4 The Uncertainty Mechanism

The most recent modifications to the firmus energy Distribution Conveyance Licence were made on 29 January 2019. The updated Designated Parameters and Determination Values outlined in Licence Condition 4.9 are resultant from the GD17 Price Control for Gas Distribution Networks Final Determination decision paper and notice of modifications, published on 28 October 2016.

The subsequent additional allowed capex resultant from recent licence extensions noted above are not reflected in the current Licence and will necessitate retrospective adjustments under the uncertainty mechanism when GD17 comes to an end.

We explore some further issues for consideration under the uncertainty mechanism in Part 13, including the Bushmills reinforcement project outlined in our GD23 Supplementary paper provided to the Utility Regulator in April 2021.

Natural gas and firmus energy's modern infrastructure, particularly in the medium to longer term, will play a key role in supporting this journey to net zero. We believe the energy landscape in 2028 will be markedly different from when we embark upon GD23, and we are preparing to ensure we are best placed to contribute to the evolving energy transition in Northern Ireland.



3 Strategic Approach to GD23

Utility Regulator Guidance

- Plans for the development and maintenance of the GDN's network, for the GD23 period and also, on a higher level, for the period up the end of the revenue recovery period specific to each GDN;
- Details on how the GDN intends to develop its business during the GD23 price control period, the key outputs and outcomes it intends to achieve as well as the investment anticipated to be needed to do.

3.1 The context for our GD23 Plan

3.1.1 Introduction

The GD23 price control period (2023 – 2028) will be vitally important for Northern Ireland's progression towards a net zero carbon energy target by 2050, and the future of Northern Ireland's natural gas industry. This net zero target is enshrined in legislation[24] with the Committee for Climate Change publishing specific pathways for Northern Ireland as part of its Carbon Budget process.[25]

On 20th April 2021, the UK government announced plans to accelerate its' plans for decarbonisation, by enshrining into law the world's most ambitious climate change target to reduce emissions by 78% by 2035 (compared to 1990).[26]

firmus energy, and the wider natural gas industry, has a critical role to play in this journey. Whilst our Business Plan has been developed to continue safely and efficiently promoting the development of our natural gas network, it also seeks to optimise the contribution of natural gas and our asset infrastructure in the decarbonisation of Northern Ireland throughout the GD23 period, and beyond.

Our Plan specifically supports the Utility Regulator's third strategic objective of "Enabling security of supply and a low carbon future." [27]

[24]https://www.legislation.gov.uk/ukdsi/2019/9780111187654/pdfs/ukdsiem_9780111187654_en.pdf
[25] Committee for Climate Change – Sixth Carbon Budget, The UK's path to Net Zero, published December 2020 https://www.theccc.org.uk/wp-content/uploads/2020/12/The-Sixth-Carbon-Budget-The-UKs-path-to-Net-Zero.pdf
[26] https://www.gov.uk/government/news/uk-enshrines-new-target-in-law-to-slash-emissions-by-78-by-2035
[27] Utility Regulator's Corporate Strategy 2019 – 2024 https://www.uregni.gov.uk/sites/uregni/files/media-files/Corporate%20Strategy%202019-24%20final%20for%20web.pdf

Our Plan also strongly supports the Northern Ireland Executives' Programme for Government and its outcomes regarding protection of the environment and delivering a green (carbon-neutral) economy.[28]

Our Plan has been built upon 16 years of successful development and growth of the natural gas network in the Ten Towns Licenced Area, and follows extensive engagement with current customers, prospective customers and stakeholders. In preparing our Plan we have undertaken research to ensure that our ambitions for GD23 are aligned, and indeed supported, by those customers we will serve during the GD23 period and beyond, particularly those most vulnerable within our communities. We have also engaged with our stakeholders, with whom we will continue to work closely to deliver our ambitious plan. Our Plan is endorsed by our shareholders, who are committed to supporting the significant investment required to deliver our commitments, for the fair return included in our submission.

We strive for continuous improvement. Our GD23 Business Plan submission to the Utility Regulator builds upon lessons learned from previous price control reviews, including GD17. We have worked to submit a Business Plan which delivers over and above that which is required within the Utility Regulator's published Regulatory Instructions and Guidance (RIGS), and to ensure our submission is ambitious, efficient and achievable within the GD23 period.

3.1.2 Regulatory and Policy Context - Northern Ireland Energy Strategy

For GD23, all gas distribution businesses will need to embrace a new 'business as usual' approach that will be essential to deliver for our customers in a rapidly changing policy environment. The ultimate goal of this new policy environment is clear – decarbonisation. However, the roadmap of how we get there is not yet set out. As such, we need to be more flexible, agile and dynamic in our approach than ever before. We need to be able to invest in 'no regrets' projects that start our journey towards the goal of decarbonisation whilst being ready to adjust to emerging policy changes, as Northern Ireland's energy strategy becomes ever clearer over time.

Whilst the Department for Economy (DfE), the Utility Regulator and firmus energy continue to share the principal objective of developing the natural gas network, this must be considered in the evolving energy policy landscape in Northern Ireland. This is alongside the primary legislation previously discussed that enshrines the 2050 net zero target into law.

The timeline for delivery of the new Energy Strategy for Northern Ireland presents challenges for both us and the Utility Regulator, in our respective preparation and review of a Business Plan for the GD23 period. This has been acknowledged in the Utility Regulator's Approach to GD23, published in November 2020.[29] We have prepared our GD23 Business Plan in alignment with the Utility Regulator's prevailing principle objective in its regulation of gas, specifically, "...to promote the development and maintenance of an efficient, economic and coordinated gas industry in Northern Ireland..." [30] and we acknowledge and welcome the Utility Regulator's intention to provide appropriate flexibility with GD23 considerations for out-workings of Northern Ireland's Energy Strategy.[31]

[28] Northern Ireland Executive Programme for Government – Draft Outcomes Framework Consultation Document, published 25th January 2021 https://www.northernireland.gov.uk/programme-government-pfg
[29] Para 4.6 of the Utility Regulator's Approach to GD23 (published November 2020) https://www.uregni.gov.uk/sites/uregni/files/media-files/2020-11-6%20GD23%20Final%20Approach-%20Final.pdf
[30] Article 14, The Energy (Northern Ireland) Order 2003 https://www.legislation.gov.uk/nisi/2003/419/article/14
[31] Para 4.8 of the Utility Regulator's Approach to GD23 (published November 2020) https://www.uregni.gov.uk/sites/uregni/files/media-files/2020-11-6%20GD23%20Final%20Approach-%20Final.pdf

In preparing our Plan, we recognise the parallel work of the DfE to develop a new strategy to decarbonise the Northern Ireland energy sector by 2050. We are a key participant and stakeholder in the progression of this strategy and will continue to support the DfE and all stakeholders to deliver this in November 2021. The DfE's Energy Strategy consultation (published 31st March 2021) contains clear indications that our network will play an important role in Northern Ireland's future energy mix, both in the short term by decarbonising heating by replacing oil heating with natural gas, and in the medium to longer term by transitioning from natural gas to renewable fuels being conveyed within our infrastructure.

Our ambitious plan supports the longer-term sustainability of our network asset and will, in turn, enable access to the renewable fuels which will be conveyed through our network in the future to almost 104,000 energy consumers, by the end of the GD23 period.

This is particularly important given the dominance of home heating oil (kerosene), used in c.60% of properties compared to just 23.8% in the rest of the UK.[32]

Metering

Operationally, we have worked, and will continue to work, with the Utility Regulator and wider industry stakeholders in our shared objective to determine and deploy a long-term metering solution to meet the reasonable expectations of Northern Ireland's natural gas customers. Whilst our submission is based upon the current costs of metering activities (for example, connection and maintenance), we are fully committed to this longer-term goal. We are a key participant and contributor to the current industry work-stream anticipating delivery of a future metering solution for Northern Ireland's gas customer, in Q2 2022.

We are committed to securing a metering solution which will serve our current and future customers through GD23, and for many years beyond. The solution will ensure we are best placed to embrace an evolving energy landscape, providing technology driven benefits for our customers and digitisation of energy information, which will allow customers and service providers alike, to support future improvements and efficiencies across our industry.

We welcome the Utility Regulator's recognition that the GD23 price control will need to provide sufficient flexibility to facilitate consideration of costs and arrangements associated with our industry's future metering solution.[33]

Business Plan Assessment

We note the Utility Regulator's introduction of Business Plan Assessments for DNOs, as part of the GD23 price control review. firmus energy is supportive of this new element of the Utility Regulator's review. We are confident that our plan works to sustain a safe and reliable network infrastructure, with ambitious growth targets which will be delivered efficiently, and underpinned by continuous engagement with our customers and stakeholders.

[32] NI House Condition Survey, published 2018
[33] Para 4.26 of the Utility Regulator's Final Approach to GD23, published November 2020
https://www.uregni.gov.uk/sites/uregni/files/media-files/2020-11-6%20GD23%20Final%20Approach-%20Final.pdf

3.1.3 Our Role

We recognise the important role that we must play in the GD23 period, promoting the development of our natural gas network whilst supporting wider policy objectives of decarbonisation now and in the future. This is central to our purpose, mission and vision as a company:

Our Purpose, Mission and Vision

Our Purpose
To optimise return from our investment in the gas network and other technologies in order to facilitate transition to net zero carbon.

Our Mission
To deliver social and shareholder value, by being energy and environmentally market-led, profitable, innovative, efficient, sustainable and socially responsible in light of transition to a zero carbon economy.

Our Vision
To become the gas provider of choice in the Northern Ireland energy market, remove oil dependency, decarbonise and be a key energy influencer (for the consumer, business, utility regulator, government and other stakeholders).

Our view on the role we must play in the GD23 period is underpinned by a set of guiding principles we have identified through our planning process:

a) Building upon 16 years of successful operations

Since the award of our license to develop the Ten Towns network in 2005, we have delivered significant annual growth, every year for 16 years. This growth is set to continue for the remainder of the GD17 price control period (2017 – 2022) and throughout the GD23 price control period (2023 – 2028). In successfully delivering our network and operational growth safely and efficiently, we have materially outperformed those targets anticipated at the time of our license award.

Safety is the foundation upon which we have successfully grown our business, and our GD23 Business Plan is committed to sustaining this success, whilst continuing to develop and improve. Our approach to safety matters and improvements for GD23 are outlined in Part 9 of this document. Safety considerations capture our employees, our customers, and the general public. Anticipated costs for ensuring the continued safe development of our network have been derived from industry best practice, experience, and our drive for continuous improvement.

b) Actively engaging with our customers and stakeholders

Consumer and stakeholder engagement has been, and will remain, a critical component of our success. Our GD23 Business Plan continues to place our customers front and centre of our network development and considers those both connected to our network and those who have yet to connect to our network. We consider our regulatory obligations, including our regulatory Codes of Practice, as mere baselines to the superior levels of service we continually strive to offer, and improve, for our customers.

We work to always 'give back' to those communities in which we have been, and will be, developing our natural gas network. We are currently accredited CORE Silver status by Business In The Community, for our Corporate Social Responsibility (CSR) activities and in two of the four years of GD17, to-date, we have been shortlisted for Business In The Community's most responsible business in Northern Ireland.

In preparing our GD23 Business Plan, we have undertaken several additional surveys and hosted consumer focus groups, in order to take a deeper dive into what our customers want and expect from their gas network provider. The GD23 period will realise several key challenges for all energy consumers in Northern Ireland, including the need to start on the route to decarbonisation, whilst at the same time keeping costs to consumers down. We believe natural gas has a significant contribution to make to Northern Ireland's Energy Transition, in a cost effective way that preserves the value of the infrastructure that customers have invested in over the past 16 years. As such, we have been particularly keen to understand and consider within our plan, what prospective domestic consumers believe to be barriers to connecting to our natural gas network and to understand the preparations being made by our largest I&C customers to decarbonise their energy requirements.

c) Delivering value for money

Since firmus energy's inception in 2005, we have worked tirelessly to deliver value for money for each customer connected to our network, and indeed, those customers who have yet to connect to our network. This approach has progressed hand in hand with the safe development and maintenance of our infrastructure and operations. From 2005 to 2020 we have delivered significant efficiency and productivity gains, and our GD23 Business Plan builds upon our drive for continuous improvement and continues this trend of doing 'more for less'. Our efforts have ensured final tariffs for current and future customers have, and will be, sustained as low as possible. We believe this alone supports our view that our development of the natural gas network in Northern Ireland is a regulatory success story.

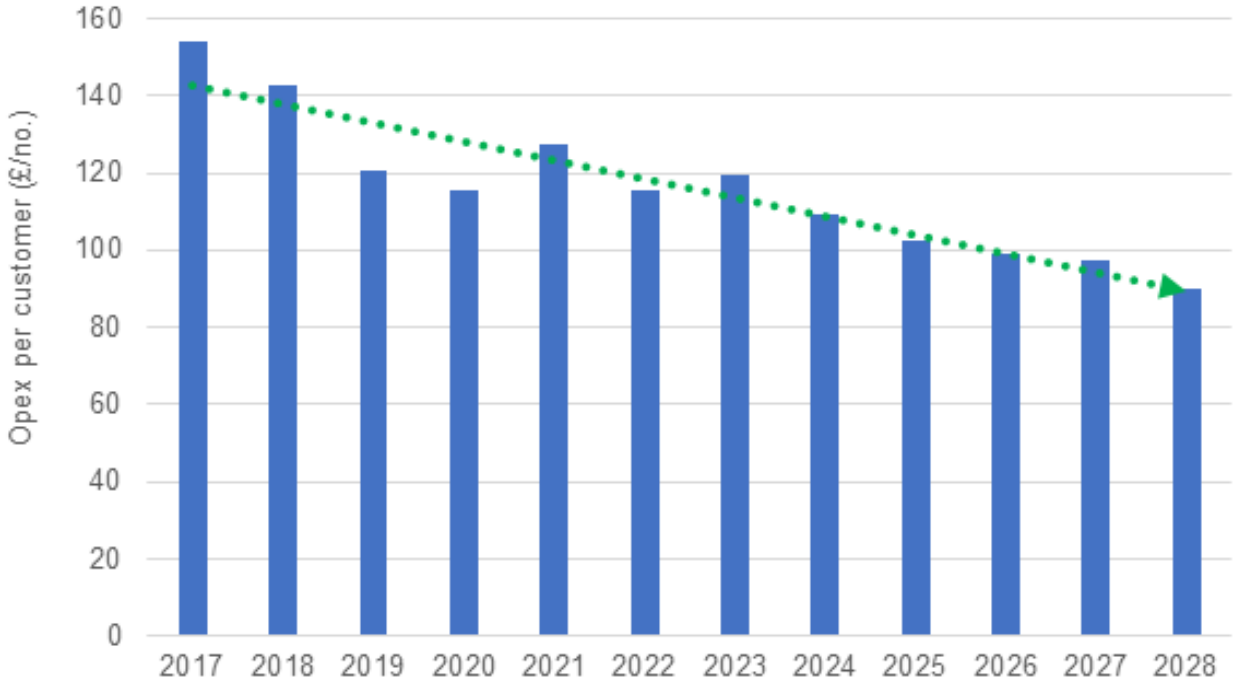
Our continued efforts to deliver value for money will underpin delivery of our GD23 Business Plan, not only for the GD23 period (2023 to 2028), but for the years beyond. Our GD23 Business Plan will deliver a reduction in network conveyance tariffs of 11%, whilst at the same time tackling the challenge of decarbonising our network to ensure the long term value of our infrastructure is realised for our customers. We have listened to our consumers, who say they expect us to be environmentally aware, whilst keeping costs to them down.

In preparing our GD23 Business Plan, we have worked to quantitatively assess the efficiency and productivity of how we are planning to deliver our GD23 outputs, and how we might be benchmarked in this regard.

We discuss efficiencies further in Part 10 of this document. Figure 3.1 illustrates our downward trend in opex [34] costs per customer since the beginning of GD17, and how this is forecast to continue throughout GD23. This reducing cost per customer supports our efforts to continually improve our value for money offering for all current and future customers.

[34] Controllable opex

Figure 3.1 firmus energy's controllable opex cost per customer 2017 to 2018



d) Contributing to Northern Ireland's Energy Transition towards net zero carbon - Policy developments

The GD23 period is set to involve the most significant changes to energy in the history of Northern Ireland.

The goal of Northern Ireland's developing energy strategy is clear, however, the journey will become clearer upon development of policy, legislation, and regulation to deliver this goal. As outlined earlier in this section, firmus energy and the wider natural gas industry is optimally positioned to play a significant role in Northern Ireland's Energy Transition towards net zero carbon by 2050. We have been an active participant in the ongoing development of Northern Ireland's Energy Strategy, and we welcome the publication of the DfE's Energy Strategy consultation, published on 31st March 2021, which recognises the role to be played by our modern, polyethylene-based network infrastructure. Our network is well positioned to support the conveyance of renewable fuels (such as biomethane and hydrogen) in the medium to longer term phases of our journey towards net zero carbon from energy in Northern Ireland.

Whilst the nature of our role may evolve in the years to 2050, significant contribution can, and will, be made towards those short, medium, and long-term objectives required to deliver decarbonisation in Northern Ireland, and this will be expected and required from those customers connected to our network.

Within the GD23 price control period we fully anticipate facilitating grid injection of renewable fuels (e.g. biomethane) into our network, and whilst policy development will inevitably follow the DfE's publication of their Energy Strategy in November 2021, firmus energy believes that the known end goal (of net zero carbon in Northern Ireland) provides a robust foundation upon which we can proactively progress, with the Utility Regulator's support, our contribution to decarbonisation throughout the GD23 period.

Short term objectives

Since the beginning of our network development in 2005, our customers have saved over 2.3m tonnes [35] of CO_2 from entering Northern Ireland's atmosphere. This contribution to the decarbonisation of Northern Ireland's energy landscape has been significant, and the potential to add to this notable achievement remains sizeable throughout the GD23 period and beyond. Again, we are keen to progress investment in 'no regrets' projects that expedite our journey towards the goal of decarbonisation whilst remaining sufficiently agile to adjust to the emerging policy changes which will support Northern Ireland's Energy Transition.

Over the GD23 period, conversion of heating within our network area, from home heating oil to natural gas, has the potential to deliver immediate and significant reductions in Northern Ireland's CO_2 emissions. The dominant fuel in Northern Ireland remains home heating oil (kerosene), which is used in c.60% of properties, compared to just 23.8% in the rest of the UK.

Immediate CO_2 savings of up to 48% can be made by switching from home heating oil to natural gas. As well as being a much less polluting fossil fuel than home heating oil (and even more so, coal), the carbon benefits of converting to natural gas are typically enhanced by heating system boiler efficiency and system controls improvements.

As we enter GD23, our penetration (connections made to the network as a percentage of the properties where gas is available) will be 35%. The potential impact to CO_2 emissions therefore remains significant as penetration increases - we have a proven track record of making these conversions happen.

A critical resource required to achieve our ambitious connection numbers and associated decarbonisation benefits is the Owner Occupied (OO) connection incentive allowance. As identified in Part 1.12 of our Business Plan, this is a particular area we believe the Utility Regulator can enable the successful delivery of our GD23 Business Plan. It will play a vital role in supporting our engagement with customers, and more specifically, the marketing, advertising, Energy Advisors, and operational activity needed to maximise our contribution to Northern Ireland's Energy Transition. For most of the properties we plan to connect in GD23, they will have already been contacted, or have been in receipt of our advertising and marketing material. The cost of conversion has consistently dominated the 'top spot' in our customer surveys as the greatest barrier to connection for our prospective customers. Whilst our advertising and marketing activities will continue to evolve to optimise reach, realising the wider benefits of CO decarbonisation must be supported by allowances which enable continued connections, particularly OO connections, to our network.

By the end of the GD23 period we will have connected almost 104,000 properties to our network, with our customers saving c.300,000 tonnes of CO_2 per annum from entering Northern Ireland's atmosphere. Over the GD23 horizon alone, our customers will deliver almost 1.7m tonnes of CO savings, when compared to their choice of fuel prior to converting to natural gas.

We are also seeking to engage with the Utility Regulator to progress five innovation projects throughout the GD23 period, which would advance the conveyance of renewable fuels to customers connected to our network, and further support our contribution to Northern Ireland's Energy Transition.

In preparing our GD23 Business Plan we sought feedback from the largest I&C customers connected to our network, regarding their future energy requirements and plans for decarbonisation. The feedback is very much aligned to our ambitions to decarbonise the gas being conveyed within our network. Support for, and progression of, our innovation projects is key to our ability to ensuring sustainability of firmus energy's infrastructure and meeting the future energy requirements of all customers, but particularly those larger energy consumers connected to our network.

[35] 2,339,416 tonnes as at the end of 2020

Medium and longer term objectives

To further support the transition to net zero in the medium term (10-20 years), we anticipate that the natural gas that we transport will progressively be replaced by lower carbon solutions. The energy that we convey is unlikely to be 100% natural gas towards the end of our license recovery period (2045).

We are presently engaged with the Utility Regulator to develop regulatory, technical and commercial frameworks to facilitate biomethane injection into our network. We believe this work stream will provide the platform upon which future energy considerations within the natural gas infrastructure will be considered.

In the longer term, our modern natural gas infrastructure, constructed principally from polyethylene (PE) plastic, has helpful characteristics to support the introduction of future net zero carbon alternatives to natural gas, such as hydrogen.

We look forward to the clarity of a more detailed roadmap, which we believe will become apparent upon the DfE's publication of their Energy Strategy for Northern Ireland, and we acknowledge the subsequent need for developing policy, legislation and regulation which will follow.

In the interim, we believe we must progress with our shared regulatory objective to promote the natural gas industry, whilst ensuring the GD23 price control framework is sufficiently equipped to accommodate projects and innovation which will be necessary to develop, if not expedite, Northern Ireland's journey toward net zero carbon emissions.

In our GD17 Final Determination, the Utility Regulator introduced an adjustment to volumes, post 2022. The adjustment acknowledges longer term volume forecast uncertainty and reduces volumes annually, and linearly, by 20% at the end of 2045 (i.e. the end of our recovery period). In preparing our GD23 Business Plan, we consider the context and relevance of this adjustment has come into much sharper focus in the years since our GD17 Final Determination. Whilst we acknowledge the further clarity which is anticipated upon publication of the DfE's Energy Strategy for Northern Ireland in November 2021, we believe forecast volume uncertainty in the context of Northern Ireland's energy transition is greater than at the time of our GD17 Final Determination. As such, we have revised the 20% reduction in volumes over the period 2023 to 2045 to 25% over the same period within our GD23 Business Plan. We discuss this volume adjustment further in Part 5.2.2.

Further potential to enhance decarbonisation across our network area in the GD23 period

We remain committed to bringing the benefits of natural gas to as many properties as possible across our Licensed Area and continuing to promote and develop the natural gas network in Northern Ireland. This is a particularly important focus as we anticipate an energy landscape in Northern Ireland which will be very different at the end of the price control period (2028) than what it looks like as we embark upon the GD23 price control period.

As outlined in Part 1 and detailed in Part 7 of this document, firmus energy has identified 10 potential 'New Areas' for network expansion.

All 10 opportunities are within, or in close proximity to our Licensed Area, and we would propose to develop these 10 new areas as 4 regional projects. This development would immediately increase the potential for energy decarbonisation in Northern Ireland, and provide an opportunity for almost 19,000 properties to access renewable fuels being conveyed in our infrastructure in the medium to longer term.

The length of mains required to make our network accessible these additional properties is 203.5km. Figure 3.2 provides an overview potential across the 4 regions.

Figure 3.2 New Areas for potential development

Region	Areas Covered	Network Length	Properties Passed
1	Eglinton Ballykelly Greysteel	45 km	3,551
2	Portrush Castlerock	58.7 km	6,128
3	Crumlin Kells Glenavy	41.3 km	4,172
4	Kilkeel Rostrevor	58.5 km	4,808
Total		**203.5 km**	**18,659**

The total investment required to extend our network to the 10 new areas outlined in Figure 3.2 is £19m. In line with the Utility Regulator's current economic threshold for securing approval to extend our network, we have not included these 10 potential opportunities within our forecasts for GD23. We do, however, look forward to the publication of the DfE's new Energy Strategy for Northern Ireland and the clear road map which this will provide for Northern Ireland's journey to net zero carbon. We anticipate this road map will present an opportunity to progress this potential for further decarbonisation. We would hope to advance this opportunity with the Utility Regulator in accordance their intention to provide sufficient flexibility within the GD23 price control to accommodate out-workings of the DfE's Energy Strategy.[36] Inclusion of this investment within the GD23 period would continue to deliver a material reduction in network tariff for current and future customers of 8%, throughout the GD23 period, and beyond.

3.1.4 How we have developed our plan- Ethos of our GD23 Business Plan preparation

We have four core values underpinning the ethos by which we conduct our business activities. These values are embedded within our culture and are front-and-centre of each employee's role within our organisation. We have a Values Committee, dedicated to the ongoing promotion and recognition of how our values positively impact our day-to-day operations. Whilst our Values Committee provides oversight and guidance for all employees, ultimate responsibility for ensuring our values are embedded into our culture resides with our Managing Director, supported by the Board.

Our values of empathy, clarity, integrity and teamwork are the pillars upon which we have developed, and will deliver, our GD23 Business Plan.

Our values of empathy, clarity, integrity and teamwork are the pillars upon which we have developed, and will deliver, our GD23 Business Plan.

Empathy:
Perhaps best illustrated by our extensive, and continual dialogue with customers and stakeholders.

Clarity:
Our Business Plan has been developed transparently, with supporting narrative and supplementary papers presented to the Utility Regulator, to outline our approach in each area.

Integrity:
We have presented our GD23 Business Plan with evidence and substantiation to support the cost allowances we believe are necessary to deliver our ambitious GD23 targets.

Teamwork:
Preparation of our GD23 Business Plan has involved all of our departments. Furthermore, throughout the GD23 price control review, we wish to work closely and collaboratively with the Utility Regulator to deliver our shared objectives, including the continued development of our natural gas network and preparations to ensure we are optimally positioned to contribute to Northern Ireland's Energy Transition.

[36] Utility Regulator's Final Approach to GD23, para 4.8, published November 2020
https://www.uregni.gov.uk/sites/uregni/files/media-files/2020-11-6%20GD23%20Final%20Approach-%20Final.pdf

Our GD23 Business Plan Methodology

As outlined already in this document and covered in more detail in Part 5 of this document, we have set ourselves ambitious targets for growth and performance throughout the years 2023 to 2028, and beyond. In Part 2 we have outlined our performance in GD17 and have identified areas of challenge, as well as areas where we have worked to outperform.

We are cognisant of the size of the task required to achieve our GD23 goals and have taken steps in preparing our Business Plan to ensure we have the best chance of success.

Figure 3.3, below provides an overview of the methodology we followed in our Business Plan preparations, comprising 12 key steps;

Figure 3.3 Steps in our GD23 Business Plan Methodology

STEP 1	GOVERNANCE	• Established governance structure to deliver GD23 price control review, ultimately reporting to our Board;
		  ○ Board sub-committee (Price Control Committee (PCC)
		  ▪ Chaired by firmus energy NED
		  ▪ Comprised of two additional firmus energy Board members
		  ▪ Finance Director
		  ▪ Regulation and Pricing Director
		  ○ Steering Group
		  ▪ firmus energy Senior Management Team
		  ▪ Regulatory Affairs
		  ▪ Business Planning
		  ○ Operational Team
		  ▪ Regulatory Affairs
		  ▪ Business Planning
		  ▪ Business knowledge owners (e.g. Engineering and Finance)
		• Assignment of key tasks to Operational Team
		• Project timeline established – (GANTT chart)
		• Review of GD17 lessons learnt
		• Key themes for GD23 agreed

STEP 2	EARLY ENGAGEMENT WITH THE UTILITY REGULATOR	• We engaged early, and proactively, with the Utility Regulator's GD23 price control team. For example;
		  ○ Board sub-committee (Price Control Committee (PCC)
		  ○ GD23 Approach consultation
		  ○ Business Plan Template and Regulatory Instructions and Guidance
		  ○ Connection Incentive Review
		• We are committed to working with the Utility Regulator to deliver our shared goals for GD23

STEP 3	EXTERNAL SUPPORT	• 3rd party experts engaged to support, challenge and review our GD23 Business Plan development and submission • 3rd party experts have supported supplementary papers on a number of key areas (e.g. WACC, benchmarking and efficiencies) in order to further inform the Utility Regulator's considerations of our business plan
STEP 4	ENHANCED CONSUMER ENGAGEMENT	• In preparing our GD23 Business Plan, we have undertaken a number of enhanced consumer engagement activities, such as customer focus groups and surveys • Our enhanced activities garnered feedback from current customers and customers not yet connected to our network. This feedback is a key input to our GD23 Business Plan • Key themes addressed include our customer service offering, barriers to conversion and vulnerability
STEP 5	CAPITAL EXPENDITURE (CAPEX)	• Determination of our core network build out and future new build development, informing investment required for the GD23 period and key metrics such as properties passed • Part 1.12 of our Business Plan identifies domestic service and meter allowances as key areas of investment required to support delivery of our GD23 Business Plan • 10 'New Areas' have been identified where we believe development of the natural gas network is the most appropriate way to support Northern Ireland's goals for decarbonisation. We are keen to explore this potential further with the Utility Regulator.

STEP 6	CONNECTION GROWTH	• Determination of our connection growth forecast for the GD23 period exceeds GD17 run rate in context of GD17 performance
		  ○ OO – ambitious growth forecast in GD23 when compared to GD17
		  ○ Northern Ireland Housing Executive (NIHE) (and HA) – forecast conversions following engagement with NIHE and housing associations
		  ○ NB – forecast connection potential following engagement with new housing developers in our network area
		  ○ I&C - Connections forecast for GD23 builds upon our experience in GD17 and our anticipated demand in the next six year period

STEP 7	VOLUMES	• Volumes are primarily derived from current and forecast growth in connections to our network • Whilst large contract volumes are forecast individually, a key input to domestic volumes is our average consumption experience • A key output of our volume forecast is quantification of the significant contribution our customer base will make to Northern Ireland's journey towards net zero carbon during GD23, and beyond
STEP 8	OPERATING EXPENDITURE (OPEX)	• Our requested opex allowances are based upon GD17 performance, refined to support GD23 delivery (including atypical expenditure), then adjusted for challenging forecast efficiency improvements • Part 1.12 of our Business Plan identifies manpower and maintenance allowances as key resources to support delivery of our GD23 Business Plan
STEP 9	BENCHMARKING AND EFFICIENCY	• We are committed to continue to do more for less. Our business plan includes challenging efficiency improvements throughout the GD23 period
STEP 10	FINANCIAL MODELLING	• We have undertaken financial modelling and scenario testing to ensure our GD23 Business Plan is financially robust • Part 4 of our submission outlines our GD23 financial statements, and financeability outlook for GD23
STEP 11	DELIVERABILITY	• Our GD23 Business Plan will deliver a reduction of 11% in conveyance charges for current and future customers for GD23 and beyond • Investment in our GD23 Business Plan remains critical in achieving our shared goal with the Utility Regulator, to promote the development of our natural gas network. As such, deliverability of our GD23 Business Plan submission is underpinned by a WACC commensurate with the task at hand. • Operationally, our Board, Management and Staff are fully committed to the successful delivery of our GD23 Business Plan • Our business plan is ambitious and we have not underestimated the challenges to delivering our plan successfully
STEP 12	BUSINESS PLAN SUBMISSION	• Our GD23 Business Plan has been submitted within the Utility Regulator's determined timeline, and in accordance with the Utility Regulator's regulatory instructions and guidance (RIGS) • Our GD23 Business Plan has been subjected to extensive internal and 3rd party scrutiny • Our Board has approved, and is committed to supporting the delivery of our GD23 Business Plan

Our GD23 strategic priorities

At the end of GD23 we will have:

- Optimised the opportunity to connect as many customers as possible to our network in the most efficient and economic manner possible. Continued customer growth is a key focus for us during the GD23 period. By the end of this period our plan is to have almost 104,000 customers connected to our network, with each of these connected properties making an important contribution to the decarbonisation of Northern Ireland's energy networks.

- Continued delivery of efficiency improvements that ensure our services remain affordable. In continuing to connect customers to our network, we want to ensure that our operations are focused around achieving this in the most efficient and economic manner possible. Increasing energy efficiency will be a key area in which we endeavour to optimise.

- Delivered brilliant customer service, including to vulnerable customers. We will continue to engage with and listen to our customers, to meet their needs with excellent customer service, including addressing their changing needs, and embedding continuous improvement in our processes and delivery.

- Maximised the immediate opportunity to contribute towards the journey to net zero Northern Ireland's journey towards net zero is extremely important to us. We will work to maximise all immediate opportunities to contribute to this journey within the GD23 period. To do so, we will be exploring exciting and innovative renewable opportunities. Our polyethylene infrastructure is comparatively new, which will afford us the ability to explore these opportunities in the future, with reduced constraints. Connecting customers to natural gas, will extend the availability of renewable alternatives to our customers, and ultimately, further contribute towards Northern Ireland's decarbonisation.

- Tested opportunities to deliver through innovations. We have identified five innovation projects which will test alternative paths to net zero carbon energy.

- Pursued our ambition in an environmentally sensitive way. We will be a responsible corporate citizen, minimising our own environmental footprint.

3.2 Our GD23 plan at a glance

We are forecasting significant growth over the GD23 horizon. The focus of this growth will be securing and supporting 36,612 additional connections to our network, conveying annual volumes of 87m therms in 2028, and saving almost 300,000 tonnes of CO_2 per annum by the end of the GD23 period.

Figure 3.4 provides an overview of key metrics within our GD23 Business Plan.

Figure 3.4 High level view of our GD23 Business Plan

	GD17		GD23						
	2021	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**GD23 Total**
Cumulative Properties Passed	176,024	192,118	195,632	197,275	198,859	200,373	201,880	203,380	
New Connections	5,845	6,111	6,500	6,335	6,171	6,016	5,866	5,724	**36,612**
Total Connections	60,398	66,509	73,009	79,344	85,515	91,531	97,397	103,121	
Penetration rate (%)	34.31%	34.62%	37.32%	40.22%	43.00%	45.68%	48.24%	50.70%	
Gas Volume (m therms)	68	73	76	79	82	84	85	87	**492**
CO2 Savings ('000 tonnes)	231	247	256	269	275	283	286	292	**1,661**
Capex (£'000)	22,175	25,098	18,698	13,038	12,141	10,593	10,599	10,753	**75,823**
Opex (£'000)	8,602	8,626	9,666	9,648	9,795	10,101	10,589	10,409	**60,208**
Total Employees	70.5	70.8	71.8	71.8	72.8	73.8	73.8	73.8	

Numbers are subject to rounding

3.3 Plans for developing our network

Our network development focus in GD17 was on the expansion of the network through the installation of 897km of new infill mains. Given the successful delivery of our GD17 plans, in GD23 our focus will switch to increasing the number of customer connections. This section provides an overview of the key outputs associated with our network development: main's length and properties passed, connections, network penetration, volumes and CO_2savings. Information is also provided introducing the capital and operating expenditure associated with our plans.

3.3.1 GD23: Main's length and properties passed

In GD17, we accelerated our mains laying programme, leaving approximately 35km of other mains to be laid in 2023 (the first year of GD23) until it is complete. Additionally, c.14km per annum of additional mains is anticipated in GD23 in response to new build developments. We have also forecast c.52km of security of supply mains and c.8km of mains relating to an I&C connection. As shown in Figure 3.5 below, this corresponds to a total new mains length of 180km over the period, with total mains length reaching over 2,300km by the end of 2028.

c.1,900 properties will be passed by the 35km of other mains described above, which will conclude our mains laying programme by the end of 2023. In addition to this, the c.14km of annual mains length relating to new build properties is expected to pass an additional 1,500 properties annually in GD23. As shown in Figure 3.5 below, by the end of 2028 we forecast that a total of 203,000 properties will be passed by our network. Further information on these assumptions is provided in Part 7 of our Business Plan.

Figure 3.5 GD23 forecast new mains, and cumulative properties passed

	2023	2024	2025	2026	2027	2028	Total
New Mains (km)	74	30	29	17	16	14	**180**
Cumulative Mains (km)	2,204	2,234	2,262	2,280	2,296	2,310	
Cumulative Properties Passed	195,632	197,275	198,859	200,373	201,880	203,380	

Numbers are subject to rounding

3.3.2 Beyond GD23: Main's length and properties passed

Looking beyond GD23, the only anticipated growth in the number of properties passed and mains length laid relates to new build customers. These are assumed to continue at the rates outlined in our GD23 Business Plan from 2029-2045: we have forecast an additional 1,500 new build customers will be passed, using approximately 14km of additional mains annually.

3.3.3 GD23: Connections, network penetration and network volume

Connections

We have developed our GD23 new connections assumptions through a bottom-up assessment across different customer segments. A detailed breakdown of how we derived our connections assumptions is provided in Part 5 of this Business Plan. This section provides an overview of the connection outcomes our development seeks to deliver in GD23.

Figure 3.6 summarises our annual new connection forecasts throughout GD23 by customer category:

Figure 3.6 Annual GD23 connections forecasts by customer category

	2023	2024	2025	2026	2027	2028	Total
Type	**No's**	**No's**	**No's**	**No's**	**No's**	**No's**	**No's**
Owner Occupied	3,852	3,685	3,524	3,371	3,224	3,084	20,740
New Build	1,500	1,500	1,500	1,500	1,500	1,500	9,000
NIHE	1,000	1,000	1,000	1,000	1,000	1,000	6,000
I&C	148	150	147	145	142	140	869
Total	**6,500**	**6,335**	**6,171**	**6,016**	**5,866**	**5,724**	**36,612**

Owner Occupied (OO) Connections

We plan to grow our OO connections over the GD23 period by 20,740, taking cumulative OO connections at the end of the GD23 period to 49,091. This represents a 73% growth in this customer category over the six-year period.

In our experience, the greatest rate of connection to our network occurs within the first 12 months of customers having access to the network. In GD23, this dynamic will change, as our core network build-out (and therefore properties passed) plateaus from 2023. From 2024, our OO connections will be sourced from existing mains infrastructure and will require focused support and resourcing, as discussed further in Part 5.5.1. As outlined in Part 1 of this document, retention of the Connection Incentive Allowance is an area where we believe the Utility Regulator can specifically enable the success of our GD23 Business Plan, and one which we consider to be of paramount importance to support delivery our ambitious OO connections target over the GD23 period. Prospective OO customers have told us that the greatest barrier to connecting to natural gas is cost. According to our 2019 and 2020 NISEP funded connections, the average cost to convert a home heating system to natural gas is c.£3,000. This cost resides with the customer; however, the connection allowance must support incentivisation of connections to our network.

a) New Build connections

Our GD23 plan targets 1,500 new build connections for each year of the period. New build schemes are identified through the published planning application and approval report. We then engage closely with key stakeholders including builders, developers, architects and landowners as projects are designed and initiated. Our network engineers and Energy Advisors proactively work to ensure we are informed of new development sites across our network area, and we will continue this discipline to ensure our ambitions are realised throughout GD23, and in the period to 2045. Our forecasts are also supported by NISRA's Population Projections, as outlined in Part 5.3.3.

b) Northern Ireland Housing Executive (NIHE) connections

Our NIHE connections forecast for GD23 has been developed following engagement with our social housing stakeholders, our experience in GD17 and our ambitions for GD23. We plan to grow our NIHE connections over the GD23 period by 1,000 per annum.

We have dedicated Energy Advisors supporting connection growth within the social housing sectors. We work hard to maintain engagement and robust stakeholder relations with all social housing representatives throughout our network. Our Energy Advisors engage routinely with NIHE and HA representatives, where future planning is a key and ongoing discussion. We work continually with our social housing representatives to promote the benefits of natural gas to their tenants; prior to each connection, our Energy Advisors will visit the property to discuss with each social housing tenant their conversion to natural gas, discussing, for example, meter positioning.

c) I&C connections

In GD23, growth in I&C connections (c.900 over the period) is forecast to originate from within the small and medium enterprise I&C customer category. We forecast an average of 145 SME I&C connections in each year of the GD23 period. This is principally based upon our GD17 experience. Regarding the impact of Covid-19 in 2020 and 2021, no fundamental changes are anticipated within this commercial sector over the GD23 period which would suggest a deviation from the average growth experienced during GD17.

Market penetration

Market penetration is a measure of the connections made to our network expressed as a percentage of the total available properties passed which could be connected to our network.

Figure 3.7, below, summarises our market penetration forecast at the end of GD23, compared to the anticipated starting position.

Figure 3.7 GD23 Market penetration forecasts by customer category

	Penetration Rate in 2022	Penetration rate in 2028	Connection Growth
Type	**%**	**%**	**2023-2028**
Owner Occupied	20.9%	35.7%	**20,740**
New Build	96.1%	97.5%	**9,000**
NIHE	68.9%	88.9%	**6,000**
I&C	27.6%	34.3%	**872**
Total	**34.8%**	**50.8%**	**36,612**

Our GD23 Business Plan is ambitious, with total penetration forecast to reach almost 51% by the end of the period, with each new connection to our network immediately contributing to decarbonisation of Northern Ireland's energy landscape. Part 5.4 provides further detail behind the individual penetration rates forecast for each customer segment, including the assumed connection run rates. As shown between Figure 3.6 and Figure 3.7, the primary driver of our network growth in GD23 is from the owner occupied customer sector, showing the importance of having the necessary supporting allowances available to ensure successful delivery, e.g. the Connections Incentive Allowance.

Volumes

Our annual gas volumes are projected to reach c.86.7m therms in 2028, compared to an anticipated volume of 72.6m therms in 2022, representing a 19% increase. As shown in Figure 3.8, below, this growth is primarily driven by domestic customers. Further information on our volume assumptions is provided in Part 5 of this Business Plan.

Figure 3.8 Annual GD23 volume forecasts by customer sector

	2023	2024	2025	2026	2027	2028	Total
Type	therms (m)	therms (m)	therms (m)	therms (m)	therms (m)	therms (m)	**therms (m)**
Domestic	24.9	26.9	28.8	30.6	32.2	33.8	**177.2**
I&C	50.6	52.5	52.8	53.1	53.1	52.9	**315.0**
Total	**75.5**	**79.4**	**81.6**	**83.7**	**85.3**	**86.7**	**492.0**

3.3.4 Beyond GD23: Connections, network penetration and network volume - Connections

Figure 3.9, below, summarises the profile of forecast connections over the longer term to 2045. Further information on the assumptions underpinning the forecasts for each customer category are provided in Part 5 of this Business Plan, and are summarised below:

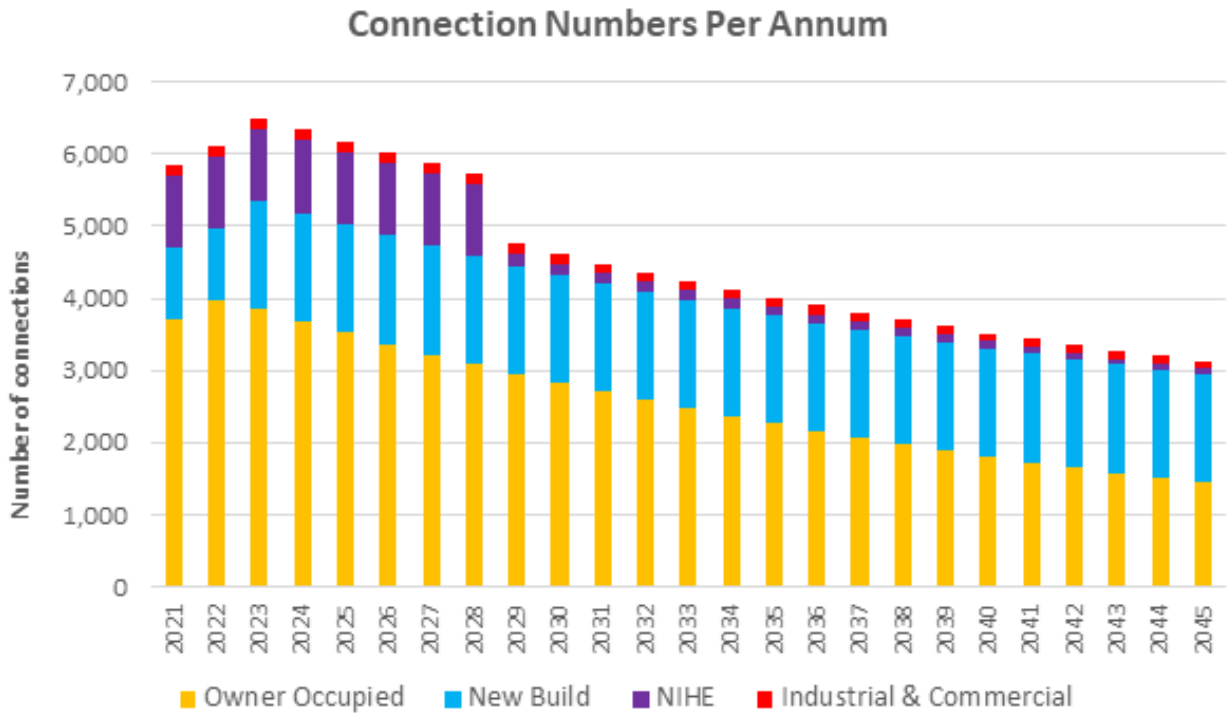
Owner Occupied:
As previously discussed, Owner Occupied connections are forecast to provide the greatest source of growth in GD23, and this is expected to remain true in the period until 2045. Connections are anticipated to decline as penetration continues to increase over time, and new connections decrease accordingly.

New Build:
Our forecast for New Build housing remains constant following the GD23 period, at 1,500 per annum until the end of our forecast horizon in 2045.

NIHE:
As our penetration in the social housing sectors reaches saturation towards the end of the GD23 period, our forecast connections in these sectors decreases accordingly.

I&C:
In line with our GD17 experience, we are forecasting continued growth of an average of 145 connections per annum in the I&C sector, with connections coming from SME customers.

Figure 3.9 Longer term connections forecasts, 2021 to 2045



Market Penetration

Figure 3.10 compares our longer-term penetration rate forecasts to those assumed for GD23. As shown below, almost 74% of properties passed by 2045 are assumed to be connected to our network. This increase from the end of GD23 continues to be driven by growth in Owner Occupied connections.

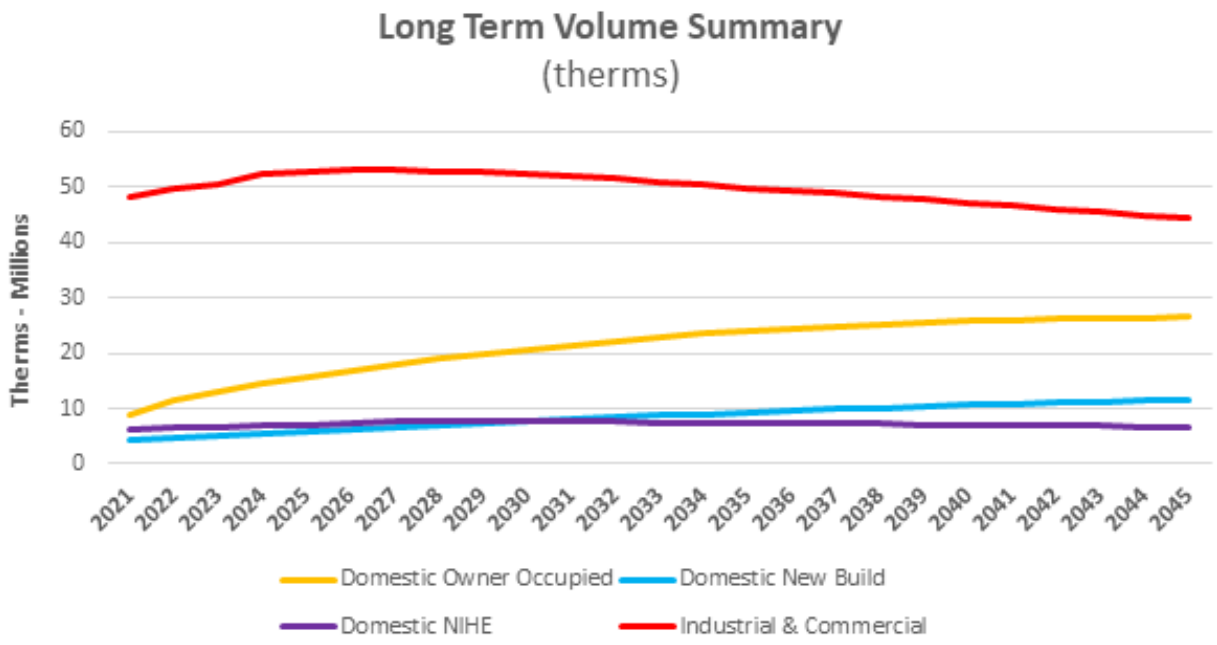
Figure 3.10 Longer term market penetration forest

	Penetration Rate in 2022	Penetration rate in 2028	Penetration Rate in 2045
Type	**%**	**%**	**%**
Owner Occupied	20.9%	35.7%	**61.9%**
New Build	96.1%	97.5%	**98.9%**
NIHE	68.9%	88.9%	**95.4%**
I&C	27.6%	34.3%	**50.9%**
Total	**34.8%**	**50.8%**	**73.7%**

Volumes

By the end of 2045, our total gas volumes are projected to be c.89m therms per annum. As shown in Figure 3.11, below, this growth is primarily driven by domestic customers. For I&C volumes, SME volumes are expected to continue increasing annually, whilst larger I&C volumes are forecast to plateau. As detailed in Part 5.2.2, we have made a forecast volume adjustment for uncertainty in the period 2023 to 2045, for all customer categories.

Figure 3.11 Longer term volume forecasts, 2021 to 2045



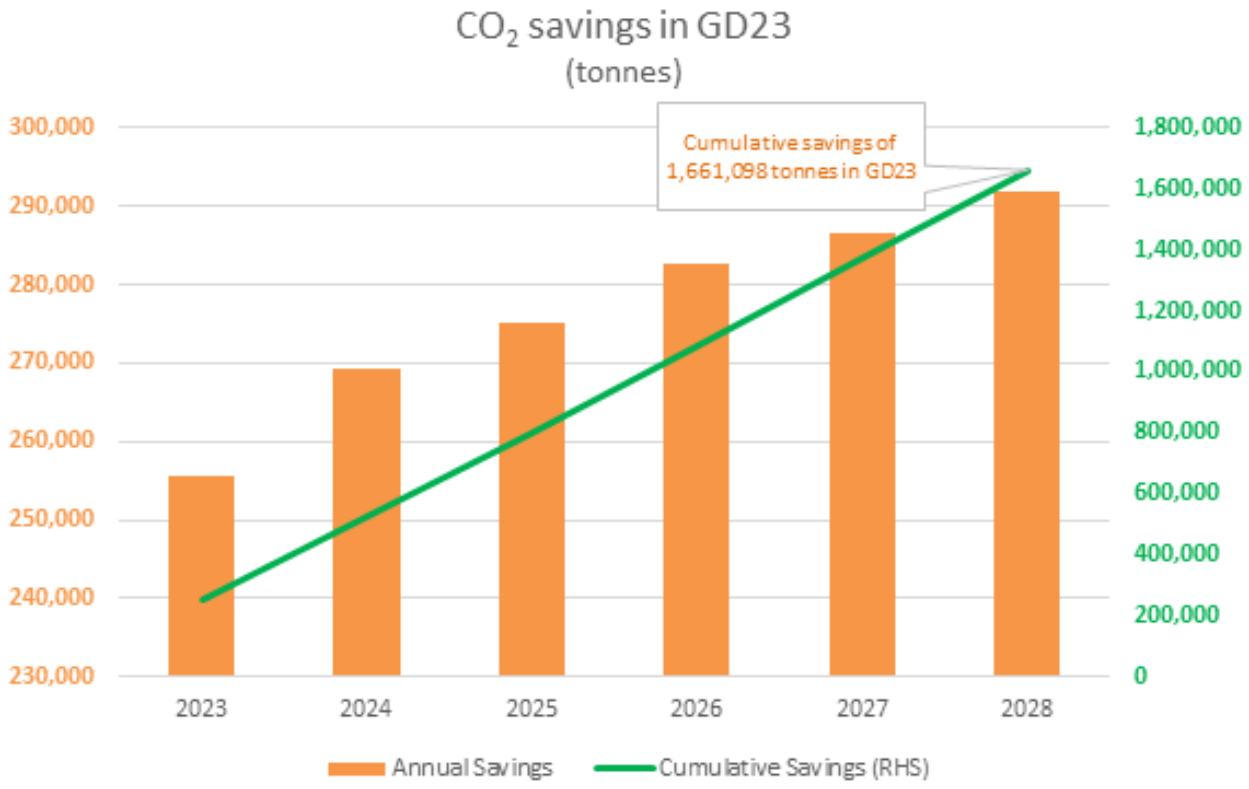
3.3.5 GD23: CO_2 Savings

Volumes, driven by connections to our network, are directly correlated to the amount of CO_2 savings which are made upon converting to natural gas from more polluting fuels such as oil or coal.

Figure 3.12 illustrates the annual and cumulative CO_2 savings which are forecast to be made by customers connecting to our network over the GD23 period.

An average of 276,850 tonnes of CO_2 savings will be made in each year of GD23, with cumulative savings being made over the six year period of 1,661,098 tonnes.

Figure 3.12 CO_2 Savings in GD23



3.3.6 Beyond GD23: CO_2 Savings

Beyond GD23, customers connected to firmus energy's network will continue to contribute significantly to Northern Ireland's journey to net zero carbon. As outlined earlier in our Business Plan, our infrastructure will play an important role in supporting the decarbonisation of fuel in Northern Ireland in the medium to longer term, with the potential introduction of renewable fuels such as biomethane and hydrogen.

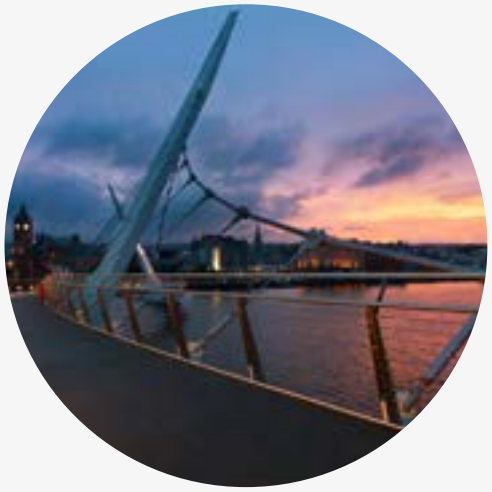
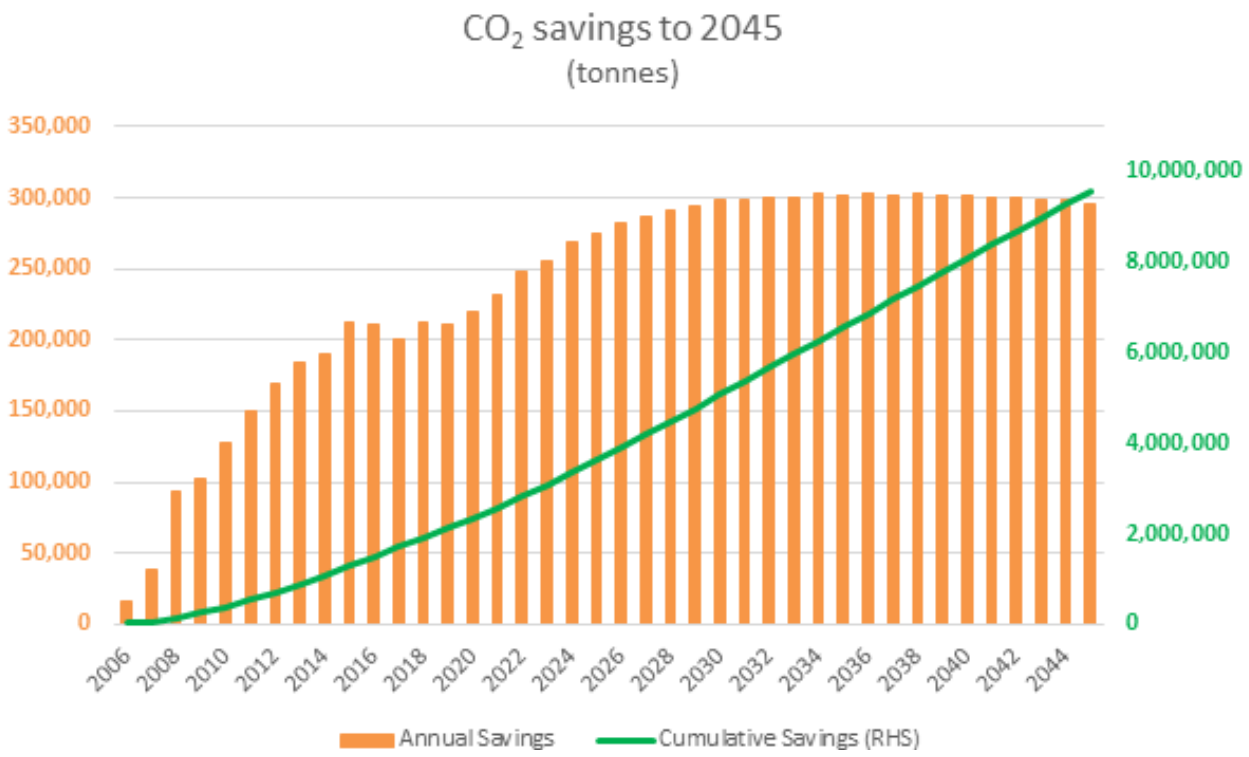


Figure 3.13 depicts our annual and cumulative CO_2 savings since the beginning of our network development in 2005, to 2045 (i.e. the end of our recovery period) and is based upon actual data to the end of 2020, and the forecast benefit of savings from natural gas alone, from 2021 to 2045.

At present, firmus energy's customers (based on natural gas alone) are forecasting a saving of almost 10m tonnes of CO_2 from entering Northern Ireland's environment by the end of 2045.

Figure 3.13 Annual and Cumulative CO_2 savings, 2005 to 2045



3.3.7 GD23: Capital expenditure

For the GD17 period, we submitted a mains laying programme that forecast a mains build-out to 2026, laying 945km of mains. To make best use of Utility Regulator's properties passed incentive, we accelerated the mains laying programme and it is now forecast that this will be completed in 2023 (the first year of GD23). With this acceleration, only 35km of "other" mains, i.e. all mains excluding new build developments and security of supply, remain for the GD23 period.

Consequently, the capex focus for the GD23 period will shift from the mains laying programme of GD17 to a largely connection driven programme, whilst also maintaining the network and delivering security of supply for existing and future customers. These costs are summarised in Figure 3.14, below, and further detail is provided in Part 7 of this Business Plan.

Figure 3.14 Network development capita expenditure (Average 2020 Prices)

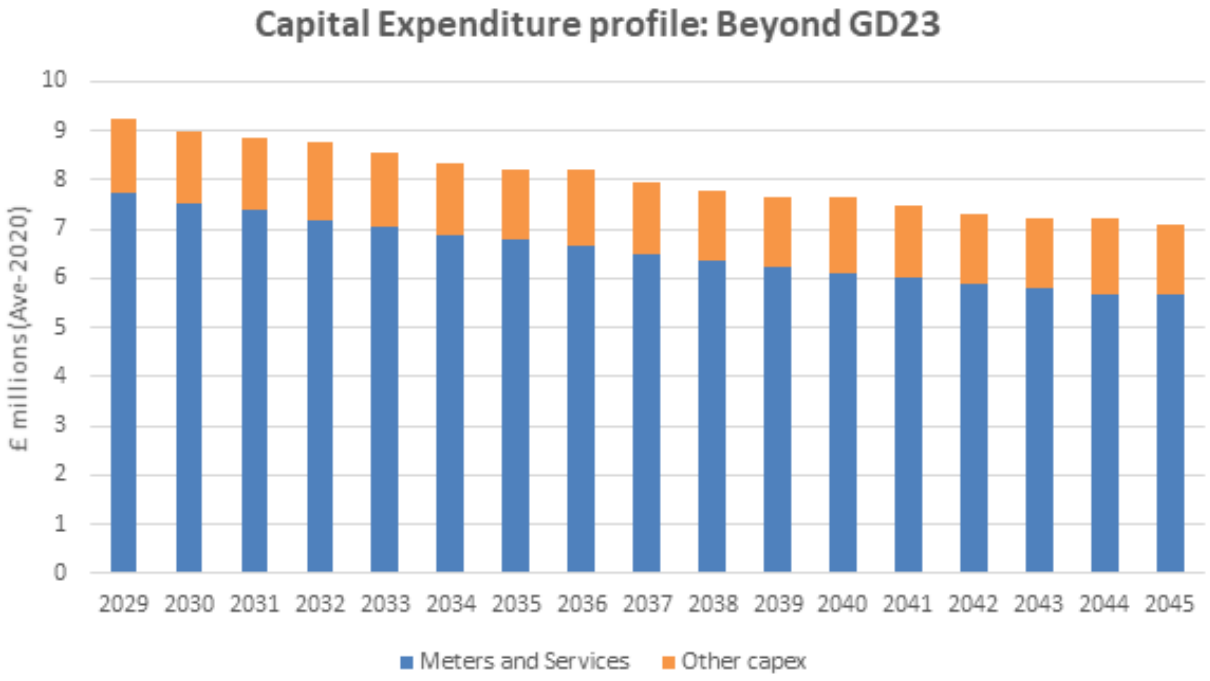
	2023	2024	2025	2026	2027	2028	Total
Capex line Item	**£'000**	**£'000**	**£'000**	**£'000**	**£'000**	**£'000**	**£'000**
LP, 2Bar or 4Bar Mains	8,050	3,109	2,526	1,005	789	522	**16,001**
individually Funded	-	-	-	-	-	-	-
Pressure Reduction	161	141	142	145	252	254	**1,095**
Domestic Services	6,527	6,539	6,387	6,328	6,172	6,040	**37,994**
Domestic Meters	1,274	1,292	1,281	1,432	1,584	1,764	**8,627**
I&C Services	389	387	387	391	385	383	**2,321**
I&C Meters	326	219	266	401	590	886	**2,688**
Other Capex	475	347	222	119	93	210	**1466**
TMA	1,497	1,004	930	772	735	694	**5,632**
Total	**18,698**	**13,038**	**12,141**	**10,593**	**10,599**	**10,753**	**75,823**

3.3.8 Beyond GD23: Capital expenditure

Beyond the GD23 period, we have developed capital expenditure forecasts by rolling forward our position as anticipated at the end of 2028, maintaining relationships between underlying drivers.

As shown in Figure 3.15, this results in a gradual downward trend over the period, in line with our declining annual connections forecasts over the same horizon.

Figure 3.15 Capital expenditure profile, 2029-2045 £ million (Average 2020 prices)



3.3.9 GD23: Operating expenditure

As described earlier in this section, with the completion of the network buildout, the GD23 period will see a move away from mains laying activities, continuing the focus on connections to the network, coupled with an increased emphasis on maintaining a maturing asset base. Consequently, additional engineering resources are required to meet the changing nature of our network's development.

As shown in Figure 3.16, opex is forecast to increase gradually over the GD23 period, driven primarily from a modest increase in manpower headcount in the first half of GD23 and from increased maintenance costs as connections grow. This includes a gradual increase in contractor costs over the period. Further detail is provided in Part 6 of this Business Plan.

Figure 3.16 Forecasting operating expenditure (Average 2020 prices)

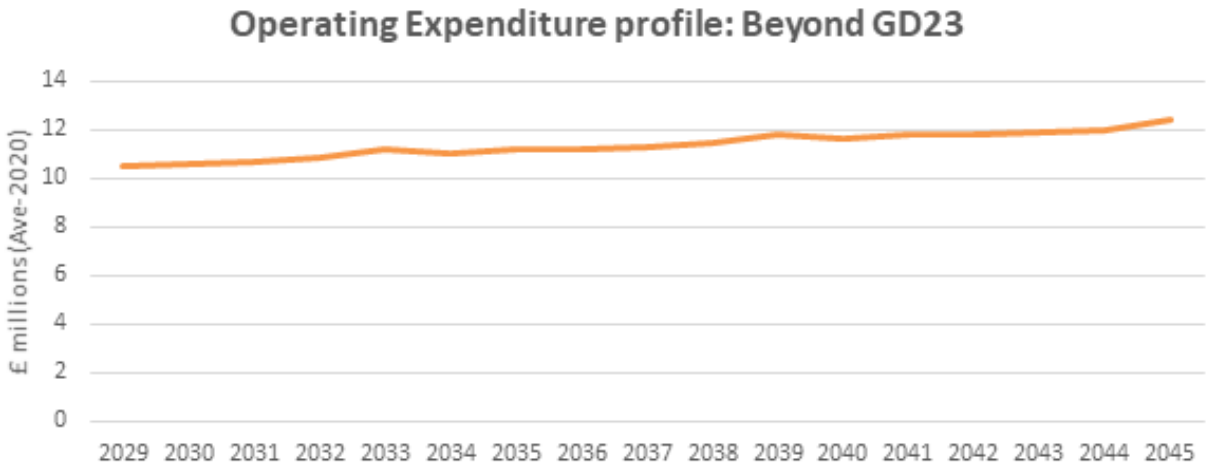
	2023	2024	2025	2026	2027	2028	Total
	£'000	£'000	£'000	£'000	£'000	£'000	£'000
Manpower	2,869	2,894	2,945	2,997	3,024	3,051	**17,780**
Emergency costs & Network Maintenance	2,590	2,731	2,883	3,163	3,372	3,513	**18,251**
Connection incentive mechanism	1,477	1,400	1,316	1,232	1,154	1,080	**7,660**
Network Rates	935	985	1,020	1,053	1,081	1,106	**6,180**
Legal and Professional Fees	586	501	501	501	801	501	**3,391**
IT	691	618	608	629	631	633	**3,810**
Insurance	326	326	326	326	326	326	**1,957**
Other Costs	193	193	194	199	199	199	**1,179**
Total	**9,666**	**9,648**	**9,795**	**10,101**	**10,589**	**10,409**	**60,208**

3.3.10 Beyond GD23: Operating expenditure

We have developed operating expenditure forecasts by rolling forward our position as anticipated at the end of 2028, maintaining relationships between underlying drivers.

As shown in Figure 3.17, this results in a gradual increase over the period, reflecting the growing number of cumulative connections requiring maintenance, alongside network rates that increase with revenue allowances.

Figure 3.17 Operating expenditure profile, 2029-2045 £ million (Average 2020 prices)



3.4 Plans for maintaining our network

3.4.1 GD23: Maintenance activity

As described earlier in this section, our network experienced significant growth throughout the GD17 period, with further connections forecast in GD23.

This continued network growth will drive additional new maintenance activity in GD23. Further activity will also be required in response to the growing maturity of the existing network, as assets age to the point where they necessitate inspection.

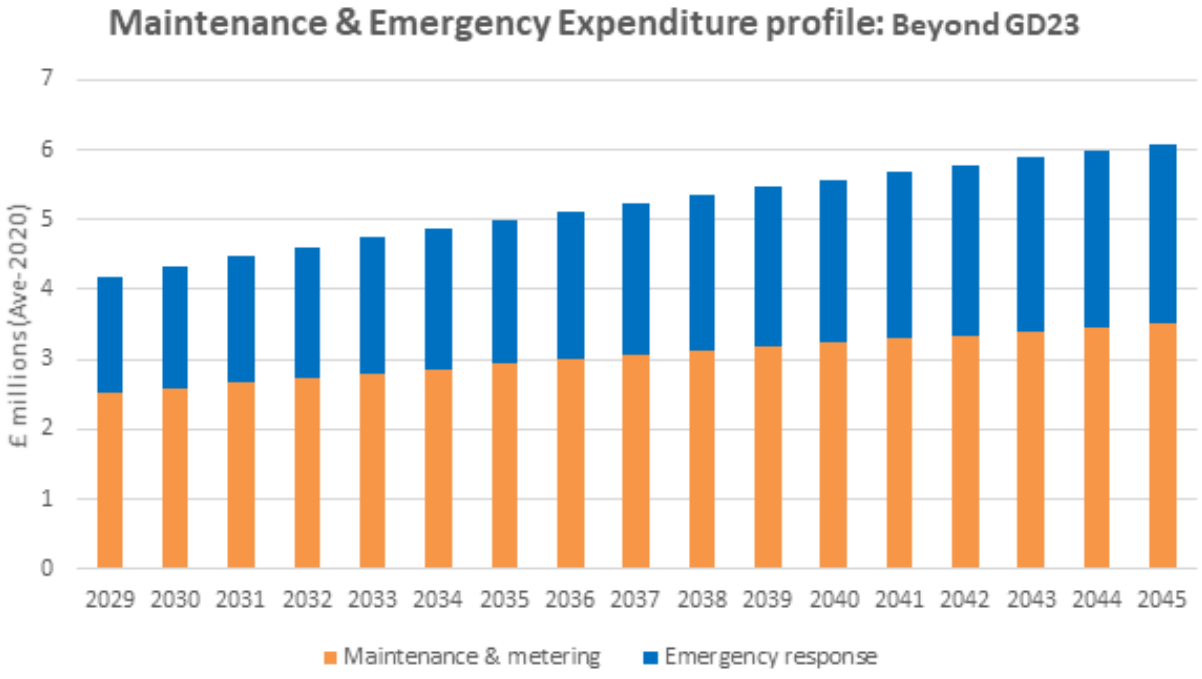
Figure 3.18 Forecasting maintence and emergencies expenditure (Average 2020 prices)

	2023	2024	2025	2026	2027	2028	Total
	£'000	£'000	£'000	£'000	£'000	£'000	£'000
Maintenance	769	775	833	878	927	950	**5,133**
Metering	971	1,021	1,054	1,200	1,273	1,302	**6,821**
Emergency	909	977	1,046	1,115	1,185	1,255	**6,487**
Emergency Call Centre	293	306	319	331	344	356	**1,949**
PRE Repairs	119	127	135	164	174	183	**901**
Total	3,061	3,206	3,387	3,688	3,902	4,047	**21,291**

3.4.2 Beyond GD23: Maintenance activity

Beyond GD23, our maintenance and emergency expenditure follows a profile consistent with our forecast growth in customer connections to our network in the period to 2045, along with the maturing of our asset over this period of time.

Figure 3.19 Maintenance and emergency expenditure profile, 2029 - 2045 (Average 2020 prices)



3.5 Deliverability

We are confident in our ability to deliver our ambitious GD23 Business Plan, safely and efficiently with the resources and expenditure we have forecast for the period. As a business, we have over 16 years experience of delivering continuous growth in our network area, whilst maintaining an excellent level of service to our customers. We understand the energy market in which we operate and the challenges which we will inevitably face through the GD23 period, however, we are committed to the activities, services and targets which will deliver our GD23 Business Plan successfully.

3.5.1 Customer Service

We take great pride in the standard of customer service we offer and are continually seeking ways to improve and adapt this service in line with the needs of our customers, particularly, those more vulnerable in the communities we serve. Customer service is embedded in our culture, from our mission statement to our values, and each employees' commitment to these values is explored as early as the recruitment process for every role within the company.

It is important to ensure we are continually measuring the level of service being offered, and adapting in response to what we hear from our customers.

Since the introduction of the Utility Regulator's Standards of Performance in 2014, we have consistently exceeded service level targets. Similarly, our Guaranteed Standards of Performance (GSS) metrics are impressive. Whilst our ultimate target is zero, we have averaged only one GSS payment per month in the GD17 period to-date.

One of our key customer service metrics is the Consumer Council for Northern Ireland (CCNI) complaints process, particularly Stage 2 complaints which are customer complaints the company is believed to have already had the opportunity to resolve, prior to the involvement of the CCNI. In the GD17 four-year period to-date (i.e. 2017 – 2020) we have had only two Stage 2 complaints upheld. Again, whilst we strive for a target of zero, this number reflects the consistently high and excellent levels of customer service we offer those connected to our network.

During GD17, we have proactively engaged with the Utility Regulator, to establish the Consumer Engagement Working Group (CEWG) and we look forward to further engagement at this forum with the Utility Regulator, consumer bodies, and our peers throughout the GD23 period. We are committed to working with these stakeholders to identify actionable data and metrics which will further improve the service we offer to our customers.

3.5.2 Safety and Innovation

Safety is the foundation upon which we have built our success to-date, and it will remain the foundation for delivery of our GD23 Business Plan.

We are committed to operating the Distribution Network in line with all legal obligations (including Industry Specific legislation and Industry recommendations such as the Institution of Gas Engineers and Managers, IGEM standards) and in accordance with the firmus energy Distribution Safety Case, which has been accepted by HSENI. Our Safety Case is a legal requirement under the Gas Safety Management Regulations Northern Ireland 1997.

We have always embraced opportunities for innovation, leading the way on continual improvement, and delivering our network growth as safely and efficiently as possible. An early example of this is the trenchless laying of mains pipeline in the development of our network infrastructure, reducing the disruption associated with our work. In GD17, we will implement a mobile working solution, specifically aimed at improving efficiency in our engineering and sales activities.

In GD23 we will continue to refine our activities to ensure we are continually delivering efficiency for our customers. This has been anticipated our GD23 planned operational and capital expenditure, detailed in Parts 6 and 7 respectively. Part 10 also outlines the benchmarking and real price effects (RPEs) which have been considered in the development of our GD23 Business Plan.

We believe the energy landscape will evolve markedly in Northern Ireland over the GD23 horizon. A key driver of this evolution will be the publication of the DfE's Energy Strategy for Northern Ireland in November 2021. We are already taking steps to ensure we remain at the forefront of innovation within the natural gas industry. Innovation is key to ensuring we remain at the forefront of Northern Ireland's energy landscape, and setting a course to optimise our significant potential to contribute to Northern Ireland's journey to net zero carbon energy emissions by 2050.

3.5.3 Stakeholder engagement

In delivering our GD23 Business Plan, we will build upon our strong stakeholder relations. We have worked hard over many years to establish, develop and maintain positive and progressive engagement with each of our stakeholders, always seeking to collaborate for the benefit of growing the natural gas industry in Northern Ireland and doing so with careful consideration to the needs of our current, and future customers.

Stakeholder engagement is managed at the most senior level within firmus energy and covers a range of organisations, including;

- Customers and prospective customers
- Government, including Local Government
- The Utility Regulator
- Energy providers
- Consumer organisations
- Industry organisations
- Business organisations
- Media

Stakeholder engagement will remain a key ingredient in the success of our GD23 Business Plan. We are committed to the continued development of our stakeholder relations, recognising each of our shared goals, and delivering our ambitious network growth over the GD23 period, and beyond.

3.5.4 Marketing in the GD23 period

Marketing will play an important role in the successful delivery our ambitious plans for connections growth in GD23, and in particular, our forecast growth in OO connections.

Having listened to our customers and identified our business challenges for the GD23 period, there are three key considerations which will influence our engagement with customers, and our marketing approach in GD23, namely;

- our commitment to ensuring current and future customers are engaged and educated in Northern Ireland's evolving energy landscape.
  - When asked about their understanding of decarbonisation, feedback from our focus groups of March 2021 included;
  - 'Reducing carbon footprint but I don't really know what it means. You hear the kids talking about it' (L'Derry)
  - 'Putting less carbon into atmosphere by increasing things that use carbon' (Newry)

- With the changing dynamic of our construction activities in GD23, our approach will also need to adapt to ensure optimal opportunity of reach to our prospective customers. In market research, (including our enhanced market research in March 2021) 69% of those prospective customers surveyed told us that their awareness of our brand (and therefore product) has been derived from our construction activity, with branding of the vehicles supporting this construction activity. As this activity markedly decreases early in the GD23 period, other marketing channels will need to be supported to generate brand awareness, sales enquiries, and ultimately, connections.
- We are committed to ensuring our business services, (including marketing), are accessible to all current and future customers, particularly those most vulnerable in the communities we serve.
  - Feedback from our focus groups in March 2021 encouraged us to 'keep it simple', particularly regarding the connection process. We have already created a youtube video to address this specific matter,[37] and we are committed to producing further non-written, 'simple step', digital material (e.g. infographics and videos, freely available on platforms such youtube or our social media channels) which will introduce and inform all our current and future customers in key aspects of our services
  - firmus energy is committed to the development of a vulnerability strategy, which will be in place before the GD23 period begins.

We work continually to ensure our marketing activity is agile, and responsive to what our customers are telling us. The principle focus (and cost allowances) for our marketing activity has been on OO households throughout the GD17 period. This will continue throughout GD23, however, our reach will need to be extended, for example, to ensure new build housing developers remain committed to the benefits of natural gas and the longer term benefits of being connected to the infrastructure, in light of Northern Ireland's Energy Strategy and journey towards net zero carbon energy by 2050.

[37] The connection journey: https://www.youtube.com/watch?v=FULeqCwtGwc

We are committed to ensuring our services are accessible to all customers. We have already taken steps to enhance training for our staff, for example, engaging with the Now Group NI[38] and their JAM Card initiative, as well as undertaking awareness training in areas such as Dementia and Autism. Ahead of GD23, we will be engaging with the Plain English Campaign,[39] to continue to ensure our written materials, including our marketing materials, are appropriate for as many customers as possible. Our relationships with organisations, such as the Royal National Institute of Blind People (RNIB)[40] will allow us to further support customers with materials such as Braille documents or audio CDs.

Our approach to marketing is multi-faceted, and the suite of channels in which we can now engage with prospective customers has been steadily increasing, even within the GD17 period.

As outlined in Part 1 of this document, we face a challenging marketplace in GD23. With penetration of 21% in our owner occupied market, our prospective customers still require education on the benefits of natural gas, as well as encouragement and support to overcome real and perceived barriers to connection.

The primary barrier to connection remains the cost of conversion. As such, we need to address and support this challenge for our prospective customers, not least those in fuel poverty, where we will continue to support government schemes (such as NISEP and the Boiler Replacement Scheme) in order to make the benefits of natural gas affordable to as many people as possible within our communities and maximise the potential for decarbonisation throughout our network.

Our accredited corporate social responsibility (CSR) activities also enable opportunities for engagement and marketing within our communities. In particular, we have established a strong working relationship with social enterprise NI over the last number of years. This relationship is focused upon what we can offer social enterprises within our network, beyond arms-length sponsorship. For example, we offer support in areas such as business planning, or IT, where we can draw upon the expertise of our own employees to provide non-financial support.

Whilst marketing is not a primary objective of our engagement with social enterprises, it does offer an important opportunity to engage directly within the communities we serve, and ensures we are continuing to build value and awareness of our brand.

We have an ongoing programme of market research and consumer engagement. We strive to ensure we are fully informed and aware of what our prospective customers believe to be barriers to connection. In preparation for GD23, we have undertaken a number of enhanced marketing activities, such as focus groups and additional market research surveys.

[38] https://www.nowgroup.org/
[39] http://www.plainenglish.co.uk/
[40] https://www.rnib.org.uk/about-us

firmus energy believes that the known end goal (of net zero carbon in Northern Ireland) provides a robust foundation upon which we can proactively progress, with the Utility Regulator's support, our contribution to decarbonisation throughout the GD23 period.

4 Finance

Utility Regulator Guidance

Any supplementary information that may help us to better understand the data provided in the reporting template. This will include, where relevant, but does not need to be limited to:

- Explanation of accounting practice applied, changes to same compared to previous regulatory submissions for the 2019/2020 reporting years and for GD17 as well as effective date and impact of such changes;
- Methodologies and rules used for allocations and estimation, changes to same compared to previous regulatory submissions for the 2019/2020 reporting years and for GD17 as well as effective date and impact of such changes;
- Substantiation of significant changes from figures relating to GD17 forecasts and allowances previously set out;

4.1 Introduction

In preparing our GD23 Business Plan, firmus energy has undertaken financial modelling to ensure our plan for GD23 is based on a solid financial footing. Our ambitious GD23 Business Plan has been developed to ensure firmus energy is best placed to contribute to the decarbonisation of Northern Ireland with continued customer growth a key focus. This vision will require access to efficient funding, through equity and debt, to satisfy the investment required to ensure the successful delivery of this vision and our six year plan.

It will be important to ensure the business is supported with sufficient resources to deliver on Northern Ireland's journey to net zero carbon, and is not constrained in playing a central role in this Energy Transition. It is also important to ensure returns are sufficient to encourage the required investment in our network, not only in the short term (i.e. through the GD23 period) but also in the medium to longer-term, ensuring the sustainability our infrastructure, which is well placed to convey the decarbonised energy of the future.

Low returns and perceived government policy risk in relation to the future of gas networks presents a risk to firmus energy and its' investors. The Sixth Carbon Budget, published in 2020, sets out a path for phasing out new installation of gas boilers. While we are encouraged that Northern Ireland government policy continues to promote natural gas, this type of wider UK policy signalling does not present a strong investment message. Defined government commitments together with the pace of change envisaged, does present increased risks for firmus energy.

firmus energy is committed to the decarbonisation journey and ensuring our network is prepared to convey renewable alternatives going forward. However, reliant on large energy users across its network, firmus energy is also at risk from an evolving energy landscape, where these customers in particular may choose an alternative route to decarbonisation. It is therefore critically important firmus energy are still able to attract the investment it needs to deliver these plans. Consideration of the wider Economic, Social and Corporate Governance (ESG) impact on investor and indeed lender appetite, will also be important going forward in to GD23.

4.2 Financial Statements

Our GD23 price control review considers the period 2023 to 2028 inclusive. Our GD23 Business Plan Template provides the following financial statements for the years 2021 to 2028 inclusive;

- Income Statements
- Statement of Financial Position
- Cash Flow Statements

All assumptions included in the preparation of our GD23 financial statements are described in the relevant chapters of our GD23 Business Plan, e.g. volumes and customers (Part 5), operating expenditure (Part 6) and capital expenditure (Part 7).

Conveyance Charges

Our GD23 Business Plan will reduce conveyance tariffs on our network by 11%, representing significant savings for our current and future customers. In 2020 prices, our domestic tariff for GD23 will be 44.50 pence per therm, compared to the GD17 determined tariff of 49.89 pence per therm.

Our determination of conveyance charges includes all relevant inputs detailed throughout this document, again, e.g. volumes and customers (Part 5), operating expenditure (Part 6) and capital expenditure (Part 7), and have been calculated in accordance with the terms of our licence and the UR's 'Pi's model.

In forecasting our volumes for the period to 2045, and therefore conveyance charges for the GD23 period and beyond, firmus energy has revised the volume adjustment applied by the Utility Regulator in the GD17 Final Determination from a reduction of 20% to a reduction of 25% by the end of 2045. The volume adjustment is detailed in Part 5.2.2 of this document.

Accounting Principles and Policies

firmus energy's accounting practices and policies for GD23 remain unchanged from those in GD17. For the GD17 submissions, company accounting records were based on International Financial Reporting Standards (IFRS). Our annual statutory accounts and regulatory accounts are now prepared in accordance with United Kingdom Generally Accepted Accounting Principles (UK GAAP) including FRS 101. Apart from reduced disclosures in the statutory accounts as permitted under FRS101, there are no differences between IFRS and the current accounting treatment. Our accounts outline the significant accounting policies used by firmus energy. During GD17, a number of accounting policies were applied. 2018 saw the introduction of IFRS9 Financial Instruments, with no material impact on accounting treatment. During 2019, the Company applied IFRS16 Leases resulting in recognition of lease assets on the balance sheet with amortisation of those assets reflected through the Income Statement. While this is still a real cost to firmus energy, this change effectively moved the lease costs from operating costs to an amortisation cost. The Company continues to capitalise labour costs relating to network construction and expansion and review and are audited in that respect annually. During GD17 firmus energy also paid corporation tax as reflected in our regulatory and statutory accounts.

4.3 Refinancing

Our current facilities expire in 2025. While firmus energy does not have a credit rating from a credit rating agency, it is our intention to progress refinancing during the GD23 period to gain the best value for money for our customers and our ongoing business operations. As such, it will be critical to be in a position to present the projected finances of our business and related cash flows in a manner which allows access to optimal financing from all potential sources. This may involve seeking a credit rating. As such, it will be important to measure the outputs of our business plan against the metrics and acceptable ranges for those metrics, as used by the main credit rating agencies. We have assumed the Utility Regulator will continue to select benchmarks, and propose a WACC which will allow firmus energy to obtain a strong investment grade rating.

4.4 Cost of Capital (WACC)

WACC is an important consideration in the preparation and deliverability of our GD23 Business Plan. It has been identified in Part 1 of this document as one of ways in which the Utility Regulator can best enable success of our GD23 Business Plan, as we seek a reasonable return for the significant investment required to secure the successful delivery of our plans for the GD23 period and beyond.

In order to explore all considerations of a reasonable rate of return for firmus energy in GD23, we engaged support from Frontier Economics. Consistent with the GD17 approach, we use a pre-tax WACC guided by four main principles in estimating the overall WACC range:

- Regulatory precedent - it is important to maintain a degree of consistency across price controls to limit investors' exposure to regulatory risk;
- Notional capital structure - the cost of capital uses a notional gearing set at the hypothetically efficient level which should incentivise companies to finance efficiently;
- Financeability - we assume that the UR is targeting a strong investment grade credit rating for firmus. Benchmarks selected and the WACC range proposed is consistent with this assumption, ensuring firmus can access capital at an efficient rate; and
- CAPM methodology - consistent with UK regulators, we use the capital asset pricing model (CAPM) in estimating the cost of equity.

Figure 4.4 Frontier Economics WACC range

Parameter	WACC estimate for GD23	
	Low	High
Real risk-free rate (%)	(2)	(0.94)
Real pre-tax cost of debt (%)	0.96	0.96
Illiquidity premium (%)	0.14	0.14
Forward rate adjustment (%)	0.71	0.71
Regulatory transaction cost allowance (%)	0.41	0.41
Assest beta	0.35	0.38
Debt beta	0.10	0.05
Equity Beta	0.73	0.88
Unlevered beta	0.30	0.36
Equity risk premium (%)	7.68	7.48
Total market return (%)	5.68	6.54
Real post-tax cost of equity (%)	3.57	5.65
Real pre-tax cost of equity (%)	4.76	7.53
Gearing	0.60	0.60
Real pre-tax WACC (%)	2.48	3.59

Having considered our financeability obligations required to deliver our GD23 Business Plan and sustain investment within this period and beyond, our plan has been submitted with a WACC of 3.16%. This figure considers 'aiming up' on the mid-point equity range by 25 basis points.

4.5 Financeability Metrics

As noted in Part 4.4 above, we have carried out financeability modelling assuming a consistent approach by the Utility Regulator on assessment of resultant metrics in line with ranges acceptable by credit rating agencies, in order to achieve a strong investment grade rating.

At the low range WACC, notional financeability analysis shows our ratios to be below what is required to support an investment grade rating.

A WACC of 3.16% has been selected as the most appropriate point estimate for our GD23 Business Plan submission. Anything below this level presents financeability challenges for the business and its ability to deliver the business plan outlined for GD23.

Our assessment takes into account what we believe to be an appropriate level of gearing, the cost of debt premium faced by smaller companies, as discussed above, the market parameters used in determining the cost of equity, and a review of the factors unique to firmus energy's network and the requirement to raise future finance in the GD23 period.

As already noted, any reduction below this rate would adversely impact our ability to finance our activities and meet required financial covenants. It would also constrain firmus energy from optimising our significant contribution to Northern Ireland's journey to net zero carbon, and supporting our evolving energy landscape.

We believe the risks presented by setting WACC at the lower end of the range presented by Frontier Economics, are considerably greater, in terms of potential for under-investment and overall achievement of GD23 plans outlined. Targets set in this submission are predicated on the submitted WACC return of 3.16%.

It will be important to ensure the business is supported with sufficient resources to deliver on Northern Ireland's journey to net zero carbon, and is not constrained in playing a central role in this Energy Transition. It is also important to ensure returns are sufficient to encourage the required investment in our network, not only in the short term but also in the medium to longer-term, ensuring the sustainability our infrastructure, which is well placed to convey the decarbonised energy of the future.

5 Volumes and Customer Numbers

Utility Regulator Guidance

- Methodologies and rules used for allocations and estimation, changes to same compared to previous regulatory submissions for the 2019/2020 reporting years and for GD17 as well as effective date and impact of such changes; and
- Substantiation of significant changes from figures relating to GD17 volume and customer number forecasts and allowances previously set out.

5.1 Introduction

GD17 saw a change in dynamic for firmus energy's network growth, as we moved towards the prioritisation of network growth from within the domestic housing sector, and more specifically, the connection of properties from within the owner occupied (OO) sector. The majority of larger I&C energy consumers, (those with an annual volume in excess of 25,000 therms), with access to our network have already decided to benefit from converting to natural gas. As such, our focus on growth from within the domestic sector will underpin our network connection ambitions in GD23.

The growth in customers connecting to our network and the growth in volumes being conveyed through our infrastructure will come, primarily, from our ambitious target to connect an additional 20,740 OO households during the GD23 period. Our ambitious targets are dependent upon sufficient allowances to support the operational and capital investment required to connect OO properties to our network, as well as the continuation of government schemes which support the conversion of qualifying OO properties to natural gas, such as NISEP or the NIHE's boiler replacement scheme.

As outlined in Part 1 of this document, two of the five key areas where firmus energy believes the Utility Regulator can particularly enable the successful delivery of our GD23 Business Plan, are allowances required to support conversion of domestic properties to natural gas. Specifically, the capital allowances required to provide services for new domestic customer connections, and the operational allowances required to support OO customer connections, in the form of the OO connection incentive allowance.

During GD23, we will continue to work closely with the Northern Ireland Housing Executive (NIHE), housing associations (HAs) and new build (NB) property developers throughout our network, to maximise the potential to convert as many properties as possible to the benefits of natural gas. We will increase our NIHE and HA customer base from 20,470 to 26,470 and our NB customer base from 14,994 to 23,994 by the end of the GD23 period.

We will, of course, continue to maximise and support the conversion to natural gas of industrial and commercial (I&C) customers, including SMEs with an annual consumption of less than 2,500 therms to those with annual consumption of more than 75,000 therms. Our GD23 Business Plan forecasts an average of 145 additional I&C customers connecting in each year of the GD23 period.

The volumes associated with our forecast growth in connections are described in more detail in the sections which follow. In securing continued growth in volumes conveyed through our network, firmus energy will sustain optimal tariffs for network conveyance, for both our current and future customers.

A significant benefit of the increasing volumes being conveyed through our network during GD23 is the associated, and significant, contribution our customers will make to the decarbonisation of energy in Northern Ireland.

Currently, c.60% of homes across Northern Ireland are still choosing to heat their homes with kerosene (home heating oil). Domestic customers converting to natural gas, from home heating oil, will save up to 48%[41] in CO_2 emissions. The potential to make a significant, and immediate, contribution to Northern Ireland's journey towards net zero carbon energy by 2050 is therefore substantial.

Our target growth in connections and volumes over GD23 will result in c.1.7m tonnes[42] of CO_2 being prevented from entering Northern Ireland's atmosphere over the six year period alone.

We believe Northern Ireland's energy landscape will have evolved significantly by the end of 2028, i.e. the end of the GD23 price control period. Our volume assumptions consider therms of energy being conveyed through our infrastructure, and not necessarily the nature of gas being conveyed. As we embark upon GD23, we expect natural gas to be the predominant gas conveyed, however, in optimising the contribution of our infrastructure to decarbonisation in Northern Ireland, we anticipate the introduction and gradual increase of renewable fuels (such as biomethane) being conveyed within our network over the course of the six year period.

5.2 Determination of Volumes in GD23

firmus energy's calculation of volumes is directly associated to the number, and type, of connections to our network. For larger I&C customers, i.e. those with an annual consumption in excess of 25,000 therms, our volume forecasts are derived from analysis of individual customers. For all other volumes, we determine an average consumption for each customer sector, i.e. OO, NIHE, NB and SMEs. Whilst a number of customers use natural gas to power processes within their businesses, the majority of natural gas usage on our network is used for heating.

As such, this makes our volume forecasts somewhat susceptible to temperature (and weather) variations.

Our determination of average consumptions for the relevant sectors, is made following analysis over the most recent five year period. This five year period provides a normalisation of temperature considerations, often referred to as 'Seasonal Normal Temperature' (SNT).

Figure 5.1 provides a summary of forecast volumes to be conveyed through our network for the remaining years of GD17 (2021 and 2022) and the six year GD23 period (2023 to 2028).

[41] See Figure 5.5
[42] Based upon conveyance of natural gas only over the GD23 period

Figure 5.1 Volumes Forecast by Customer Category, 2021 to 2028

	GD17		GD23					
	2021	2022	2023	2024	2025	2026	2027	2028
Category	Therms	Therms	Therms	Therms	Therms	Therms	Therms	Therms
	('000)	('000)	('000)	('000)	('000)	('000)	('000)	('000)
Owner Occupied	8,909	11,652	13,117	14,479	15,742	16,912	17,994	18,991
New Build	4,384	4,717	5,133	5,538	5,933	6,318	6,692	7,056
NIHE	6,037	6,420	6,660	6,894	7,121	7,341	7,554	7,760
Domestic Subtotal	**19,328**	**22,789**	**24,910**	**26,911**	**28,796**	**30,571**	**32,240**	**33,808**
Very Small I&C	1,431	1,776	1,892	2,006	2,114	2,218	2,316	2,409
Small I&C	8,645	8,303	8,213	8,123	8,032	7,942	7,852	7,762
Medium I&C	6,429	6,574	6,502	6,431	6,359	6,288	6,217	6,145
Large CHP	1,442	1,664	2,289	2,900	2,868	2,835	2,803	2,771
Large Firm Non CHP	13,565	13,982	13,821	13,661	13,501	13,341	13,181	13,029
Interruptible	16,831	17,539	17,905	19,394	19,964	20,516	20,682	20,763
I&C Subtotal	**48,342**	**49,838**	**50,622**	**52,513**	**52,838**	**53,140**	**53,050**	**52,880**
Total Volumes	**67,670**	**72,627**	**75,532**	**79,424**	**81,634**	**83,711**	**85,290**	**86,687**

As can be seen from Figure 5.1, our annual volumes forecast is expected to increase from 72.6m therms in 2022 to 86.7m therms in 2028, representing an increase of 19% over the GD23 period.

Whilst our annual increase in overall volume growth is consistent over the period, the growth within each customer category varies quite notably. This is directly associated with our forecast customer connections.

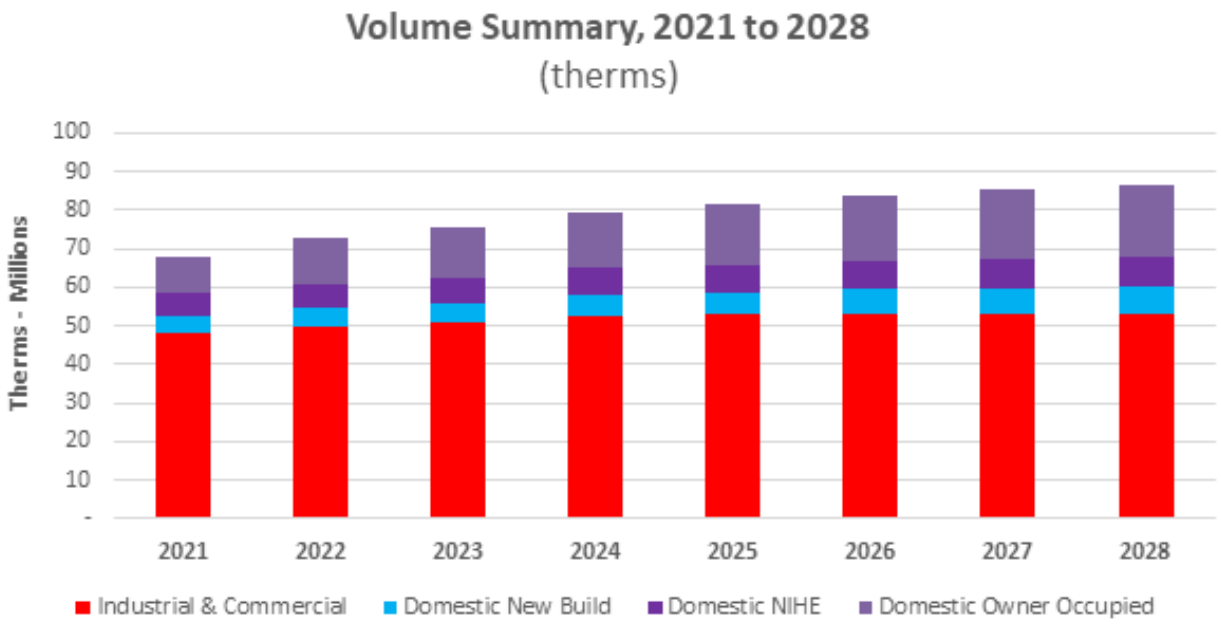
Over the GD23 period, I&C annual volumes are expected to grow by an average of 507k therms, or 1%. We recognise that large I&C customers (including interruptible customers), in particular, are under continued pressure to reduce energy consumption, however, we have forecast volumes for this category of customers, using a 'bottom up' approach, based upon current experience. As discussed in Part 5.3.4, we have not forecast any net change in larger I&C contract connections during the GD23 period. We are, however, forecasting average annual growth of c.145 connections from within the very smaller I&C tariff (i.e. SME) customer category. Similar to domestic average consumption, we have calculated an average consumption for I&C tariff connections, which will be reflected in our volume growth. I&C volumes include an adjustment for forecast uncertainty from 2023, (discussed further in Part 5.2.2) which will account for downward pressure on I&C energy consumption over the period 2023 to 2045.

NIHE (including HA) and NB annual volumes are expected to grow by 1.3m therms (21%) and 2.3m therms (50%) respectively, over the GD23 period. These volumes have been calculated using forecast connections to our network, multiplied by the average consumption for the respective customer category. Again, the adjustment for forecast volume uncertainty (discussed in Part 5.2.2) has been included within NIHE and NB volume forecasts from 2023 to 2045.

The greatest increase in annual volumes forecast is within the OO sector, reflecting our ambitions for growth in connections from within this sector over the GD23 period. Annual volumes are set to rise from 11.7m therms in 2022 to 19.0m therms in 2028, representing growth of 62% over the GD23 period.

Our anticipated growth in the domestic sector over the GD23 period will see a movement in the weighting of domestic volumes from 31% in 2022 to 39% in 2028. Figure 5.2 illustrates our annual volumes by customer category for the GD23 period.

Figure 5.2 GD23 Annual Volumes Forecast

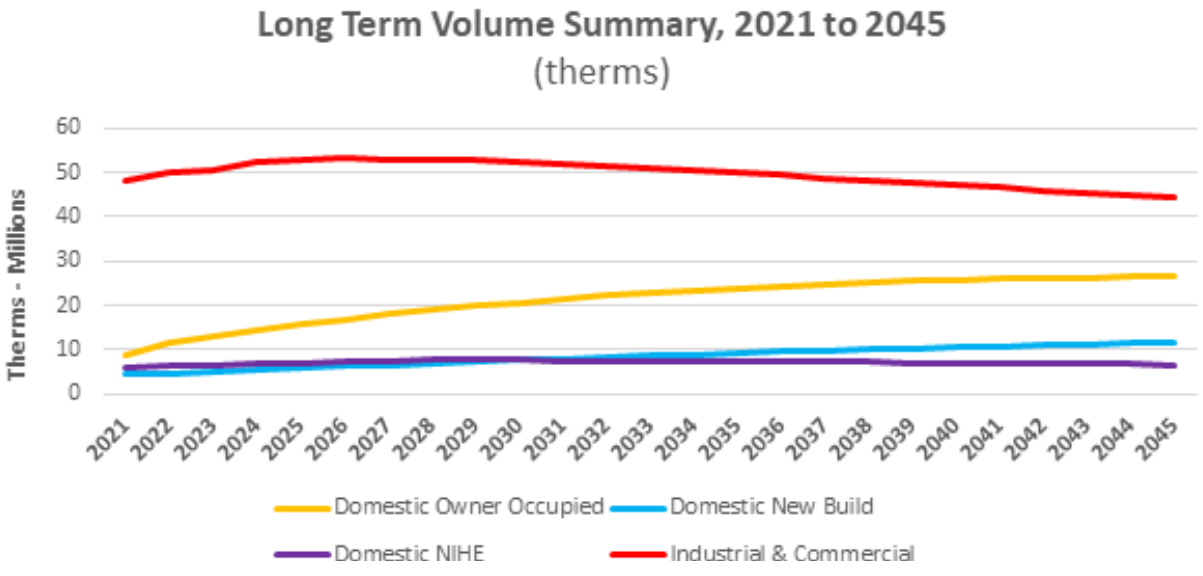


5.2.1 Longer Term Volumes Forecast

Beyond GD23, firmus energy is forecasting continued, and significant, annual growth. Our forecast considerations, post GD23, run to the end of 2045. This horizon aligns to the firmus energy's licence recovery period.

As with the GD23 period, our volumes forecast to 2045 are derived from our connections forecast for this period. These volumes are illustrated in Figure 5.3.

Figure 5.3 Longer term Volumes Forecast to 2045



For domestic connections, post GD23, we have sustained our average consumption assumptions for each customer category, however, these will be adjusted in line with the forecast volume uncertainty adjustment, described in more detail in Part 5.2.2.
OO volumes will remain our primary sector of growth, post GD23, as we continue to increase connection penetration on our network.

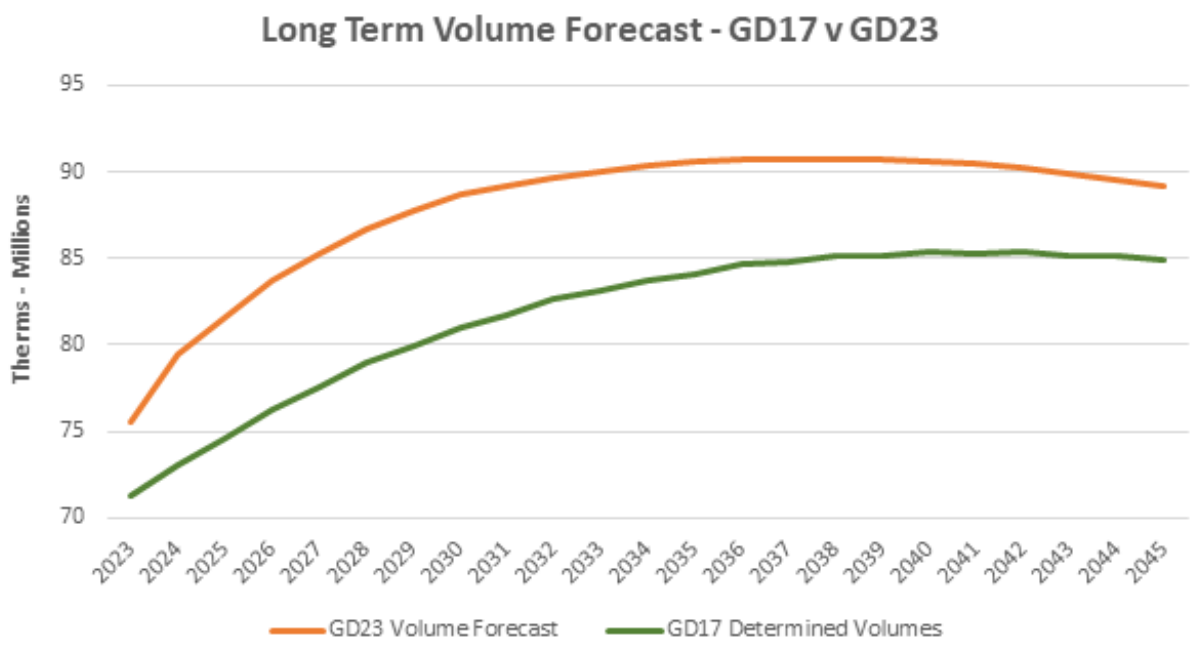
We are also forecasting a continuing run rate for NB (private and social) property development and connections to our network, which contribute to our increasing annual volumes.

Post GD23, we are expecting a plateauing of NIHE and HA volumes, as our connection penetration in these sectors begins to reach saturation.

For I&C volumes, post GD23, we are expecting SME volumes to increase annually, as we continue to make connections to our network over the period to 2045. Larger I&C volumes, however, will plateau over this period, reflecting the level of market saturation in this customer sector. As with domestic volumes, I&C volumes have been adjusted to reflect our forecast volume uncertainty, again, described in more detail in Part 5.2.2.

Overall, firmus energy is forecasting higher volumes for the period 2023 to 2045 than those determined for the same period in the GD17 Final Determination, as illustrated in Figure 5.4.

Figure 5.4 GD23 vs. GD17 Volumes Forecast, 2023 to 2045



5.2.2 Forecast Volume Adjustment

In the Utility Regulator's GD17 Final Determination, a linear (downward) adjustment was made to volumes forecast, post 2022. For firmus energy, this adjustment commenced in 2023 and scaled up to 20% in 2045, i.e. the end of our licence recovery period.

Paragraph 5.61 of the Utility Regulator's GD17 Final Determination stated;

"We have made adjustments to all GDNs volume figures in the period beyond 2022 to reflect long term uncertainty over such forecasts. As noted in the draft determination, it is more appropriate to consider future volume assumptions than to adjust deprecation profiles. Therefore, we have applied reductions to longer term volume assumptions. For FE the reduction starts in 2023 and ramps up to 20% by 2045...."

In preparing our GD23 Business Plan, we consider the context and relevance of this forecast adjustment has come into much sharper focus in the years since our GD17 Final Determination, particularly regarding the role of energy efficiency and energy decarbonisation in contributing to Northern Ireland's journey to net zero carbon emissions. We believe this is especially relevant to larger I&C customers currently connected to our network.

Energy efficiency and decarbonisation will become an increasing focus for all energy users over the GD23 period, and beyond. Efficiency will be a key element of Northern Ireland's Energy Transition and working towards a target of net zero carbon emissions by 2050. This will invariably place downward pressure on the average consumption of all customers connected to our network.

The following quotes are examples of feedback from a number of our largest I&C customers (by volume), during engagement to inform our GD23 Business Plan;

"Foyle Food Group are committed to delivering the recommendations the Paris Climate Change Agreement. As part of our plan we have become members of the Science Based Targets Initiative and set ambitious reduction targets covering our operational emissions (Scope 1&2) as well as our upstream and downstream value chain (Scope 3). We will reduce our absolute Scope 1&2 emissions by at least 28% by 2030 and our absolute Scope 3 emissions by 14% by 2030.... For Scope 1&2 we will be moving all our facilities to certified renewable electricity by 2022. This will allow us to drastically reduce our Scope 2 emissions. With regards to Scope 1 (Natural gas/ LPG/ Diesel) we will be seeking opportunities to recover energy losses from our plant machinery and reduce our reliance on related fossil fuels. However, we anticipate that we will still have a portion of our energy portfolio fueled by fossil fuels in future and so will be seeking opportunities to purchase decarbonised natural gas. Ultimately, we plan to use hydrogen when feasible. Upon doing so we envisage a portion of Foyle Food Group sites could be Carbon neutral within the decade."

Foyle Food Group

"The Ulster Group is setting out an ambitious short and long term CSR strategy looking at all aspects of its operations. A key element to this strategy is to decarbonise our manufacturing impact. We believe working with suppliers and stakeholders is paramount to achieving sustainable development goals and would welcome participation from Firmus Energy on product (green gas) and technical solutions (technical guidance) for business."

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"As a business Mackle Pet Foods is fully committed to decarbonize as much as possible over the coming years. Our biggest step so far in this process was to fully convert from heavy oil usage to Natural Gas with the assistance of Firmus Energy. To progress our decarbonization further we are relying on progression and solutions within the industry to allow us to do this effectively and efficiently."

MACKLE
PETFOODS

"The SHSCT (Southern Health & Social Care Trust) is committed to the Central Government Energy Management Strategy and Action Plan to 2030 along with meeting the collective NHS carbon reduction targets that are detailed within a recent publication "Delivering a 'Net Zero' National Health Service". These emissions targets are as follows:

- For the emissions we control directly (the NHS Carbon Footprint), net zero by 2040, with an ambition to reach an 80% reduction by 2028 to 2032.
- For the emissions we can influence (our NHS Carbon Footprint Plus), net zero by 2045, with an ambition to reach an 80% reduction by 2036 to 2039."

HSC Southern Health and Social Care Trust
Quality Care - for you, with you

Feedback provided by the above I&C customers demonstrates a focus on both energy efficiency and decarbonisation of fuel, and reflects the ambitions of many other I&C customers connected to our network. Whilst customers remain supportive of firmus energy's ambitions to decarbonise the gas being conveyed within our network, we must acknowledge uncertainty associated with future volume forecasts.

Whilst we acknowledge the further clarity which is anticipated upon publication of the DfE's Energy Strategy for Northern Ireland in November 2021, we believe volume uncertainty in the context of Northern Ireland's energy transition is greater than at the time of our GD17 Final Determination.

Following consideration of the Utility Regulator's GD17 assumption, the evolving energy landscape in Northern Ireland and feedback from customers, we have revised the GD17 Final Determination assumption of 20% reduction in volumes over the period 2023 to 2045 to 25% over the same period, within our GD23 Business Plan. Of note, this adjustment is NPV neutral within our regulatory framework.

5.2.3 Contribution to Northern Ireland's Decarbonisation of Energy

In the Utility Regulator's GD17 Final Determination, a linear (downward) adjustment was made to volumes forecast, post 2022. For firmus energy, this adjustment commenced in 2023 and scaled up to 20% in 2045, i.e. the end of our licence recovery period.

As described in Part 3 of our GD23 Business Plan, the price control horizon (2023 – 2028) will be of significant importance in Northern Ireland's progression towards a net zero carbon target by 2050, and particularly following the publication of DfE's Energy Strategy for Northern Ireland in November 2021. firmus energy and our customers have a critical role to play in this net zero carbon challenge, and whilst our Business Plan has been developed to safely and efficiently continue to promote the development of our natural gas network, it also seeks to optimise the contribution of natural gas and our asset infrastructure in the decarbonisation of Northern Ireland throughout the GD23 period, and beyond, specifically supporting the Utility Regulator's third strategic objective of "Enabling security of supply and a low carbon future."[43]

[43] Utility Regulator's Corporate Strategy 2019 – 2024
https://www.uregni.gov.uk/sites/uregni/files/media-files/Corporate%20Strategy%202019-24%20final%20for%20web.pdf

Domestic customers converting from kerosene (home heating oil) can reduce their carbon emissions by up to 48% and customers converting from solid fuel (e.g. coal) can reduce their carbon emissions by at least 60%,[44] when choosing to connect to the natural gas network.

As home heating oil remains the dominant fuel choice for domestic consumers in Northern Ireland, it is primarily these households which we will work to convert to natural gas during GD23.

Figure 5.5 highlights the immediate CO_2 savings which can be realised upon converting a household from home heating oil to natural gas.

Figure 5.5 CO_2 savings when converting from home heating oil to natural gas

	kWh[45]	kg of CO_2 per kWh[46]	CO_2 (tonnes)
Inefficient oil boiler	15,468	0.254	3.92
Efficient oil boiler and controls	11,137	0.254	2.82
Efficient gas boiler and controls	11,137	0.184	2.04

firmus energy's network infrastructure and natural gas offering has a significant and important role to play in Northern Ireland's Energy Transition toward net zero carbon by 2050. With the vast majority of our network developed in the early stages of GD23, our focus on optimising connections to our network will readily serve to positively impact Northern Ireland's ambitions for carbon reduction.

Natural gas offers a cost effective route to decarbonisation in Northern Ireland, and an opportunity to optimise the contribution potential from investment already made in firmus energy's infrastructure. Figure 5.6 provides a helpful illustration of the potential cost per tonne of CO_2 abated from homes switching from oil to natural gas. This analysis was conducted by Ervia in February 2019 as part of their response to "Irelands Draft National Energy & Climate Plan 2021-2030" .[47]

[44] Assuming 15,468 kWh @ 0.3147 kg of CO per kWh, UK Government - Greenhouse gas reporting: conversion factors 2019, https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2019
[45] Based on an average annual load of 380 therms as assumed in the GD17 Final Determination
[46] BEIS, "Greenhouse gas reporting: conversion factors 2019", November 2019. https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2019
[47] Ervia's response to Ireland's Draft National Energy & Climate Plan 2021-2030" (February 2019) https://www.ervia.ie/news/innovative-technologies-k/Ervias-response-to-Irelands-Draft-National-Energy-and-Climate-Plan-consultation.pdf

Cost per tonne of CO_2 abated (Homes switching from oil)

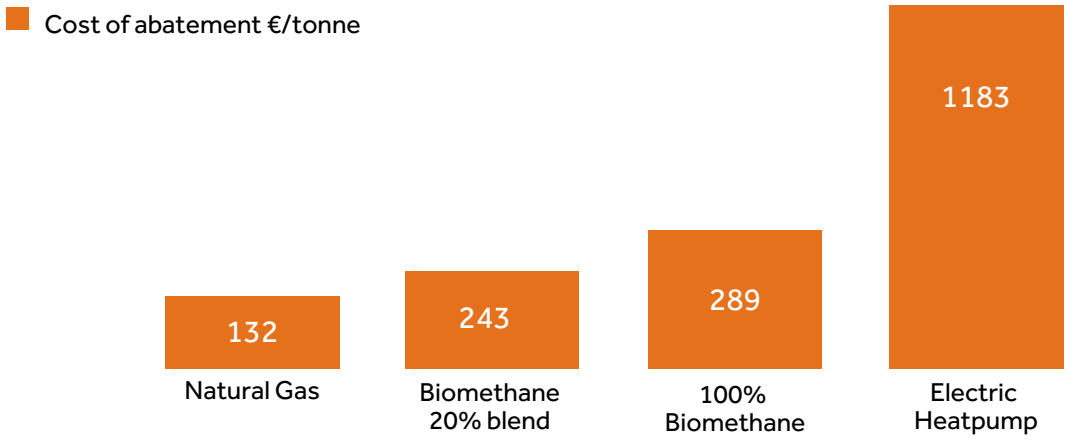


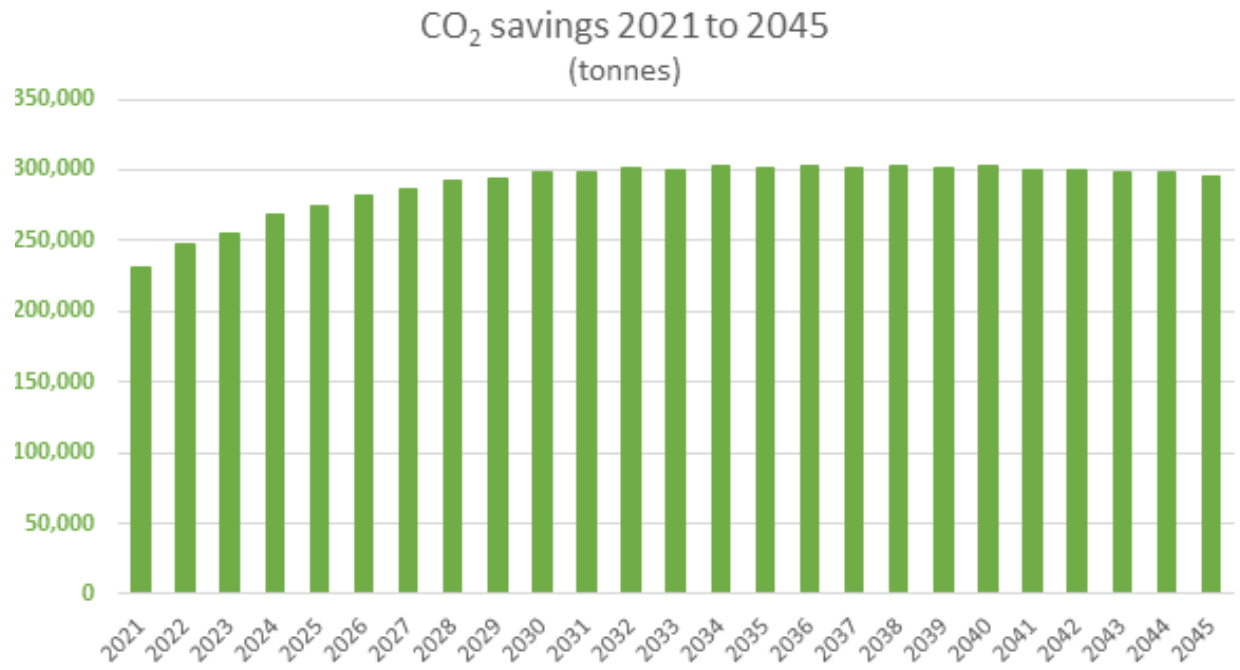
Figure 5.6 Cost per tonne CO_2 abated - homes switching from oil to natural gas

Figure 5.7 illustrates the annual CO_2 savings being contributed by firmus energy's customers in the period 2021 to 2045. These significant CO_2 savings are directly correlated to our volumes forecast, as described above, and by extension, our forecast connections, as described in Part 5.3.

In order to optimise network growth and the CO_2 savings which follow, our connections growth is dependent on allowances which support the resources and funding of meeting our ambitious targets.

In particular, we believe the allowances being sought to support our OO connections throughout GD23 are critical to our ability to optimise firmus energy's contribution to decarbonisation in Northern Ireland.

Figure 5.7 Forecast CO_2 savings on firmus energy's network 2021 to 2045



5.3 Customer numbers

5.3.1 Overview

As discussed earlier in Part 5, the OO sector will provide the greatest growth in connections to our network in the GD23 period, and in the period until 2045. Over the GD23 period we have ambitious plans to connect a further 20,740 OO properties and increase our OO customer base by 73%.

Our forecast for New Build (NB) housing remains constant throughout the GD23 period, and beyond. We are forecasting a run rate of 1,500 new properties being developed, and connected to our network in each year of the GD23 period, and continuing at 1,500 per annum until the end of our forecast horizon in 2045. Of note, any newly developed NIHE or HA properties are captured as NB properties from 2023, and are forecast to account for 500 of our 1,500 annual run rate.

As our connection penetration to existing households in the social housing sectors, i.e. NIHE and HA properties, reaches saturation, our forecast connections in these sectors decreases accordingly.

In line with our GD17 experience, we are forecasting continued growth averaging 145 connections per annum in the I&C sector, with all connections growth assumed to come from SME customers.

Figure 5.8 illustrates our annual forecast connections, by customer category, over the period 2021 to 2045.

Figure 5.8 Longer term connections forecast, 2021 to 2045

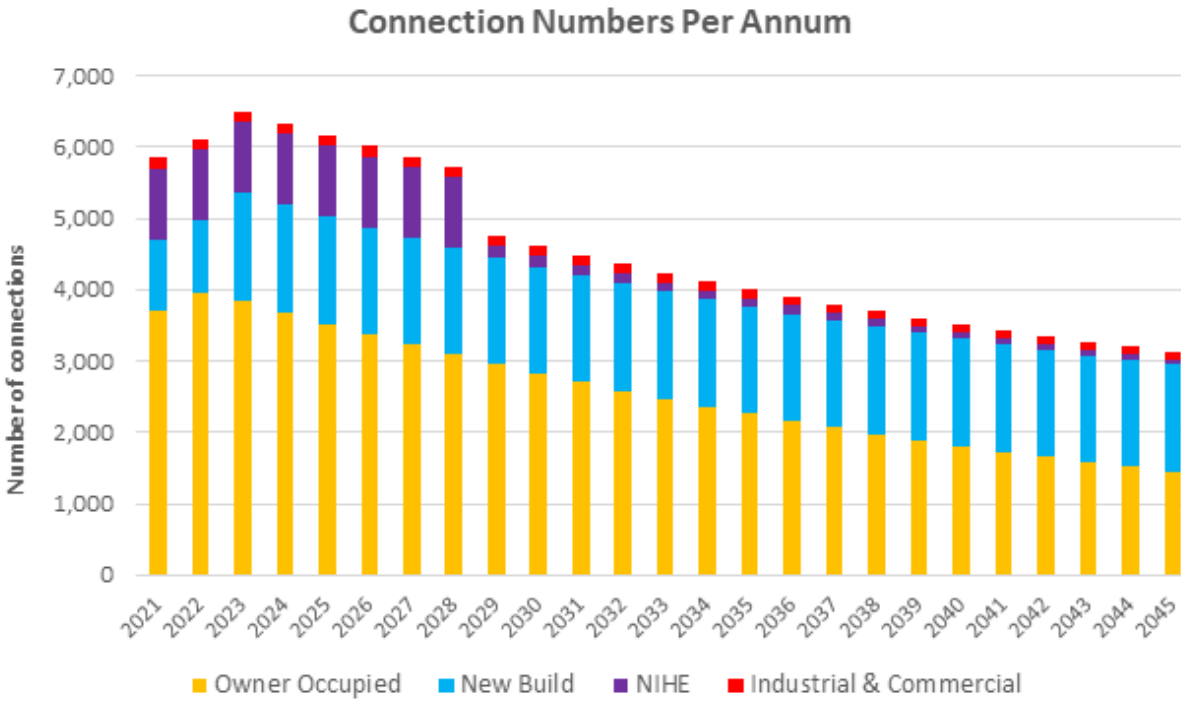


Figure 5.9 provides a detailed breakdown of annual connections by customer category for the remainder of the GD17 period (2021 and 2022), as well as the GD23 period (2023 – 2028), and Figure 5.10 provides a detailed breakdown of our forecast cumulative customers over the same time horizon.

Figure 5.9 Annual connections forecast, 2021 to 2028

	GD17		GD23					
	2021	2022	2023	2024	2025	2026	2027	2028
Category	**No's**	**No's**	**No's**	**No's**	**No's**	**No's**	**No's**	**No's**
Owner Occupied	3,695	3,961	3,852	3,685	3,524	3,371	3,224	3,084
New Build	1,000	1,000	1,500	1,500	1,500	1,500	1,500	1,500
NIHE	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
I&C	150	150	148	149	147	144	142	139
Total	**5,845**	**6,111**	**6,500**	**6,335**	**6,171**	**6,016**	**5,866**	**5,724**

Figure 5.10 Cumulative connections forecast, 2021 to 2028

	GD17		GD23					
	2021	2022	2023	2024	2025	2026	2027	2028
Category	**No's**	**No's**	**No's**	**No's**	**No's**	**No's**	**No's**	**No's**
Owner Occupied	24,390	28,351	32,203	35,888	39,412	42,783	46,007	49,091
New Build	13,994	14,994	16,494	17,994	19,494	20,994	22,494	23,994
NIHE	19,470	20,470	21,470	22,470	23,470	24,470	25,470	26,470
Domestic Subtotal	**57,854**	**63,815**	**70,167**	**76,352**	**82,376**	**88,247**	**93,971**	**99,555**
I&C Subtotal	**3,187**	**3,337**	**3,485**	**3,635**	**3,782**	**3,927**	**4,069**	**4,209**
Total	**61,041**	**67,152**	**73,652**	**79,987**	**86,158**	**92,174**	**98,040**	**103,764**

Again, the greatest category of growth is the OO property sector, with forecast growth in cumulative customers over the GD23 period (2023 to 2028) of 73%. Overall, the number of customers connected to firmus energy's network is forecast to increase from 67,152 at the end of GD17 (i.e. the end of 2022) to 103,764 at the end of GD23 (i.e. the end of 2028), representing a growth in customers connected to our network of 55%. These growth targets are ambitious, but achievable, based upon the resourcing and operational support we have include within our GD23 Business Plan.

As discussed earlier in Part 5, our ambitious connections forecast not only serves to sustain optimal tariffs for conveyance on our network, but importantly, it serves to optimise the benefit of reduced CO_2 emissions into Northern Ireland's atmosphere, over the GD23 period and beyond. The CO_2savings contributed by those customers connected to firmus energy's network will expedite Northern Ireland's journey to achieving net zero carbon emissions by 2050. These forecast savings were previously outlined in Figure 5.7, above.

In the sections which follow, we outline the steps and assumptions made to determine our GD23 connections forecast for each customer category.

5.3.2 OO Connections Forecast Assumptions

firmus energy plans to grow our OO connections over the GD23 period by 20,740, taking our cumulative OO connections at the end of the GD23 period to 49,091 and representing a 73% growth in this customer category over the six year period.

As we embark upon GD23, network penetration in the OO sector (i.e. the number of OO properties connected as a percentage of the total number of OO properties with access to the natural gas network) is 21%. This sector therefore offers significant potential, not only for network growth but also the resulting contribution to reducing CO_2 emissions in Northern Ireland. By the end of the GD23 period we expect this network penetration to grow to 36%.

In our experience, the greatest rate of connection to our network occurs within the first 12 months of customers having access to the network. In GD23, this dynamic will change for firmus energy, as our core network build (and therefore properties passed) plateaus from 2023. From 2024, firmus energy's OO connections will therefore be sourced from existing mains infrastructure and will require focused support and resourcing, as discussed further in Part 5.5. As outlined in Part 1 of this document, retention of the Connection Incentive Allowance is an area where firmus energy believes the Utility Regulator can particularly enable the successful delivery of our GD23 ambitions.

For GD23, firmus energy is forecasting an OO connection run rate of 4.35% of 85% of properties passed with access to our network. We believe this run rate demonstrates our ambitions to expedite growth in the OO sector and optimise its' contribution to reducing CO_2 emissions in Northern Ireland.

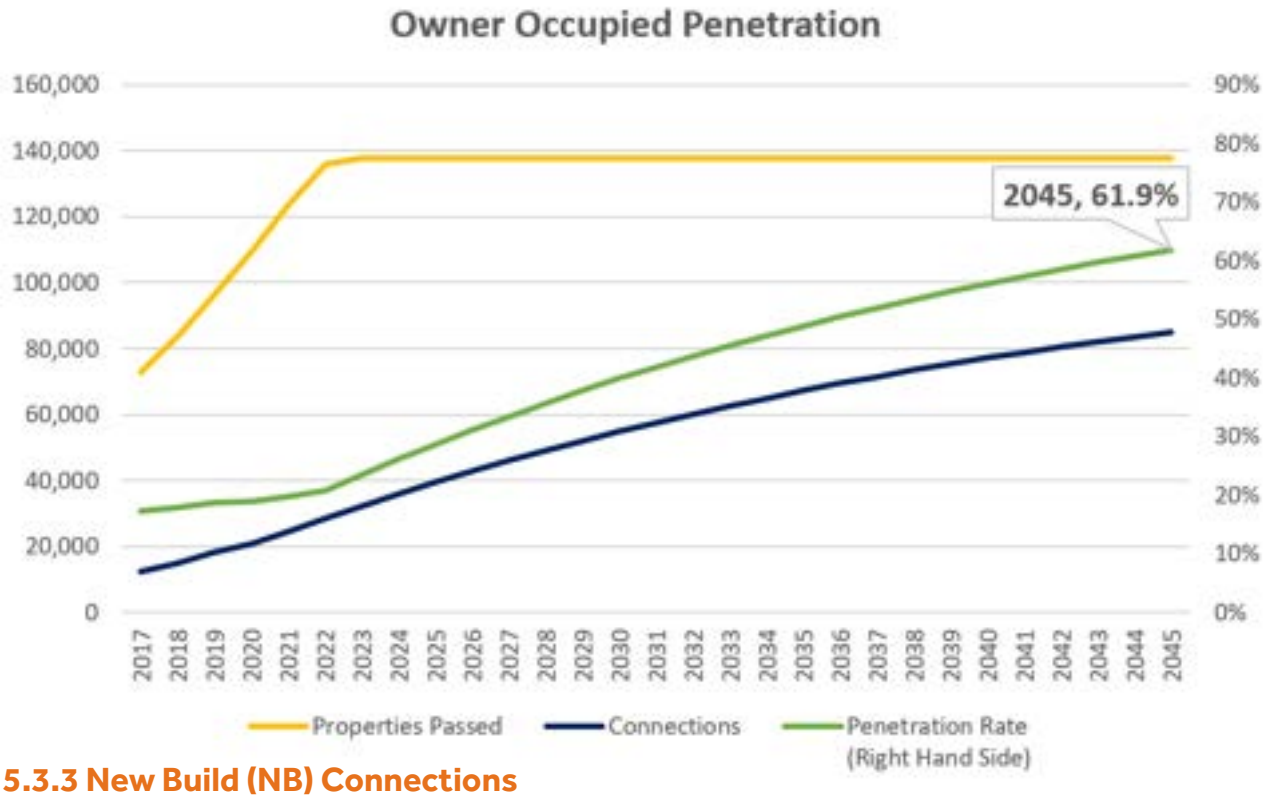
Our run rate of 4.35% is derived from our experience in GD17, and compares (somewhat) to the 5% run rate determined by the Utility Regulator in their GD17 Final Determination.

Whilst the quantum of our run rate in GD23 is comparable to that in GD17, the context is very different. As outlined above, the vast majority of our OO connections in GD23 will be from existing mains and no longer represents a 'blended rate' which includes connections from new infill areas, as well as connections from existing mains. It is in this context, we believe a connection run rate of 4.35% from 85% of available properties passed for the GD23 period, and beyond, is ambitious.

4.35% is the average run rate experienced for the years 2017, 2018 and 2019. We have excluded the 2020 run rate (3.48%) from our calculations due to the atypical impact on OO connections in this year, due to the outbreak of Covid-19. To further highlight our ambitions in GD23, the OO connections run rate from existing mains (i.e. those properties where gas has been available for longer than 12 months) averages 2.93% for the years 2017, 2018 and 2019, peaking at 3.35% in 2019.

Figure 5.11 illustrates the profile of OO connections, OO properties passed and cumulative OO properties passed in the period to 2045. Our penetration will grow from 21% at the end of GD17, to 36% at the end of GD23, and ultimately reach 62% by the end of 2045.

Figure 5.11 Overview of OO Connections, Properties Passed and Penetration, 2021 to 2045



5.3.3 New Build (NB) Connections Forecast Assumptions

New build (NB) properties include all newly built properties from within the private (OO) or social (NIHE and HA) domestic customer categories, discussed in Parts 5.3.2 and 5.3.4 respectively. During firmus energy's 16 years of network development, we have established strong relations with NB stakeholders operating throughout the 'Ten Towns' area, including;

- **Architects**
- **Property Developers**
- **Land Owners**
- **Department of Infrastructure**
- **Builders**
- **NIHE**
- **Local Planning Offices**
- **Housing Associations**

Our forecast is supported by a number of factors, including engagement with our NB stakeholders in preparation of our GD23 Business Plan. According to NISRA's Population Projections for Northern Ireland, published on 30th April 2020[48], the population of Northern Ireland is forecast to grow by 5.7% in the 25 year period 2018 to 2043, driving continued demand for housing. The Department for Infrastructure in Northern Ireland is projecting new dwellings demand of 84,800 properties over the period 2016 to 2030, (i.e. c.5,653 new dwellings per annum).

We have been successful in our ambitions to demonstrate the benefits of natural gas to property developers and ensure natural gas has been installed as the fuel of choice, where it has been feasible to do so. Our network engineers and Energy Advisors proactively work to ensure we are informed of new development sites across our network area, and we will continue this discipline to ensure our ambitions are realised throughout GD23, and in the period to 2045.

Figure 5.12 Projected New Dwellings in Northern Ireland, 2016 to 2030 [49]

District Council	Household Projection 2030	Second Homes 2030	Vacant Stock 2030	Net Conversions closures and Demolitions 2016-2030	New Stock Estimate 2030	House stock at April 2016	Projected New Dwelling Requirement 2016-2030
Antrim and Newtownabbey	59,200	400	3,200	(400)	62,400	58,300	4,200
Ards and North Down	70,100	900	4,500	200	75,800	70,300	5,500
Armagh City,Banbridge and Craigavon	90,500	900	6,300	2,000	99,700	82,500	17,200
Belfast	148,200	1,500	13,000	900	163,500	156,100	7,400
Causeway Coast and Glens	58,300	2,700	5,200	2,400	68,600	62,900	5,600
Derry City and Strabane	60,000	200	4,300	100	64,600	60,500	4,100
Fermanagh and Omagh	46,200	500	4,300	1,300	52,400	48,000	4,300
Lisburn and Castlereagh	63,500	400	3,700	1,100	68,700	58,000	10,700
Mid and East Antrim	59,200	200	3,600	1,000	64,100	58,700	5,400
Mid Ulster	57,000	200	3,500	2,300	63,000	52,600	10,300
Newry, Mourne and Down	72,300	800	5,300	300	78,700	68,600	10,000
Northern Ireland	784,600	8,700	57,000	11,100	861,300	776,500	84,800

firmus energy has forecast 1,500 annual NB connections throughout the GD23 period. Our forecast is supported by further assessment of the data provided within Figure 5.12. Figure 5.13 outlines our assessment of forecast NB growth within our network area.

[48] NISRA population projection for Northern Ireland, published 30 April 2020 https://www.nisra.gov.uk/publications/2018-based-population-projections-areas-within-northern-ireland

[49] Department for Infrastructure Housing Growth Indicators: https://www.infrastructure-ni.gov.uk/sites/default/files/publications/infrastructure/Housing%20Growth%20Indicators%20-%202016%20based_1.pdf

Figure 5.13 Assessment of forecast New Build Properties in firmus energy's network area

Local Government District	Growth in 15 Years (2016 to 2030 inclusive)	Assumed Annual growth Rate	Firmus Energy Coverage (approx.)	Potential growth within Firmus Energy's Network	Assumed loss to other energy types in GD23 @ 5%	GD23 forecast growth in Firmus Energy's network
Antrim & Newtownabbey	4,200	280	33.1%	93	(5)	**88**
Armagh, Banbridge & Craigavon	17,200	1,147	68.8%	789	(39)	**750**
Causeway Coast & Glens	5,600	373	45.2%	169	(8)	**161**
Derry & Strabane	4,100	273	73.9%	202	(10)	**192**
Mid & East Antrim	5,400	360	34.0%	122	(6)	**116**
Mid Ulster	10,300	687	3.3%	23	(1)	**22**
Newry, Mourne & Down	10,000	667	26.2%	175	(9)	**166**
Total	**56,800**	**3,787**		**1,573**	**(78)**	**1,495***

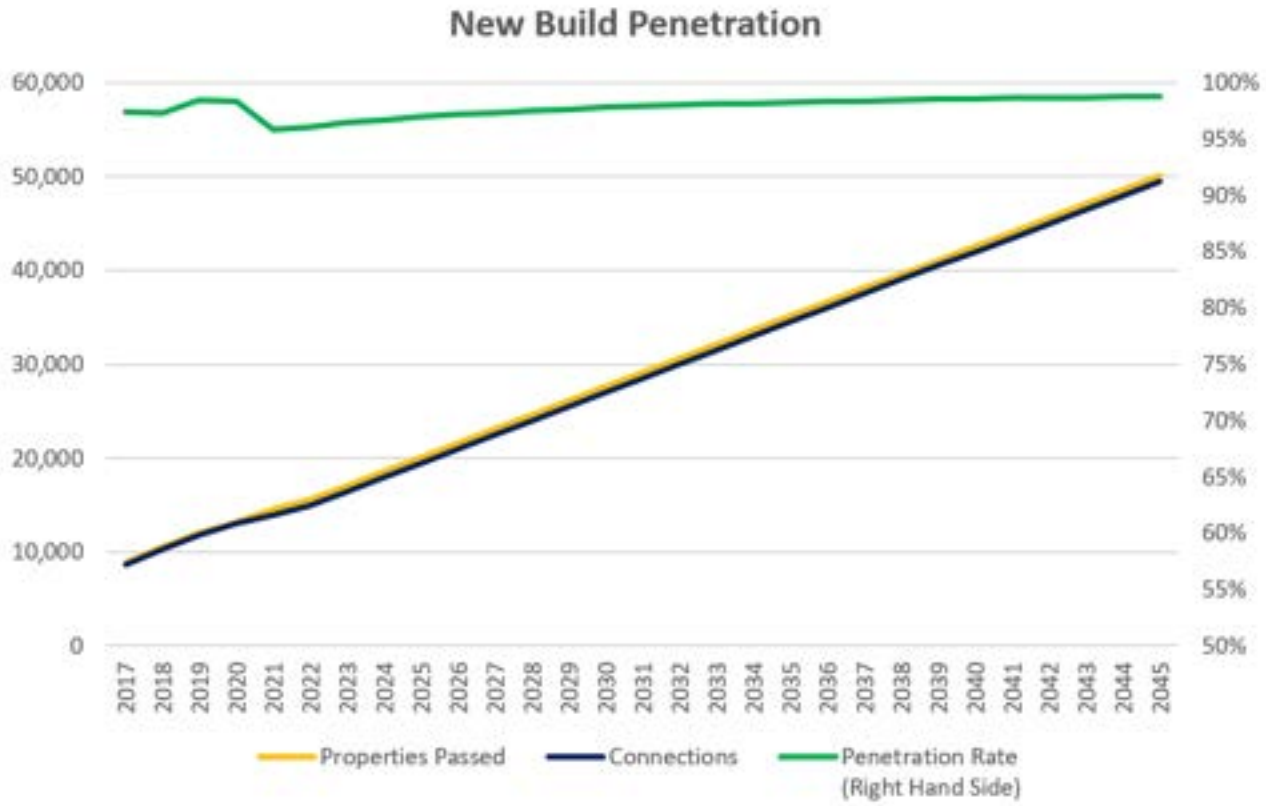
** rounded to 1,500 for GD23 forecast*

For GD23, and in accordance with the Utility Regulator's guidance, new build NIHE and Housing Association dwellings are included within the 'NB' categorisation.
Our total NB connection run rate for GD23, and beyond, is 1,500 per annum, (estimated to be c.1,000 per annum private sector dwellings and 500 per annum social sector dwellings).
This run rate takes our cumulative NB connections at the beginning of GD23 from 14,994 to 23,994 at the end of GD23. This represents growth of 60% in this customer category over the six year period.

The penetration of NB properties on our network will rise from 96% to 97.5% through the GD23 period, and is forecast to reach 99% at the end of 2045.

Figure 5.14 illustrates the profile of NB connections, NB properties passed and cumulative NB properties passed in the period to 2045.

Figure 5.14 Overview of NB Connections, Properties Passed and Penetration, 2021 to 2045



5.3.4 NIHE (and HA) Connections Forecast Assumptions

In our GD23 Business Plan, the NIHE customer category includes all categories of social housing, such as properties owned by housing associations (HAs). Any new social housing stock which is built through the GD23 period, and beyond, will be considered as new build (NB) properties.

firmus energy plans to grow our NIHE connections over the GD23 period by 1,000 per annum. As we embark upon GD23, the total social housing stock with access to firmus energy's network will be 29,703, with connection of 20,470 (i.e. 69% penetration). Our penetration is set to increase to 89% penetration by the end of GD23, when 26,470 connections will be made to the 29,780 properties with access to our network. This represents penetration growth over the six year GD23 horizon of 20%.

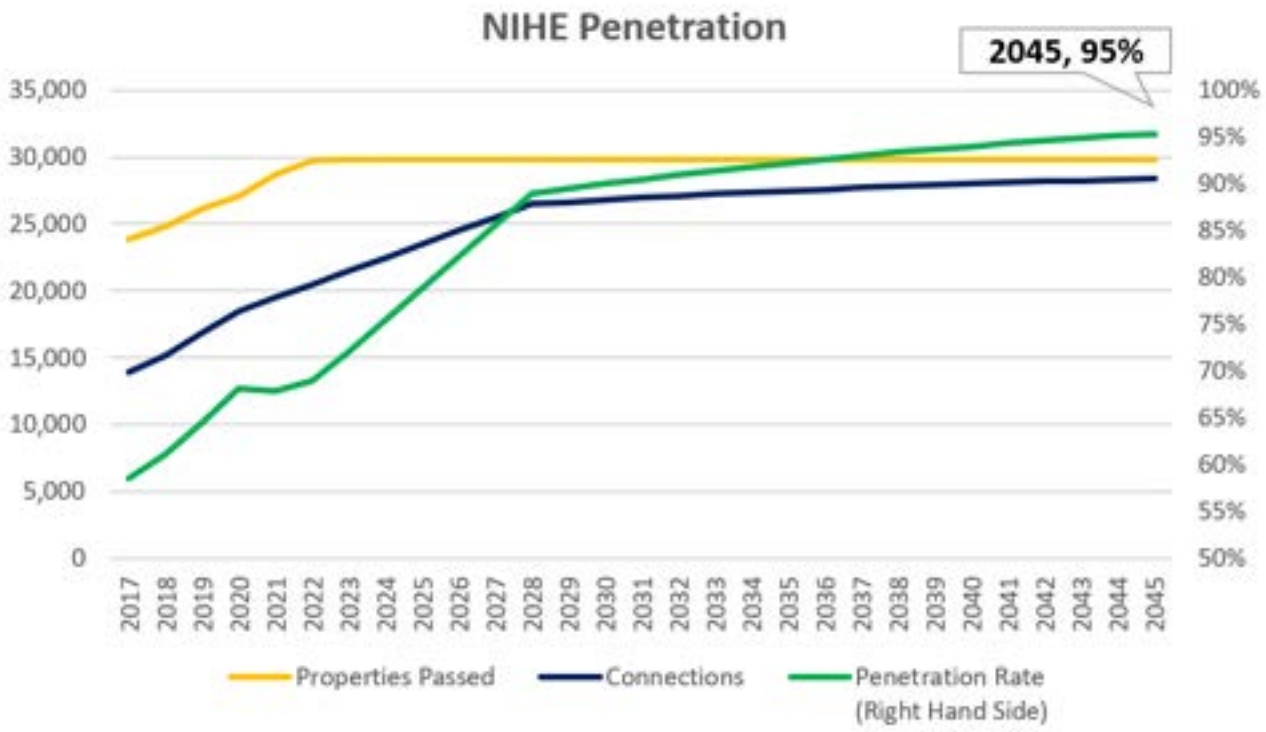
firmus energy has a dedicated Energy Advisor, supporting connection growth within the social housing sectors. We work hard to maintain engagement and robust stakeholder relations with all social housing representatives throughout our network.

Our Energy Advisor engages routinely with NIHE and HA representatives, where future planning is a key, and ongoing, discussion. More operationally, firmus energy works continually with our social housing representatives to promote the benefits of natural gas to their tenants, and prior to each connection our Energy Advisor will visit the property in order to discuss their conversion to natural gas, including for example, meter positioning, with each social housing tenant.

Our NIHE connections forecast for GD23 has been developed following engagement with our social housing stakeholders, our experience in GD17 and our ambitions for GD23.

Figure 5.15 illustrates the profile of NIHE connections, NIHE properties passed and cumulative NIHE properties passed in the period to 2045. From 89% penetration at the end of GD23, our forecast penetration in the social housing sector is forecast to reach 95% at the end of 2045.

Figure 5.15 Overview of NIHE Connections, Properties Passed and Penetration, 2021 to 2045



5.3.5 I&C Connections Forecast Assumptions

Our I&C customers category is comprised of larger I&C customers, i.e. those with an annual volume in excess of 25,000 therms, and small and medium I&C customers (SMEs), with an annual volume of less than 25,000 therms.

Large I&C Customers

Within the GD17 period our average large I&C connections has averaged 1-2 per annum. Whilst there have been some notable movements, with customer closures (e.g. Michelin and Banah) and customer gains (e.g. Mackles, Ulster Farm By-Products and a second distillery at Bushmills), the overall number of customers connected has remained stable.

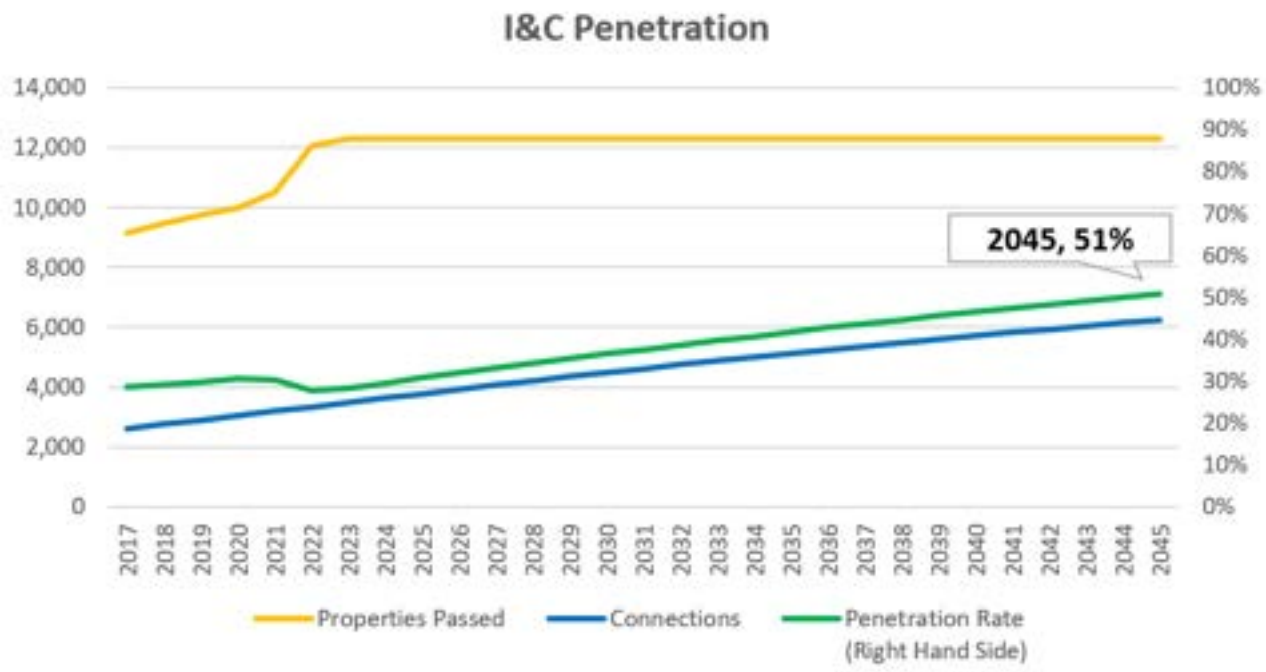
Given our network penetration, we are not forecasting any (net) change to customer connections in this sector for the GD23 period.

Small and Medium (SME) I&C Customers

In GD23, growth in I&C connections is forecast to come from within the SME I&C customer category. Over the period, firmus energy is forecasting an average of 145 SME I&C connections in each year of the GD23 period. Our forecast is principally based upon our GD17 experience, supported by our view that notwithstanding the impact of Covid-19 in 2020 and 2021, no fundamental changes are anticipated within this commercial sector over the GD23 period which would suggest a deviation from the average growth experienced during GD17.

Figure 5.16 illustrates the profile of I&C connections, I&C properties passed and cumulative I&C properties passed in the period to 2045.

Figure 5.16 Overview of I&C Connections, Properties Passed and Penetration, 2021 to 2045



5.4 Penetration Summary Forecasts

Penetration measures connections made to our network as a percentage of the total available properties passed which could be connected to our network.

Figure 5.17 outlines network penetration of our GD23 Business Plan, by customer category at the end of GD17, the end of GD23, and the end of 2045. For reference, we have also included the penetration which was anticipated within our GD17 Final Determination.

Figure 5.17 Penetration Forecast by Customer Category

	GD23 Penetration rate at 2022	GD23 Penetration rate at 2028	GD23 Penetration rate at 2045	GD17 Penetration at 2045
Owner Occupied	20.9%	35.7%	61.9%	51.6%
New Build	96.1%	97.5%	98.9%	98.0%
NIHE	68.9%	88.9%	95.4%	99.5%
Industrial & Commercial	27.6%	34.3%	50.9%	51.8%
Total	**34.8%**	**50.8%**	**73.7%**	**64.0%**

As shown in Figure 5.17, our GD23 Business Plan is ambitious. By the end of GD23, our overall network penetration is forecast to be 50.8%, which compares to GD17 when we anticipated an overall network penetration by the end of 2028 of 45%.

As discussed throughout Part 5, the primary area for growth in volumes, connections and penetration over the GD23 period is the OO customer sector. As we embark upon GD23, the opportunity which exists within the OO customer sector is significant. Not only have we the opportunity to continue the growth in connections to our network, but each new connection to our network will immediately contribute to decarbonisation of Northern Ireland's energy landscape.

Our ambitions for increasing network penetration, particularly within the OO customer sector, are dependent upon the resourcing, cost allowances and continued government support schemes required to support our plans. Our GD23 Business Plan includes provision for those firmus energy activities which we believe will secure the successful delivery of our forecasts, and are embedded within our 11% reduction in tariffs for the GD23 period, and beyond. This support is outlined in Part 5.5, as follows.

5.5 Support required to achieve our forecast volumes and connections

5.5.1 Connection Incentive Allowance

The OO customer sector will be the primary source of growth in connections to firmus energy's network in the GD23 period. This sector will also see the largest growth in volumes conveyed through our network and contribute the largest displacement of CO_2 emissions over the six year price control horizon.

In determining our ambitious OO connection targets for GD23, our assumptions have been founded upon an accompanying cost to support each OO connection to our network. As outlined in Part 1 of this document, firmus energy believes the costs required to support OO connections to our network, materially increasing volumes conveyed and significantly contributing to Northern Ireland's journey towards decarbonisation, are of the utmost importance to the successful delivery of our GD23 ambitions.

Previously, the Utility Regulator has included a concept on non-additionality in their determination of cost allowances to support OO connections to our network, suggesting 25% of OO connections are made without any cost requirement. It is a matter of fact, that each OO connection requires cost support, for example,

- It would be impossible to identify those potential customers not requiring direct marketing engagement, such that we could deploy direct marketing to only 75% of our potential customers
- It would be impossible to reduce radio or TV marketing expenditure by 75% in order to reach only those potential customers who might be persuaded to convert to the benefits of natural gas
- Each OO customer connection requires at least one Energy Advisor visit, to walk each potential customer through our connection process, and ultimately, to undertake activities such as agreeing meter placement with those customers choosing to connect.

As such, firmus energy strongly believes an overall allowance is required to support every forecast connection to our network in GD23, albeit this may be subsequently allocated on a per connection basis, for each connection made.

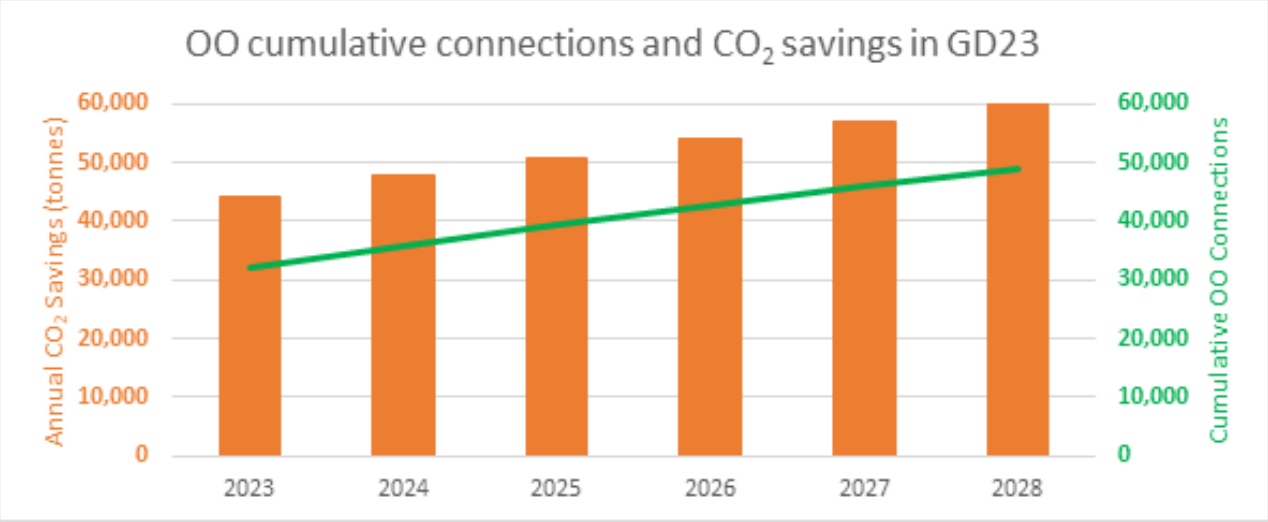
In GD23, firmus energy has presented our ambitious OO connections forecast based upon an allowance of £506 (£2020) for each connection throughout the period. This allowance is based upon the Utility Regulator's GD17 determined allowance for 2022, with a 20% uplift to our per connection marketing requirement for the GD23 period. As outlined in Part 5.3.2, our annual forecast connection rate of 4.35% of 85% of available properties passed, has been determined in the knowledge that we will be passing no new OO properties for five years of the six year period. OO properties passed within 12 months have historically offered the greatest percentage uptake in connections (at c.10% of available properties passed in each year). Furthermore, OO customers who have previously connected to our network have told us that they recalled awareness of our brand from vehicles and construction activity in their area. Again, after 2023, this activity materially decreases, as firmus energy's engineering focus moves from construction to maintenance of our network.

Potential OO customers have also told us that the greatest barrier to connecting to natural gas is cost. The average cost to convert a home heating system to natural gas is c.£3,000. This cost resides with the customer, however, the connection allowance must continue to support incentivisation of connections to our network and the marketing activities required to deliver our targets for the GD23 period.

As discussed further in Part 5.5.2, below, firmus energy strives to ensure those in fuel poverty have the opportunity to convert to a more economical and decarbonising fuel option. In order to access grant funding for customers across our network (such as NISEP and the Boiler Replacement Scheme) firmus energy must commit funding to secure support for those more financially vulnerable in our network area.

Our GD23 Business Plan presents a saving to all current and future customers of 11% in the tariffs they will pay for network conveyance usage. This notable tariff decrease includes the costs we believe are necessary to support the continued growth in OO connections to our network and the environmental (decarbonising) benefits which will be enjoyed throughout Northern Ireland, as detailed in Figure 5.18.

Figure 5.18 OO Cumulative Connections and CO_2 Savings in GD23



5.5.2 External Support for Customer Connections

In preparing our GD23 Business Plan, we are anticipating the continuation of the current suite of government schemes which support connections to the natural gas network. There are three key schemes which support, in particular, those customers requiring financial assistance to avail of the benefits of natural gas. These schemes provide essential support to those in fuel poverty, or for whom the cost of conversion would otherwise be a barrier to connection.

The primary support schemes which provide financial assistance to a number of our customers are;

NISEP Funding

- The Northern Ireland Sustainable Energy Programme (NISEP) is an £8m fund, collected from all electricity customers in Northern Ireland by means of a Public Service Obligation (PSO). This funding is used to support energy efficiency schemes across the province, with c.80% of funding targeted to support vulnerable customers.
- Each year firmus energy competitively bids, via a tender process, for NISEP funding to provide, either, a fully-funded or partially-funded gas heating and insulation upgrade installation to households across our network area. In GD17, we have secured funding to support an average of 440 connections per annum. In GD23, we have assumed continuation of the NISEP scheme, and our requested allowance of £506 per connection will ensure we can continue to secure NISEP funding for more vulnerable customers across our network.

The Boiler Replacement Scheme

- The Boiler Replacement Scheme supports OO households to improve the energy efficiency of their homes. The scheme, which provides a grant of up to £1,000, is available to OO customers whose gross (household) income is less than £40,000 and who have an inefficient boiler of at least 15 years old.
- firmus energy promotes this scheme to households across our network, via all advertising channels. In GD17, we have provided £200 funding (from our connection incentive allowance) to help potential customers bridge the gap (c. £2,000) between the Boiler Replacement Scheme allowance and the cost of a natural gas installation. The Boiler Replacement Scheme and firmus energy's contribution, has supported the connection to natural gas of c.400 households per annum.

Affordable Warmth Scheme

- The Affordable Warmth Scheme is focused upon supporting those in fuel poverty, within the private sector. Support is provided to improve energy efficiency of homes, offering assistance with installation of insulation, central heating and new windows. Pertinent to customers of firmus energy is the support provided to assist with the replacement of old boilers with new energy-efficient boilers, as is the case with typical conversions from oil to natural gas.
- This scheme is managed solely by local councils who identify those meeting the schemes' criteria, and ultimately fund heating or insulation costs. In GD17, c.100 connections per annum have been made to our network. firmus energy does not have access to number of households availing of this scheme in our network area, however, we believe the number of connections resulting from the Affordable Warmth Scheme is c.50 to 100 per annum.

As discussed previously in this document, customers have told us that the cost of conversion is the primary barrier to connecting to natural gas. It is therefore essential for those most in need of financial assistance to connect to our network that firmus energy can continue to support funding which enables those customers to access external funding schemes. Over the GD17 period to-date, the greatest number of connections availing of external financial support have availed of the NISEP scheme.
On average, 440 OO connections availed of this scheme per annum in the four year period 2017 to 2020.

We believe this funding is essential to support our more financial vulnerable customers and have anticipated our continued support for, and access to these schemes throughout the GD23 period. These schemes are central in our ongoing engagement with stakeholders, including government policy and decision makers, such that those in fuel poverty, or perhaps financial vulnerability, can avail of the benefits of natural gas and contribute to Northern Ireland's journey towards net zero carbon.

Our ambitious connections forecast not only serves to sustain optimal tariffs for conveyance on our network, but importantly, it serves to optimise the benefit of reduced CO_2 emissions into Northern Ireland's atmosphere, over the GD23 period and beyond. The CO_2 savings contributed by those customers connected to firmus energy's network will expedite Northern Ireland's journey to achieving net zero carbon emissions by 2050.

6 Opex

Utility Regulator Guidance

- Methodologies and rules used for allocations and estimation, changes to same compared to previous regulatory submissions for the 2019/2020 reporting years and for GD17 as well as effective date and impact of such changes;
- Additional details on cost movements in the reporting period;
- Additional details about changes in workload, their timing and impact of same on the business, now and in the future;
- Details on any non-price controlled activities listed;

6.1 Introduction

firmus energy's forecast operating expenditure for the GD23 period follows a detailed bottom-up analysis of resources required to deliver our business activities efficiently and effectively during this period of growth, whilst maintaining our excellent standards of safety and customer service.

The engineering dynamic within firmus energy is set to change over the GD23 period. With completion of our core network buildout in 2023, the GD23 period will see a move away from mains laying (capex) activities, and a greater focus on maintenance related (opex) activities.

As outlined in Part 5, our ambitious plans for customer growth are contingent upon the support we have requested within our GD23 Business Plan. We need to secure resources to support successful delivery of our plans for the GD23 period, but also to ensure our infrastructure is best placed to maximise our contribution to Northern Ireland's journey to net zero carbon in the medium to longer term.

Over the GD23 plan period it is expected that specific additional engineering resources will be required. The increased opex planned comes primarily from a modest increase in manpower headcount in the first half of GD23 and from increased maintenance costs associated with the growth, maturity and safety of our network over the GD23 period.

The largest increase in maintenance comes from the additional requirements to inspect medium pressures regulators at 5 year intervals as per BS6400 rather than the current 10 year requirement. This will effectively more than triple the cost in this area over the GD23 period by adding an inspection at 5 year and 15 years in addition to 10 years, and accounts for the stepped increase in costs in 2023.

With a 55% increase in firmus energy's customer base (i.e. an additional 36,612 customers) forecast over the GD23 period, a broadly proportionate uplift in gas emergency calls and responses is also anticipated. In addition, although the pipeline network itself requires little maintenance at this stage, a number of mandatory cycles of maintenance activity will come on stream as certain assets pass the 10-year and 20-year inspection/replacement mark.

Apart from these items, firmus energy's other operating costs remain flat in real terms over the GD23 period despite the significant growth in the company's connection numbers. A summary of firmus energy's operating costs across the GD23 period is set out below in Figure 6.1.

In preparing estimates of future operating expenditure we have based our costs, on our experience to date in the Ten Towns development area. All costs have been supplied on the basis of 2020 prices, and efficiency improvements have been built into the cost inputs.

In developing the operational Business Plan, firmus energy must continue to deliver efficient operation of the gas network system in a manner that is compliant with all relevant safety, regulatory and statutory obligations.

Figure 6.1 Opex Breakdown

	GD17		GD23					
	2021	2022	2023	2024	2025	2026	2027	2028
	£'000	£'000	£'000	£'000	£'000	£'000	£'000	£'000
Manpower	2,779	2,824	2,869	2,894	2,945	2,997	3,024	3,051
Emergency Costs & Network Maintenance	1,787	1,927	2,590	2,731	2,883	3,163	3,372	3,513
Connection Incentive Mechanism	1,387	1,395	1,477	1,400	1,316	1,232	1,154	1,080
Network Rates	891	933	935	985	1,020	1,053	1,081	1,106
Legal and Professional Fees	761	461	586	501	501	501	801	501
IT	514	565	691	618	608	629	631	633
Insurance	285	326	326	326	326	326	326	326
Other Costs	247	245	418	243	244	249	249	249
Total	**8,652**	**8,676**	**9,891**	**9,698**	**9,845**	**10,151**	**10,639**	**10,459**

Cost Management

firmus energy has systems in place to manage and review operating costs through budgeting processes and coding structures. The objective of the firmus energy purchasing procedures is to ensure that resources are used effectively and cost efficiently. All expenditure requires an initial purchase order to ensure that expenditure is necessary, appropriately approved and coded correctly. Larger cost activities require tendering processes, including OJEU/FTS processes, and/or contracts to ensure value-for-money and to add a further level of control. The manager authorising the purchase is responsible for ensuring that the purchase itself is justified (including, without limitation):

- The provision of a business case where appropriate
- Confirmation of an approved budget
- Confirmation that the purchase is necessary business expenditure

Costs are reviewed on an on-going basis through the purchase order and contract management system. All payment runs and cheques also require approval from at least two members of senior management and these are reviewed on a weekly basis. Costs are also reviewed monthly by the Senior Management Team (SMT). The company has well-developed information systems for managing costs and uses a well-established SAGE accounting system as its financial software.

Efficiency Improvement

Innovation and technology transfer will contribute to efficiency improvement and cost reduction. Two innovative measures in particular will assist with the reduction of costs in the GD23 period.

- Replacement of the out-dated IT platform used for engineering workflows and asset management, driving efficiency improvements and speeding up internal processes and procedures, coupled with improvements to the GIS system and inter-links between the two systems.
- Computer tablets – reducing manual data input, allowing decisions on connections on the doorstep, and reducing environmental impact with less use of hardcopy application forms

The company will continue to drive for internal efficiency savings through the regular review of internal processes and the identification of improvements.

6.2 Manpower

firmus energy currently has 71 full time equivalent (FTE) staff employed in the distribution business. It is projected that headcount (and associated staff costs) will remain relatively flat for the remainder of the GD17 period and throughout the GD23 plan period.

Only 3.5 additional heads have been forecast for the GD23 period. Three of these will be employed in the operations and maintenance department within the engineering directorate and the additional half a FTE will reside in the Regulatory department.

The three additional operations and maintenance roles reflect the uplift in maintenance activities and will largely cover support functions within this department, to allow the qualified engineers to continue to focus on the more complex maintenance and emergency activities.

The three operations and maintenance roles forecast are as follows:

1. FROM 2023	• **A dual role covering both plant protection and management of the storeroom facilities**
2. FROM 2025	• **An additional trainee governor technician to assist with the increased volume of governor maintenance work**
3. FROM 2026	• **An engineering administrative/analyst role, assisting in data collation for internal and external reporting**

The additional half a FTE in the Regulatory department (from the commencement of the GD23 period) is to cover additional regulatory reporting and stakeholder engagement ensuring the company continues to meet its regulatory licence requirements and reporting deadlines, whilst also supporting the objective of the Utility Regulators Corporate Plan.

6.2.1 Comparison to GD17 - Headcount

As can be seen from Figure 6.2, the determined headcount for GD17 was 58.3 and firmus energy has operated throughout the GD17 period, above this determined figure.

It should be noted, however, that for GD17 the Utility Regulator did not set an explicit manpower cost allowance, since manpower costs form part of most of the cost categories, rather than being an individual cost category.

As such, some of the variance to the determined headcount can be explained by firmus energy directly employing maintenance and Owner Occupied Energy Advisor staff rather than employing consultants/contractors, as previously forecast.

Figure 6.2 firmus energy GD17 Allowed Headcount versus historical actual

	GD17 Determined	2017 Actual	2018 Actual	2019 Actual	2020 Actual
Work Management	29.4	28.5	31.5	32.0	29.0
Work Execution	4.7	6.2	6.2	8.0	8.8
Business	11.5	11.4	11.9	12.3	13.2
Advertising & Market Development	12.8	12.0	14.1	14.4	18.5
Total Price Control Activities	**58.3**	**58.1**	**63.7**	**66.6**	**70.3**

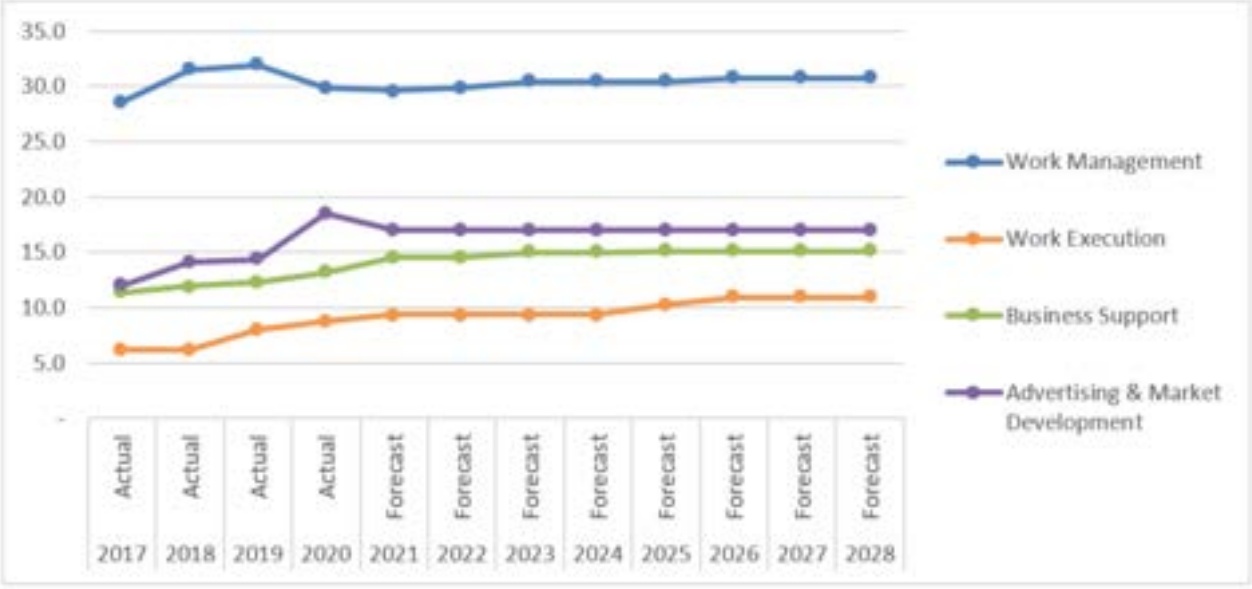
The GD23 projection for staff headcount for the period from 2021 to 2028 is set out in Figure 6.3 below.

Figure 6.3 firmus energy Staff Headcount Forecast GD23

	GD17		GD23					
	2021	2022	2023	2024	2025	2026	2027	2028
Work Management	29.6	29.9	30.4	30.4	30.4	30.7	30.7	30.7
Work Execution	9.3	9.3	9.3	9.3	10.2	10.9	10.9	10.9
Business Support	14.5	14.5	15.0	15.0	15.1	15.1	15.1	15.1
Advertising & Market Development	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0
Total Price Control Activities	**70.5**	**70.8**	**71.8**	**71.8**	**72.8**	**73.8**	**73.8**	**73.8**

The historic performance on staff headcount alongside the GD23 forecast is shown in Figure 6.4 below.

Figure 6.4 Historic and Forecast Manpower



6.2.2 GD23 movement in Planned Staff Headcount

In GD23 firmus energy will require an additional 3.5 FTEs (compared to 2020) to support delivery of our ambitious Business Plan. Our resource requirements will be phased over the GD23 period and are detailed as follows;

Figure 6.5 Additional Headcount Roles

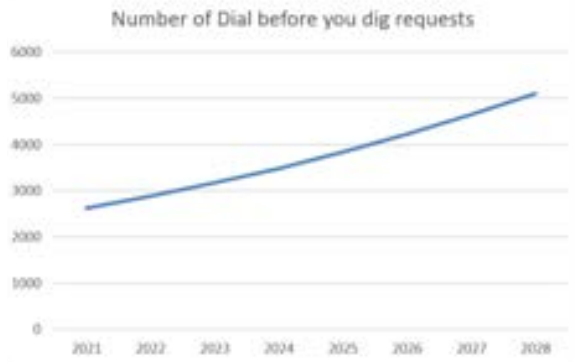
From Year	Role	Headcount
2023	Regulatory Analyst	0.5
2023	Plant Protection/ Store Management	1.0
2025	Trainee Governor Technician	1.0
2026	Engineering Analyst	1.0
Total		3.5

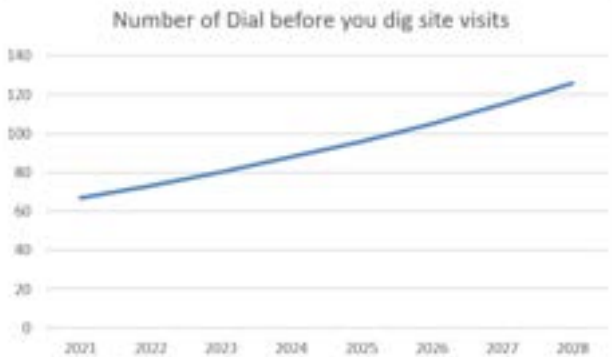
Business Rationale for Additional Staff Headcount - Plant Protection

As the network grows, the number of dial before you dig requests have increased, as has the number of site visits required with third parties. The average time taken to manage each request has also grown as the requests require more plant information and are increasingly taking the form of multiple requests. The area of plant protection is a recognised and critical function for all utility companies and the small time spent on site safe-guarding the network is rewarded with minimising the time involved in resolving a large scale emergency resulting from a damage to the network.

Almost all of our individual pressure networks are single fed from a single above ground installations (AGI's) and the criticality to protect our asset as more and more customers connect to gas, increases each year. Part of the requirements under IGEM/GL/1 Ed 2 is to safeguard the system and extend the network where possible to minimise this risk. Plant protection is a critical element of this work before any Security of Supply network extension project is completed on the network.

The growth of resource required to carry out this work is represented below in the following graphs;





We will therefore need additional resource dedicated to this area as the network grows. It is proposed that an extra 0.5 FTE is required for the GD23 period from 2023.

Stores Person

As the work increases within maintenance and with the governor technician's work taken in-house by firmus energy there is an increased level of store items being managed by firmus energy. This is expected to increase throughout the GD23 period especially as the 20 year replacement program of works is reached in 2026. As part of our ISO55001 Asset Management accreditation, we are audited and our external auditor has highlighted that an area of improvement is required in the area of stock management and the lack of a personnel and dedicated system to manage this. With this is mind, and the future growth in work as described above, this is an area we need to add additional resource.

There are a number of functions this resource will be required to carry out such as managing the recycling of defective materials found as part of the B6 inspections programme in addition to faulty equipment found under emergency and other planned work. As the asset base grows and ages, there will be more items replaced due to being defective and /or at the 20 year end of life. Another part of the works is recycling the return of the batteries from the 10 year battery replacement and the 20 year end of life of the meter in line with our Environmental ISO14001 and Asset Management ISO55001 accredited policies.

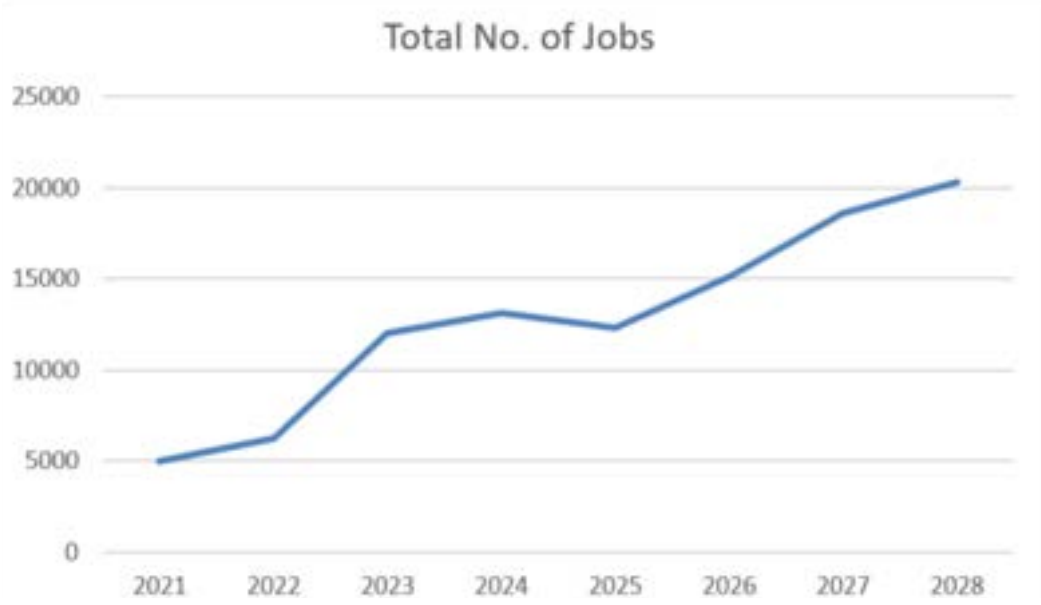
We will therefore require an additional resource dedicated to this area as the network grows. It is proposed that an extra 0.5 FTE is required for the GD23 period from 2023.

Engineering administrative support/financial analyst

With the number of increased jobs proposed in GD23 such as the move to a 5 year and 15 year inspection, as well as the current 10 year inspection of the medium pressure domestic regulator, as per the requirements of BS6400 and the associated extra jobs with the 20 year end of life replacement programme, it is proposed that additional resource is required to manage this uplift in workload.

It is not just the raising of the jobs on the system and handover to the contractor but also the management of queries from customers and contractors as well as completion paperwork.

The graph below illustrates the increase in number of jobs over GD23 period that will need resource to raise for regulator inspections, battery replacement and 20 year end of life replacement jobs.



It can be seen from the graph that there is a step change in the number of jobs in 2023 and 2026 to support this approach.

As this graph does not consider the other increases of jobs across the business such as emergencies, and customer requested work, it further reinforces the requirement for extra administrative for the GD23 period.

The Utility Regulator now requires much more granular detail of appropriate of costs as well as activity numbers within the Operations and Maintenance department. The methods used by the Finance and Regulation departments can no longer assist with this new format of information presentation and much of this work is required to be completed by the engineering department.

Indeed there is a requirement for increased detailed reporting for a number of government agencies that may have been traditionally fulfilled by regulation and finance departments such as emissions information for the statutory accounts. As these requirements are all new items, it means they are in additional to the previous requirements and therefore cannot be fulfilled by existing staff amending their duties.

It is therefore proposed that a new Financial Analyst will be required from 2026 to assist with the above work, to compile the relevant statistics and information for the Utility Regulator for the annual cost reporting and other government bodies reporting requirements and also the management of queries from customers and contractors and completion paperwork.

Amendment of duties within the Engineering Team

It is recognised that there will be a reduction in the construction mains program during GD23 but an increase in service connections, with increasing NIHE connections and the continuation of new build sites and proposed new development areas that will need to be adequately resourced.

It must be considered that the number of connections within their respective program will remain broadly in line with current levels and therefore the resource in this area will remain the same.

With the increase of tasks in 2023 due to increased inspection years for medium pressure regulators, and in 2026, the 20 year maintenance of equipment commencing, these tasks will require the transfer of staff moving from the construction team to the O&M team.

Regulation

firmus energy's Regulatory Affairs team is a corporate service which provides support for both firmus energy Distribution Ltd. and firmus energy Supply Ltd.

This team, comprising 1 manager and 1 analyst, are responsible for managing a suite of activities within both our Distribution and Supply businesses, which include responsibility for;

- all matters of license compliance and regulatory reporting (e.g. managing price control reviews and REMM reporting)
- operational engagement with the Utility Regulator (e.g. forums, working groups and consultations), Consumer bodies (e.g. CCNI) and wider industry stakeholders (e.g. governmental departments, fuel poverty groups, and other natural gas service providers)

Also included within the remit of our Regulatory Affairs team is the role of Data Protection Officer (DPO) for both firmus energy's businesses. This responsibility is incorporated within the role of our Regulatory Affairs Analyst.

Of the 2 FTEs within this team, the UR's GD17 determination provided an allowance of 1 FTEs for firmus energy Distribution Ltd.

Since the UR's GD17 determination, the work demands placed upon our Regulatory Affairs team have steadily increased, and not least in the area of consumer protection.

firmus energy is fully supportive of the UR's Consumer Protection Programme (CPP) and its objective to deliver fair and equitable results for all domestic consumers, including those in vulnerable circumstances. We recognise however, that support for the UR's CPP will require firmus energy's commitment to a number of projects, and ongoing regulatory and stakeholder engagement at an incremental level to that required during GD17, or any previous price control periods.

Our ability to adequately resource engagement in the CPP is not only critical to our ability to support the UR's objectives on this matter, but we believe these will deliver long-term benefits to firmus energy's consumers, and all natural gas consumers in Northern Ireland.

To provide a proxy for our increased regulatory workload, we would note the following in relation to the UR's Forward Work Plans, comparing that of 2020/2021 to that of 2015/2016 (i.e. the time of GD17 price control review).

UR FWP	2015/2016	2020/2021	Change	Change %
FTEs	80*	87	7	9%
Budget	£7.98m	£8.95m	£0.97m	12%
UR Projects	27	23	(4)	(15%)
Projects involving firmus energy Distribution Ltd.	6 (22%) of 27	8 (35%) of 23	2	13%
Projects involving firmus energy Supply Ltd.	8 (30%) of 27	7 (30%) of 23	(2)	*no change*

*76 + 'several' (assumed to be 4 by firmus energy) temporary staff

In our GD23 Business Plan, we believe an increase of 1 FTE per annum within our Regulatory Affairs team for the GD23 period (and beyond), to be split between our Distribution business (0.5 FTEs pa) and our Supply business (0.5 FTEs pa) is an essential requirement to secure delivery of our Business Plan and support the Utility Regulator in delivering projects currently identified within it's Corporate Work Plan.

FTEs within our Regulatory Affairs team are therefore requested to increase from 1 FTE (0.98 rounded) in GD17 to 1.5 FTEs (1.48 rounded) in GD23.

6.3 Connection Incentive Mechanism

6.3.1 Retention of the Connection Incentive Allowance in GD23

Our GD23 Business Plan forecasts the retention and enhancement of the existing connections incentive mechanism for owner occupied (OO) connections.

GD23 will present greater challenges to firmus energy in growing connections to our network, than at any time previously in our network development. The energy landscape is evolving and becoming more complex than at any time previously, and many customers will be less persuaded to connect to a fossil fuel, particularly when having to pay the conversion cost for doing so. Customers will need to be educated, then persuaded by the immediate benefits of natural gas in the short to medium term, and the significant medium to longer term opportunity offered by our infrastructure (i.e. to convey renewable fuels).

As detailed in Part 5, we have set ambitious targets (based upon an annual run rate of 4.35% of 85% of all connectable available properties on our network, for each year of the GD23 period). In setting our targets we have embraced the principle objective we share with government and the Utility Regulatory, namely, "...to promote the development and maintenance of an efficient, economic and co-ordinated gas industry in Northern Ireland"[50] In addition, we have considered the significant opportunity to promote the objectives of Northern Irelands developing Energy Strategy, which targets net zero carbon energy by 2050.

We acknowledge and support the requirement to ensure our development of the natural gas industry remains efficient and economic. firmus energy recognises the value of connecting a customer to our network depends upon a reasonable expectation that the associated costs of this connection will be recovered over the (economic) life of the connection.
We consider, however, that there is scope to amend the assumptions within the Utility Regulator's economic test, such that more appropriate allowances might be determined for the GD23 period.

firmus energy believes an allowance of £506 (£2020) per connection is required to successfully deliver our ambitious OO targets over the six year period, 2023 to 2028.

[50] Clause 14 of The Energy (Northern Ireland) Order 2003; https://www.legislation.gov.uk/nisi/2003/419/part/III/crossheading/gas

6.3.2 Calculation of our forecast Connection Incentive Allowance for GD23

1. In the Utility Regulator's GD17 Final Determination, firmus energy's equivalent per connection allowance, for each OO connection in 2022, is £465, (£2020, including forecast opex efficiency in 2022)
2. In the GD17 period to-date (2017 to 2020), A&M expenditure accounts for 44% of total expenditure on OO connections, with the balance (56%) necessary to support manpower, corporate overheads and incentive elements of the OO connection incentive allowance
3. 44% of our GD17 Final Determination, per connection allowance in 2022 (£465) = £205
4. Our marketing requirement for GD23 has been detailed throughout this document, and is forecast as a 20% uplift to the Utility Regulator's Final Determination for 2022.
   a. Uplift = £205 (see 3) x 20% = £41
   b. Required marketing expenditure per OO connection in GD23 = £205 + £41 = £246
5. As A&M costs account for 44%, expenditure for the remaining elements of our connection incentive allowance (i.e. Manpower, Corporate Overheads and Incentives) account for 56% of OO expenditure in the GD17 period to-date.
   a. firmus energy is retaining the Utility Regulator's Final Determination for 2022 assumed, per connection, cost of these elements of the OO connection incentive allowance for the GD23 period;
   b. £465 (see 1) x 56% (see 2) = £260
6. OO connection incentive allowance for GD23 = £246 (see 4) + £260 (see 5) = £506 (£2020)

6.3.3 Summary of Connection Incentive Costs in GD23

	2023	2024	2025	2026	2027	2028	GD23 Total
Owner Occupied Connections (No.)	3,852	3,685	3,524	3,371	3,224	3,084	20,740
Advertising & Market Development (OO Properties)							
Staff Costs	231	233	235	237	239	241	1,414
Stationery, Communications and Billing	30	30	30	30	30	30	182
MDR Allowance	1,431	1,355	1,271	1,187	1,109	1,035	7,388
Reallocation of shared corporate overheads	258	248	248	252	254	256	1,516
Connection Incentive Costs	1,950	1,866	1,784	1,707	1,632	1,561	10,501
Cost per connection (£)	**506**	**506**	**506**	**506**	**506**	**506**	**506**

6.3 Maintenance Costs and Movement in the Reporting Period

6.4.1 Network Maintenance Costs Management

Using our 'felive' system (used by both ourselves and our period contractor), each item of network maintenance is given a unique job number and associated tracksheet. The contractor charges time and materials to this tracksheet. Tracksheets (and the associated maintenance works) are regularly monitored by firmus energy engineers to check progress, quality of workmanship and correct application of rates for the work.

Tracksheet costs are included in the firmus energy financial accounting system as work-in-progress is also monitored on a monthly basis as part of the month-end management accounts review.

Once a tracksheet has been certified as complete by a firmus energy engineer, the costs are uploaded to our financial accounting package and then expensed as an operating cost which will form part of the monthly invoice from the contractor for all works certified in that period.

These invoices are reviewed in detail to ensure all work included has been appropriately monitored and approved, and when satisfied, the invoice is approved for payment by both the Construction Manager and the Director of Engineering.

As Figure 6.6 shows below, firmus energy maintenance costs are projected to rise steadily throughout the GD23 period. This is not a reflection of current activities costing more, but primarily a result of new maintenance activities being added as the network grows and as certain assets age to the point where they necessitate further inspection and, in some cases, replacement.

A detailed make-up of the cost elements for maintenance in the GD23 period is appended to this document.

Figure 6.6 Emergency and Maintenance Cost Forecast

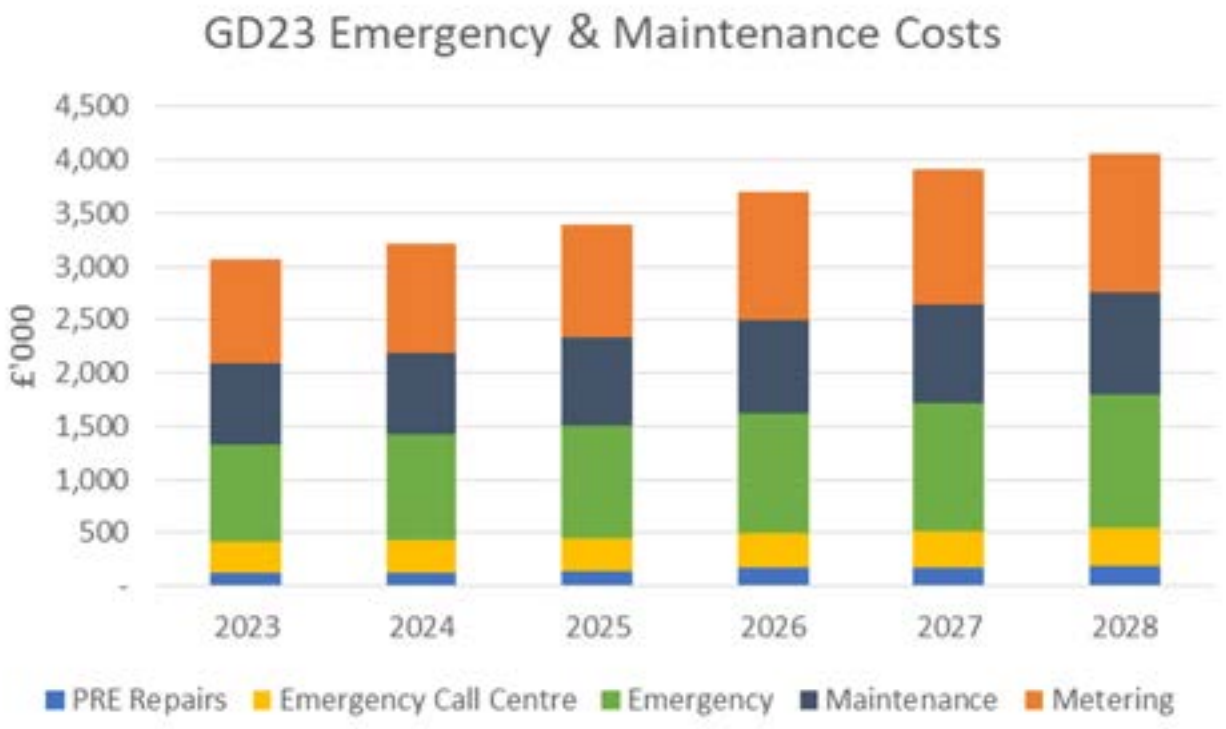


Figure 6.7 Emergency and Network Maintenance Costs (Average 2020 Prices)

	GD17		GD23					
	2021	2022	2023	2024	2025	2026	2027	2028
	£'000	£'000	£'000	£'000	£'000	£'000	£'000	£'000
Maintenance	591	592	769	775	833	878	927	950
Metering	573	631	971	1,021	1,054	1,200	1,273	1,302
Emergency	742	807	916	985	1,054	1,124	1,194	1,265
Emergency Call Centre	265	278	293	306	319	331	344	356
PRE Repairs	87	93	119	127	135	164	174	183
Total Emergency and Maintenance	**2,257**	**2,401**	**3,068**	**3,214**	**3,395**	**3,697**	**3,911**	**4,057**

6.4.2 Maintenance Activities

In addition to the on-going 2020 level of annual maintenance, firmus energy has identified a number of areas where new and additional work will be required from next year onwards. These are set out below;

Medium Pressure Regulator Testing and Replacement

BS6400 states that Medium pressure regulators should be inspected to ensure correct operation after 5 years in service. As above this means the regulators will be inspected at 5 and 15 years during GD23 as well as the 10 year inspection currently undertaken during GD17. This requires an engineer to visit each property and isolate the gas supply and then test the regulator and replace it or certify for re-use as necessary.

Libra Meter Battery Replacement

Landis and Gyr meter lithium batteries have a 10-year life and require to be replaced on-site with minimal interruption to the meter.

Governor and Customer Rig Component Replacement

firmus energy has already experienced failure of equipment at some of the large user sites due to the sheer volume of gas passing through the meters. We have estimated that, notwithstanding our inspection regime, we forecast there will be some failures per annum and an increasing need to replace regulating and metering equipment due to unforeseen faults.

Meter Calibrations and Repair (including Turbine and Rotary Positive Displacement (RPD) Meters)

Turbine meters require testing for accuracy and recalibration every 6 years and rotary meters will only be replaced if a failure is found before their end of life at 20 years.

Inspection and Overhaul of Customer and District Pressure Reduction Modules (CPRMs and DPRMs)

In order to comply with the Pressure Systems Safety Regulations ('PSSR') customer and district regulating equipment requires annual inspection and function checking. The annual costs include all planned maintenance works required the period including the Annual PSSR check, overhauls, meter calibrations, corrosion maintenance on the one visit to ensure maximum efficiency is obtained due to the distances involved in the firmus energy network area and the small pool of resource to complete this work.

Network Valves and Lids maintenance

firmus energy has implemented a programme of network valve inspections to ensure that valves and associated pressure points are fit for purpose in stopping gas flow where required as well as inspection of the condition of the road lid and associated reinstatement around it. Valves most critical to the integrity of the network have been identified and will be inspected more frequently under this proposal. As the network grows, the volume of valve inspections will increase.
As the network increases in age so will the maintenance requirements increase. It has been seen from the 2020 valve inspections and the Transport NI defect reports that the number of lids requiring repaired has increased. This information has been used to forecast the increased level of lid repairs during the GD23 period.

One of the new maintenance items for GD23 is a camera survey of the internal workings of the network valve whilst the valve is still in operation with live gas. This will give a whole asset assessment and allow a more informed replacement strategy for valves in the future.

Steel Riser Inspection and Maintenance Programme

firmus energy has been supplying gas to multi-occupancy buildings since 2007 using external steel risers. They require inspection and assessment and any remedial work carried out after a period of operation. In line with our Asset Management System, this is a conditional approach.

Bridge Inspections

firmus energy has 12 steel mains attached to bridge structures and as these are designated critical assets, an annual inspection should be carried out. It is envisaged that inspections over the period will highlight the requirement for remedial works. To date in GD17 all non-destruction testing has proven the initial protection added during construction to be adequate and only future inspection are proposed for GD23.

Engineers Equipment

firmus energy engineers will require to be fully equipped as they carry out routine and emergency operations on a rapidly growing network. This includes provision and annual calibration of equipment such as gascoseekers, pressure gauges, personal monitors, personal protective equipment and toolkits.

Telemetry Expenditure and Maintenance
An annual calibration check is carried out on the telemetry equipment fitted on daily metered (DM) customer gas meter installations. This certificate is proof of independent verification and can also be presented to a customer upon request.

Meterbox Repairs

After 10 years in operation a growing number of meterboxes will require maintenance, including, in some cases, the replacement of doors and hinges.

6.4.3 Emergency Related Operating Costs

firmus energy has a full suite of emergency procedures in place for the safe conveyance of gas in the Ten Towns, and these will extend to the new extended areas. firmus energy engineers provide supervision at gas escapes, while our period contractor provides the first response service and excavation teams. PREs account for a large proportion of firmus energy's engineering operating costs. PREs and emergency calls are generally expected to rise steadily in the GD23 period as more customer connections are added to our network.

Call Centre costs

firmus energy, in conjunction with Phoenix Natural Gas Ltd and SGN Natural Gas, has a contract with Cadent for processing emergency calls through the national emergency centre at Hinckley for all emergency calls received throughout NI in relation to natural gas. The cost of the contract is based largely on the volume of calls handled with a monthly charge unless the level of calls is reached when a variable charge is introduced. firmus energy also utilises a second out of hours call centre that triages some of these calls to minimise the number of calls that are received by the NI gas emergency call centre. The total call centre costs are forecast to rise from £293,000 in 2023 to £356,000 in 2028;

Call centre costs comprise emergency reports that require investigation by a first call operative and calls which can be categorised as general enquiries, where no further action is required as the call handler has effectively resolved the issue over the phone.

firmus energy is also working with other Network Operators in Northern Ireland to minimise these calls.

The driver for call centre activity is the total number of customer connections. In the contract there is a fixed cost of c. £212, 000 and a variable cost per call for both Cadent NI emergency call centre and the second call centre utilised by firmus energy. Figure 6.8 sets out the forecast call volumes relating to emergencies.

Figure 6.9 Emergency Calls and Callouts

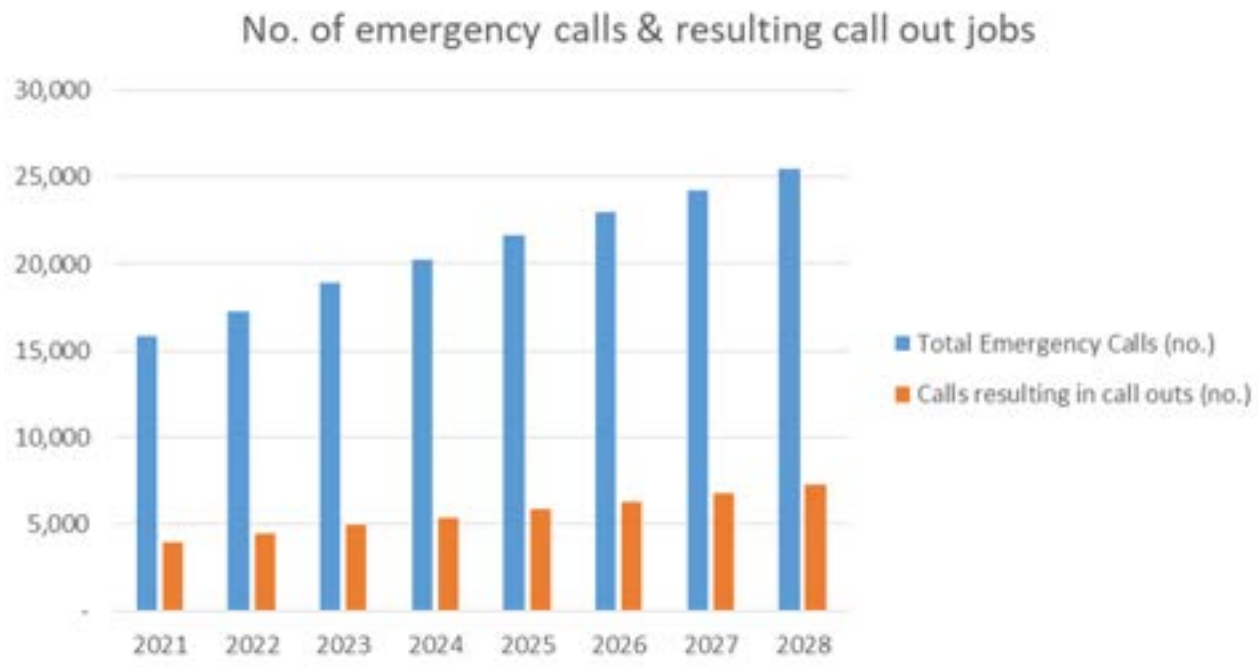


Figure 6.8 and the associated graph (Figure 6.9) show the rise in the volume of calls split between those calls which can be dealt within and by the call centre and those which necessitate an emergency call-out and site visit. firmus energy has put considerable effort into educating customers about not calling the emergency number for customer service queries that are non-urgent, and as a result, the proportion of emergency calls deemed as an enquiry is projected to fall steadily over the GD23 period.

Although the total volume of calls is rising, costs per call are projected to fall and costs per call-out are expected to also fall. Figure 6.10 shows the trend in calls and call-out costs over the regulatory period.

Figure 6.10 Emergency Call Trends

	2021	2022	2023	2024	2025	2026	2027	2028
Total Emergency Calls (including enquiry calls)	15,800	17,281	18,886	20,279	21,629	22,954	24,242	25,502
Cumulative customer numbers	60,398	66,509	73,009	79,344	85,515	91,531	97,397	103,121
Calls per customer	0.26	0.26	0.26	0.26	0.25	0.25	0.25	0.25
Call cost per customer (£)	4.39	4.19	4.01	3.86	3.73	3.62	3.53	3.45

	2021	2022	2023	2024	2025	2026	2027	2028
Calls resulting in call outs	3,950	4,408	4,910	5,376	5,839	6,314	6,788	7,268
Cumulative customer numbers	60,398	66,509	73,009	79,344	85,515	91,531	97,397	103,121
Emergency calls per customer	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07
Emergency cost per customer	12.29	12.13	12.55	12.41	12.32	12.28	12.26	12.27

6.5 Rates

The breakdown of firmus energy's projected network rates costs are shown in Figure 6.11. Network rates have been calculated in line with the methodology used by Land and Property Services (LPS), in that they are a function of firmus energy's conveyance revenue.

We have used the current rate multiplier of 7% that LPS have advised is likely to remain for the GD23 period, and the latest average rate in pound value of 0.54.

With the decrease in annual conveyance revenue from the start of GD23, network rates also drop and then gradually increase as volumes and conveyance revenues increase over the GD23 period.

Figure 6.11 Network Rates

	GD17		GD23					
	2021	2022	2023	2024	2025	2026	2027	2028
	£'000	£'000	£'000	£'000	£'000	£'000	£'000	£'000
Network Rates	891	933	935	985	1,020	1,053	1,081	1,106

6.6 Non-Price Controlled Activities

Within the firmus energy group, the main non-price controlled activity is its supply business in the Greater Belfast area which serves c.50,000 customers. This business activity has no impact on the company's distribution business in the Ten Towns licensed area.

Other non-price control costs such as group recharges and some group Board fees have been excluded from this submission.

6.7 Information Technology

Forecast IT opex costs primarily reflect incremental customer and staffing requirements and have been modelled based on our current managed service contract for IT and projected costs for the licencing and use of a new IT platform, forecast to be purchased in 2022.

A breakdown of the forecast GD23 IT and Telecoms opex costs is outlined in Figure 6.12, below;

Figure 6.12 GD23 IT Costs

	2023	2024	2025	2026	2027	2028	GD23 Total
Application development	3,873	3,873	3,873	3,873	3,873	3,873	**23,237**
Application maintenance & support	423,262	348,845	349,469	350,100	350,740	351,386	**2,173,801**
Desktop services	54,634	54,634	54,634	54,634	54,634	54,634	**327,804**
Application server support	14,277	14,277	14,277	14,277	14,277	14,277	**85,662**
Storage	2,357	2,357	2,357	2,357	2,357	2,357	**14,142**
Network (LAN & WAN)	89,795	89,795	89,795	89,795	89,795	89,795	**538,770**
Business telecoms	29,187	29,187	29,187	29,187	29,187	29,187	**175,123**
Other costs	165,714	167,799	157,884	179,419	181,504	183,589	**1,035,909**
Total	**783,099**	**710,767**	**701,476**	**723,641**	**726,367**	**729,098**	**4,374,448**

6.8 Insurance

Forecast insurance costs are based upon 2021 forecast policy prices. Costs are forecast to remain constant over the GD23 period despite the company's increasing staff numbers and network kilometres (reflecting anticipated savings through insurance procurement).

Figure 6.13 firmus energy's Insurance Costs

	GD17		GD23					
	2021	2022	2023	2024	2025	2026	2027	2028
	£'000	£'000	£'000	£'000	£'000	£'000	£'000	£'000
Insurance	285	326	326	326	326	326	326	326

Forecast insurance costs are materially higher than historic actuals as they have been heavily impacted by both the Covid-19 pandemic and Brexit.

Correspondence with our current insurance brokers has highlighted the recent upward pressures within the insurance industry, suggesting that overall, insurance pricing in the fourth quarter of 2020 in the UK increased 44%.

Compared to the actual costs incurred in 2020, we are forecasting a 34% increase in overall insurance costs with half of this increase recognised in 2021 as our current insurance expires in June 2021.

The overall 34% increase is a blend of multiple increases dependant on the insurance line and derived after taking advice from our current insurance brokers.

6.9 Other Operarating Costs

Overall, 'other' costs, including office costs, remain flat over the entire GD23 period. The various cost headings are analysed briefly below. The overall picture is of flat costs throughout the GD23 period.

Figure 6.14 'Other' Costs in GD23

	GD17		GD23					
	2021	2022	2023	2024	2025	2026	2027	2028
	£'000	£'000	£'000	£'000	£'000	£'000	£'000	£'000
Rent and Office rates	82	82	82	82	83	88	88	88
Stationery, Communications and Billing	66	63	62	62	62	62	62	62
Bad Debt	30	30	30	30	30	30	30	30
Other	20	20	20	20	20	20	20	20
Licence Fees	50	50	50	50	50	50	50	50
Total Price Control Activities	**247**	**245**	**243**	**243**	**244**	**249**	**249**	**249**

Buildings

firmus energy operates out of 'business park' type office accommodation which is the correct size and is economically attractive compared to 'Class A' office accommodation elsewhere. The company is ideally placed within its existing offices at Kilbegs Business Park, Antrim, to reach each town within the current network. We have performed in-house test trials to verify that additional decentralised office locations are not required and note that we are currently servicing towns from Warrenpoint to Derry/Londonderry within the Ten Towns network from this centralised location.

During 2019, the Company applied IFRS16 Leases resulting in recognition of lease assets, particularly building rental and motor vehicle leases, on the balance sheet with amortisation of those assets reflected through the Income Statement. While this is still a real cost to firmus energy, this change effectively moved the lease costs from operating costs to an amortisation cost.

To aid comparison to the GD17 Determination and to ensure these cost allowances are not overlooked, building rental and motor vehicle leases have been treated as operating costs in our GD23 submission.

Stationery, Communications and Billing

Telephone, postage and stationery costs include both a fixed cost and variable cost component. We have modelled a fixed cost per annum representing the telephone line rental cost which is based on and proportionate to our existing Ten Towns service arrangements. Meanwhile, the variable cost element is driven by 2020's actual costs.

We need to secure resources to support successful delivery of our plans for the GD23 period, but also to ensure our infrastructure is best placed to maximise our contribution to Northern Ireland's journey to net zero carbon in the medium to longer term.

7 Capex

Utility Regulator Guidance

- Methodologies and rules used for allocations and estimation, changes to same compared to previous regulatory submissions for the 2019/2020 reporting years and for GD17 as well as effective date and impact of such changes;
- Additional details on cost movements in the year;
- Additional details about changes in workload, their timing and impact of same on the business, now and in the future;
- Justification for proposed diversion, feeder mains, reinforcement and security of supply projects as well as for capex replacement;
- Details on any capex classified as other capex, amounting to >£5k and not falling into any of the following expenditure categories: system operations; IT and telecoms; commercial gas trading IT; plant, tools and equipment, land, buildings, furniture and fittings, security, vehicles & wheeled plant.
- An explanatory on the GDN's view on the implementation of the TMA legislation in Northern Ireland, including expected timelines, expected impact on the GDN cost base during the GD23 price control period and proposed methodology for determination of TMA allowances.
- Details on economic tests and business cases relating to replacement expenditure; and business cases for feeder mains, reinforcement and security of supply projects.

7.1 Introduction

Since 2005, firmus energy has invested progressively in the Ten Towns natural gas network. Figure 7.1, below, sets out our company's historic capital investment.

In total, between 2005 and 2020, firmus energy has invested more than £220m (£2020) in our Licensed Area.

Figure 7.1 firmus energy's Network Investment 2005-2020

	2005	2006	2007	2008	2009	2010	2011	2012	2013
	£'000	£'000	£'000	£'000	£'000	£'000	£'000	£'000	£'000
Capital Investment	2,246	15,811	15,793	14,496	12,850	11,452	14,558	13,185	13,924

	2014	2015	2016	2017	2018	2019	2020	Total
	£'000	£'000	£'000	£'000	£'000	£'000	£'000	£'000
Capital Investment	13,248	14,766	14,629	13,843	18,447	17,691	17,661	**224,601**

To assist with achieving connection targets and optimising the Utility Regulator's properties passed incentive, firmus energy has accelerated its mains laying programme and is now forecasting the core network build to be completed by the end of 2023 (i.e. the first year of GD23).

For the GD17 period (2017 to 2022), Figure 7.2 and Figure 7.3, below, highlight this acceleration in terms of properties passed and length of mains laid.

Figure 7.2 Other Mains - Properties Passed in GD17

Other Mains - Properties Passed	2017	2018	2019	2020	2021	2022	Total
Actual/Forecast	11,622	12,386	13,820	14,367	16,108	15,094	83,397
Determined	11,366	11,071	11,528	10,414	10,765	11,673	66,817
Outperformance	**256**	**1,315**	**2,292**	**3,953**	**5,343**	**3,421**	**16,580**

Figure 7.3 Other Mains - Length in GD17

Other Mains - Length (km)	2017	2018	2019	2020	2021	2022	Total
Actual/Forecast	117	135	145	155	172	173	896
Determined	113	112	110	109	111	112	667
Outperformance	**4**	**23**	**34**	**46**	**60**	**61**	**229**

With this acceleration, only 35km of 'other' mains, i.e. all mains excluding new build developments and security of supply mains, remain for the GD23 period.

As such, our capex focus for the GD23 period will move from the main laying programme of GD17 to a largely connection driven programme, whilst also monitoring security of supply for existing and future customers.

The cumulative outputs of our GD23 capex programme are shown in Figure 7.4.

Figure 7.4 Capex Programme Outputs

Metric	Units	2023	2024	2025	2026	2027	2028
Cumulative customer numbers	no.	73,009	79,344	85,515	91,531	97,397	103,121
Cumulative properties passed	no.	195,632	197,275	198,859	200,373	201,880	203,380
Cumulative capex	£'000	18,698	31,737	43,878	54,471	65,070	75,823
Cumulative mains laid	km	74	104	133	150	166	180

7.2 GD23 Capex Overview

firmus energy's planned capex for GD23 (along with forecast outturns for GD17) is shown in Figure 7.5, below.

Overall, proposed capex requirements average £12.6m per annum during the GD23 period, however, excluding the last year of our core main laying activities (in 2023), expenditure from 2024 to 2028 decreases to an average of £11.4m per annum.

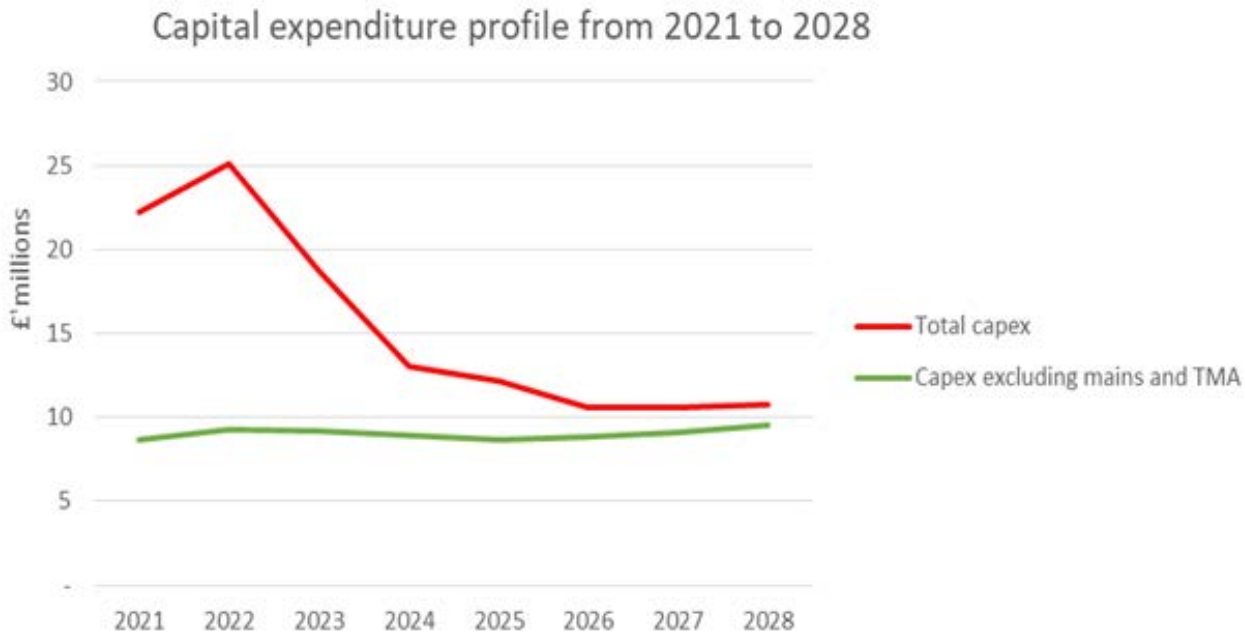
Figure 7.5 firmus energy Forecast Capex GD17 and GD23

	GD17		GD23					
	2021	2022	2023	2024	2025	2026	2027	2028
	£'000	£'000	£'000	£'000	£'000	£'000	£'000	£'000
LP, 2Bar or 4Bar Mains	13,521	15,808	8,050	3,109	2,526	1,005	789	522
Individually Funded	1,259	1,362	-	-	-	-	-	-
Pressure Reduction	361	266	161	141	142	145	252	254
Domestic Services and Meters	6,243	6,535	7,801	7,831	7,668	7,760	7,756	7,804
I&C Services and Meters	630	545	715	606	653	792	975	1,269
Other Capex	162	581	475	347	222	119	93	210
TMA	-	-	1,497	1,004	930	772	735	694
Total	**22,175**	**25,098**	**18,698**	**13,038**	**12,141**	**10,593**	**10,599**	**10,753**

With the close out of the infill mains laying programme, capital expenditure falls from GD17 levels and plateaus from 2024. Thereafter, total capex remains consistent to the end of the GD23 period.

Excluding mains and the TMA costs that have been forecast from 2023, capex costs are virtually flat. This is depicted in Figure 7.6, below.

Figure 7.6 Capital Expenditure Profile



The largest element of our capital programme in GD23 is the investment in domestic connections (services and meters). The investment of £46 million in domestic connections over GD23 accounts for over 60% of total capex in the period.

Capital expenditure in I&C customers remains flat over the Business Plan period reflecting a relatively small but continuous level of new customer connections in that sector. 'Other' capex remains at comparatively low levels across the GD23 period.

7.3 Analysis of Proposed Network Investment

7.3.1 Rationale for Investment

The rationale for the investment activities planned is based on our comprehensive survey of the Licensed Area and our experience in rolling out the network build across the Ten Towns network in the past fifteen years.
Over this time we have sought to optimise network design and to drive cost efficiencies through innovation, without compromising either safety or the quality of the network build.

In addition to this we have staff and contractors with extensive experience within the gas industry, allowing us to put in place efficient plans and processes, choice of materials, construction methods and new technology to deliver benefits for customers and other stakeholders.

Cost Management

firmus energy is committed to tight control of capital expenditure and has a robust system to deliver this. For the majority of capital expenditure requirements (being the contracted–out activities), firmus energy engineering staff will agree a work schedule with the Period Contractor for the forthcoming months.

Each item of capital work is given an individual code (a 'tracksheet'). The contractor charges time and materials to this. Tracksheets (and the associated capital works) are monitored by firmus energy's engineers to review progress and costs. Costs are included in our financial accounting system as work-in-progress, which are monitored on a monthly basis.

Once a tracksheet has been certified as complete by a firmus energy engineer, the costs are then capitalised and will form part of the monthly invoice from the Period Contractor for all works certified in that period.

These invoices are reviewed in detail to ensure all work included has been appropriately checked and approved when satisfied. The contractor invoice is approved for payment by both the firmus energy Construction Manager and Director of Engineering and Sustainability. All capitalised salaries follow the normal salary approval process.

Other external third party payments for capital expenditure will flow through the firmus energy contract management and invoice systems, whereby purchase orders are raised and approved before any work commences or materials/services are purchased. Invoices are checked and reconciled to these purchase orders and approved where appropriate.

New Network Mains

The quantity of new mains to be laid over the GD23 period is set out in Figure 7.7, below, analysed between new build properties and 'other', for which different per metre allowed construction rates apply.

Figure 7.7 Forecast of new mains laid and properties passed

New Build Mains	2023	2024	2025	2026	2027	2028	Total
Mains laid new build (m)	14,250	14,250	14,250	14,250	14,250	14,250	85,500
Properties passed NB (no)	1,500	1,500	1,500	1,500	1,500	1,500	9,000
Metres per property passed	9.5	9.5	9.5	9.5	9.5	9.5	9.5

All Main excluding New Build	2023	2024	2025	2026	2027	2028	Total
Mains laid other (m)	59,676	15,767	14,470	3,092	1,561	-	94,566
Properties passed other (no)	2,014	143	84	14	7	-	2,262
Metres per property passed	29.6	110.3	172.3	220.9	223.0	-	41.8

The remainder of the infill mains programme to be completed in 2023 (35km) is largely in areas with higher metres per property passed and with more challenging ground conditions, resulting in a higher metres per property passed and cost than historic GD17 levels.

The majority of the proposed network build will be made up of 4 bar mains. Due to the makeup of proposed connection numbers, the greater part of the mains will be small diameter 90mm and 63mm infill mains. Associated costs will cover pipe, installation method (open cut or directional drill), inclusion of valve and connection to parent main (branch saddle, top tee or squeeze-off), dust surround to pipe, backfill material and reinstatement to Northern Ireland Road Authority and Utilities Committee (NIRAUC) specification.

The installation of low pressure mains will be confined to town centres where the gas meter needs to be sited internally due to type of property frontage and areas where the required clearance from the medium pressure gas main with existing properties cannot be achieved.

In areas of multiple occupancy buildings, such as apartments and flats, it is often necessary to install low pressure mains. Associated costs will cover cost of pipe, installation method (open cut or directional drill), dust surround to pipe, backfill material and reinstatement to NIRAUC specification.

In our network development, we have maximised the medium pressure network and minimised the low pressure network within the Ten Towns development area, thus saving on the costs associated with pressure reduction equipment and resultant associated maintenance costs.

We have installed pressure reduction equipment above ground rather than below ground (which has historically been the case in Northern Ireland), thus reducing manufacturing, installation and resultant maintenance costs.

We maximise the use of directional drilling, where ground conditions permit, to minimise the installation costs and to maximise productivity. firmus energy has already used this technique successfully during the roll-out of parts of the gas network already laid within the Ten Towns area.

Gas main installation using the directional drilling technique is more efficient than an open cut method and this, coupled with lower amounts of excavated material being transferred to landfill, lower reinstatement costs and reduced disruption to the public, make this the optimal installation method.

We will install mains within grass verge areas, where possible, in order to facilitate directional drilling and to reduce costs. Effective planning and traffic management will ensure that out of hours costs are kept to a minimum.

Conversely, it is not possible to use this technique in hard or very soft ground conditions and in areas where there is a multitude of other utility assets, including town centres. Mains laying is extremely expensive where public realm paving exists and has to be fully reinstated. firmus energy therefore has ongoing engagement with public authorities and other utility operators in order to maximise the coordination of work, where possible, in order to reduce costs and disruption to members of the public.

We have held discussions with DSD and DFI Roads Service with regard to public realm schemes within town centres, and it is our intention to trench share with other utility providers where possible, again, to minimise installation costs and disruption.

Steel Mains

Steel mains are used where there is no other engineering option and the gas main is exposed – such as river crossings where the gas main is most often attached to a bridge. There are a small number of these on the firmus energy Ten Towns network, and it would be the intention of firmus energy to minimise the number of steel crossings by using good engineering design.

We will also be working in tandem with the Structures Division of the DFI to find alternative lower cost solutions to river crossings, including directional drilling or the installation of the gas mains within the structure of the bridge itself, if feasible.

Network Mains – Costs

Network mains costs for GD17 and GD23 are analysed in Figure 7.8 below;

Figure 7.8 Network Mains Costs and Costs per Metre in GD17 and GD23

New Build Mains	2021	2022	2023	2024	2025	2026	2027	2028
Mains cost new build (£)	422,063	299,803	482,183	498,760	502,877	513,953	517,040	521,578
Mains laid new build (m)	13,300	9,500	14,250	14,250	14,250	14,250	14,250	14,250
Cost per metre new build (£)	32	32	34	35	35	36	36	37

All Mains excluding New Build	2021	2022	2023	2024	2025	2026	2027	2028
Mains cost other (£)	13,099,362	15,508,622	7,567,966	2,610,535	2,023,204	491,265	271,749	-
Mains laid other (m)	171,777	173,219	59,676	15,767	14,470	3,092	1,561	-
Cost per metre other(£)	76	90	127	166	140	159	174	-

Unit costs for new build mains remain flat over the plan period as a result of the assumption that we will again be tied to fixed prices within a single contract on renewal. Security of supply mains is discussed further in Part 7.4, below.

Pressure Reduction Stations (PRS)

Pressure reduction stations will be installed to reduce pressure in the mains network from medium to low pressure to facilitate the placing of gas meters internally, where no garden frontage is available at the property (such as in town centre locations where properties are terraced or where a meter position cannot be achieved within the required standards). Pressure control was traditionally provided by pre-assembled governor modules located below ground.

firmus energy has now moved to above ground modules since February 2019 (where feasible), which has improved our maintenance operations and compliance with the Pressure Systems Safety Regulations (PSSR).

We will take a pragmatic approach to only replace those PRS units that are still required at the 20 year end of life with the combination of the growth units allowed, rather than every unit that reaches the 20 year milestone.

Services

Planned investment in domestic as well as I&C services over the remainder of the GD17 and GD23 periods is outlined in Figure 7.9, below.

Domestic services can be 20mm or 32mm low pressure or medium pressure PE pipes, installed by either open cut or impact moling technique. Associated costs include connection to parent main, pipe cost and the connection at the Meter Control Valve (MCV). A flow limiter device is installed that automatically cuts off the flow of gas should the service pipe be damaged between the connection to the main and the customer's meter.

I&C services will vary in diameter from 32 mm to 180 mm for I&C customers. Dependant on ground conditions and length, the service may be installed by a variety of methods; open-cut trench, directional drilling or impact moling. It is firmus energy's intention to utilise directional drilling and impact-moling as much as possible.

The associated costs include the connection to the main, the PE pipe, dust surround and termination at the meter control valve. It is our intention to install services to all classes of I&C at the same time as the mains in the roadway to minimise connection costs and live gas connections. On small I&C services (up to u65 meter), a flow limiter device is fitted. firmus energy uses flow limiters on all small I&C services on the network as they offer an extra level of safety by minimising the release of gas should a third party interference occur and they require limited maintenance.

Service valves are installed on all I&C services that do not have a flow limiter device fitted and are used to shut off the flow of gas in an emergency, should the service pipe be damaged or the building is at risk from fire. The associated costs include the valve costs, GRP chamber and road/footway cover.

Figure 7.9 Capex Spend on Services 2021 to 2028

Domestic	2021	2022	2023	2024	2025	2026	2027	2028
Cost of Domestic and I&C Services (£'000)	5,563	5,765	6,916	6,926	6,774	6,718	6,557	6,423

Overall, investment in domestic services remains reasonably constant throughout GD23 in line with connection targets. Capex for I&C services also remains constant throughout the period, reflecting the forecasted average of 145 connections per year in the sector.

Unit costs for both domestic and I&C connections remain relatively flat over the life of the GD23 period however it is important that allowances adequately reflect these costs to support our ambitious connection targets in the GD23 period.

Meters

Domestic meters – there are two types of meter in use across the Ten Towns network; credit and prepay. In a drive to reduce costs resultant from erroneous reports of gas escapes and building on the domestic connections in GD17, we are anticipating an uplift in the proportion of credit meters used across our network. The reasons behind this are further outlined in Part 9 of this document.

As noted in Part 3 of this document, we are presently working with the Utility Regulator and wider industry stakeholders in our shared objective to determine and deploy a long-term metering solution to meet the reasonable expectations of Northern Ireland's natural gas customers.

Whilst our GD23 submission is based upon the current costs of metering activities (for example, connection and maintenance), we are fully committed to this longer-term goal.

We are a key participant and contributor to the current industry work-stream, which anticipates delivery of a future metering solution for Northern Ireland's gas customer in Q2 2022.

We are committed to securing a metering solution which will serve our current and future customers through GD23, and for many years beyond. The solution will ensure we are best placed to embrace an evolving energy landscape, providing technology driven benefits for our customers and digitalization of energy information, which will allow customers and service providers, alike, to support future improvements and efficiencies across our industry.

We welcome the Utility Regulator's recognition that the GD23 price control will need to provide sufficient flexibility to facilitate consideration of costs and arrangements associated with our industry's future metering solution,[51] and we look forward to further engagement the DfE and wider industry stakeholders in addressing the DfE's intention "to undertake a Cost Benefit Analysis (CBA) of electricity and gas smart meters [emphasis added]." [52]

I&C meters – all I&C meters are sized following assessment by our Energy Advisor team and ordered through our contractor. The units are delivered to site pre-assembled to minimise connection time on site.

The larger meter rigs have lifting eyes in place to crane into position onto a pre prepared concrete base.

There are a number of differing meter rig configurations depending on the size of the meter rig and flows to be managed, however, a simple meter unit contains an emergency control valve, inlet filter, regulator, over pressurisation protection and the meter itself.

All parts are housed within a meter enclosure that offers the meter protection from weather, fire and vandalism. In conjunction with our contractor, we have dual sourced the meter range and spare parts required for maintenance purposes, thus ensuring product availability at the most economical cost.

Investment in meters to the end of 2028 is detailed in Figure 7.10, below.

Figure 7.10 GD23 Capex - Meters (Domestic and I&C)

Domestic	2021	2022	2023	2024	2025	2026	2027	2028
Number of Domestic Meters	5,695	5,961	6,352	6,185	6,024	5,871	5,724	5,584
Cost of Domestic Meters £	991,871	1,030,429	1,176,749	1,186,578	1,166,540	1,161,864	1,140,898	1,123,932
Average cost per Domestic Meter £	174	173	185	192	194	198	199	201

I&C	2021	2022	2023	2024	2025	2026	2027	2028
Number of I&C meters	150	150	148	150	147	145	142	140
Cost of I&C Meters (£)	230,537	189,726	315,894	210,422	259,317	263,346	262,074	260,826
Average cost per I&C Meters (£)	1,537	1,265	2,134	1,403	1,764	1,816	1,846	1,863

[51] Utility Regulator's Final Approach to GD23, para 4.26, published November 2020 https://www.uregni.gov.uk/sites/uregni/files/media-files/2020-11-6%20GD23%20Final%20Approach-%20Final.pdf
[52] DfE Consultation on policy options for the new Energy Strategy for Northern Ireland, page 135 https://www.economy-ni.gov.uk/sites/default/files/consultations/economy/energy-strategy-for-NI-consultation-on-policy-options.pdf

Overall, investment in domestic meters remains reasonably constant throughout GD23 in line with connection targets. Capex investment on I&C meters also remains constant throughout the period, reflecting the forecasted average of 145 connections per year in the sector.

Meter Replacement

Within meter replacement there are 2 elements:

- Life Expired – Planned replacements
- Other replacements – unplanned replacements

Life Expired

firmus energy is proposing to commence this planned program of works at 20 years. This work will commence in 2026 when the firmus energy's network reaches 20 years old.

We will undertake the following approach;

- Domestic – 15% of meter installations will be a complete replacement of all items, 85% will be a parts replacement only
- Small Commercial IC (u6 to U40) – 100% of meter installations will be a complete replacement of meter and meterbox including the meter control valve.
- Larger IC (U65 and above) – only the meter and other associated parts will be replaced.

Within tab 4.12 of our Business Plan Template, the costs associated with the meter only replacement (labour, materials and meter) have been placed in table 4.12a and all other costs will be placed in 4.12b.

Other replacements

This category includes any faulty meters that are found during emergency and planned work.

The majority of these meters are the PAYG meters that are electronic, and due to the constant card operation, they cause the greatest number of issues.

As these are faulty meters and therefore unplanned, we have considered the information from 2017 to 2020 to consider the most appropriate base to predict these numbers for the GD23 period.

It can be seen that overall the estimated figure also includes a small number of I&C meters that are found to be faulty and require replacement.

7.4 Justification for Diversion, Feeder Mains and Security of Supply Projects

Diversionary/abandonment works

firmus energy has no plans to divert or abandon any mains or associated plant during the GD23 period. In line with the Code of Practice (Measures necessary where apparatus is affected by major works – Diversionary Works 2nd Edition), there is a general presumption against moving apparatus unduly. Additional plant protection measures can be introduced to mitigate the need to carry out expensive diversionary works and firmus energy will only move/divert apparatus where there is no engineering solution to leaving the gas apparatus in situ.

Abandonment of assets may be required during diversionary works when road re-alignment schemes or footway works are being undertaken and where there is a significant reduction in the depth of cover to the gas apparatus. In this case, new mains would be installed alongside the existing apparatus at a greater depth of cover and the shallow main abandoned. Diversion works are predominantly carried out at the request of Transport NI Roads Service and are invoiced and paid prior to the commencement of works.

In conjunction with the relevant Code of Practice, there are several detailed planning stages during diversionary works associated with major road works, although this is not always adhered to, and often firmus energy receives little or no prior indication that road works are to take place in the vicinity of our apparatus and that gas plant will be affected. Individual customer requests for smaller diversionary works are also sporadic with little or no prior notification. We invoice all customers for the full costs of requested diversionary works and all works are paid prior to commencement.

All diversionary works are undertaken in line with the Safe Control of Operations (SCO) requirements, with qualified and competent personnel and in conjunction with live gas operations procedures.

Details of diverted or abandoned mains left in-situ are captured on our GIS and are identified on maps and plans issued to contractors digging in the vicinity of our plant.

Network Reinforcement/Security of Supply

The firmus energy gas networks have been constructed in line with the IGEM suite of guidance documents and recommendations which reflect industry best practice and take into account the 1 in 20 peak six minute demand criterion for network analysis when designing and planning the gas network roll-out. It also requires the consideration of specific network reinforcement/security of supply investments in circumstances in which large numbers of customers (and in particular vulnerable categories of customer) are unusually exposed to the risk of failure of a single piece of equipment.

The firmus energy gas network is made up of eight separate pressure systems supplied from Above Ground Installations ('AGIs') off the North-West and South-North Transmission Pipelines. With the exception of the Craigavon pressure system all systems are supplied via a single feeder main from the AGI to the town boundary with an associated risk of loss of supply should there be a significant third party damage to the feeder main. As the number of customers increase throughout our towns the requirement for network reinforcement will be continually assessed through the use of network analysis to identify the area affected by a potential loss of infrastructure and the numbers of domestic, commercial and industrial customers affected. Where possible network reinforcement will be included within our on-going mains programme, focussed upon passing properties and connecting customers.

Figure 7.11 Security of Supply Projects in GD23

Security of Supply Projects	2023	2024	2025	2026	2027	2028
Number of projects	8	8	11	8	5	-
Properties passed	115	143	84	14	7	-
Length of mains	16,752	15,767	14,470	3,092	1,561	-
Cost of projects (£)	2,524,478	2,610,535	2,023,204	491,265	271,749	-
Average cost per metre (£)	151	166	140	159	174	-

Feeder mains

These are typically larger diameter low pressure or medium pressure mains that convey gas between towns or throughout the towns to enable infill mains to be installed providing gas to I&C, SME and domestic customers. We have not forecast any feeder mains within our capex plan for 2023-2028 as these will have been installed by 2022.

Line valves

These will be installed on all feeder/spine mains in accordance with IGEM recommendations at intervals of between 800m and 1,000m for urban and rural areas and at main road junctions. Dependant on size of main, these valves may be of a metallic or PE construction. PE tailed valves are used where possible to reduce construction times and future maintenance requirements. Associated costs to cover cost of valve, suitable concrete base to support valve, concrete sections to create the chamber and road/footway cover. Suitable wrapping will also be used on metallic valves. Valves will be sited where they can be operated safely and, if possible, in grass verges to minimise installation costs.

7.5 Other Capex

Figure 7.12 Overview of Other Capex 2021 to 2028

Domestic	2021	2022	2023	2024	2025	2026	2027	2028
IT (Infrastructure and systems) and Telecoms	111,210	530,880	379,030	141,286	50,440	21,240	18,040	135,626
Land, buildings, furniture and fittings	-	-	41,000	150,500	116,500	41,000	18,000	18,000
Telemetry	32,195	32,195	49,649	49,649	49,649	49,649	49,649	49,649
Other	5,000	5,000	4,907	5,888	5,888	6,869	6,869	6,869
Total	**148,405**	**568,075**	**474,586**	**347,323**	**222,477**	**118,758**	**92,558**	**210,144**

IT and Office (Including Network Code)

Significant and necessary spend is planned on IT infrastructure. However, any such costs will be capitalised as part of plant and machinery costs in the month that the expenditure is incurred.
The two main capital projects foreseen during the GD23 period are:

Move to Cloud Based Servers

The proposed costs are forecast, based upon discussions with our current managed service partner, based on their experience with previous migrations of a similar size and nature. Costs reflect the professional service charges required to design and ultimately implement a migration away from our current datacentres in Dublin to a replacement solution into, for example, Microsoft Azure public cloud.
All migration options will be considered with final selection based on the technical merits of each proposal and crucially the potential for capex and opex cost savings, compared to what the company pays currently for hosting.
A move away from Dublin hosting is required for several reasons:

- The commercial agreement in place at present with our hosting partner is concluding at the end of 2022
- The physical IT equipment in use in the Dublin datacentres at present is already considered 'end of life' and urgently needs to be replaced to ensure it can remain supported by the equipment manufacturers
- Choosing to stay in these datacentres would require significant capital investment to renew this aging IT equipment by replacing it with newer in-warranty equipment. Additionally, this capex renewal of the IT equipment would have to be undertaken every 5 years thereafter further adding to this capex cost to ensure any new equipment continues to stay current. Moving the hosting services to cloud hosting will reduce the total cost of ownership by avoiding these regular capex investments, both in 2022 and every subsequent 5 years.

Laptop Refresh and Provisioning Services

Forecast costs are to replace and provision firmus energy client laptops every 4 years. Refreshing laptops in this way ensures they are always in support and covered by manufacturer warranty, to allow them to be repaired or replaced if required. This is particularly important for laptops since they tend to have increased physical wear and tear because of their portability. As well as replacing the physical hardware with faster, more reliable equipment, this lifecycle offers an opportunity to migrate users to the latest version of Microsoft Windows – ensuring they are able to take full advantage of the latest security patches and software versions at that time.

The use of laptops is particularly important to firmus energy – they form a crucial part of our business continuity strategy ensuring that the recent Covid-19 pandemic had relatively little impact on our day to day operations since staff were able to continue working remotely with immediate effect.

Land, buildings, furniture and fittings

In 2025 firmus energy's offices in Antrim will be 20 years old. It will be necessary to carry out some improvements to the office and store areas.

- Expansion of stores, workshops and recycling areas
  As discussed previously, 2026 will see the commencement of our 20 year meter replacement programmes including domestic and Industrial and Commercial meter installations. This activity will see the replacement of various levels of components, with the new meters and components being issued from our stores at our Antrim offices, and the old meters and components being returned. To dispose of these items in a sustainable manner there will be a need to strip and separate parts and stream them ready for collection by recycling service providers. Since 2005, firmus energy has utilised a basic stores area to the rear of our office accommodation, however the step change in activity levels will require a greatly enhanced working space.
  As the stores currently have limited space it will be necessary to expand capacity by installing a mezzanine floor area with extensive racking and shelving and external storage to accommodate these new activities. This will be carried out in 2025 at a cost of £90,000. A further £8,500 expenditure on a bespoke stock management system will enable more efficient materials handling. This provision should enable all currently foreseen meter and regulator maintenance, life end and recycling requirements throughout the GD23 period.

- **Installation of solar panels to office roof**
  Installing Photovoltaic panels will facilitate charging of electric vehicles which firmus energy's staff have already started to switch to from conventional petrol and diesel fuelled cars. A capital investment of £132,500 is required for the installation. A connection to the electric grid would enable the export of power back to grid when the offices are unoccupied i.e. weekends and public holidays.

- **Installation of EV charging points**
  The Government has announced that from 2030 there will be a ban on sales of new petrol and diesel fuelled cars throughout the UK. Therefore, the provision of electric charging points must be considered, as there will be a gradual move towards electric powered vehicles. The installation of Electric Vehicle (EV) charging points is planned in conjunction with installation of solar panels which will support our self-sufficiency in terms of generating electricity to charge the vehicles, while staff members are at work. The installed cost of each charge point is c.£1,000.
  We plan to install 20 of these points in 2023 at a cost of c.£23,000 in 2023 with a further 20 being installed in 2026 costing a further c.£23,000.

- **Office furniture replacement (incl. carpets and redecoration)**
  This will include the replacement of all carpets, redecoration and replacement of desks, chairs and cabinets which are found to be at life end. A capital expenditure of £18,000 per year will facilitate this work to be carried out on an ongoing basis throughout the GD23 period.

Capitalised Salaries (in relation to the above activities)
firmus energy staff whose activities and hence salary costs are directly attributable to the construction of the network are capitalised on a monthly basis as a cost of the network.

7.5 TMA

Given our excellent working relationship with the DFI Roads Service and extensive experience rolling out the gas network through small towns across Northern Ireland we recognise the need for close co-ordination with respect to working hours, traffic control, potential disruption and the need to interact with all stakeholders prior to carrying out major construction works. That said, we understand the rationale for the implementation of the TMA in Great Britain in April 2008.

The TMA makes provisions for the designation of traffic officers and their duties, the management of road networks and regulating the carrying out of works and other activities in the street. The Act has seven parts of which parts 3 and 5 would have a significant impact upon Network Development activities.

Part 3: Permit schemes. This would mean work in certain areas requiring permits in advance and limiting the duration and time at which these works could be carried out; such as night time works or bank holidays.

Part 5: Highways and Roads. This most notably provides for regulations to apply a 'lane rental' charge to building materials, skips and temporary excavations. A Transport for London document on the TMA estimates that at almost £800 per day for a lane rental, these costs will add almost £12m per year to utility company costs which in turn will add approximately £3 per year average increase onto utility bills.

Following the GD17 approach, we have included a 10% uplift in costs for certain activities which would be impacted by the introduction of the TMA in Northern Ireland.

7.6 Potential New Areas

As part of firmus energy's GD17 submission, we submitted a comprehensive view of our plans to complete our core Ten Towns network build for existing properties. This submission took the form of 621 projects and comprised 92,344 properties. Our development of these projects during GD17 is detailed further in Part 2 and Part 7 of this document. In our ambitions to bring the benefits of natural gas to as many properties as possible in Northern Ireland, continue to promote and develop the natural gas network in Northern Ireland, and identify areas which can benefit from a decarbonised fuel alternative, we have worked to determine and assess further areas of opportunity for network growth.

We have identified 10 potential 'New Areas' for network expansion, which did not form part of our GD17 Final Determination. All 10 opportunities are within, or in close proximity to firmus energy's Ten Towns Licensed Area, as shown in Figure 7.13.

Figure 7.13 firmus energy Ten Towns Licensed Area - highlighting potential 10 New Areas

In developing the 10 New Areas, firmus energy would propose bundling these opportunities into 4 regional projects. The total length of mains associated with the 10 New Areas is 203.48 kms, as detailed in Table 7.14.

Figure 7.14 Total length of mains associated with the 10 New Areas

Region	Map Reference	New Area (Town)	Network Length (Km) including Feeder Mains	Properties Passed
1	1	Eglinton	17.04	1,461
	2	Greysteel	9.26	607
	3	Ballykelly	18.7	1,483
2	4	Castlerock	17.9	952
	5	Portrush	40.78	5,176
3	6	Kells	13.04	944
	7	Crumlin	18.94	2,456
	8	Glenavy	9.34	772
4	9	Rostrevor	15.15	1,310
	10	Kilkeel	43.33	3,498
			203.48	**18,659**

The current vires of the UR stipulate a regulatory requirement to provide evidence of economic viability for any extension of the natural gas networks beyond the development areas defined in each distribution licence. We have undertaken appropriate NPV analysis to guide financial viability/attractiveness of the projects. Based upon rates within our GD17 Final Determination, the results indicate that these new areas will fall below the UR's current economic threshold. However, we believe the costs are competitive when seeking to extend the benefits of decarbonisation and an infrastructure which can promote Northern Ireland's journey towards net zero carbon by 2050.

From the onset of GD17, we have based our network development strategy around an overall assumption of robust growth and stable customer tariffs over the long-term.

Maintaining the trajectory for customer connections to 2045 will ensure costs are spread over a wider customer base, resulting in downward pressure on tariffs. Our GD23 modelling, incorporating the assumptions outlined in detail throughout this document results in a conveyance charge for domestic tariffs of 44.5 pence per therm in 2020 prices. This equates to a 11% reduction to our GD17 determined conveyance charges of 50 pence per therm, in 2020 prices. The cost of this additional development is c. £19m, which if included in our GD23 Business Plan, would still result in a decrease in tariffs to current and future customers of 8% in the GD23 period and beyond.
Figure 7.15 highlights the difference in tariffs including and excluding the 10 'New Areas'.

Figure 7.15 Difference in tariffs excluding and including the new areas identified

	Pence per therm	Comparison to GD17 Determined Conveyance Charges
Conveyance charge for domestic tariffs excluding new areas	44.5	- 11%
Conveyance charge for domestic tariffs including new areas	46.0	- 8%

We recognise there is an opportunity with these new areas to deliver further network growth, which in itself presents a significant opportunity to enable accessible of more properties to our infrastructure. Northern Ireland's natural gas networks are uniquely placed as the polyethylene composition of our pipes can support the delivery of gas to households and industry from renewable sources, which strongly supports the role of natural gas as the transition fuel of choice in our progression towards net zero carbon. Looking ahead at the options for consumers who are currently 'off grid', the natural gas infrastructure provides a cost effective solution which will significantly contribute to the decarbonisation of energy in Northern Ireland.

A study carried out on behalf of Ervia in 2018, suggests that renewable gas can reduce CO_2 emissions from home heating at a third of the cost of electric heat pumps.

The scenarios included; gas decarbonisation via biomethane, gas decarbonisation via biomethane and hydrogen and the electrification of heat.

When comparing these low carbon heat options, the scenario that favoured cost effectiveness, whilst also achieving Green House Gas (GHG) efficiency requirements, was based on the gas decarbonisation by biomethane. When comparing the financial impact per household, electrification of heat was deemed significantly more expensive than decarbonisation via Biomethane. Specifically, this was 3 times more expensive.[53] The study further confirmed that whilst feasible, heat pumps are an innovative low carbon means of providing heat but at greater cost and complexity.

The conclusion of the study confirmed that whilst all scenarios are feasible, utilising low carbon biomethane within the existing gas network is the lowest cost way of decarbonising heat for homes connected to or in close proximity to the gas network. The table below (Figure 7.16), extracted from the study, illustrates the cost differential for all scenarios. [54]

[53] www.ervia.ie/decarbonising-domestic-he/KPMG-Irish-Gas-Pathways-Report.pdf
[54] Decarbonising Domestic Heating in Ireland- page 6

Cost per household (€), total costs

(capital investment and fuel) to 2050,discounted, current prices

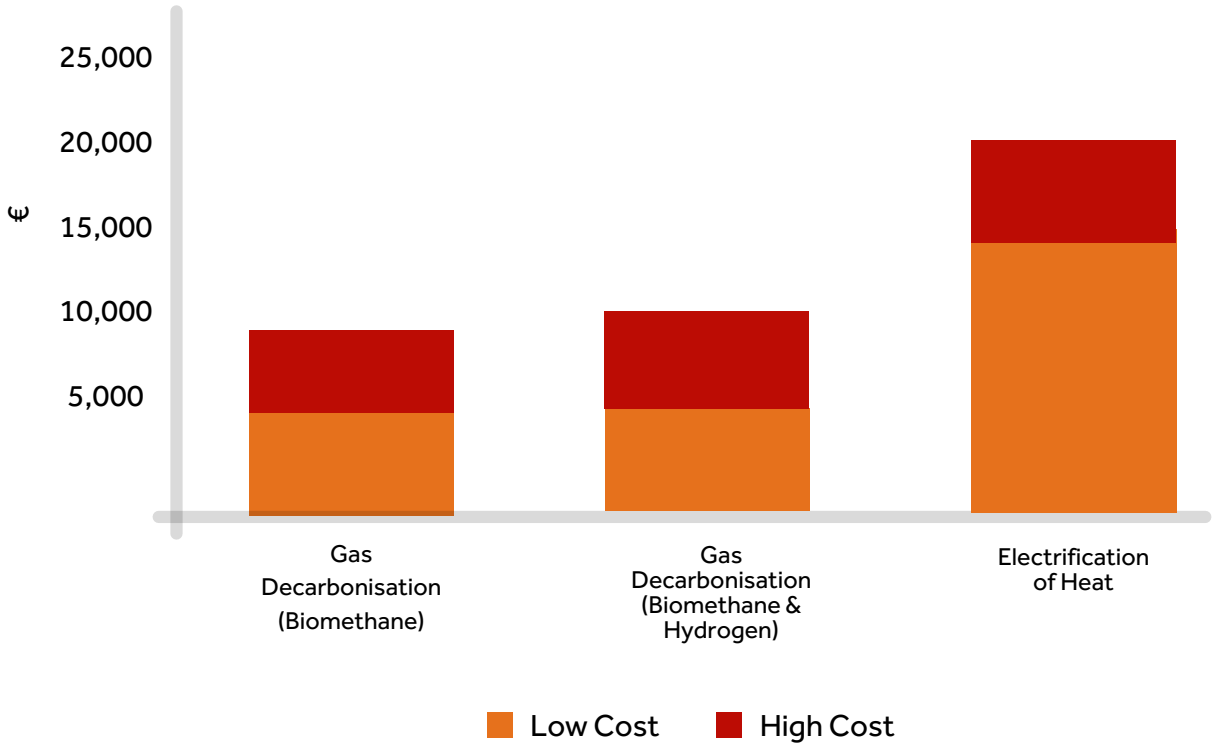


Figure 7.16 Illustrates the cost differential for all scenarios

There will be a cost associated with decarbonising the heat sector in Northern Ireland. We believe the marginal uplift in conveyances charges for these 10 new areas is a very competitive alternative to, for example, the potential roll out of heat pumps for customers. Figure 7.17 provides useful comparable metrics for conversion. This aids the comparison for consumers who are currently off grid. This table also highlights the cost differentials for the natural gas customer today in comparison to customers in the new areas previously mentioned who are known as off the grid customers.

The costs of converting an existing heating system to that of natural gas, biomethane, hydrogen or electrification of heat is considered a one off cost. Conversion from oil to natural gas, for example, consists of; gas pipework being installed, pipework system and radiators being flushed, all redundant items removed and disposed of, heating system upgraded to current building control specs, a high efficiency boiler installed and any associated electrical works.

Figure 7.17 Comparison of conversion costs

	One off costs	Ongoing Costs (based on typical Medium Domestic Consumption Value of 12,000kWh per year as published by OFGEM)
Natural Gas	£2-3 k	£493.20[55]
Natural Gas with new areas charge included	£2-3 k	£498[56]
Gas Decarbonisation with Biomethane	£2-3 k	£557.86[57]
Gas Decarbonisation with Biomethane and Hydrogen	£6k	Unknown
Ground Source Heat Pumps[58]	£11-15 k	[59]£846.80[60]
Ground Source Heat Pumps[61]	£11-15 k	[62]£846.80[63]

Housing stock in Northern Ireland is predominantly of an energy efficient rating less than C band, with 49% of all dwellings having an EE rating of A-C.[64] The KPMG report summarises the feasibility of each scenario and details that electrification of heat requires expensive, deep retrofit of houses to achieve energy efficiency levels required for heat pump technology. The conversion to heat pump technology is also reliant on spatial sizing parameters to accommodate the installation, this may prohibit smaller properties opting for a heat pump.

We welcome the inclusion of the future energy policy and strategy included within the UR's forward work programme 2021-2022. Particularly the recognition that the UR will need to be flexible in reflecting the evolving strategic landscape within their current vires. In the context of Northern Ireland's energy transition, the definition of economic regulation will require focus, in order that the opportunity presented by the natural gas infrastructure for decarbonising gas is not arbitrarily constrained.

We have not included a business case with our submission but would welcome further discussion with the UR regarding this opportunity to extend the benefits of natural gas whilst immediately increasing our contribution to the decarbonisation of Northern Ireland.

We welcome the inclusion of the future energy policy and strategy included within the UR's forward work programme 2021-2022. Particularly the recognition that the UR will need to be flexible in reflecting the evolving strategic landscape within their current vires. In the context of Northern Ireland's energy transition, the definition of economic regulation will require focus, in order that the opportunity presented by the natural gas infrastructure for decarbonising gas is not arbitrarily constrained.

We have not included a business case with our submission but would welcome further discussion with the UR regarding this opportunity to extend the benefits of natural gas whilst immediately increasing our contribution to the decarbonisation of Northern Ireland.

[55] Based on a PAYG customer with a tariff rate of 4.11 pence per kWh
[56] Based on a PAYG customer with a tariff rate of 4.15 pence per kWh
[56] Based on British Gas tariff @ 3.624 pence per kWh and a standing charge @ 33.692 pence per day
[58] A Guide to Heat Pump Prices in 2020 | The Renewable Energy Hub
[59] www.imsheatpumps.co.uk/blog/air-source-heat-pump-running-costs/ For every 1 kWh of electricity, an air source heat pump can produce 3kWh of heat. The average annual demand for most homes in the UK is at 12,000 kWh. 12,000 kWh (heat demand) / 3kW (heat production per unit of electricity) = 4,000 kWh of electricity
[60]The Running Costs of Heat Pumps (2021) | GreenMatch 21.16 p/kWh
[61] A Guide to Heat Pump Prices in 2020 | The Renewable Energy Hub
[62] www.imsheatpumps.co.uk/blog/air-source-heat-pump-running-costs/
[63] The Running Costs of Heat Pumps (2021) | GreenMatch 21.16 p/kWh
[64] www.nihe.gov.uk/Documents/Research/HCS-2016-Main-Reports/HCS-2016-Infographic-Summary.aspx page 24

Northern Ireland's natural gas networks are uniquely placed as the polyethylene composition of our pipes can support the delivery of gas to households and industry from renewable sources, which strongly supports the role of natural gas as the transition fuel of choice in our progression towards net zero carbon. Looking ahead at the options for consumers who are currently 'off grid', the natural gas infrastructure provides a cost effective solution which will significantly contribute to the decarbonisation of energy in Northern Ireland.

8 Network Assets

Utility Regulator Guidance

- Any supplementary information that may help us to better understand the data provided in the reporting template. This will include, where relevant, but does not need to be limited to methodologies and rules used for allocations and estimation, changes to same compared to previous regulatory submissions for the 2019/2020 reporting years and for GD17 as well as effective date and impact of such changes

8.1 Introduction

This chapter outlines the network assets that will be in place across firmus energy's development area following the construction and operations activities proposed for the GD23 period, 2023-2028.

The asset categories comprise;

- Distribution Mains
- Governors
- Domestic Services and meters
- I&C Services and meters
- Service Risers
- Service Laterals

8.2 Network Design

firmus energy's network has been designed and installed to meet the requirements of the Institution of Gas Engineers and Managers (IGEM) and National Standards Authority of Ireland (NSAI).

From commencement of operations, firmus energy's network has been designed to reduce complexity where possible. A number of the pipe diameters referred to within the Utility Regulator's GD23 Business Plan Template are not utilised on the firmus energy contract, namely; 50mm, 75mm, 200mm and 600mm diameter pipes. Likewise, firmus energy does not utilise Intermediate Pressure ('IP') within our network, with a two-tier pressure approach of MP (4 Bar) and LP (75mbar) hence no cells relating to IP mains have been populated within the relevant areas of the Business Plan Template.

8.3 Network Construction

The GD23 Business Pan Template does not provide an opportunity to record the number of valves across our network infrastructure. As such, we have included valves with our mains data.
Polyethylene ('PE') pipe has been the predominant material used in the development and construction of firmus energy's mains and services, due to its life expectancy, lower cost (when compared to steel), lower maintenance requirements, impact resistance and ease of handling and installation. It is anticipated firmus energy will continue to use PE throughout the GD23 period and there is no forecast replacement (due to wear and tear) expenditure for existing PE gas mains or services during this six year period.

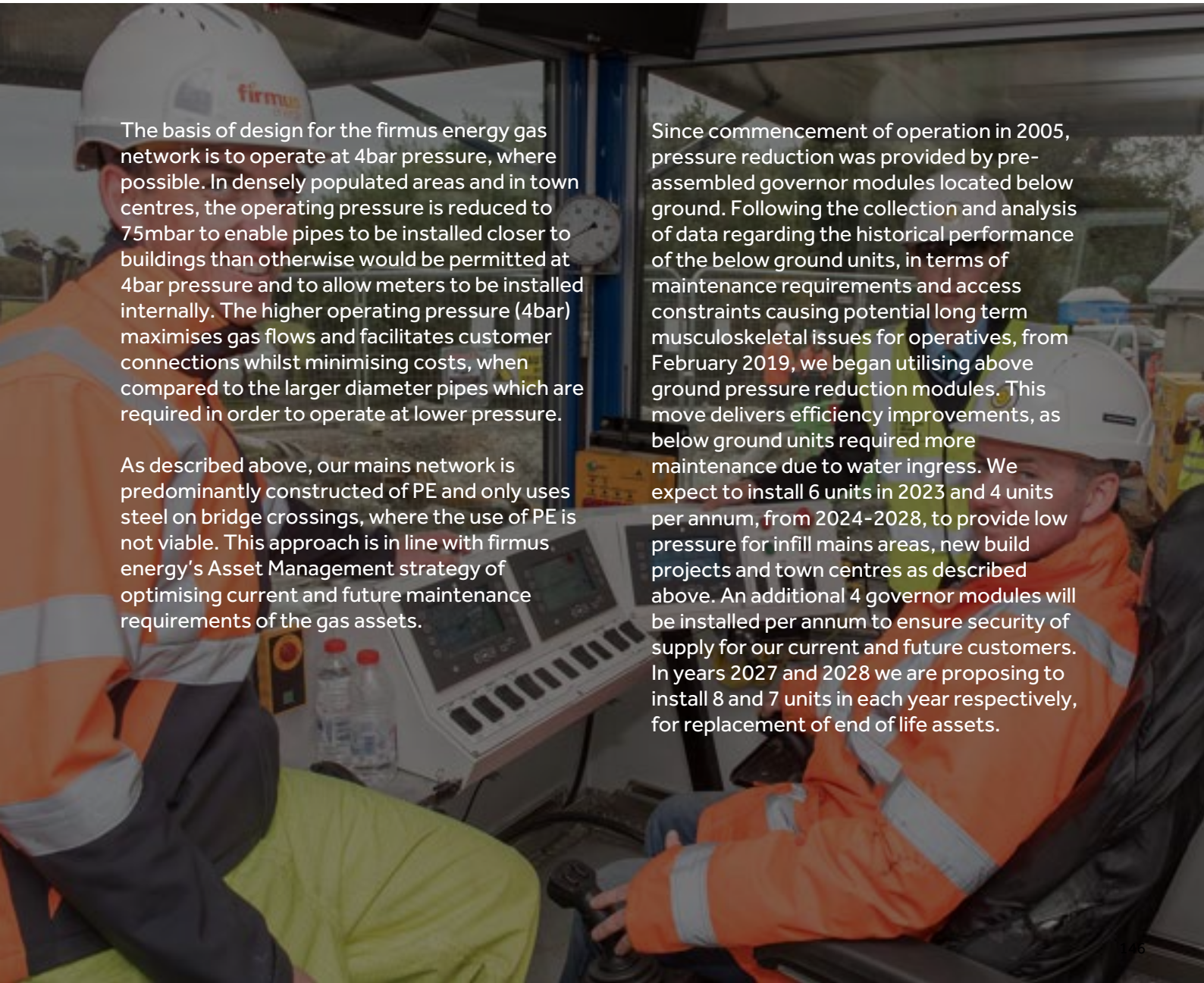
firmus energy is, however, forecasting a marked increase in the amount of open cut mains, including town centre works within public realm streets, to be installed in 2022 and 2023. At the commencement of our network construction in 2005, firmus energy's development plan centred around a 'thin' network model, laying larger diameter feeder mains throughout the principle towns, to connect large I&C customers and to make natural gas available to NIHE areas and new build developments. The GD17 Price Control centred on the roll out of infill mains principally targeting domestic properties passed. We are now entering a new phase of our development plan which includes more infill within town centres.

The GD17 Price Control centred on the roll out of infill mains principally targeting domestic properties passed. We are now entering a new phase of our development plan which includes more infill within town centres. The main laying activity in these areas will predominately require open cut construction, due to the presence of other utility apparatus. Within town centres, directional drilling is not, typically, a viable option and our experience of ground conditions within these town centres are such that the drill bore would be subject to collapse. A high proportion of the planned mains are within public realm streets which will result in an uplift in required capex expenditure. These mains will make gas available to more commercial and domestic customers and will see an increase in the average cost per metre of infill mains during the GD23 period, when compared to GD17 costs.

The quantity of large diameter mains to be installed on our network is reducing, due to the core feeder mains and spine mains network being almost complete across our towns.

Figure 8.1 Network Assets - Lengths of Mains

Pipe Size	Start of 2021	Abandoned Pre - GD23	Start of GD23	Abandoned During GD23	End of GD23
	km	km	km	km	km
63mm	969	-	1,246	-	1,348
90mm	262	-	306	-	317
125mm	180	-	214	-	236
180mm	189	-	199	-	211
250mm	88	-	89	-	117
315mm	39	-	39	-	43
355mm	27	-	27	-	29
400mm	0	-	0	-	0
450mm	9	-	9	-	9
Total	**1,762**	**0**	**2,130**	**0**	**2,310**



The basis of design for the firmus energy gas network is to operate at 4bar pressure, where possible. In densely populated areas and in town centres, the operating pressure is reduced to 75mbar to enable pipes to be installed closer to buildings than otherwise would be permitted at 4bar pressure and to allow meters to be installed internally. The higher operating pressure (4bar) maximises gas flows and facilitates customer connections whilst minimising costs, when compared to the larger diameter pipes which are required in order to operate at lower pressure.

As described above, our mains network is predominantly constructed of PE and only uses steel on bridge crossings, where the use of PE is not viable. This approach is in line with firmus energy's Asset Management strategy of optimising current and future maintenance requirements of the gas assets.

Since commencement of operation in 2005, pressure reduction was provided by pre-assembled governor modules located below ground. Following the collection and analysis of data regarding the historical performance of the below ground units, in terms of maintenance requirements and access constraints causing potential long term musculoskeletal issues for operatives, from February 2019, we began utilising above ground pressure reduction modules. This move delivers efficiency improvements, as below ground units required more maintenance due to water ingress. We expect to install 6 units in 2023 and 4 units per annum, from 2024-2028, to provide low pressure for infill mains areas, new build projects and town centres as described above. An additional 4 governor modules will be installed per annum to ensure security of supply for our current and future customers. In years 2027 and 2028 we are proposing to install 8 and 7 units in each year respectively, for replacement of end of life assets.

Figure 8.2 Network Assets - Number of Meters

Meter Type	Start of 2021	Abandoned Pre - GD23	Start of GD23	Abandoned during GD23	End of GD23
Domestic Credit	9,069	-	12,923	-	24,648
Domestic Credit	67	-	75	-	96
Domestic Prepayment	42,576	-	50,370	-	74,364
I&C U6	877	-	1,011	-	1,401
I&C U16	661	-	737	-	956
I&C U25	404	-	437	-	533
I&C U40	293	-	323	-	411
I&C U65	225	-	241	-	284
I&C U100	143	-	149	-	167
I&C U160	88	-	92	-	99
I&C U250	68	-	68	-	68
I&C U400	35	-	35	-	45
I&C U650	22	-	22	-	22
I&C U1000	16	-	16	-	16
I&C U1600	7	-	7	-	8
I&C U2500	2	-	3	-	3
Total	**54,553**	**0**	**66,509**	**0**	**103,121**

On all 4bar domestic and small I&C services, firmus energy installs a flow limiter safety device which automatically cuts off the flow of gas in the event of interference damage to the service pipe. The flow limiter device reduces the risk associated with uncontrolled releases of gas. The jointing system employed by firmus energy comprises modern butt and electro-fusion, with effective quality control comprising daily inspections of weld records and testing, which are reviewed and validated by firmus energy's engineers. The use of steel has been restricted to bridge crossings where it is not feasible to utilise PE pipe, and the general use of steel has been minimised across the network due to maintenance requirements and increased installation costs.

8.4 Network Abandonment

Any abandonment of assets is carried out at the request of Department for Infrastructure (DFI) Roads, when undertaking road improvement schemes or footway works. Due to DFI Roads' internal operating and budgetary processes, there is often a limited 'line of sight' of these works for firmus energy. Any abandonment of assets is charged to the relevant authority requesting the works. Any abandonment of services, either domestic or I&C, is extremely rare and we do not foresee a significant uplift in occurrences of service abandonment during GD23.

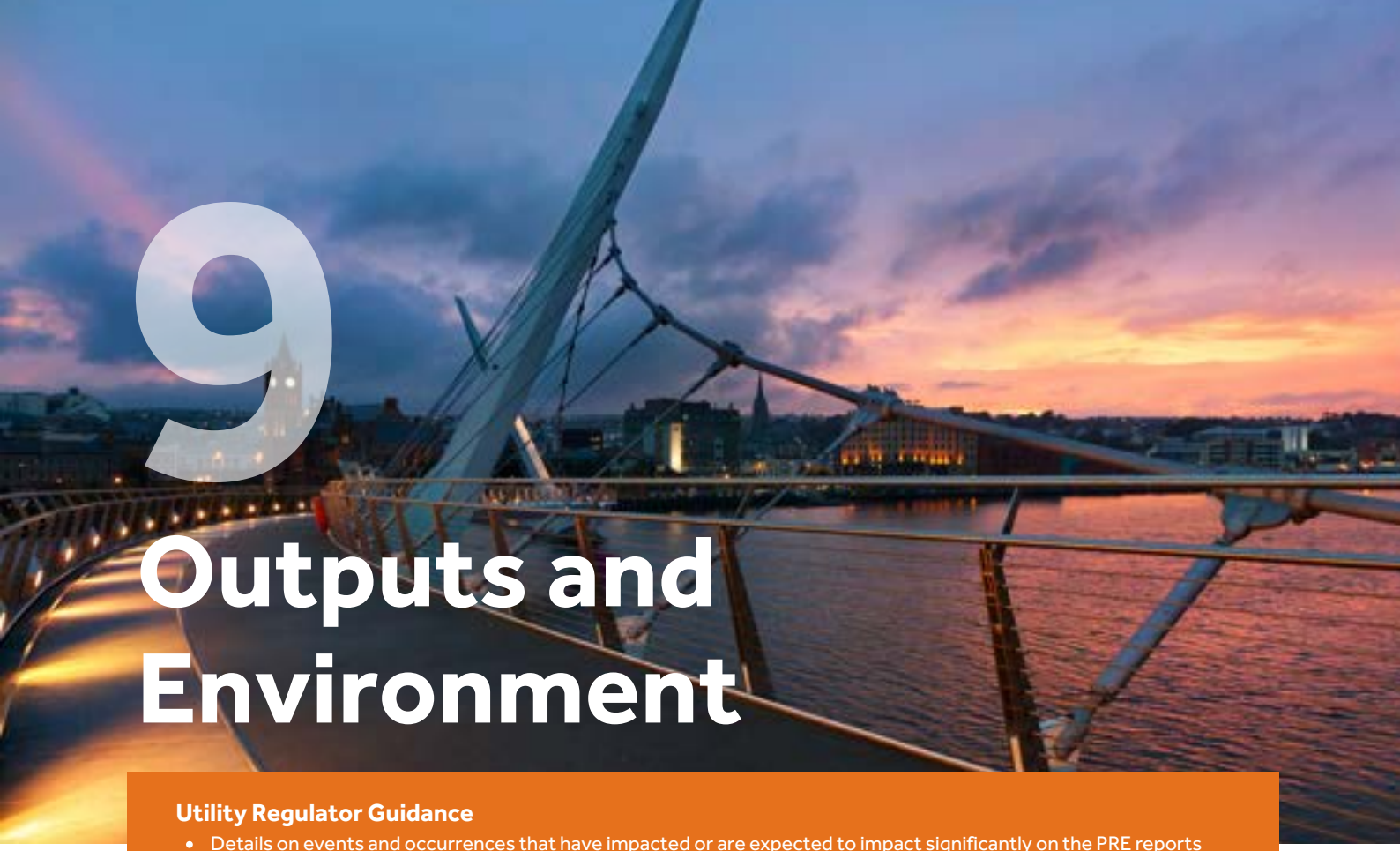
We receive small numbers of requests to divert gas services to facilitate building works, however these are generally temporary in nature and the gas supply is typically reinstated soon after. The costs of these works are in line with our Connection Policy and payment is required prior to the commencement of any works.

8.5 GD23 Outlook

As the number of connections to our gas network continues to grow, the associated maintenance requirements will also increase. GD17 maintenance activities will continue throughout the GD23 period, however, they will do so at an increasing rate, particularly as our asset ages and the number of assets requiring intervention increases.

As our gas network matures, there will be a number of new maintenance items added to our current suite of activities during the GD23 period, for example, replacement of regulators and meters, as these assets reach their 20 year end of life, and other, more intrusive, maintenance of larger equipment is forecast, due to age and usage. These new items will not only add to the maintenance workload but will also require significantly more management and administrative support within the firmus energy operations and maintenance team.

Northern Ireland's natural gas networks are uniquely placed as the polyethylene composition of our pipes can support the delivery of gas to households and industry from renewable sources, which strongly supports the role of natural gas as the transition fuel of choice in our progression towards net zero carbon.



9 Outputs and Environment

Utility Regulator Guidance

- Details on events and occurrences that have impacted or are expected to impact significantly on the PRE reports and repairs numbers and performance indicators, including timing of such events and occurrences.
- Methodologies and rules used for allocations and estimation, changes to same compared to previous regulatory submissions for the 2019/2020 reporting years and for GD17 as well as effective date and impact of such changes.
- Details on reporting boundaries for business carbon footprint reporting; and
- Details on relevant fuel-types over and above those pre-listed in the business plan data template.

9.1 Public Reported Gas Escapes

firmus energy has robust systems in place to manage public reported escapes (PREs). We operate a 24 hours a day, 365 days a year emergency support service, supported by the Northern Ireland Emergency Control Centre, located at Hinckley in Great Britain. This Emergency Control Centre is shared with the other Distribution Network Operators (DNOs) operating in Northern Ireland. firmus energy has a full suite of procedures in place for the safe conveyance of gas in our network area, including matters such as Leak Management, Major Incident and Loss of Supply.

firmus energy achieved an average response time of 37 minutes to all PREs in 2020, including both controlled and uncontrolled gas escapes.[65] Unlike gas network operators in GB, who classify gas escapes in terms of risk, monitor leakage and then plan future repair, we do not defer any gas escapes on the network and respond and repair all PREs as soon as practicable. Our engineers are on call 24 hours a day, 365 days a year for any emergencies which may arise across the network area. In 2020, 100% of uncontrolled gas escapes were attended within 1 hour (against a target of 97% set by UR within our Overall Standards of Performance) and 97% of controlled gas escapes attended within 2 hours (against a target of 97% set by UR within our Overall Standards of Performance).

[65] An uncontrolled gas escape is where it cannot be ascertained that the gas escape is controlled, which is when the meter control valve has been turned off and this has stopped the gas escape.

9.1.1 Experience of Natural Gas

firmus energy's network development commenced in 2005, and has grown steadily over the last 16 years. There is relatively less history, or experience, of natural gas in our Licenced Area when compared to GB, or Greater Belfast, and this influences the number of PRE's reported by our customers, or members of the general public. Unlike GB, where natural gas has been present for over 50 years, or even in Greater Belfast where Phoenix Natural Gas (PNG) has been operating the gas network for over 25 years, firmus energy serves some areas where there is very limited familiarity with natural gas, as the network roll out has only brought natural gas to parts of the 'Ten Towns' area as recently as the GD17 period, i.e. within the last four years. The lesser history and customer and general public experience of natural gas results in firmus energy needing to manage many misconceptions regarding possible safety implications with respect to the usage of natural gas. Consequently, our customers and the general public across our network area will more readily tend to call our emergency number and customer service teams for guidance and reassurance, and are more likely to report what they believe to be a gas escape. Safe operation of our network is paramount, so whilst many of these PREs result in 'No Trace', each report must be treated and managed as a potential escape of gas.

9.1.2 Forecasting PREs

As firmus energy continues to develop our network, a number of factors will impact upon the number of PREs received, most notably, customer numbers, experience of using natural gas and aging of the natural gas equipment. Weather conditions can also have a significant effect, particularly during harsh winter conditions, for example, those experienced in 2018 with the infamous "Beast from the East" cold weather event.

Following tragic events in Castlerock in 2010, when 2 young men died as a result of carbon monoxide (CO) poisoning, the NIHE and Housing Associations took responsible action and fitted large quantities of CO alarms to their housing stock in 2011. CO alarms have a lifespan of c.7 years and subsequently, were due for replacement from 2018. As the CO alarms approached their end of life, an alarm was emitted, and this led to a spike in the number of PRE calls received by firmus energy (in 2018).

When the 'Beast from the East' weather event was combined with the number of CO reports received from NIHE and Housing Association tenants, it led to an increase of c.29% in the number of emergency jobs raised in 2018, when compared to 2017.

In 2019 the number of jobs reduced (compared to 2018), as there were no major weather events and a milder winter was experienced in the year, leading to fewer emergency jobs being generated.

There were fewer emergency calls in 2020, particularly between April and June, as Northern Ireland became subject to government restrictions as a result of the outbreak of the Covid-19 pandemic. This reduction was aligned with the experiences of other DNOs throughout Northern Ireland and GB.[66] Our shared experiences in 2020 recognised the impact of unseasonably good weather during this period and the impact of government restrictions (i.e. with a reduction in gas equipment being utilised, as businesses were closed), which led to an atypical reduction in emergency numbers across all natural gas networks in Northern Ireland and GB.

[66] During the months April 2020 to June 2020, firmus energy participated on fortnightly Covid-19 focused industry calls, facilitated by Cadent (who provide the Emergency Call Centre for Northern Ireland's gas industry), with other operators in Northern Ireland and GB.

During the GD17 period to-date (2017 to 2020), the number of emergency jobs experienced has been less than what had been anticipated in the Utility Regulator's GD17 Final Determination, and this has led to a reduction in associated expenditure. This reduction has been supported by a number of initiatives introduced by firmus energy's Engineering and Customer Service teams to maximise efficiencies, including training, updating procedures, and streamlining activities, whilst continuing to deliver an effective emergency response service.

firmus energy does not have ultimate control over the number of calls we will receive for an emergency or gas supply related matter, but we can, and do, influence the triaging of calls to ensure all matters that can be dealt with over the phone, do not result in an actioned emergency response job. There has been extensive work with the emergency call centre, firmus energy's staff and our external call handling centre to train personnel and develop scripts that can be used to ensure that all calls are handled safely and effectively, and the necessary response activity is optimised.

Since embarking upon the GD17 price control period, firmus energy has continued to work to fine tune our call triaging and response activities. We have been successful in delivering a reduction in the percentage of emergency calls requiring an emergency response, and have used this experience to develop our GD23 emergency call and response forecasts.[67]

In order to forecast PREs for the GD23 period, we have predicted the number of emergency calls expected to be received (as a function of customer numbers and total calls expected to be received by the business), and subsequently forecast the percentage of emergency calls requiring a response to be actioned, building upon our GD17 experience to-date.

Over the GD23 period, the number of calls will inevitably deviate from our average estimates, particularly given their correlation to temperature and weather, as outlined above, however, our model predicts a smooth incremental growth, commensurate with our forecast growth in customer connections.

The firmus energy gas network will reach 20 years in service in some areas during the GD23 period, and as the network ages, more PREs and our requirement to complete a repair to the network will occur due to the degradation of assets. Having balanced all these factors as part of our assumptions for GD23, our forecast methodology is aligned to the approach taken by the Utility Regulator in their GD17 Final Determination.

[67] The GD17 Final Determination forecast c.50% of emergency calls would require a response, however, firmus energy has worked to drive this percentage below 30% for the GD17 period to-date.

9.1.3 Reducing PREs

firmus energy works tirelessly to appropriately reduce the number of PRE calls received by our business. We do so by undertaking, for example, the following activities;

Engineering support for our Customer Service activities

Our Customer Service and Engineering teams have worked to develop call answering scripts to best support emergency calls from our customers and the general public. Our call scripts have been created to provide clear, concise and appropriate advice (or action) for anyone contacting our business. This advice is designed to ensure provision of any information which would benefit future calls to firmus energy, for example, by directing callers to our website for further information in the event they experience similar problems in the future, perhaps not directly related to an emergency situation requiring the intervention of an emergency response engineer. This focussed triaging and informing of caller activity has supported a reduction in the percentage of calls requiring an emergency job to be raised and responded to by an emergency response engineer (i.e. a First Responder). In the GD17 Final Determination this percentage was c.50%, however, in GD17 firmus energy has achieved rates less than 30% in the years 2017 to 2020, and is forecasting to continue to do so for the GD23 period.

Whilst pay as you go meters remain very popular with domestic customers connected to firmus energy's network,[68] higher numbers of 'emergency' calls are received from customers using PAYG meters, than those using credit meters. This is primarily a result of the significant increased, and necessary customer interaction with a PAYG meter (for example, the insertion of cards to top up credit), but is also due to the 'smarter' technologies within a PAYG meter and therefore their increased propensity for fault, when compared to a credit meter.

Our Customer Service and Engineering teams work to ensure the optimal level of support is available to customers calling us in relation to matters related to their PAYG meter, for example, information regarding error messages received on a PAYG meter, circumstances requiring the release of the valve on their meter, the benefits of ensuring PAYG meters have at least 20m^3 credit, and keeping 'top up' cards in a safe location (to avoid scratches or dirt leading to damage on the card chip). Upon connection to our network, we send information leaflets on 'top tips' on how to use a PAYG meter to every new customer.

Information and Guidance

firmus energy has introduced a number of initiatives to inform our customers and the wider general public about natural gas, the correct usage of a gas meter, and what to do should the smell gas be detected. We have updated and expanded the information available on our website and social media, and through general customer communications, marketing activities and customer service engagement, our customers are actively encouraged to visit our website or social media sites and avail of the information available. We have added short videos to help customers diagnose issues with their meter (or prepayment card) and how to use them correctly in order to mitigate a general enquiry call to our emergency line, and thereby mitigating further costs associated with the call out of an engineer.

We review each PRE call received and where it has been confirmed that the issue relates to a matter outside the scope of firmus energy's operations, (e.g. low water pressure in their boiler, a general boiler fault, a carbon monoxide alarm or a thermostat fault), we will follow up with a letter to our customers, providing further guidance on responsibility for installations downstream of their natural gas meter and the criteria that ought to be satisfied before a call is made to our emergency centre.

PAYG Meters

PAYG meters remain popular with firmus energy's customers, particularly due to their ability to support our customers' budgeting of energy usage and fuel requirements, for example, facilitating smaller amounts of credit being added to their meter without the need for the 'one-off' expense associated with a top-up of home heating oil. Across firmus energy's network area, we have a relatively high proportion of customers with lower disposable income, when compared to Northern Ireland more generally,[69] and GB.[70]

[68] c.78% of domestic consumers connected to firmus energy's network at the end of 2020
[69] Derry/Londonderry is firmus energy's largest customer base (and is Northern Ireland's second largest city, after Belfast. Derry City and Strabane council was listed in the bottom 10 Gross Disposable Household Income, per head, areas in the UK, by NUTS3 local areas, UK, 2016 https://www.ons.gov.uk/economy/regionalaccounts/grossdisposablehouseholdincome/bulletins/regionalgrossdisposablehouseholdincomegdhi/1997to2016#analysis-of-nuts1-regions
[70] Northern Ireland's Gross Disposable Household Income, per head of population is 82.1% of that in the UK as a whole, in 2018. https://www.nisra.gov.uk/statistics/economic-output-statistics/gross-disposable-household-income

This, in turn, results in potentially higher levels of fuel poverty throughout our network area. As outlined above, PAYG meters are more prone to faults than credit meters, and particularly as a result of improper use of the pre-payment 'top up' card or incorrect meter operation by customers. Customers across our network regularly run out of credit and use the emergency credit on their meter, prior to attempting to top up credit. If the correct procedure is not followed, this often results in a 'no gas' situation, with the customer subsequently calling our emergency contact number.

This, in turn, typically results in an engineer needing to be dispatched to reset the customers' meter.

Given firmus energy's relatively high proportion of PAYG meters (c.78% of domestic meters), the associated challenges with PAYG meters are proportionately impactful upon firmus energy's PREs and costs, particularly when compared to network operators with lower customer preference for PAYG meters. In GB this is c.15% of natural gas customers.

Issues with PAYG meters are more prevalent in the colder months (October to March) when gas usage is greatest and when customers are paying for higher energy usage, and typically topping up their credit more often. For example, in March 2019 there were 161 jobs relating to PAYG meter issues, compared to 46 in August 2019, as shown in Figure 9.1, below.

Figure 9.1 PREs in 2019

2019	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Total Month PREs	321	285	317	293	200	161	161	163	245	284	347	345
Issues with PAYG & Attributable to external parties	134	131	161	140	87	56	48	46	74	109	129	140
% of total PREs	42%	46%	51%	48%	44%	35%	30%	28%	30%	38%	37%	41%

Meter Credit

The opening and closing of the valve within the meter housing when a customer runs out of gas, creates more wear and tear on the meter than would typically be expected. This added use of the meter reduces the life expectancy of the meter, and indeed the regulator, leading to more meters and regulators requiring replacement before their natural end of life.

We continue to record all instances of customers running out of credit, using the reserve facility on their meter and subsequently calling our Emergency Control Centre for an engineer to respond to reset their meter. We fully acknowledge and ensure we remain sensitive to the financial challenges faced by some of our customers, however, we continue to contact these customers by phone and letter, and in some cases by calling to their home, advising them on the importance of trying to sustain sufficient credit on their meter so that a 'no gas' situation is prevented. We have had success in this regard and the number of customers repeatedly running out of gas has reduced. Nonetheless, we will need to continue to work with customers during GD23, and remain sensitive to those customers who may be living in fuel poverty and may not have the requisite disposable income to adequately heat their homes in the colder months. Figure 9.2, shows the number of PREs generated as a result of meters running out of credit in the GD17 period to-date, and the percentage of total PREs caused by this activity.

Figure 9.2 Meter Credit Issues as a percentage of PREs in GD17 to-date

	2017	2018	2019	2020
Number of customers running out of credit on PAYG meters	348	482	325	139
Total number of PREs	2,719	3,519	3,122	3,013
% running out of credit	12.8%	13.7%	10.4%	4.6%

As can be seen from Figure 9.2, there was an increase from 2017 to 2018. This movement is due to the "Beast from the East" weather event in 2018.

If we compare the figures from 2017 and 2019, when the general weather and temperature conditions were similar, there was a marked decrease in this type of PRE. This decrease indicates that the strategy implemented by firmus energy from the outset of GD17 is yielding success.

The figures for 2019 to 2020 have seen a further reduction. Whilst this is, in part, due to the extensive work undertaken by firmus energy, it is acknowledged within the natural gas industry in Northern Ireland and GB, that the impact of government restrictions in 2020 has had a significant impact on PRE numbers. During these government restrictions, more people were spending more time at home and monitoring their energy usage more frequently. Furthermore, the good weather experienced during spring 2020 led to a notable reduction in calls associated with the number of PREs and meter credit issues.

The roll-out of our planned extensive infill network during GD17 has made natural gas available to almost 92,000 additional properties and we anticipate an uplift in new customers opting to have a credit meter fitted, thus reducing the percentage of call-outs associated with PAYG meters within the GD23 period. In 2020, there was an increase in the percentage of credit meters fitted, with around 33% of new customers choosing a credit meter, compared to our historic average of c.22% of customers choosing a credit meter. As such, whilst we continue to increase our customer base and connect increasing numbers of PAYG customers each year, the rate of growth in PAYG meters is less than in previous years.

9.2 Environmental Management

9.2.1 GD23 Business Plan focus

firmus energy's environmental considerations for our GD17 Business Plan were focussed upon;

- Environmental management
- Reducing our environmental impacts
- Attaining third party accreditation for our management systems
- Continual improvement in our practices

To meet our GD17 commitments we successfully implemented an environmental management system and gained external accreditation to meet the ISO14001 standard. We have successfully reduced one of our most significant environmental impacts, waste to landfill, by diverting 45% of excavated material from landfill during the GD17 period to-date. We have seen many areas of continuous improvement across our operations, such as reducing energy usage within our Antrim offices by 16% over the previous 4 years.

As we embark upon the GD23 period, our Business Plan remains committed to continuous improvement and seeking additional opportunities to reduce our environmental impact. firmus energy's GD23 Business Plan provides strong support for the Northern Ireland Executives' Programme for Government,[71] specifically within the following outcomes;

- "We live and work sustainable – protecting the environment", and
- "Our economy is globally competitive, regionally balanced and carbon neutral"

In addition, our GD23 Business Plan strongly supports Utility Regulator's third strategic objective of "Enabling security of supply and a low carbon future." [72]

[71] Northern Ireland Executive Programme for Government – Draft Outcomes Framework Consultation Document, publish 25th January 2021 https://www.northernireland.gov.uk/programme-government-pfg
[72] Utility Regulator's Corporate Strategy 2019 – 2024 https://www.uregni.gov.uk/sites/uregni/files/media-files/Corporate%20Strategy%202019-24%20final%20for%20web.pdf

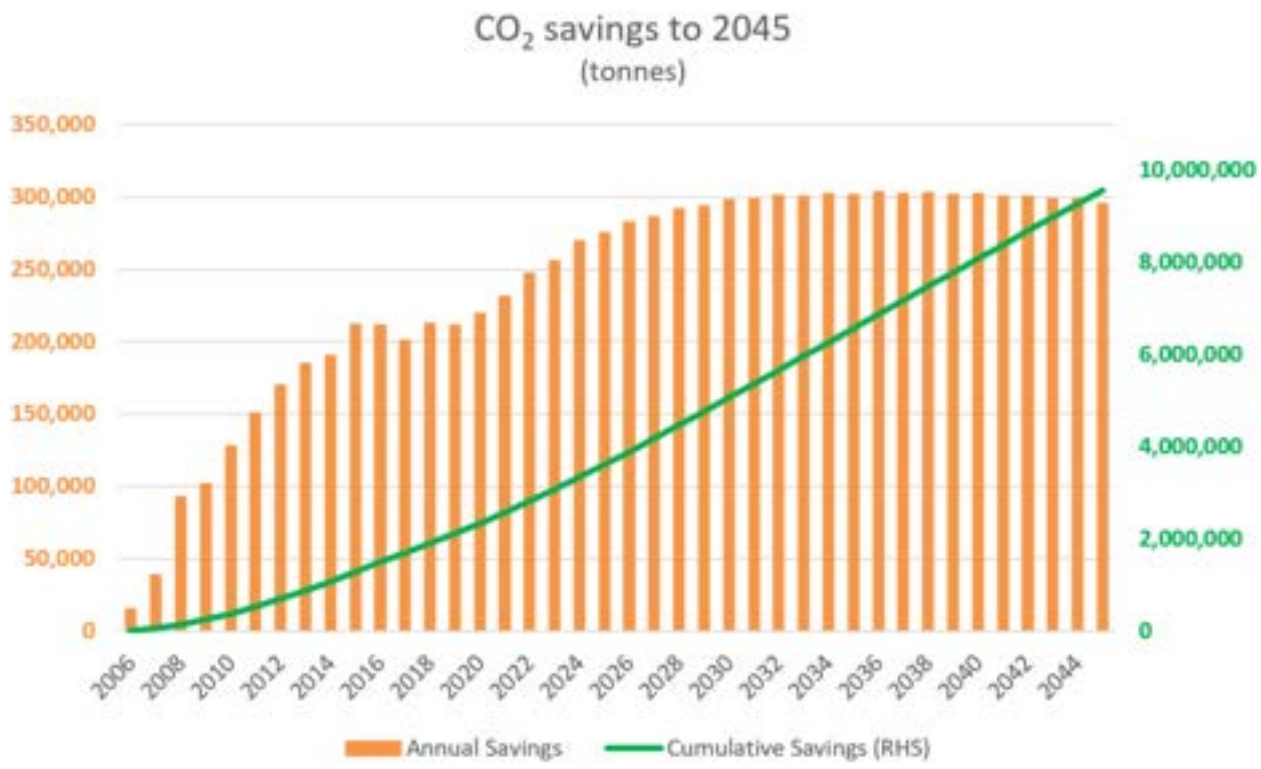
As we develop and progress our learnings during the current (GD17) price control period, our environmental focus for the GD23 horizon will include;

- Sustainability, including network sustainability.
- Promoting the circular economy, through refurbishment of network assets, where possible, and the investigation of purchasing sustainable materials within our supply chain.
- Reducing our carbon footprint by the use of green energy, and promotion of energy efficiency, including emissions from our white and grey business fleet.
- Our strategic commitment to support decarbonisation towards net zero carbon energy in Northern Ireland by 2050.
    - As outlined throughout our GD23 Business Plan, natural gas offers a significant opportunity to realise immediate, and material, reductions in Northern Ireland's CO_2 emissions. Our GD23 connections forecast is ambitious, and is underpinned by the costs requested within our Business Plan to support their delivery. Our Business Plan is presented with tariffs for current, and future, customers which will decrease by 11%, compared to current tariffs, whilst delivering almost 1.7m tonnes of CO_2 savings over the six year period alone.

9.2.2 Northern Ireland's journey towards net zero carbon - Conversion of properties to natural gas

As discussed in Part 5 of our GD23 Business Plan, the growth of our natural gas network and our plans to have almost 104,000 customers connected to our network by the end of the GD23 period (i.e. 2028), will deliver a significant contribution to Northern Ireland's journey towards net zero carbon energy. The predominant fuel choice for households in Northern Ireland remains home heating oil (kerosene), and this market presents the largest opportunity for converting properties, and OO properties in particular, to natural gas. Typically, a household converting to natural gas (from home heating oil) will reduce their carbon emissions by c.48%. (This percentage typically increases to over 60% when converting to natural gas from solid fuel). Since the award of our licence in 2005, firmus energy's network development and customer growth has already enabled the displacement of more than 2.3m tonnes of CO_2 from Northern Ireland's environment, as at the end of 2020. As we continue to grow connections to our network throughout the GD23 period, and beyond, we will have displaced almost 10m tonnes of CO_2 from Northern Ireland's atmosphere by the end of 2045, as illustrated in Figure 9.3.

Figure 9.3 Cumulative CO_2 savings by firmus energy customers, 2005 to 2045

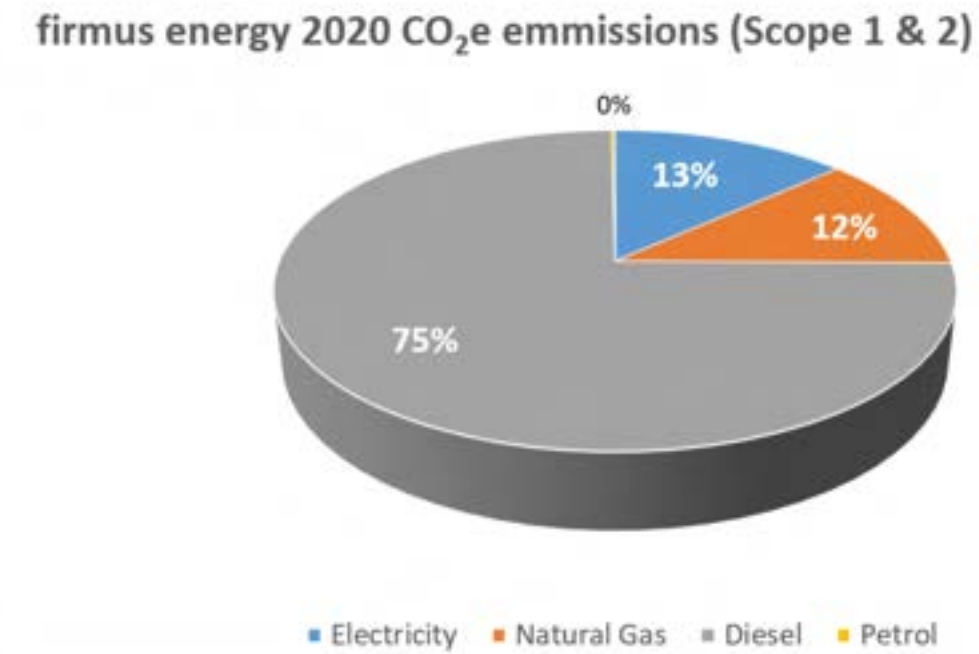


9.2.3 Reducing our business carbon footprint

firmus energy is committed to the continued reduction of our business carbon foot print. Figure 9.4, below, depicts the source of our CO_2 emissions for both Scope 1[73] (direct emissions from company-owned and controlled resources) and Scope 2 (indirect emissions from the generation of purchased energy) carbon emissions.

Total carbon emissions in 2020 for Scope 1 and Scope 2 were 157 tonnes of CO_2e, (carbon dioxide equivalent).

Figure 9.4 firmus energy's tCO_2e % emissions



[73] Scope 1, Scope 2 and Scope 3, as defined by the GHG Protocol https://ghgprotocol.org/

The inclusion of our Scope 3 emissions (all indirect emissions that occur in the firmus energy supply/ value chain primarily that of our appointed period construction contractor, including the use of Polyethylene pipe) extends our emissions to c.2,500 tonnes CO_2 e, annually, excluding network shrinkage.

As part of our commitment to reduce our business carbon footprint, firmus energy began sourcing green energy to power our offices in Antrim in 2021.

In 2020, transport emissions accounted for 75% of our Scope 1 and Scope 2 GHG emissions, As such, reducing emissions from our vehicle fleet and improving efficiencies will be a key focus over the GD23 period.

In 2018, firmus energy installed electric vehicle charging points at our offices, in Antrim, to support and promote the use of plug-in Hybrid vehicles. Our continued promotion and sourcing of electric vehicles will continue throughout the GD23 period, in conjunction with additional considerations to deliver improvements in Scope 3 emissions within our Supply Chain, such as improved work scheduling, driver awareness training, reducing packaging and further investigating the use of sustainable products as opposed to virgin aggregate, where feasible with Local Authorities.

9.2.4 Environmental Management

firmus energy's Environmental Management system is accredited to ISO 14001. This achievement was attained in 2017 as we embarked upon our GD17 price control period. Our Environmental Management system is audited externally at 6 months intervals against the standard, and ensures we have identified our environmental aspects, have plans in place to minimise adverse impacts upon them, and to ensure we are continually striving for continual improvement in our ongoing performance.

Our most recent Environmental management systems external audit was conducted in Q2 2021 by BSI, an independent accreditation body, and recommended continued accreditation to the ISO 14001 environmental management standard. No non-conformances or opportunities for improvements were identified during the audit. The auditor also noted "Good progress over the period in relation to improved focus on decarbonisation, bio diversity commitments and waste management. "

We foster an environment which drives continual improvement in all areas of our environmental management, including energy consumption. The HSE and facilities management teams work closely, and proactively, to identify savings opportunities, implement improvement plans and measure performance.

We take great pride in the knowledge that firmus energy is the only energy provider in the UK to have 100% of our employees accredited (or preparing for accreditation) in a City and Guilds qualification in energy efficiency. Each employee receives training and undertakes examination within 12 months of joining our business. We work closely with National Energy Action (NEA), who facilitate the training and examination of our employees. Our staff are ambassadors for energy conservation, regardless of their role within our organisation and public facing staff, in particular, are equipped to inform, educate and promote energy efficiency in the homes and businesses of our customers.

9.2.5 Business In The Community (BITC) Northern Ireland - Environmental Benchmarking Survey

The BITC Northern Ireland Environmental Benchmarking Survey benchmarks organisations against sector peers and leading Northern Ireland organisations, based on environmental management and performance in key areas, as well as the extent to which environmental business practices have been embedded within corporate strategies.

Effective environmental management provides a way for organisations to make tangible cost savings, while contributing to a sustainable future. Participating organisations are ranked by level: Platinum, Gold, Silver, Bronze or Green.

firmus energy achieved Gold Level accreditation in the 2020 Environmental Benchmarking Survey, and ranked fifth within the Utility Sector, attaining 82.3%. The average score across all 103 participating organisations was 72%. This was only our third year participating in the survey and as we embark upon GD23, our sights are set on working to attain Platinum Level accreditation.

9.2.6 Asset Management and the circular economy

Our asset management system, which is externally accredited to ISO 55001, considers the entire lifecycle of assets, including 'life end', when steps are taken to ensure that the assets, where feasible, are sustained as a resource to be refurbished for future network installations. We are committed to enhancing our contribution to the 'circular economy' through the GD23 period through the continued refurbishment of assets and materials wherever possible.

9.2.7 Waste to Landfill

Our activities as a gas network operator have the potential to deplete available natural resources, particularly in the construction phase of our operations. As detailed in Part 7 of this document, our construction activity, and therefore our waste to landfill impacts will decrease markedly from 2023, i.e. from the first year of our GD23 price control review period. In Northern Ireland, generally, the majority of excavated material is replaced with fresh quarried material before the top surface is restored with bituminous material.

In order to minimise the amount of materials being excavated, firmus energy and our appointed contractor, Kier Utilities, strive to maximise the use of trenchless technology, with mains being installed using directional drilling techniques wherever possible, and moling of small diameter service pipes used to connect customers to our network. These methods will continue to be employed to support our ambitious connections targets throughout GD23, in the most environmentally responsible manner.

In 2017, firmus energy and Kier Utilities established a relationship with Craigavon based company, Recon Waste Management, who receive excavated material which is then recycled for re-use in the wider construction industry. This has resulted in diverting over one third of all excavated material from landfill, since the beginning of GD17 (i.e. since 2017), with a current objective for GD23 to increase this through investigating additional geographic locations where such facilities might also be made available to our operations.

9.2.8 Biodiversity

Biodiversity is considered, planned for and monitored throughout all stages of our distribution network lifecycle. We work closely with stakeholders (both internal and external) to ensure our potential impacts on biodiversity are closely managed throughout all projects, ranging from our routine gas mains and service laying construction activities through to our larger, more complex infrastructure projects. The scale and potential impact of specific projects will dictate the level of additional project resources requiring external specialist support.

We are ever mindful that urban areas will also home valuable wildlife habitats and enhancement opportunities. The firmus energy engineering design team will assess all environmental aspects during the design phase of any construction activities, identifying potential impacts and selecting suitable control measures to eliminate or minimise those which may be detrimental to the environment including all habitats, species and eco systems. During GD23 this will involve continual training and awareness for both design and construction personnel in both firmus energy and our appointed construction contractor.

9.3 Safety and Security of Supply

firmus energy is committed to operating our network in line with all legal obligations (including industry specific legislation and industry recommendations such as the Institution of Gas Engineers and Managers (IGEM) Standards) and in accordance with the firmus energy Distribution Safety Case, which has been accepted by HSENI. Our Safety Case is a legal requirement under the Gas Safety Management Regulations Northern Ireland 1997.

The Safety Case outlines how firmus energy, as the DNO, has identified and controlled the risks associated with the safe operation of our network, including;

- The safe flow of gas through our network
- The composition of gas being conveyed
- firmus energy's arrangements for responding to gas related escapes and incidents, and, arrangements for managing gas supply emergencies.

We are committed to ensuring the Health, Safety and Welfare of our employees, contractors, visitors, gas customers and members of the public, who could be affected by our operations and activities; this includes the safe construction, operation, maintenance, integrity management and the response to all gas related emergencies occurring on our network. Health and Safety management is a core value of our business. firmus energy's Health and Safety management system is well established, has been externally accredited to ISO 45001, and will underpin delivery of our GD23 Business Plan.

The competency and development of all staff (particular those with responsibility for the safe operation of the network) is a key focus of annual training and development plans to ensure the safe development and operation of the distribution network. These requirements are embedded within our forecast training costs for the GD23 period and are an essential component of the successful delivery of our GD23 Business Plan.

9.3.1 Safety Campaigns

Both industry and public safety related campaigns play a key part in our annual safety strategy, and will be further developed throughout the GD23 period. Interference damages caused by third parties working in proximity to our infrastructure have presented the most significant risk for firmus energy to manage. To that end, firmus energy has developed and promoted a 'Dial before You Dig' service, providing 'as laid' gas utility plans and plant protection advice to any party undertaking operations in the vicinity of our network. This is also supported with firmus energy's 'Safe Digging' and 'Gas Safety' awareness briefings which we provide for all third parties wishing to avail of this service. This will be further enhanced during GD23, with development of promotional videos and campaigns with industry partners and HSENI.

Gas safety, reporting a gas related emergency, and awareness of The Northern Ireland Gas Emergency telephone number have each been key focus areas of firmus energy's public safety campaigns, since commencement of our network construction in 2005. As our network continues to grow, and mature, we will also continue to promote carbon monoxide (CO) awareness and the 'Gas Safe Register' throughout the GD23 period.

During GD17 we also delivered a series of Construction Safety briefings in local schools reminding school children of the potential dangers that construction sites can present. We will continue with this programme during GD23 and extend it to include Environmental Awareness and the role played by the Energy Sector in Northern Ireland's journey to net zero carbon.

9.3.2 Collaborative working to support improving standards across Northern Ireland

firmus energy works collaboratively on safety related risks with each DNO in Northern Ireland, focussing upon common risk areas, including reducing third party damages and the promotion of safe digging practices in the proximity of natural gas assets and infrastructure.

Throughout GD17, the three DNO's in Northern Ireland have been working together to seek amendments to our existing respective Safety Cases with the HSENI, for acceptance to implement 'Customer self-isolation and/or restoration' (CSIR). CSIR is the term used to describe the process by which gas consumers can be allowed to isolate and/or recommission their own downstream gas apparatus (i.e. regulator, meter, pipework and appliances) during a gas supply emergency, and in defined circumstances. This protocol would only be implemented in large scale gas outages where the risk of, for example, hypothermia (due to temperatures) outweighs the risk of educating customers to take responsibility for the restoration of their natural gas supply, in a safe and controlled manner. We believe the establishment of these procedures are important, prudent and effective considerations which will support delivery of our GD23 Business Plan.

Gas industry arrangements in Great Britain have resulted in HSEGB accepting amendments to network operators' safety cases which allow CSIR during gas supply emergencies, again, where determined criteria is satisfied.

All three of Northern Ireland's DNOs have worked with DNV GL to prepare a CSIR risk assessment and risk model calculator which will support the DNO's selection and invoking of an appropriate gas supply emergency response, with respect to safe guarding life.

All three DNO's have worked collaboratively on this project, which if accepted by HSENI, will be of significant benefit to effectively managing gas supply emergencies in Northern Ireland. We expect to have HSENI's acceptance of our proposals in advance of commencing the GD23 price control period.

Since the award of our licence in 2005, firmus energy's network development and customer growth has already enabled the displacement of more than 2.3m tonnes of CO_2 from Northern Ireland's environment, as at the end of 2020.

10 Real Price Effects and Efficiencies

Utility Regulator Guidance

- Company view of real price effects that it the GDN expects to be faced with until the end of the GD23 price control period.
- Details of what the GDN has undertaken during the GD17 price control period to date or proposes for the future with respect to benchmarking/performance/efficiency improvements as well as the actual/expected findings of these actions and how they will be used.
- Details of any capex/opex trade-offs and their effects on the results and forecasts for the future.
- Details on and substantiation of any cost categories for which the GDN believes separate RPEs should be considered as well as substantiation of and underlying source data for any RPE assumptions contained in the business plan data template.
- Details on the relative efficiency assessment undertaken and the derivation of the proposed catch-up efficiency targets, together with an explanation of how these will be met; and
- Details on studies undertaken and information considered when establishing the frontier shift assumptions.

10.1 Real Price Effects

This section sets out our view of the RPEs that firmus energy expects to face during the GD23 price control period.

firmus energy's costs are expected to change as a result of upward pressures in the price of its inputs. While upfront allowances are indexed to inflation as part of the price review, the basket of goods considered in general inflation indices is unlikely to fully reflect the specific costs faced by firmus energy. To account for this, RPEs are used. RPEs calculate the difference in the input price changes faced by firmus energy and general inflation levels.

As further discussed in Part 10.4, we consider that the most recent relevant regulatory precedent on RPEs comes from the RIIO GD2/T2 decisions. The range of forecast RPEs for GDNs under RIIO-GD2 is summarised in Figure 10.1, below, for the years 2021-2026. We consider that these RPE forecasts can be used for the GD23 period up to 2026, as the input price challenges that firmus energy will face are similar to those faced by GB GDNs. For the remaining years of GD23 (i.e. 2027 and 2028), we consider that the final forecast year (2026) can be projected forward, as included in Figure 10.1, below.

Figure 10.1 RPE forecasts - RIIO-GD2

	2021	2022	2023	2024	2025	2026	2027	2028
GDNs	0.9%	1.4%	1.1%	1.0%	0.9%	0.9%	0.9%	0.9%

Source: 2021 to 2026 estimates from the RIIO-2 Final Determination, Core Document. RPE forecast for 2026 has been rolled forward for the remaining years of GD23 (i.e. 2027 and 2028).

10.2 Internal efficiency programmes

This section sets out the efficiency improvements that firmus energy has made in GD17, and which form the basis of our GD23 forecasts.

During the GD17 period to date, firmus energy has made savings on capex and opex spend versus regulatory allowances. From 2017 to the end of 2021, firmus energy anticipates that these savings will total approximately £10m, coming from savings of approximately 13% on capex and 5% on opex.

These savings have been achieved through a number of initiatives to deliver the required network build and maintenance requirements at a lower cost and with higher contractor productivity. These initiatives are detailed further, below.

Capex

The engineering team has designed an efficient network build to utilise low cost construction techniques which can deliver higher productivity versus conventional open trench methods of mains installation and minimise contractor downtime. firmus energy has carried out extensive planning of the construction roll out and maximised productivity, for example, by building the network in larger work packages throughout the GD17 period.

The firmus energy engineering team is responsible for the more intricate engineering site activities. This has reduced the contractor's responsibility and has delivered more competitive rates through the recent retendering process for the new period contract which commenced in April 2020.

More specifically, firmus energy has implemented the following construction initiatives to deliver savings and drive down cost per metre of pipe;

- Single live gas connections are used for domestic infill areas.
- firmus energy has maximised the use of directional drilling where ground conditions are favourable, allowing it to outperform main laying allowances and to reduce the amount of excavated material sent to landfill.
- Where possible, gas mains are installed in grass verges rather than in roadways and footways which would be more costly.
- Work packages have been zoned to maximise resource outputs and efficiencies, leading to significant improvements in the mobilisation of work and resources.
- firmus energy has commissioned work packages in one visit, rather than taking a piecemeal approach with multiple visits / mains connections in the same area.
- firmus energy has taken advantage of improved pipe welding technology which provides information instantaneously for review and storage on the cloud.
- firmus energy has provided sites with direct access to design documentation, such as laid plans and weld records, leading to increases in site productivity.
- Internal job handover has been moved to a digital platform which coincides with the period contractor's mobile working platform.
- Domestic services have been grouped and zoned to increase contractor productivity.
- NIHE mains and services have been issued for construction at the same time to increase efficiencies.
- firmus energy has been working very closely with the Roads Authority to discuss roll out plans, reinstatement requirements and timelines to minimise expensive out of hours working and control costs.
- firmus energy has developed close, collaborative working relationships with other utilities to minimise disruption and downtime.

Opex: Maintenance and Emergency

firmus energy's ISO55001 accredited asset management system and the development of specialist internal asset owners has driven an efficient approach to maintenance across all network assets. This approach is centred on continual improvement and delivered through a number of initiatives, detailed below.

- At the outset of GD17, firmus energy's move from a third-party contractor to an in-house, directly employed governor team has reduced costs, increased productivity and improved quality standards.
- firmus energy has worked closely with its principle contractor to plan works and enable two activities to be carried out in a single visit (e.g. MP regulator inspection along with PAYG battery replacement). This has delivered synergies and cost savings in GD17.
- The close inspection and grading of specific assets has been undertaken in GD17. This has allowed firmus energy to draw up an asset health 'criticality index' and ensure maintenance is targeted at the areas where it is needed most.
- Reconciling previously dispersed networks and inter-linking them through detailed planning of network construction has delivered fewer district regulators, lowering the number of maintenance visits and associated long term costs.
- The system of prevention employed through gas plant marker posts has reduced both the disruptive network damages to critical sections of firmus energy's network and the frequency with which firmus energy is required to attend site to monitor safe digging practice near its assets.
- firmus energy has increased efficiencies by using telemetry to highlight potential pressure problems, negating the need to dispatch engineers to site to investigate.
- Rechecks following Public Reported Escapes (PREs) enhance firmus energy's 'find and fix' approach to dealing with these jobs. This has resulted in repairs being carried out on a planned basis during normal working hours rather than from subsequent emergency calls which are considerably more expensive.
- firmus energy has used drones and high resolution photography to inspect and record the condition of exposed steel assets (risers for flats and gas pipes attached to bridges). This information is then used to make decisions on maintenance activities, avoiding the need for expensive scaffolding to gain access and determine asset condition.
- firmus energy has implemented a system of triage and follow up on nuisance type PRE's to reduce the number of call outs which it attends, thus minimising these costs. firmus energy has carried out extensive work to manage PRE calls both during and out of hours.

Opex: Public Information and Education

firmus energy has introduced a number of initiatives to educate its customers and the wider general public about natural gas, how to use the gas meter and what to do should someone smell gas. Additionally, the information available on the company website has been updated and expanded. This has enabled more customer queries to be directed to our website or to firmus energy call centre operatives, through direct marketing.

For example, there are now short videos available to help customers diagnose issues with their meter (or prepayment card) and how to use them correctly in order to mitigate a general enquiry call to firmus energy's emergency line, thus stemming further costs associated with the call out of an engineer. For customers that prefer to talk through this information on a call, firmus energy's call handlers have also been trained to inform and educate customers on best practice use of pay as you go (PAYG) meters. Leaflets are also sent to PAYG customers with a number of "top tips" for using the meter.

Additionally, firmus energy reviews each PRE call received and sends out letters to customers where it has been confirmed that the issue relates to their installation, such as low water pressure on a boiler, boiler fault, carbon monoxide alarm or thermostat. These letters remind customers that they are responsible for the installation downstream of the meter and that there are certain criteria that should be met before a call is made to firmus energy's emergency centre.

10.3 Capex/Opex trade-offs

This section details the capex/opex trade-offs facing firmus energy.

Capex/opex trade-offs may arise from a GDN's network operating decisions. For example, to maintain the security of the network, some networks may focus on increased asset maintenance while others may tend toward asset replacement. While both choices can result in the same outcome, this can result in differences in the proportion of spend accounted for by capex and opex across networks. Additionally, a GDN that outsources more activities, such as IT, may have higher opex but lower capex than a GDN that keeps these activities in-house.

If cost comparisons between networks are made at the opex or capex (or further disaggregated) level in isolation, there is a risk that these trade-offs will not be accounted for or may skew the relative efficiency results. This risk has been recognised by Ofgem and accounted for in RIIO-GD2 through its decision to use a single top-down totex benchmarking model which allowed it to "better account for cost complementarities, trade-offs and potential reporting inconsistencies across GDNs than alternative approaches, thus avoiding the risk of GDNs appearing more efficient or inefficient as a consequence of differences in their business models."[74] firmus energy considers that any assessment of efficiencies in GD23 must also account for these capex/opex trade-offs.

10.4 Cost categories impacted by RPEs

This section sets out the cost categories that we consider RPEs should apply to in GD23.
In line with RIIO-2 precedent, we consider that these RPEs should apply to labour (general and specialist) and materials costs. We note that the RPEs will impact both internal labour and materials as well as labour and materials used by external contractors.

The impact of RPEs on contract prices will be of particular importance for the GD23 period. This is because firmus energy's contract for the provision of network build and maintenance services may be up for renewal in 2023, as the current three year contract period began in 2020 following a competitive tendering process. While multi-year contracts may insulate firmus energy from year-on-year price changes, it will be exposed to market price changes when the contract is up for renewal.

firmus energy considers that prices are likely to increase at contract renewal due to:

- General upward price pressure on inputs; and
- A decrease in scale economies relative to the current contract.

In relation to the upward pressure on prices, firmus energy has identified a number of reasons why these upward pressures will be particularly significant in GD23.

- Current utility and wider civils contracts are experiencing an upward pressure on labour costs in Northern Ireland, particularly given increases in telecoms work.
- The current contractor has indicated to firmus energy that it expects there will be increases in future vehicle costs, predominantly due to increased environmental constraints. As environmental regulations would apply to all potential contractors, these increased costs are likely to feed through to all bids when our new contract is tendered.
- PE costs (polyethylene pipes) have recently seen an 11% increase and at the time of writing, force majeure has been declared by PE suppliers in Europe. firmus energy's current contractor is expecting exceptional cost increases from its suppliers. These cost increases will likely be faced by all potential contractors, and will need to be recovered through increased prices to firmus and other network companies.
- There is a legislative change due from April 2022 which will see the tax relief on red diesel removed.[75] This will increase input costs for firmus directly and through its contractors.

[74] Ofgem, 'RIIO-2 Final Determinations – GD Sector Annex (REVISED)'
[75] HM Revenue and Customs, Policy Paper, 'Reform of red diesel and other rebated fuels entitlement'

In addition to the general upward pressures on prices, firmus energy's contract rates are likely to face additional upward pressure because its contractors will no longer be achieving the same economies of scale on building work. In GD17, firmus energy was still building its network, and was able to negotiate reduced contract rates with the current contractor by bringing forward some of the mains work. These economies of scale resulting from increased mains work appeared as reduced rates across all areas of the contract. In other words, the economies of scale achieved in mains work were smoothed across contracted rates for all services (e.g. domestic service rates).

As the network will be largely built by GD23, firmus energy is proposing a reduced level of mains work for the price control period (as outlined in the capex plans submitted). This transition from a mains laying programme to a servicing programme with emergency and maintenance work means that the economies of scale previously achieved will no longer be available. As such, firmus energy expects its contract rates to increase in areas such as service connections, meter works, emergency response and maintenance work.

10.5 Catch-up efficiency

This section discusses the challenges of relative efficiency assessment for firmus energy and appropriate catch-up efficiency targets.

There are a number of challenges with comparative benchmarking for firmus energy. In particular, relative to the comparator set of GB GDNs, firmus energy remains an outlier in terms of explanatory variables, detailed below.

- There are significant scale differences between firmus energy and comparator GDNs. For example, the GDN with the lowest number of customers (Scotland) has more than 30 times the number of customers connected to firmus energy's network and the GB network with the shortest network length (North London) is more than 14 times the network length of firmus energy.
- firmus energy's licence area is much more sparsely populated than those of comparator GDNs. For example, firmus energy's population density is approximately two-thirds that of the least densely populated GB GDN (Scotland).
- firmus energy's network density (customers per km of main) is also significantly lower than comparator GDNs. More specifically, the GDN with the lowest network density (North East England), has almost twice as many customers per km of network than firmus energy.

Due to these significant differences, in our view the results of comparative benchmarking with GB GDNs will lack statistical robustness and will not provide any meaningful view of relative efficiency.

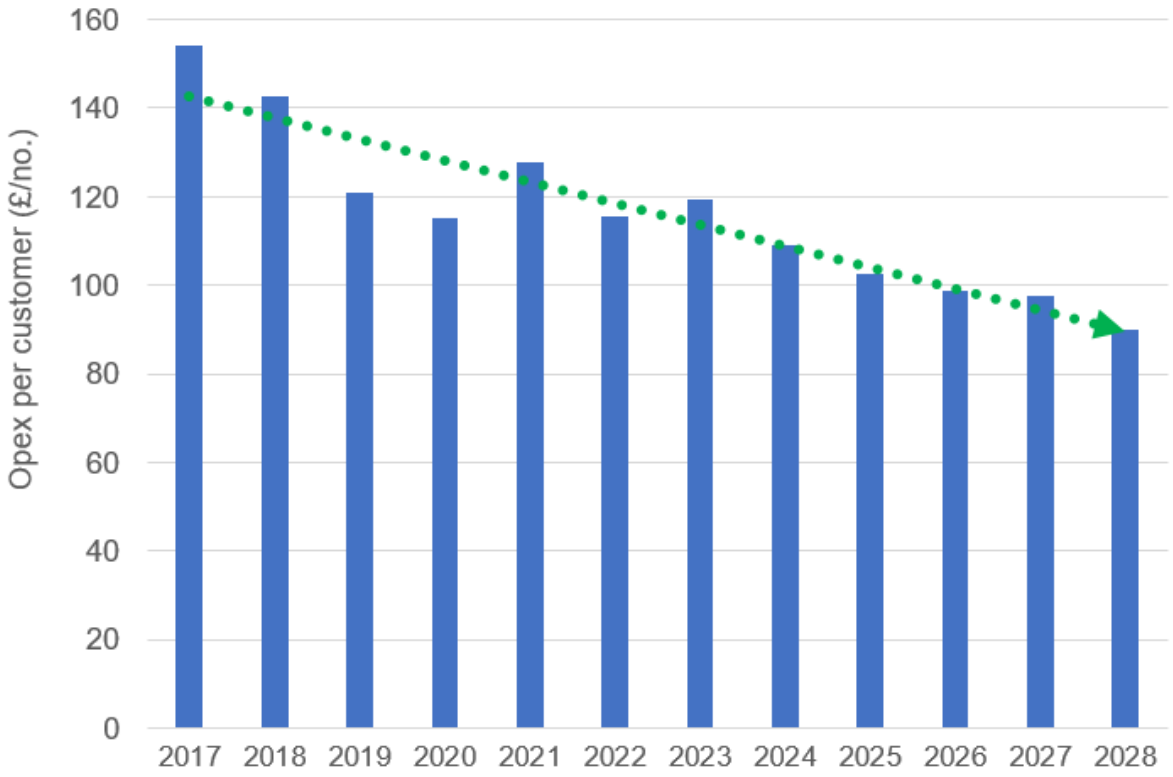
As a result, the most appropriate way to assess firmus energy's efficiency is to analyse our unit costs over time. Analysis of our unit costs over time found;

- Costs per customer have been decreasing over GD17 and are forecast to decrease further during GD23.
- Costs per GWh of gas delivered have increased slightly over the GD17 period and are forecast to remain relatively consistent across the GD23 period. This is driven by the volume of gas delivered growing at a slower rate than the number of customers. At the beginning of the GD17 period, firmus energy's two largest (I&C) customers ceased operations (Michelin and Gallaghers). In the GD23 period, our primary growth in volume is from within the domestic customer sector.
- Costs per km of network length have decreased over the GD17 period and are forecast to remain constant in the first three years of GD23 before increasing slightly in the final three years. This change in trend is directly related to the slowing growth of firmus energy's network length, after a period of significant growth in GD17, accompanied by continued customer growth in GD23. firmus energy's core network build will be completed in 2023, however, we are forecasting continued, and significant growth in customer base for the remainder of GD23 and in the period to 2045. As such, there will be more customers, and therefore higher costs, per km of network length.
- Costs per emergency job have fluctuated over GD17 but are forecast to decrease over the GD23 period. These unit costs have fluctuated over GD17 as the number of emergency jobs is highly dependent on the temperature (and weather) in each year. For example, the 'Beast from the East' weather event in 2018 lead to a significant increase is emergency jobs (and costs), whereas the outbreak of the Covid-19 pandemic in 2020 and subsequent government 'lockdown' restrictions lead to a level of emergency jobs which was lower than forecast.

firmus energy considers that these trends provide evidence that our costs are well justified and efficient. While the unit costs per GWh of gas delivered and per km of network length are projected to increase and stabilise, respectively, this is due to the significant increases in customer numbers and emergency jobs forecast in GD23 and slower expected growth in the volume of gas delivered, coupled with the completion of our core network build at the beginning of the GD23 period.

In particular, we note that the slight increase in cost per km of network length reflects that each km of network now has an increased number of customer connections which bring additional costs (e.g. metering, emergency call-outs and customer service). One of the key unit cost measures is therefore the cost per customer which is expected to decrease over the GD23 period, as shown in Figure 10.2, below;

Figure 10.2 Opex[76] per customer



On the basis of our assessment above, we do not consider that there is any evidence to support a catch-up efficiency target for GD23.

Noting this, firmus energy aims to set itself challenging targets in the business plan for productivity improvements overall, as we did in GD17. The programmes undertaken in GD17, which we expect to continue and build upon in GD23, are detailed in the section below.

[76] Controllable opex

10.6 Frontier Shift

Ongoing efficiency targets are typically estimated using an economy-wide measure of productivity growth, with EU KLEMS data being the most commonly used source of productivity estimates. This data has been recently analysed for the RIIO-GD2 price control, and resulted in Ofgem's advisors, CEPA, proposing an initial reference range of:

0.5% to 1.2% for opex; and	**0.5% to 1% for capex**

From this range, Ofgem set the following ongoing efficiency targets for GB GDNs:

1.05% for opex; and	**0.95% for capex** [77]

A number of GB GDNs are currently appealing elements of the RIIO-2 decision, including the ongoing efficiency target. In particular, the following issues with Ofgem's decision to set ongoing efficiency targets at the upper end of CEPA's specified range have been raised by a number of GDNs:

- The upper bound in CEPA's range is effectively based solely on the value-added (VA) estimates, and does not consider the gross output (GO) measures. This is contrary to CEPA's advice and regulatory precedent which suggest that both VA and GO measures should be used to determine an efficiency target.
- The upper bound estimate was calculated using an economy wide comparator set ('Weighted Average – All Industries') which is not representative of the gas distribution sector. Productivity growth across 'relevant industries' was significantly lower than in the wider economy.
- The upper bound does not place sufficient weight on the evidence of a structural productivity slowdown in the UK since 2008.[78]
- The decision does not adequately consider the evidence of the impact of Covid-19 on the potential for productivity growth.

While we consider that UK wide productivity growth estimates can be reasonably applied to Northern Ireland, and therefore to firmus energy, the above challenges raised in relation to the RIIO-2 decision suggest that a point estimate at the lower end of the range identified by CEPA is more appropriate for firmus energy in GD23.

Taking this into account, alongside firmus energy's ambitions to improve productivity over time, we consider that the midpoints of these ranges, i.e. 0.85% for opex and 0.75% for capex, are appropriate. These frontier shift assumptions have been included within our GD23 Business Plan.

[77] We note that these point estimates exclude the additional 0.2% innovation uplift added by Ofgem, which it added with the view that companies can deliver additional efficiencies as a result of innovation funding provided during RIIO 1. As Northern Ireland Gas Networks did not benefit from similar innovation funding, it is not appropriate to include this uplift.

[78] In its March 2020 Economic and Fiscal Outlook, OBR looked at historical evidence of UK labour productivity growth. It stated that "[g]rowth in labour productivity has been persistently weak since around the time of the financial crisis. Since 2008, output per hour has grown by an average of just 0.3 per cent a year, compared to a little over 2 per cent over the preceding four decades".

We will continue with the Construction Safety programme during GD23 and extend it to include Environmental Awareness and the role played by the Energy Sector in Northern Ireland's journey to net zero carbon.

11 Special Factors and Atypical Expenditure

Utility Regulator Guidance

Special factors, i.e. variables typically outside of management control which result in either higher or lower costs than comparators. In order to be awarded a special factor, the GDN must adequately demonstrate the following:

- What is different about the circumstances that cause materially higher costs ("material" claims have previously been agreed by company and Regulator as those individual claims which amount to greater than 1% of total opex)?
- Why do these differences result in higher costs?
- What is the net impact of these costs on prices over and above that which would be incurred without these factors? What has been done to manage the additional costs arising from the different circumstances and to limit their impact?
- Are there any other different circumstances that reduce the company's costs relative to the industry norms? If so, have these been quantified and offset against the upward cost pressures?

Atypical expenditure, i.e. costs (or reductions) which are not repeatable and are exceptional in nature ('one-off' costs). In order to be considered as an atypical expenditure, the GDN must adequately demonstrate the following:

- What is different about the circumstance which causes it to be exceptional or 'one-off'?
- Why does it result in cost variances?
- Which data sources has the GDN used to assess the impact of the atypical expenditure and what results have been established?
- When was the atypical expenditure incurred?

11.1 Introduction

In this Part of our GD23 Business Plan, we provide supplementary information regarding special factors and atypical expenditure which are pertinent to assessing cost allowances required by firmus energy to efficiently and effectively deliver our ambitious targets for the GD23 period.

There are number of areas of our Business Plan which are impacted by special factors. These special factors are, primarily, considerations required to account for the relative scale of our operations (including the immaturity of firmus energy's network development) and the sparse nature of our network area.

Part 10 of our GD23 Business Plan has already outlined the particular challenges associated with benchmarking firmus energy against DNOs in GB and those in Northern Ireland. The challenges associated with comparing firmus energy with other DNOs has been previously recognised by the Utility Regulator, in their GD17 Final Determination;

"FE is a clear outlier in terms of scale compared to PNGL and the GB GDNs,..." [79]

There are a number of key areas for which consideration of special factors (such as scale and sparsity) are particularly important when assessing the efficient costs of operating in our 'Ten Towns' network. The scale and sparsity of firmus energy's network will impact upon our potential economies of scale, when compared to other DNOs. These costs include, but are not limited to, expenditure associated with maintenance and emergency repairs on our network (opex), the nature of marketing required to deliver an effect 'reach' to both customers and potential customers across our network areas (opex), and costs associated with installing connection services (capex). Throughout the GD23 period, maintenance and emergency activities account for 30% of forecast total opex, and service laying activities account for 50% of forecast capex over the six year period.

Part 6 of this document details our forecast opex for the GD23 period, which we believe are efficient, and necessary, to support the successful delivery of our GD23 Business Plan.

Part 7 of this document details our forecast capex for the GD23 period, which we believe are efficient, and necessary, to support the successful delivery of our GD23 Business Plan.

At Part 11.3, we have outlined five key areas of atypical and enduring expenditure anticipated within the GD23 period, for which costs are presently undetermined. Each of these areas, bar one, are driven by regulatory, industry-wide projects, with the remaining area driven by the possible out workings of the DfE's Energy Strategy for Northern Ireland.

11.2 Special factors - Comparison between firmus energy and other DNOs

firmus energy is a very small and developing business. We are still at an early stage of our network growth and we operate on a much smaller scale than the established DNOs in GB, and PNG, the largest DNO in Northern Ireland. As we embark upon GD23, we will have a customer base of over 67,000 and a network penetration of 35%.

11.2.1 Network Scale

Figure 11.1, illustrates the material difference in scale of firmus energy's network, compared to DNOs in GB and PNG.

[79] GD17 Final Determination, Para 6.46 https://www.uregni.gov.uk/sites/uregni/files/media-files/2016-09-15_GD17_Final_Determination_-_final_1.pdf

Figure 11.1

Area	Network Operator	Customer Base	Length of Infrastructure (Mains)	Customers per Km of Infrastructure	Employees
GB	Cadent Gas	11,000,000	132,000	83	4,000+
GB	Scotia Gas Networks (GB)	5,900,000	75,000	79	3,000+
GB	Northern Gas Networks	2,700,000	37,000	73	1,300
GB	Wales and West Utilities	2,500,000	35,000	71	1,300
Northern Ireland	Phoenix Natural Gas	230,000	3,650	63	122
Northern Ireland	Firmus Energy	55,200	1,800	31	70
Northern Ireland	SGN Natural Gas	568	165	3	20

Note: Numbers are estimated, as at the end of 2020

The numbers in Figure 11.1 highlight the challenges associated with comparing the scale of firmus energy's operations with other DNOs, particularly those in GB. The scale of difference in characteristics between firmus energy and other DNOs is significant and does not therefore provide a robust basis upon which comparisons can reasonably be made.

Our network length equates to only c.1% of the largest DNO in GB, Cadent Gas (who operate 4 networks), and is c.44% the size of the largest DNO in Northern Ireland, PNG.

Wales and West Utilities is the smallest DNO in GB, yet its' network is still c.20 times larger than that of firmus energy.

Wales and West Utilities is the smallest DNO in GB, yet its' network is still c.20 times larger than that of firmus energy.

The difference in customers served by the DNOs is equally stark.
Cadent Gas serves almost 200 times as many customers as firmus energy, and Wales and West Utilities serves 45 times as many customers as firmus energy.
Data in Figure 11.1 represents the challenge associated with making effective costs comparisons between firmus energy and other DNOs in GB, or Northern Ireland and highlights the challenges of achieving the economies of scale enjoyed by these much larger organisations.
The scale of firmus energy's network is a (special) factor which must be considered in the determination of the appropriate efficient and economic costs required to deliver our GD23 Business Plan.

11.2.2 Network Sparsity

Approximately 466,000 people live in firmus energy's network area. Our network area is predominantly rural in nature and is characterised by small towns and villages: the largest of the "Ten Towns", Derry/Londonderry, has approximately 101,000 inhabitants. As can be seen in Figure 11.2, below, no one town makes up more than 22% of the total population of our network area.

Figure 11.2 Population of principle towns in firmus energy's network area

Principle 'Ten Towns'	Population of towns and environs	Percentage
Derry / Londonderry	100,807	22%
Craigavon	90,189	19%
Antrim	52,649	11%
Newry	46,294	10%
Ballymena	45,217	10%
Coleraine	43,917	9%
Armagh	34,856	7%
Banbridge	27,340	6%
Limavady	12,495	3%
Ballymoney	12,236	3%
Total	**466,000**	

Source: NISRA

The largest economic centre in our network area is Derry/Londonderry, however, this city has less than one sixth of the inhabitants of Belfast and population in the Greater Belfast and East Down Area (i.e. the area served by PNG) is more than 80% larger than the entire population within firmus energy's network area.[80]

As shown in Figure 11.1, the number of customers per kilometre of infrastructure in firmus energy's network is c.32. This represents c.39% and c.50% of the same metric for Cadent Gas and PNG respectively.

Our sparsely populated network area means that firmus energy's network assets are dispersed and asset concentration is very low compared to more densely populated urban areas. This will impact costs. For example, third party contractor rates give explicit consideration to our network geography, including higher travel costs to undertake both maintenance and service laying activities.

[80] Population in Greater Belfast and East Down estimated at 850,000 https://www.nisra.gov.uk/publications/2018-based-population-projections-areas-within-northern-ireland-statistical-bulletin

In GD17, the Utility Regulator's benchmarking consultants (Deloitte) described the characteristics of firmus energy's network area as 'quite idiosyncratic',[81] further suggesting that '[a] detailed analysis of special factors driving cost differences between FE and other GDNs, which is outside of the scope of this report, would be required to isolate these effects.' [82]

Furthermore, in its RIIO-GD1 and GD2 decisions, Ofgem recognised sparser networks may face higher per-customer costs for categories such as maintenance costs and emergency and repair costs associated with operating over larger geographical areas.[83] This is due to factors such as longer drive times or more limited infrastructure in sparsely populated areas. Marketing costs are also impacted within firmus energy's network. In order to achieve customer 'reach' within our network, our marketing activities must be aligned to the geographic nature of our network. For example, multiple billboards across smaller towns (as opposed to fewer being required in more densely populated networks) and newspaper advertising limited to more regional circulations (such as the 'Banbridge Chronical', Newry Democrat' or 'Derry Journal'), compared to the 'Belfast Telegraph', which covers all of PNG's network area.

In recognising the challenges of sparsity, Ofgem also recognises the effects of urbanity. Whilst sparsity adjustments were subject to analysis of "district-level area and population estimates", urbanity was limited to the London area, where Ofgem "provided a 15% adjustment to GDN's labour costs for activities within the M25 (for repex, connections and reinforcement activities only)."

The sparsity of firmus energy's network is a (special) factor which must be considered in the determination of the appropriate efficient and economic costs required to deliver our GD23 Business Plan.

11.2.3 Forecasting Costs

In forecasting the efficient costs necessary to deliver our ambitious GD23 Business Plans, we have built upon our operational experience and our focus on continual improvement, along with year on year efficiencies in both opex and capex expenditure. Our costs have been detailed in Part 6 (Opex) and Part 7 (Capex) of our Business Plan. Part 10 provides further detail of the special considerations which must be made, in order to account for comparative differences between firmus energy and DNOs in GB and Northern Ireland. The detail also provides evidence of our forecast efficiency and productivity in delivering our GD23 Business Plan.

[81] GD17 Final Determination, Annex 4 https://www.uregni.gov.uk/sites/uregni/files/media-files/GD17_Annex_4_-_GD17_Efficiency_Advice_Deloitte_LLP.pdf
[82] GD17 Final Determination, Annex 4 https://www.uregni.gov.uk/sites/uregni/files/media-files/GD17_Annex_4_-_GD17_Efficiency_Advice_Deloitte_LLP.pdf
[83] RIIO-2 tools for cost assessment, Paras 6.20 to 6.22 https://www.ofgem.gov.uk/system/files/docs/2019/06/maindocument_riio-2_tools_for_cost_assessment.pdf

11.3 Atypical expenditure in GD23

There are five principle areas where firmus energy expects to incur costs within GD23 which are atypical (i.e. once off), or perhaps enduring, but are presently undetermined.

We welcome the Utility Regulator's acknowledgement of these potential (and necessary) expenditures and their intention to ensure sufficient flexibility is embedded within the G23 price control framework to support firmus energy's expenditure in these areas. These five areas are outlined in Figure 11.3.

Figure 11.3 Five principle areas of pending atypical or enduring costs in GD23

Topic	Status of Costs	Nature of Project	Anticipated Commencement
DFE Energy Strategy	Unknown, Atypical and Enduring	Policy and Regulatory driven	2022
Biomethane Injection into Northern Ireland gas Infrastructure	Unknown, Enduring	Regulatory - Industry Wide	Mid 2022
Metering Solution for Northern Ireland	Unknown, Enduring	Regulatory - Industry Wide	From 2023
Metering Reading Responsibility	Unknown, Atypical and Enduring	Regulatory - Industry Wide	Pending Regulatory Decision
Business Separation	Unknown, Atypical and Enduring	Regulatory (Licence) obligation	2026

11.3.1 DfE Energy Strategy for Northern Ireland

As discussed throughout this document, having published their Energy Strategy Consultation on Policy Options in March 2021, DfE are planning to publish their Energy Strategy for Northern Ireland in November 2021.[84] This post-dates our GD23 Business Plan submission by 5 months and is a number of weeks ahead of the Utility Regulator's planned publication of the GD23 Draft Determination.

The concurrent development of DfE's Energy Strategy for Northern Ireland will require appropriate flexibility within the Utility Regulator's GD23 determination, in order to accommodate any potential policy changes made effective during the GD23 horizon (2023 to 2028).

This includes the potential for review of the Utility Regulator's vires and the necessity for, inter alia, appropriate innovation funding to sustain and develop our network infrastructure, in order to optimise firmus energy's contribution to decarbonisation. We believe this to be of paramount importance, given the DfE's recognition within their Energy Strategy consultation to the longer term contribution of our network infrastructure in playing a key role in Northern Ireland's journey to carbon net zero by 2050.

[84] DfE Energy Strategy consultation, published March 2021 https://www.economy-ni.gov.uk/sites/default/files/consultations/economy/energy-strategy-for-NI-consultation-on-policy-options.pdf

We welcome the Utility Regulator's acknowledgement of the challenges posed by the timing of the DfE's Energy Strategy and their intention to introduce an uncertainty mechanism to deal with these matters within the GD23 price control review;

"As the timing to review changes or proposals will be limited we propose an Uncertainty Mechanism. This will be ring fenced to specifically dealing with any outcome of the Energy Strategy. This provides some certainty for all and allow a more complete review on any implementation of strategies that are appropriate for the Industry." [85]

We look forward to future engagement on all matters which support the role of firmus energy, and our wider industry, in our shared goal of net zero carbon energy by 2050.

11.3.2 Biomethane Injection into Northern Ireland's gas infrastructure

At the time of writing, DNOs and Transmission System Operators (TSOs) in Northern Ireland are engaged in a project with the Utility Regulator to enable and support biomethane injection into the Northern Ireland natural gas networks. The Utility Regulator's timeline envisages regulatory, technical and commercial arrangements to be in place to facilitate biomethane injection by Q2 2022. firmus energy is a key participant in this project.

The Utility Regulator and industry participants are adopting a 'no regrets' approach and have, to-date, established a base case with which to progress development of the necessary arrangements.

It is the current working assumption that costs directly attributable to an individual biomethane connection will be the responsibility of the biomethane producer, however, there will be costs associated with the facilitation of biomethane injection into our network for which individual producers are (or are unlikely) to be responsible. As such, mechanisms to recover these costs will be subject to further discussion between the Utility Regulator and firmus energy (along with other industry participants).

[85] Utility Regulator's Approach to GD23, Para 4.8, published November 2020 https://www.uregni.gov.uk/sites/uregni/files/media-files/2020-11-6%20GD23%20Final%20Approach-%20Final.pdf

Specific costs associated with the introduction of biomethane injection into our network will include;

- Training and resourcing specialist functions to manage biomethane injection connections
- Implementing technical solutions to overcome any demand constraints, such as the monitoring and adjustment of pressure settings on our network
- 24/7 SCADA monitoring and ROV (Remote Operated Value) activation – currently not a feature of networks in Northern Ireland
- Gas emergency response training for biomethane injection sites
- Gas quality and meter validations
- Annual quality audits.

Future industry costs (atypical and enduring) for firmus energy and the wider industry will become clearer as the industry-wide project progresses, and arrangements are finalised in 2022.

We welcome the Utility Regulator's acknowledgement that the treatment of costs will require their consideration[86] and look forward to future engagement on this matter.

11.3.3 Metering Solution for Northern Ireland

In Northern Ireland, responsibility for metering assets resides with the DNOs. The DNOs have been advised by our current meter manufacturer (who is responsible for supplying all DNOs in Northern Ireland) that the longer-term provision of the pre-payment meters being deployed across each of our networks (i.e. the Libra 100/110 and Libra 200/210 models) is no longer guaranteed.

As GB continues to roll out smart metering solutions, the sustained production of Libra meters has become increasingly less cost effective for the manufacturer.

With the outbreak of the Covid-19 pandemic in March 2020, the functionality of our current pre-payment metering solution was drawn into sharp focus. Most notably, customers wishing to 'top-up' credit on their meter can only do so by visiting a retail outlet, i.e. credit top-ups cannot be facilitated remotely.

In recognition of these issues, the DNOs (in collaboration with the Utility Regulator, gas suppliers and consumer bodies) are engaged in a project to develop and deliver an industry solution that provides:

- a new domestic gas meter (credit and prepayment functionality) for use by all DNOs in Northern Ireland;
- a meter management system (MMS) for use by both DNOs and gas suppliers, operating in Northern Ireland's domestic gas market; and
- a solution which includes a gas payment platform, to be used by gas suppliers and gas customers (e.g. for topping up credit remotely). This solution will be required to interface with both the new domestic gas meter and MMS.

[86] For example, slides 5 and 12 of the Utility Regulator's project meeting presentation on 15th March 2021

Recognising the risks associated with the longer term supply of the existing meter type and acknowledging the recent social challenges of customers being potentially unable top-up credit remotely, the project plan currently envisages our tendering and procurement process being concluded by Q2 2022. This will then be followed by a period of testing within the industry, prior to the full implementation of the new meter roll-out from 2023.

This project will introduce fundamental changes to Northern Ireland's gas distribution arrangements, and firmus energy will play a central role in the development and delivery of the industry solutions. As such, this will require the engagement of 3rd party experts and legal support throughout the tendering and procurement process. It is currently not possible to determine costs associated with the level of system development, or resource that will be required to support the new industry arrangements. The nature of these costs will be both atypical (implementation of systems and arrangement) and enduring (ongoing support for a 'smarter' meter and the potential to seek efficiency and service improvements, primarily associated with the availability of extensive customer usage data.

In addition, there will also be a requirement to support the existing metering arrangements for what may be a considerable period of time (i.e. up to 20 years, based upon DNO's current meter replacement programmes), and therefore the resource implications of supporting two meter types (each with specific industry arrangements) must be fully considered and costed. The current working assumption is that the new metering solution will be rolled out gradually, forming part of the existing meter replacement programmes and the new connections process. However, the feasibility of this approach may need to be considered in the future against a cost benefit analysis which might support an accelerated roll out of the new meter type.

In addition, there will also be a requirement to support the existing metering arrangements for what may be a considerable period of time (i.e. up to 20 years, based upon DNO's current meter replacement programmes), and therefore the resource implications of supporting two meter types (each with specific industry arrangements) must be fully considered and costed. The current working assumption is that the new metering solution will be rolled out gradually, forming part of the existing meter replacement programmes and the new connections process. However, the feasibility of this approach may need to be considered in the future against a cost benefit analysis which might support an accelerated roll out of the new meter type.

In the DfE's Energy Strategy consultation, published in March 2021, reference is made to a cost benefit analysis for smart metering (for gas) in Northern Ireland.

"We intend to undertake a Cost Benefit Analysis (CBA) of electricity and gas smart meters as required by the Electricity Directive. In addition to measuring the financial costs and benefits, we propose that this CBA should take into account the broader role of smart meters to facilitate an energy-transition that benefits consumers." [87]

At the time of writing, it is not clear how this cost benefit analysis will dovetail to the ongoing project to develop and procure a new metering solution for Northern Ireland gas customers. firmus energy is committed to working with both the DfE and Utility Regulator, as well as wider industry stakeholders, to deliver an efficient and effective enduring metering solution which meets the reasonable expectations of gas customers in Northern Ireland.

11.3.4 Meter Reading Responsibilities

In the Utility Regulator's 'Approach to GD23' document, published in November 2020, the Utility Regulator indicated their intention to transfer natural gas meter reading responsibilities in Northern Ireland from gas suppliers to DNOs, stating, "...we are minded to transfer responsibility for meter reading from supply companies to the GDNs and add greater clarity on roles and responsibilities." [88]

Whilst we broadly support the Utility Regulator's intentions, we believe this project is significant, and will require both atypical costs to support DNO's arrangements to undertake this responsibility (e.g. IT and procurement costs), and enduring costs (e.g. meter reading costs).

[87] DfE Energy Strategy consultation, page 135, published March 2021
https://www.economy-ni.gov.uk/sites/default/files/consultations/economy/energy-strategy-for-NI-consultation-on-policy-options.pdf
[88] Utility Regulator's Approach to GD23, Para 4.25, published November 2020
https://www.uregni.gov.uk/sites/uregni/files/media-files/2020-11-6%20GD23%20Final%20Approach-%20Final.pdf

In the event that this transfer of responsibility proceeds, we will need to work with the Utility Regulator to establish how these costs will be treated within the regulatory framework, for example, meter reading costs potentially becoming a new consideration within our existing uncertainty mechanism.
To date there has been no engagement with industry regarding the transfer of this obligation.

In advance of any decision to transfer these obligations, there must be a substantial programme of engagement within industry to fully establish what this change will encompass. If it is concluded that the obligations should transfer to the DNOs, full consideration of the resource and system changes required to support such a fundamental change must be undertaken. Again, whilst broadly supportive of the Utility Regulator's views regarding the transfer of responsibility of meter reading in Northern Ireland, we do believe that undertaking such a significant project outside the price control processes (for DNOs and regulated domestic gas suppliers alike) is a material undertaking, which will involve considerable engagement and agreement with respect to the treatment of associated costs.
The Utility Regulator has acknowledged, "[t]his work might not be complete before submissions of the Business Plan submissions and allowances will be made for the possibility of the timeline for this work not aligning within the Price Control process." [89]

11.3.5 Business Separation

As discussed further in Part 12 of this document, firmus energy currently operates as a 'bundled' business. Our supply (retail) business, firmus energy (Supply) Ltd is a subsidiary of our distribution business, firmus energy (Distribution) Ltd. Condition 1.16 of our distribution licence obliges legal separation of these two businesses once '100,000 premises' are connected to our network.

Our GD23 Business Plan anticipates this connection threshold being reached in 2028, i.e. the last year of the GD23 review period.

At this time of writing, the nature of our business separation remains uncertain, and as such, presents challenges for both firmus energy and the Utility Regulator in assessing appropriate and efficient costs associated with undertaking this licence obligation.

Costs associated with the separation of our distribution and supply businesses will be both atypical and enduring.

In preparing our GD23 Business Plan, we have discussed this matter with the Utility Regulator and shared our proposed approach to both our GD23 Business Plan submission and how we anticipate seeking approval for costs associated with licence conditions 1.16 and 1.17 within the GD23 price control period (as outlined below).

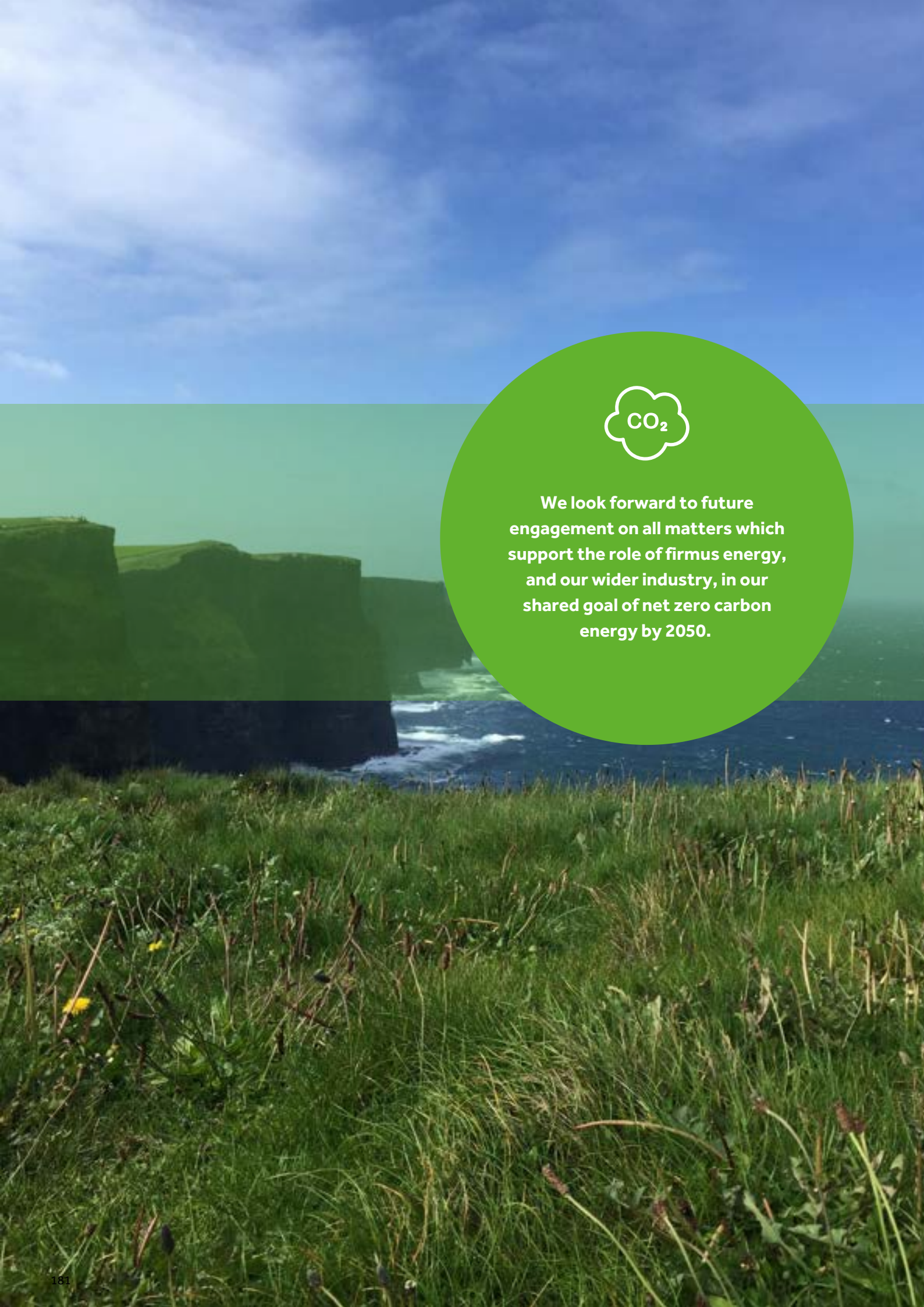
[89] Utility Regulator's Approach to GD23, Para 4.26, published November 2020
https://www.uregni.gov.uk/sites/uregni/files/media-files/2020-11-6%20GD23%20Final%20Approach-%20Final.pdf

We welcome the Utility Regulator's recognition that any significant change in our organisational structure will create the potential for increased costs.

We have not included costs associated with meeting our obligations under licence conditions 1.16 and 1.17 within our GD23 Business Plan. Our proposal for seeking cost allowances within the GD23 period can be summarised as follows;

- We acknowledge that costs associated with meeting our obligations under licence conditions 1.16 and 1.17 can only be approved following submission, assessment and review by the Utility Regulator
  - As our options regarding the separation of our distribution and supply business operations are presently unknown, we have not submitted (distribution business) costs related to this matter as part of our GD23 Business Plan submission
  - We anticipate the approval of costs associated with separation of our business activities at a later date within the GD23 price control period (i.e. as we approach the 100,000 connections threshold)
- At present, the uncertainty mechanism has 5 categories of adjustment;
  - output based
  - pass through
  - ring fenced
  - nominated output, and
  - materiality threshold
- We are proposing that the costs associated with meeting our business separation obligations would fall under the materiality threshold category, i.e. an additional project which is not included within the GD23 Final Determination but is subsequently approved by the Utility Regulator (currently for costs above £100k).
  - Each of the other (4) alternative mechanisms would require some form of allowance to be included within GD23, albeit to be later adjusted/'trued-up'
  - We do not believe these 4 mechanisms to be appropriate in this circumstance
- firmus energy will submit a plan (with associated costs) to the Utility Regulator 18 months ahead of the forecast threshold of 100,000 connections being made to our network
  - Based upon our GD23 Business Plan forecast, we anticipate this submission will be made in late 2026 / early 2027
  - We will outline one-off costs, as well as enduring costs within our distribution business, resulting from changes in our organisational structure
- In the event that the 100,000 connections threshold is met in GD23, and associated costs are included within the uncertainty mechanism, we would anticipate any enduring costs (or savings) to be treated as 'business as usual' costs in our GD29 price control review….i.e. there would no longer be a requirement to include 'business separation costs' within the GD29 uncertainty mechanism

firmus energy will ensure the Utility Regulator remains informed of our progress towards the threshold of 100,00 premises being connected to our network. We look forward to the future submission, review and approval of costs associated with meeting our obligations under licence conditions 1.16 and 1.17 which will be included, as appropriate, within the GD23 materiality threshold uncertainty mechanism.



We look forward to future engagement on all matters which support the role of firmus energy, and our wider industry, in our shared goal of net zero carbon energy by 2050.

12 Organisation Changes

Utility Regulator Guidance

- Details of any changes in the company's structure, timing of such changes and the effect this may have on the future performance.

12.1 Equitix Investment Management Ltd.

In 2019, the ownership of firmus energy changed. Our new owner is Equitix Investment Management Ltd. ('Equitix'). Established in 2007, Equitix has significant experience in the development and long-term fund management of core infrastructure and energy-efficiency assets in the UK and Europe.

firmus energy is one of a number of investments made by Equitix in Northern Ireland's energy industry, and one of two regulated utility businesses owned by Equitix within the UK.

12.2 firmus energy Resource in GD23

firmus energy's recent change of ownership has not impacted upon staff numbers or the allocation of staff between our Distribution and Supply businesses.

As detailed in Part 6 of this document, our GD23 Business Plan will require the support of an additional 3.5 FTEs during the GD23 period, when compared to GD17 actual requirements in 2020.

This additional support will cover a period which sees our customer base grow by 55%, including growth in owner occupied customers of 73%.

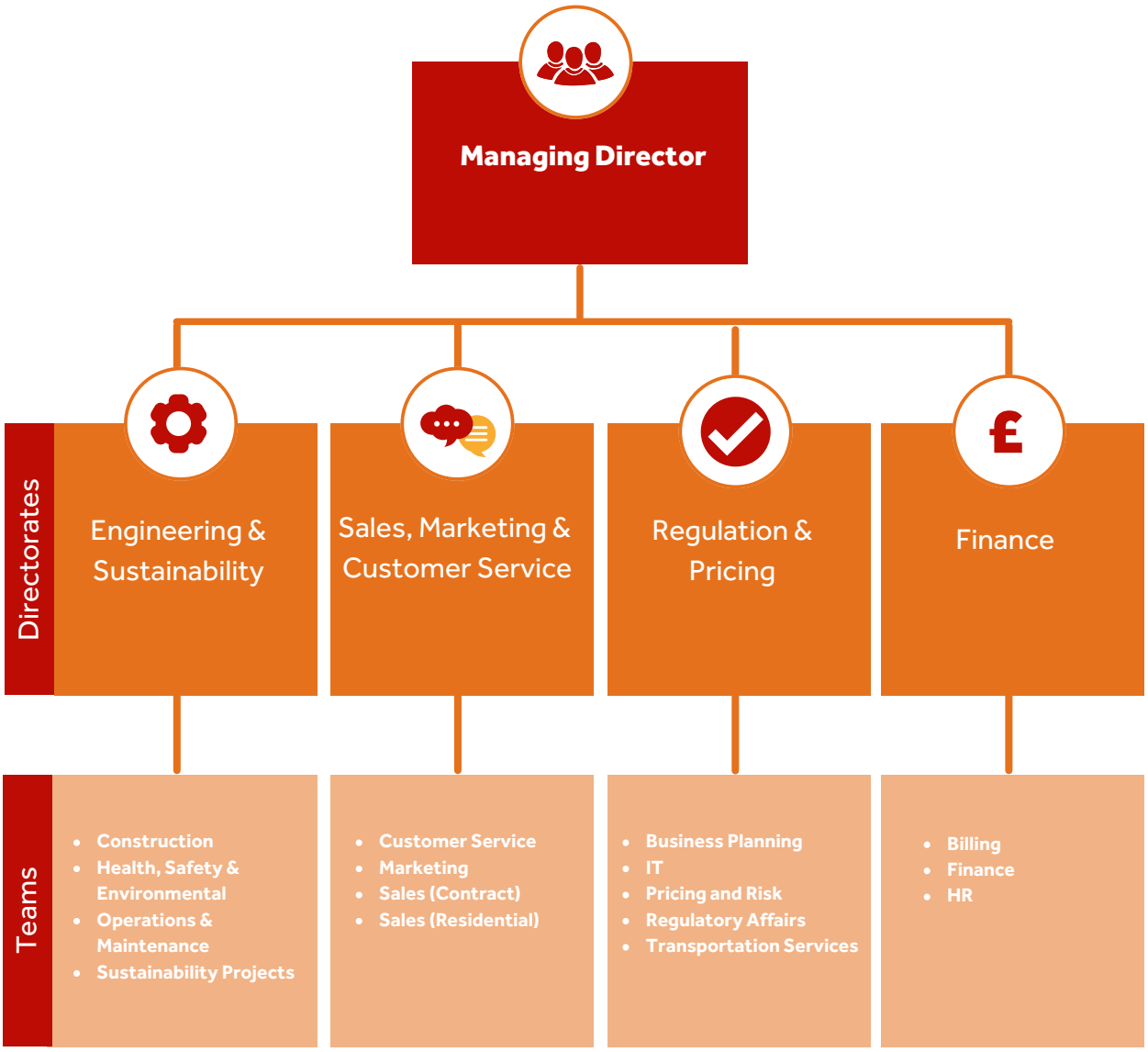
Our manpower resource requirements not only consider the continued growth of our business during the GD23 period, but also the resource required to support the Utility Regulator's Corporate Objectives over this horizon.

12.3 Corporate Governance

firmus energy's Corporate Governance is provided by firmus energy's Board structure, which follows best practice in corporate governance strategy for the utility industry. This structure comprises separate Boards of Directors for firmus energy (Distribution) Ltd and firmus energy (Supply) Ltd. The firmus energy Distribution Board comprises a Chairman, Executive Directors and two Non-Executive Directors.

12.4 Organogram

The following organogram outlines firmus energy's current structure, and the structure which is anticipated to remain in place throughout the majority of the GD23 period. As discussed in Part 12.5, when firmus energy has 100,000 connections to our network, we are obliged under licence condition 16.1 to separate our Distribution and Supply businesses. Our GD23 Business Plan forecasts this threshold to be reached in 2028, i.e. the last year of the price control period, and as outlined below, we have committed to ensure the Utility Regulator is fully informed of how we will fulfil our obligations under licence conditions 1.16 and 1.17.



12.5 Business Separation

firmus energy was awarded licences to distribute and supply natural gas in the 'Ten Towns' network area in 2005. We are currently the only 'bundled' natural gas business in the UK, i.e. our operations include both distribution and supply (retail) activities.

At present, our natural gas supply business, firmus energy (Supply) Ltd, is a subsidiary of our distribution business, firmus energy (Distribution) Ltd.

As outlined in condition 1.16 of our distribution licence (and discussed previously at Part 11.3.5 of this document), firmus energy must separate these 'bundled' activities once 100,000 connections have been made to our network.

Condition 1.16 Independence of the Licensed Business

1.16.1 Application

This Condition shall apply to the Licensee where:

(a) it conveys, or is authorised to convey, gas through low pressure pipe-lines;

(b) any affiliate or related undertaking of the Licensee is carrying on the activities of an Associated Business; and

(c) the Licensee and/or any Relevant Affiliate of the Licensee has (whether individually or in aggregate) at least 100,000 premises connected to any gas conveyance network consisting of low pressure pipe-lines which is owned or operated by the Licensee or any Relevant Affiliate of the Licensee.

Where this Condition has begun to take effect by virtue of paragraphs (a), (b) and (c) above being satisfied, it shall have effect at all times following that date.

Part 5 of our Business Plan sets out firmus energy's connection targets (and cumulative connection numbers) for the GD23 period. By the end of 2027, our cumulative connections forecast is 98,040 and by the end of 2028 (i.e. the last year of the GD23 price control) we are forecasting cumulative connections to our network of 103,764. As such, the '100,000 premises' threshold outlined in licence condition 1.16.1 is reached in 2028.

This event is forecast c.7 years from the time of preparing our GD23 Business Plan, and the nature of any separation of our businesses remains unknown, at this time of writing. As such, forecast atypical or enduring costs associated with our licence obligation to separate our businesses are uncertain.

In preparing our GD23 Business Plan, we have discussed this matter with the Utility Regulator and shared our proposed approach to both our GD23 Business Plan submission and how we anticipate seeking approval for costs associated with licence Condition 1.16 and 1.17 within the GD23 price control period (as outlined below).

We welcome the Utility Regulator's recognition that any significant change in our organisational structure creates the potential for increased costs.

In Part 11.2.5, we have outlined our proposed approach to costs associated with fulfilling our obligations under licence conditions 1.16 and 1.17. Given the relevance to our organisational structure we have again outlined our proposal for these cost allowances in the GD23 period, below.

We have not included costs associated with meeting our obligations under licence conditions 1.16 and 1.17 within our GD23 Business Plan. Our proposal for seeking cost allowances within the GD23 period can be summarised as follows;

- We acknowledge that costs associated with meeting our obligations under licence conditions 1.16 and 1.17 can only be approved following submission, assessment and review by the Utility Regulator
  - As our options regarding the separation of our distribution and supply business operations are presently unknown, we have not submitted (distribution business) costs related to this matter as part of our GD23 Business Plan submission
  - We anticipate the approval of costs associated with separation of our business activities at a later date within the GD23 price control period (i.e. as we approach the 100,000 connections threshold)

- At present, the uncertainty mechanism has 5 categories of adjustment;
  - output based
  - pass through
  - ring fenced
  - nominated output, and
  - materiality threshold

- We are proposing that the costs associated with meeting our business separation obligations would fall under the materiality threshold category, i.e. an additional project which is not included within the GD23 Final Determination but is subsequently approved by the Utility Regulator (currently for costs above £100k).
  - Each of the other (4) alternative mechanisms would require some form of allowance to be included within GD23, albeit to be later adjusted/'trued-up'
  - We do not believe these 4 mechanisms to be appropriate in this circumstance

- Firmus energy will submit a plan (with associated costs) to the Utility Regulator 18 months ahead of the forecast threshold of 100,000 connections being made to our network
  - Based upon our GD23 Business Plan forecast, we anticipate this submission will be made in late 2026 / early 2027
  - We will outline one-off costs, as well as enduring costs within our distribution business, resulting from changes in our organisational structure.

- In the event that the 100,000 connections threshold is met in GD23, and associated costs are included within the uncertainty mechanism, we would anticipate any enduring costs (or savings) to be treated as 'business as usual' costs in our GD29 price control review….i.e. there would no longer be a requirement to include 'business separation costs' within the GD29 uncertainty mechanism

firmus energy will ensure the Utility Regulator remains informed of our progress towards the threshold of 100,00 premises being connected to our network. We look forward to the future submission, review and approval of costs associated with meeting our obligations under licence conditions 1.16 and 1.17 which will be included, as appropriate, within the GD23 materiality threshold uncertainty mechanism.

What is clear however, is that the energy landscape in Northern Ireland will look very different by the end of our GD23 price control period, and we must be taking steps now to ensure we optimise the value of our network infrastructure, and we position ourselves to maximise our contribution to the decarbonisation journey.

13 Price Control Performance

Utility Regulator Guidance

Any supplementary information that may help us to better understand the data provided in the business plan data template as well as the overall perspective of the GDN with respect to its performance against the GD17 price control targets with consideration of outputs, costs and workload. This will include, where relevant, but not be limited to:

explanation of changes in financial and non-financial forecasts; and

- Explanation of changes in financial and non-financial forecasts; and
- Impact of uncertainties over the full period up to the end of GD17, including both uncertainties that have been triggered and those yet to be triggered; and
- Methodologies and rules used for allocations, estimation and forecasts, changes to same compared to previous regulatory submissions for the 2019/2020 reporting years and for GD17 as well as effective date and impact of such changes.

13.1 Impact of uncertainties up to the end of GD17

13.1.1 Economic and global uncertainties

GD17 has been a period of remarkable uncertainty, and this is anticipated to remain the case for the next price control period. Home heating oil remains our largest competitor, and whilst we strive to sell the benefits of natural gas, the wholesale price of home heating oil directly impacts the propensity of our prospective customers to convert to natural gas.

The impact of this uncertainty is one which we continually work to manage, and this will be even more important as we embark upon GD23 and the evolving energy landscape in Northern Ireland.

We anticipate an uplift in other 'competitor' activity in GD23, as Northern Ireland progresses it's journey to net zero carbon. Alternative renewable energy fuels are expected to become more established throughout the GD23 period and firmus energy will require additional marketing effort to persuade our prospective customers on both the short term immediate environmental benefits of converting to natural gas, but also, the longer term benefit of connecting to an infrastructure which will convey renewable energy fuels in the medium to longer term.

The DfE will publish their Energy Strategy for Northern Ireland in November 2021. This will plot Northern Ireland's journey to net zero carbon energy by 2050. firmus energy has been a key participant in supporting the development of the DfE's Energy Strategy, however, anticipation of its publication and the possible out-workings for energy customers and energy service providers in Northern Ireland is impacting certainty within the energy marketplace. What is certain however, is Northern Ireland is on a journey of decarbonisation, and we believe firmus energy has a central role to play in getting there.

Of particular note in the GD17 period, was the unexpected outbreak of the global Covid-19 pandemic in early 2020.

This pandemic created, and continues to create at the time of writing, uncertainty with our customers, our prospective customers, our supply chain and our business operations. Whilst the resilience of firmus energy's business operations proved robust, we were subject to uncertainties which we (nor any other DNOs) had never previously experienced, or managed. Whilst our volumes of gas conveyed were impacted in Q2 2020, we did see recovery in the remaining months of the year, however, considerations such as the long term viability of many businesses (particularly SMEs) following the end of the government's furlough scheme, has created uncertainty in the marketplace, which we believe will be sustained into, if not throughout the GD23 period.

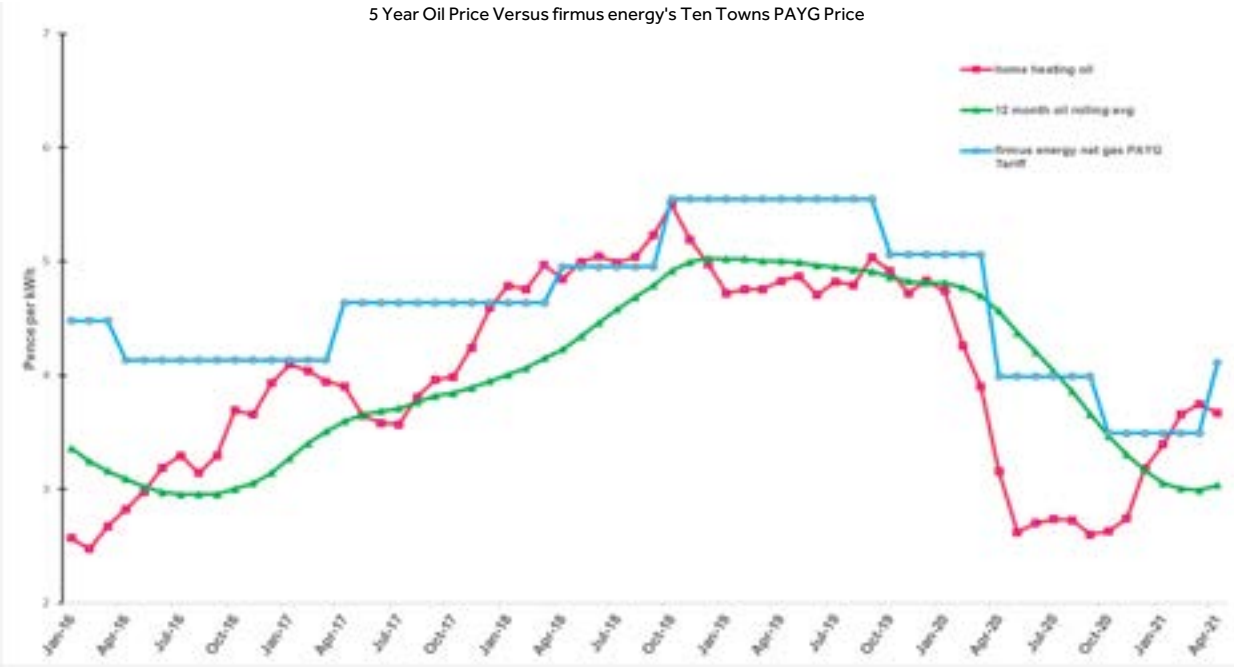
Home Heating Oil

Home heating oil remains the predominant fuel of choice for households in Northern Ireland, with c.60% of properties still choosing this fuel type. At the end of 2022, natural gas will have market share across Northern Ireland of c.38%.[90]
A key deliverable of firmus energy's GD23 Business Plan is increasing OO connections to our network by 20,740 over the six year period. These conversions will come from households using home heating oil, and our prospective customer's propensity to convert to natural gas is primarily driven by oil prices and the cost to convert to natural gas. Feedback from prospective customers suggests their consideration of running costs does not extend to a comparison between oil and natural gas, but is solely based on their relative perception of the price they are paying for their current fuel. For example, only a large incremental increase in the price of their last oil 'fill' will trigger an interest in exploring the opportunity to convert to natural gas.

Wholesale oil and natural gas prices are globally traded commodities, and as such, are outside the control of service providers in Northern Ireland. This engenders uncertainty within our marketplace and our ability to influence prospective customers. This industry uncertainty, particularly in the wake of the Covid-19 pandemic, is well recognised by market commentators such as Deloitte and their outlook for the oil (and gas) industries over the next decade.[91]
Figure 13.1 highlights the movements in oil and natural gas retail prices in firmus energy's network area over the last 5 years. As shown, the unit price of home heating oil has remained, for the most part, less expensive than natural gas, albeit, this does not consider efficiency gains when upgrading a household's heating system to natural gas.

[90] Forecast connections of 324,000 (PNG 250,000, firmus energy 67,000 and SGN 7,000) as a percentage of 850,000 households
[91] Deloitte publication; 2021 Oil and gas industry outlook 2021
https://www2.deloitte.com/ch/en/pages/energy-and-resources/articles/oil-and-gas-industry-outlook.html

Figure 13.1 Retail oil and natural gas prices January 2016 - April 2021



In addition to our well-rehearsed challenges of managing price uncertainties in the energy market place, many oil customers are needing to be increasingly persuaded to convert to natural gas in the context of the evolving energy landscape, and particularly in anticipation of publication of the DfE's Energy Strategy and a clearer 'line of sight' of how Northern Ireland will transition to net zero carbon energy by 2050.

DfE Energy Strategy for Northern Ireland

In preparing our GD23 Business Plan, we have been cognisant of the parallel work of the Department for Economy (DfE) in developing a new strategy to decarbonise the Northern Ireland energy sector by 2050. There is no doubt that Northern Ireland's energy landscape will be remarkably different at the end of GD23. As a business and an industry, we need to ensure we are prepared to address the challenges and opportunities of this energy transition.

firmus energy is a key participant and stakeholder in the progression of this strategy and we will continue to support the Department and all other stakeholders to develop and deliver this strategy.

The timeline for delivery of the new energy strategy presents challenges (and uncertainties) for both firmus energy and the Utility Regulator. This has been acknowledged in the Utility Regulator's Approach to GD23, published in November 2020.[92]

Our GD23 Business Plan has been prepared in alignment with the Utility Regulator's prevailing principle objective in its regulation of gas, specifically, "...to promote the development and maintenance of an efficient, economic and co-ordinated gas industry in Northern Ireland...",[93] and and we acknowledge and welcome the Utility Regulator's intention to provide appropriate flexibility for the out-workings of Northern Ireland's Energy Strategy.[94]

[92] Para 4.6 of the UR's Approach To GD23 (published November 2020) https://www.uregni.gov.uk/sites/uregni/files/media-files/2020-11-6%20GD23%20Final%20Approach-%20Final.pdf
[93] Article 14, The Energy (Northern Ireland) Order 2003, https://www.legislation.gov.uk/nisi/2003/419/article/14
[94] Para 4.8 of the UR's Approach To GD23 (published November 2020) https://www.uregni.gov.uk/sites/uregni/files/media-files/2020-11-6%20GD23%20Final%20Approach-%20Final.pdf

We have, however, highlighted the significant opportunities for firmus energy to contribute to decarbonisation in Northern Ireland throughout this document. In particular, we have discussed the immediate benefits of connecting customers to natural gas, which delivers instant CO_2 savings of 48%. In the short to medium term, we have presented 5 projects to the Utility Regulator which highlight our ambition and preparedness to progress the conveyance of renewable fuels throughout our infrastructure. The certainty with which it will be possible to progress each of our 5 projects will rely on the out-workings of the Energy Strategy, and a regulatory framework which embraces our desire to get 'ahead of the curve' and optimise our contribution to Northern Ireland's net zero carbon journey.

In the longer term, firmus energy will have an established customer base connected to an infrastructure which will deliver renewable energy and will support a green economy.

It is for this reason also, we must continue to support and persuade prospective customers to connect to our network.

We welcome the Utility Regulator's commitment to ensure there is sufficient flexibility within our GD23 Final Determination to support out-workings of the Departments Energy Strategy.[95] However necessary, flexibility does not support certainty. We would welcome further discussion on the nature of such flexibility (e.g. price control re-openers) with the Utility Regulator ahead of the GD23 Draft (and Final) Determinations, in order to mitigate uncertainties associated with embracing Northern Ireland's journey to net zero.

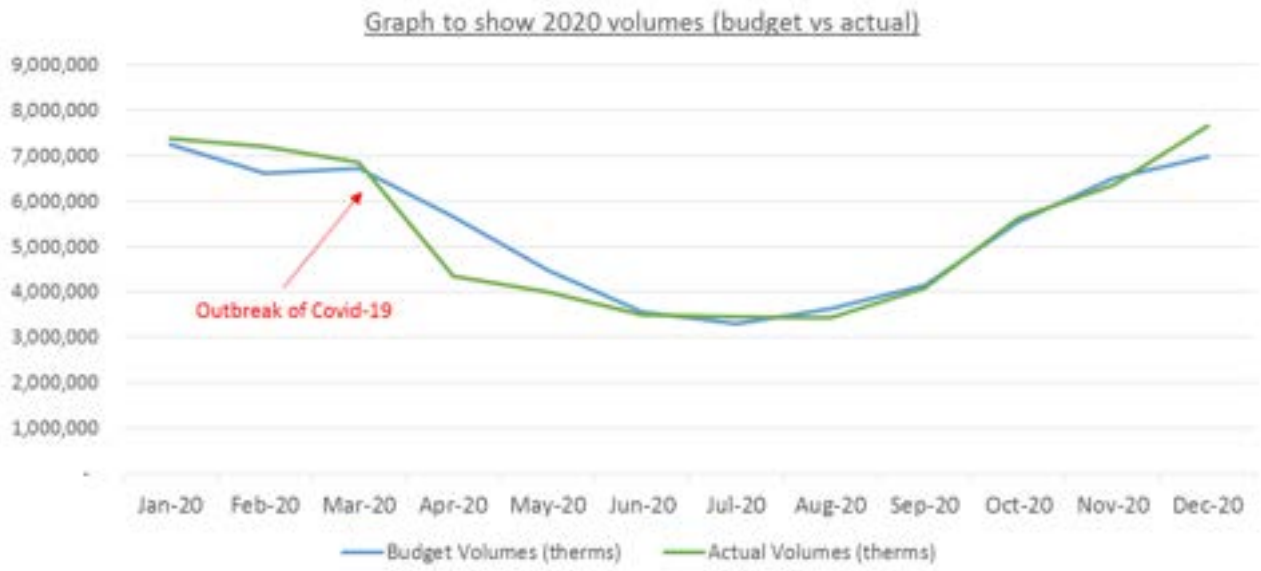
The impacts of Covid-19

The outbreak of the global Covid-19 pandemic in 2020 was an unexpected and unprecedented event. firmus energy's business continuity arrangements and operations proved robust and resilient, and we were able to continue our service provision without interruption. Operationally, we had interruptions to construction activity (mains and service laying works) and Energy Advisor (sales) activities in Q2 2020, as we were bound by government restrictions.

With the closure of many other businesses as a result of government restrictions, we witnessed a drop in our forecast volumes over the Q2 2020 period, however, as the year progressed, we did see a recovery to levels anticipated prior to the Covid-19 outbreak. Our volumes for 2020 are shown in Figure 13.2.

[95] Paragraphs 4.7 and 4.8 of the UR Final Approach to GD23 document, published November 2020. https://www.uregni.gov.uk/sites/uregni/files/media-files/2020-11-6%20GD23%20Final%20Approach-%20Final.pdf

Figure 13.2 firmus energy's conveyed volumes in 2020, actual vs. forecast



We are optimistic that the adverse health and social impacts of Covid-19 will have passed by the time we embark upon GD23, however, the greatest uncertainty which Covid-19 has created for firmus energy, is the potential for more enduring impacts caused by the pandemic, such as job security for those living and working in our network area.

At the beginning of our GD17 price control period, Northern Ireland's unemployment rate ('claimant count') was c.3.5%, as at October 2016. This compares to c.7% in October 2020. The number of annual proposed redundancies has increased by the same magnitude (i.e. almost doubled) over the same time frame.[96]

[96] Report by Conor Lambe, Chief Economist at Danske Bank, December 2020 https://danskebank.co.uk/-/media/danske-bank/uk/business/advantage/unlearn-2021-disruptive-change-with-graeme-codrington.pdf?rev=d8a6aa4763e2469689f041d5b729a7a4&hash=02012040B19505E4520C55E1023E7E70

Prospective customers have told us that cost is the greatest barrier to converting to natural gas. At a time when many employees have been furloughed or made redundant, or are aware of others being furloughed or made redundant, consumer behaviour has become much more cautious, and there has been a significant reluctance to increase household expenditure. We believe this cautious approach to household expenditure will linger into the GD23 period, and conflated with the uncertainties outlined above, will prove challenging for firmus energy in GD23.

The direct impact of Covid-19 on the business of firmus energy has been varied:

- Staff required to work from home - associated costs with ensuring IT functionality supporting remote access
- Costs incurred to ensure premises are "COVID safe" and fit for purpose
- Businesses supplied by firmus energy were forced to close or operate at reduced capacity, in line with government guidelines
- Connection and mains laying activities ceased for 3 months in 2020 as a result of the lockdown
- Emergency and maintenance activities had to be tailored for the various lockdown restrictions

Exit from the EU

Whilst the withdrawal of the United Kingdom from the European Union (Brexit) has not yet had a material impact on firmus energy, the cost repercussions for some of the materials used in our business activities has yet to be fully realised. In particular, the cost of polyethylene (PE) pipe for Northern Ireland contractors, sourced from Europe, is anticipated to increase as a result of Brexit.

13.1.2 GD17 Price Control Uncertainties

As part of our GD17 submission, we prepared detailed plans to extend the gas network to the natural boundaries of the towns in our licence area, passing an additional 92,344 existing properties. We proposed to pass 67,304 (73%) of these properties in GD17 with the remainder passed in the early years of the next price control (GD23).

We provided detailed plans for the development of gas mains in each town comprising 621 individual projects. Each project assessment included a detailed layout of mains, a schedule of works priced using current tendered rates and an economic assessment of the project. With this backdrop, we have had much greater certainty over the mains build programme and have been able to plan (and accelerate) the programme throughout GD17.

The acceleration of the mains programme has also assisted in delivering connections, with the marketing of new mains in an area and the propensity of people to connect when gas first becomes available.

The main area of uncertainty in the GD17 period has proven to be in opex, with staff turnover a constant challenge.

Legal and professional fees (including IT costs) are particularly difficult to forecast and the GD17 allowances in these areas have proved challenges resulting in an underperformance in this area. There is an ongoing requirement to seek advice to ensure we deliver on our regulatory and statutory obligations and having a robust IT platform is key to meeting the needs of our customers and for our data recording.

The security of supply project to lay mains under the River Foyle, planned for the start of GD17, was a great success, being delivered on time, and within budget.

A licence extension was also granted to deliver gas to Ulster Farm By-Products and, as with the River Foyle crossing, this was delivered on time, and within budget.

A further reinforcement project to deliver gas to a new distillery at Old Bushmills Distillery and to assist with pressures in the Coleraine network is planned for 2021/2022.

13.2 Proposed Licence Parameter Changes Resultant from GD23

Our GD23 Business Plan provides detailed proposals for connection growth in the Ten Towns network during the GD23 period. Our ability to achieve this growth is wholly dependent on securing sufficient resources for the corresponding investment in the network.

As outlined in Part 1 of this document, allowances required to support owner occupied connections in the GD23 period are a critical element to the successful delivery of our growth plans and contribution to decarbonisation over the six year horizon.

Prior to our GD23 Business Plan submission we have discussed our proposed approach with the Utility Regulator and have based our Business Plan Template inputs upon these discussions. The key assumptions are noted in Figure 13.3.

Figure 13.3 GD23 Parameter Assumptions

Designated Parameter	Description	Current Value	Limitation to the application of redesignated values	Firmus Energy Proposed value	Rationale for firmus energy change
r	Rate of return	0.0432	Shall be 0.075 until the end of Formula Year 2016 after which it may be any number between 0 and 1	0.0316	To reflect our proposed rate of 3.16%. For further commentary please refer to Part 4 of this document.
n	Trigger for Price Control Reviews (as defined in Condition 4.2.3(a))	2022	A formula year	2028 (on completion of the GD23 process)	This designation would provide Licence clarity regarding the length of the GD23 Price Control
m	The Formula Year that was n for the preceding review	2016	A formula year	2022 (on completion of the GD17 process)	This designation would provide Licence clarity regarding the length of the GD17 Price Control
f	Averaging factor to reflect in year accruals (as defined in Condition 4.4.5)	0.5	A number between 0 and 1	0.5	The current value reflects the cashflow profile over the reporting year
q	The forecasting horizon for the review calculation (as defined	2045	Shall be the Formula Year 2045 or any Formula Year after 2045	2045	The Firmus energy submission is based upon a profile adjustment to 2045

Designated Parameter	Description	Current Value	Limitation to the application of redesignated values	Firmus Energy Proposed value	Rationale for firmus energy change
	in Condition 4.2.4)				
RPI	The indexation base	256		293.1	firmus energy agrees with the basis upon which RPI has been calculated for GD23
w	Incentive period (as defined in Condition 4.4.10	5	A number of Formula Years	5	firmus energy accepts the length of the incentive period
g	A switch for the Operating Rolling Incentive	0	Either 0 or 1	0	firmus energy accepts that the incentive is not currently engaged
h	A switch for the Capital Rolling Incentive	1	Either 0 or 1	1	firmus energy accepts the continuation of the incentive in its current form
d	A switch for the depreciation component	1	Either 1 or 0	1	firmus energy accepts the continuation of the incentive in its current form
l	Deemed asset life	33	None	33	firmus energy accepts the depreciation assumptions made by the Utility Regulator

13.3 Retrospective Adjustments Resultant from GD17

As part of the GD17 Final Determination, the Utility Regulator included a number of Uncertainty Mechanisms. Below, we outline our approach and performance within these Uncertainty Mechanisms for the GD17 period.

13.3.1 Traffic Management Act (TMA)

As part of the GD17 determination firmus energy was granted £7.1 million (2014 prices) of capex for TMA. This amount was ring fenced due to the uncertainty of timing of implementation of the legislation. As discussed in Part 7, this legislation has yet to be implemented. As such, this capex was excluded from the allowed regulatory capex on an on-going basis and is therefore excluded from the opening TRV position for GD23.

Excluding this capex allowance on an on-going basis rather than implementing it through the retrospective adjustment has better enabled firmus energy to comply with financial covenant calculations, and will provide the same opening position in GD23. below:

13.3.2 All Mains

The mains allowances for other mains and new build mains are subject to an output based retrospective mechanism to adjust for the actual number of properties passed, compared to the properties passed target. The output is based on the actual number of properties passed, annual average number of metres of mains laid per property passed up to a cap, and the determined unit rate. The adjustment is applied on a cumulative basis in GD17 and additional incentives and penalties apply depending on the number of properties passed each year.

Our forecast performance on properties passed for GD17 is outlined in Figure 13.4, below:

Figure 13.4 GD17 Properties Passed

Properties Passed Other Mains	2017 Actual	2018 Actual	2019 Actual	2020 Actual	2021 Forecast	2022 Forecast	Total
Determined Target	11,366	11,071	11,528	10,414	10,765	11,673	**66,817**
Actuals	11,622	12,386	13,820	14,367	16,108	15,094	**83,397**
Variance	**256**	**1,315**	**2,292**	**3,953**	**5,343**	**3,421**	**16,580**

Properties Passed New Build Mains	2017 Actual	2018 Actual	2019 Actual	2020 Actual	2021 Forecast	2022 Forecast	Total
Determined Target	800	800	800	800	800	800	**4,800**
Actuals	1,487	1,645	1,423	1,201	1,400	1,000	**8,156**
Variance	**687**	**845**	**623**	**401**	**600**	**200**	**3,356**

Applying the uncertainty mechanism calculations, the outperformance in properties passed (as shown in Figure 13.4) results in the increase to GD17 Final Determination mains allowances shown in Figure 13.5, as follows:

Figure 13.5 Adjusted Allowances for Properties passed

Mains - Adjusted Allowances (£'000)	2017 Actual	2018 Actual	2019 Actual	2020 Actual	2021 Forecast	2022 Forecast	Total
Determined Allowances	8,169	7,891	7,746	7,716	7,771	7,784	**47,078**
Adjusted Allowances	8,516	9,459	10,244	10,482	11,801	10,919	**61,422**
Variance	**347**	**1,568**	**2,498**	**2,766**	**4,030**	**3,135**	**14,345**

13.3.3 Domestic/I&C Meters and Services

As per the GD17 Final Determination, domestic and I&C meters and services are subject to an output based uncertainty mechanism, to adjust for the actual number of connections.

Our GD17 performance in these areas has been included in the retrospective adjustments within the Uncertainty Mechanism calculations, and are detailed within Figure 13.6 and Figure 13.7, below.

Figure 13.6 Domestic Connections (Meters and Services) in GD17

Connections Domestic	2017 Actual	2018 Actual	2019 Actual	2020 Actual	2021 Forecast	2022 Forecast	Total
Determined Target	4,068	4,408	4,734	5,001	5,255	5,534	**29,000**
Actuals	4,942	5,208	6,329	5,412	5,695	5,961	**33,547**
Variance	**874**	**800**	**1,595**	**411**	**440**	**427**	**4,547**

Figure 13.7 Adjustments for Domestic Connections (Meters and Services) in GD17

Connections I&C	2017 Actual	2018 Actual	2019 Actual	2020 Actual	2021 Forecast	2022 Forecast	Total
Determined Target	150	150	150	150	150	150	**900**
Actuals	128	152	131	141	150	150	**852**
Variance	**(22)**	**2**	**(19)**	**(9)**	**-**	**-**	**(48)**

13.4 Capex Projects

As part of the GD17 Final Determination, it was stipulated that both Additional Development Area (ADA) projects submitted by firmus energy and approved by the Utility Regulator and projects dealing with security of supply would be added to our cost base through the retrospective adjustments. One security of supply and two ADA projects and have been approved since the GD17 Final Determination:

13.4.1 Foyle River Crossing

firmus energy identified a need to reinforce the supply to the cityside of Derry/Londonderry and the Utility Regulator accepted the need for a second crossing of the Foyle.

For the purpose of determining robust tariffs in our GD17 Final Determination, the Utility Regulator included a ring fenced allowance for the Foyle River crossing.

The security of supply project to lay mains under the River Foyle, planned and delivered at the start of GD17, proved to be a great success, being delivered on time and within budget.

13.4.2 Ulster Farm By-Products

On 5 February 2020, the Utility Regulator approved the extension of firmus energy's network to supply the Ulster Farm By-Product factory in Glenavy.

Despite contending with the COVID-19 pandemic in 2020, this project was delivered successfully, on time and within budget.

13.4.3 Old Bushmills Distillery Reinforcement

In May 2021, the Utility Regulator approved the extension of the firmus energy network to reinforce the supply to Old Bushmills Distillery.

This project, costing c.£3m with a mains length of 17km, is anticipated to be completed by December 2022.

13.5 Rates/Licence Fees

Rates and licence fees are subject to a pass through retrospective adjustment and have been adjusted for actual costs for 2017 to 2020, and forecast costs 2021 and 2022.

13.6 Connections Incentive Mechanism

In GD17 an output based mechanism was put in place for the owner occupied connections (i.e. the Connections Incentive Mechanism). The mechanism was based on owner occupied connections (excluding 'non-additional' properties) and a per connection allowance of £700, reducing to £570 over the period (2014 prices), being adjusting for any over/under performance to GD17 determined annual targets.

The owner occupied connections target was set at 19,400 for the period, with 25% of the targeted connections (i.e. 4,850 connections) excluded from the targeted connections on the basis that they are 'non-additional'.

Figure 13.8, below, shows the forecast adjusted allowances for the connection incentive mechanism, with shortfalls in owner occupied connections in 2017 to 2020 resulting in a reduction to the GD17 determined allowances.

Figure 13.8 GD17 adjusted allowances for owner occupied connections

Connection Incentive Adjusted Allowances (£'000)	2017 Actual	2018 Actual	2019 Actual	2020 Actual	2021 Forecast	2022 Forecast	Total
Determined Allowances	1,277	1,380	1,483	1,524	1,574	1,599	**8,838**
Adjusted Allowances	1,109	1,110	1,471	1,049	1,597	1,613	**7,949**
Variance	**(168)**	**(271)**	**(12)**	**(476)**	**23**	**15**	**(889)**

13.7 Rate of Return Adjustment Mechanism

The Utility Regulator determined that the rate of return adjustment mechanism (i.e. cost of debt adjustment) would take effect as part of the GD23 review. The Utility Regulator compares the allowed revenues that it provided for in our GD17 Final Determination with the allowed revenues that firmus energy would have been entitled to had the post-refinancing, post-adjustment WACC been known to the Utility Regulator at the time of the GD17 Final Determination.

The difference between the two streams of revenue will be rolled up in a NPV-neutral way and added or subtracted from firmus energy's TRV, from 1 January 2023.

firmus energy's calculation of this adjustment, reduces the GD17 determined cost of debt from 5.6% to 4.58%, with an associated reduction to the TRV of £4.6m (2014 prices).

13.8 Capital Rolling Incentive Mechanism

firmus energy had a capex rolling incentive mechanism 'switched on' within our distribution license for GD14 and GD17. If firmus energy outperforms in capex, (i.e. spending less than the regulatory allowance), it is permitted an element of this outperformance (comprised of rate of return and depreciation on the allowed capex) for a rolling period of five years. Conversely, overspends are treated in a symmetric manner, where firmus energy is not compensated for incurred overspend for a rolling 5 year period.

In GD17, firmus energy is forecasting an outperformance in capex. Figure 13.9 highlights our actual and forecast capex costs against adjusted allowances:

Figure 13.9 GD17 Capex - Allowances vs. Actual

Capital Rolling Incentive (£'000)	2017 Actual	2018 Actual	2019 Actual	2020 Actual	2021 Forecast	2022 Forecast	Total
Allowed Capex	15,193	16,334	16,818	18,031	18,904	18,965	**104,245**
Actual Capex	12,250	14,797	14,840	15,874	18,980	22,150	**98,892**
Variance	**(2,942)**	**(1,536)**	**(1,978)**	**(2,157)**	**76**	**3,186**	**(5,353)**

13.9 Overall Retrospective Adjustment Position

Based on the assessments outlined above, the total forecast adjustment, which encompasses each of the above mentioned retrospectively adjusted items, produces a DAV increase of £11.1m and a profile adjustment reduction of £4.4m at the end of GD17.

The GD17 Final Determination forecast a closing TRV (in 2022) of £201m. Following consideration of retrospective adjustments, our closing GD17 TRV is forecast to be £208m.

In the longer term, firmus energy will have an established customer base connected to an infrastructure which will deliver renewable energy and will support a green economy. It is for this reason also, we must continue to support and persuade prospective customers to connect to our network.

14 Other

Utility Regulator Guidance
Any other information the GDN considers relevant and which is not covered under any of the other commentary headings.

14.1 Serving our Customers and Communities

At firmus energy, we believe the best way to create a culture to be proud of is by living our core values. Our four values reflect who we are and how we conduct our business activities.

firmus energy's dedicated customer service staff are focussed on providing a first class customer journey that will be perfected by our structured consumer engagement processes. We actively listen to our current and prospective customers and will ensure this feedback informs our activities in the GD23 period. We strive to continually improve all aspects of our consumer engagement activities and this ethos will underpin delivery of our GD23 Business Plan.

Along with firmus energy's own measures to develop our service to customers, we are committed to working with the Utility Regulator on all aspects of their Consumer Protection Programme,[97] including development of a Best Practice Framework for vulnerable consumers. Working in tandem with the Utility Regulator and other consumer stakeholders, we will consolidate and formalise our services for vulnerable customers in a Vulnerable Customer Strategy for the commencement of GD23.

[97] Utility Regulator's Consumer Protection Programme https://www.uregni.gov.uk/sites/uregni/files/media-files/Consumer%20Protection%20Programme%202019WEB.pdf

At firmus energy, our customer service team are the first point of contact for new and existing customers, 3rd parties and queries from the general public. Internally, our customer service team provides the primary interface between external enquiries and other business functions within firmus energy.

We continue to retain a focus and prioritisation on inbound calls, with our customer service lines being 'manned' 24/7.

In 2020, the following inbound call performance statistics were recorded:

Calls answered on first presentation	**98.7%**
Abandoned calls	**0.35%**
Average call queue time	**4 seconds**

The importance of customer service and engagement extends beyond our dedicated customer service team. For example, we are proud to be the only UK energy provider with 100% of staff trained and accredited with a City and Guilds qualification in energy efficiency within their first year of employment with firmus energy, irrespective of their role.

At firmus energy, we are proud of our extensive, accredited, Corporate Social Responsibility (CSR) activities. These engagements, along with feedback from our current and prospective customers will continue to inform and guide the successful delivery of our GD23 Business Plan.

14.2 Codes of Practice

As a regulated energy service provider, firmus energy has a suite of Codes of Practice governing customer interaction and provision of service. Prior to publication of these Codes of Practice, each Code was developed in collaboration with Northern Ireland DNO's, CCNI and the Utility Regulator. At firmus energy, we ensure our Codes of Practice are set out in clear language and are understandable, so that our customers can be assured of our procedures. These documents are made available to customers on our website and upon request from our customer services team.

Complaints Handling Procedure

Within this Code of Practice, and more generally within firmus energy, a complaint is defined as "An expression of dissatisfaction made by any person in respect of the activities of firmus energy".

Within this code we ensure the following information is both transparent and simple

1.How to make a complaint
2.The steps firmus energy will take to process and endeavour to resolve the complaint
3.The timeframes in which firmus energy will endeavour to resolve the complaint
4.The contact details for issuing a complaint with firmus energy including:
    a.A telephone number charged at the local call rate;
    b.A UK postal address; and
    c.Online.

Consumer Information Code

Within this code we ensure the following detail is both transparent and simple;
How consumers may:

- Check gas availability;
- Contact firmus energy to discuss connection;
- Arrange a connection to the network;
- Choose a supplier; and
- Find an installer.

Where consumers may access firmus energy's:

- Connection Policy;
- T&Cs for connection;
- Complaints Handling Procedure;
- Notice of Rights;
- Standards of Service; and
- Accuracy Scheme.

The contact details or other special services in the event of an emergency on the network.

Distribution Marketing Code

Within this code we set out the standards which govern all marketing interactions with our customers and our potential customers.

1.This code ensure firmus energy employs good marketing practices
2.The marketing activities we undertake meet the requirements of all other relevant legislation
3.Marketing activities will be cognisant of the Advertising Standards Authority guidelines
4.The marketing activities will provide an explanation of the role of the DNO and the role of suppliers when discussing natural gas connections
5.The marketing activities will be conducted in a fair, transparent, appropriate and professional manner
6.The information provided through the marketing activity will be accurate, easily understood and will not mislead the consumer.
7.The information provided through the marketing activity will not restrict, distort or prevent competition in the supply of gas.

Code of Practice for the Theft of Gas

We collaboratively work together with all other DNO's and energy suppliers as well as the CCNI to put best practice procedures in place in regard to energy theft. This ensures that communications are consistent and clear when engaging with all consumers.

14.3 Standards of Performance

14.3.1 Overall Standards of Performance

Our customers are at the heart of everything we do, delivering a service that focuses on meeting their needs in the most cost effective way possible. As a regulated energy service provider, we have standards to achieve pursuant to the activities associated with our operations, of which there are 11 associated standards.

We continually meet and often surpass each performance target, as demonstrated by the standards of performance outlined in Figure 14.1 below, for the GD17 period to date.

Figure 14.1 Standards of Performance - GD17 period to date

		Actual				
Overall Standard Ref	**Standard of Service**	**2017**	**2018**	**2019**	**2020**	**Target**
Customer Contact						
	Telephone Answering We will endeavour to answer all calls promptly	Average call answering time - **4 seconds**				
8	**Customer correspondence** Written correspondence will receive a reply within ten working days. Correspondence may be responded to by telephone unless you request a written response.	100%	100%	100%	100%	97%
	Consumer Information Code firmus energy will publish a code of practice to be known as the consumer information code.	The Distribution Consumer Information Code of Practice is published on our website.				
9	**Customer Complaints** firmus energy will publish a code of practice for the handling of customer complaints.	The Distribution Complaints Handling Code of Practice is published on our website.				
	All complaints, whether made in person, by telephone, in writing, or otherwise will be recorded and classified	All members of the Customer Service and Billing Teams receive extensive call handling training. This tailor-made training focuses on using our values of clarity, integrity, empathy and teamwork to ensure customer complaints are dealt with effectively. All complaints have been recorded and classified				
	Complaints will receive a full response to their complaint within 10 days, where applicable	100%	100%	100%	100%	97%

		Actual				
Overall Standard Ref	Standard of Service	2017	2018	2019	2020	Target
CONNECTION						
5	**Reposition meters** firmus energy will reposition an ordinary meter within 15 working days of a quotation being accepted.	100%	100%	100%	100%	100%
6	**Meter Change** firmus energy will change the meter of a domestic customer within 10 working days of a referral by the Supply Company	100%	100%	100%	100%	100%
RESPONDING TO GAS EMERGENCIES - GAS ESCAPES						
2	**Uncontrolled gas escapes** Uncontrolled gas escapes will be attended to within one hour of being notified. An uncontrolled gas escape is where it cannot be ascertained that the gas escape is controlled, which is when the meter control valve has been turned off and this has stopped the gas escape	100%	100%	100%	100%	97%
3	**Controlled gas escapes** Controlled gas escapes will be attended to within two hours of being notified to firmus energy.	98%	100%	100%	97%	97%
ENERGY EFFICIENCY						
	Reducing your bill firmus energy has a duty to promote the efficient use of our product. We will do this by training relevant staff, by offering free energy efficiency advice to customers and promoting energy efficiency to customers and potential customers.	firmus energy targets 100% staff attainment of City & Guilds qualifications in Energy Awareness. We provide energy efficiency tips on our website and our staff offer energy efficiency advice to customers and potential customers. If the customer requires further information, we refer them to Bryson energy for independent energy advice.				
PREPAYMENT METERS						
7	**Faulty Prepayment Meters** firmus energy will visit a faulty prepayment meter within 4 working hours of being notified	100%	100%	100%	99%	97%

		Actual				
Overall Standard Ref	Standard of Service	2017	2018	2019	2020	Target
RESTORATION OF GAS SUPPLY						
1	**Within twenty-four hours** Following the disconnection of a domestic customer's gas supply due to a fault in the network, the transportation business will restore, on the basis of reasonable practicality, the domestic customer's gas supply within twenty-four hours.	100%	100%	100%	98%	97%
4	**Reconnection following non-payment** Customers disconnected for non-payment will be reconnected within 24 hours of referral by a gas supplier.	100%	100%	100%	100%	100%

14.3.2 Individual Standards of Performance - Notice of Rights

In addition to our overall standards of service, firmus energy also has obligations to deliver guaranteed levels of customer service to individual consumers. Our 'Notice of Rights' explains the individual standards of performance customers can expect from us and outlines the compensation they could receive if we fail to deliver these standards. The document is maintained in accordance with the Gas (Individual Standards of Performance) Regulations (Northern Ireland) 2014. Our Notice of Rights is reviewed annually and shared with suppliers, published on our website and made available upon request to any member of the public.

Guaranteed Standards detailed in our Notice of Rights are:

- Meter Disputes
- Meter Mix-ups
- Prepayment Meters
- Appointments
- Supply Restoration
- Reinstatement of customer's premises
- Connections
- Notification of planned interruption
- Responding to complaints
- Making standard payments

At firmus energy, we take great pride in delivering the highest standards of customer service. Since 2016, we have incorporated the Guaranteed Standards of Service into our business practices and have consistently maintained high levels of compliance. Across our growing network of customers (c. 55,000 at the end of 2020), we have compensated an average of 12 customers per annum in the GD17 period to date, 2017 to 2020.

14.4 Connection Policy

Our connection policy sets out, in clear language, exactly what our customers can expect from us when installing all pipework and fitting of their gas meter. Our connection policy complies with firmus energy's Network Code and Licence obligations, setting out our practices and principles in respect of the management and administration of gas network connections. The policy includes schedules of charges, indicative costs, and technical requirements for property owners or Licensed Gas Suppliers. The Utility Regulator reviews our policy on an annual basis.

14.5 Innovation and Sustainability

In 2019, the UK government set in law its 2050 target of net zero carbon emissions, and in April 2021, announced its intention to set in law the even more ambitious target of cutting emissions by 78% by 2035, compared to 1990 levels. Whilst Northern Ireland does not have specific Climate Change legislation, the Climate Change Act 2008 extends to the region and it is therefore implicit that Northern Ireland contributes to the UK net zero carbon target. The Committee on Climate Change has advised that Northern Ireland will need to cut emissions by at least 82% by 2050 (compared to 1990 levels) to support the overall UK target. However, Northern Ireland's carbon emissions from energy is targeted at net zero by 2050.[98]

Whilst the goal in known, the pathway to net zero carbon is less clear. What is clear however, is that the energy landscape in Northern Ireland will look very different by the end of our GD23 price control period, and we must be taking steps now to ensure we optimise the value of our network infrastructure, and we position ourselves to maximise our contribution to the decarbonisation journey.

The energy sector, including gas networks, has a vital role to play in facilitating the path to net zero, and a significant transition is needed. In turn, energy network innovation is an essential element of this transition. The DfE's Energy Strategy for Northern Ireland is due to be published in November 2021, and we anticipate further clarity on our shared pathway to carbon net zero.

In March 2021, the DfE published their Energy Strategy consultation on policy. The consultation recognises the important long-term role that Northern Ireland's gas networks have to play in addressing net zero carbon emissions. It particularly recognises the unique nature of the gas networks in Northern Ireland.

As a small, modern gas network, firmus energy is particularly suited to delivering on such innovation. Our modern network is, for example, more suitable to blending or use of hydrogen, while our size will support our agility to collaborate with partners to maximise value of innovation spend.

[98] Energy Strategy for Northern Ireland, Consultation on Policy Options, page 5. https://www.economy-ni.gov.uk/sites/default/files/consultations/economy/energy-strategy-for-NI-consultation-on-policy-options.pdf

At the beginning of 2021, firmus energy established our Sustainability Committee, comprising members of our Board and Senior Management Team. This Committee serves to guide and support our ambitions for sustainability across firmus energy's network area, and the future operations of our infrastructure. Our ambitions in this regard are fully aligned to, and will significantly contribute to Northern Ireland's journey to net zero carbon.
In Part 1, we have outlined 5 projects which we are keen to progress through the GD23 period. These projects will expedite the role of the natural gas infrastructure in delivering the goal of net zero carbon.

In Part 1, we have outlined 5 projects which we are keen to progress through the GD23 period. These projects will expedite the role of the natural gas infrastructure in delivering the goal of net zero carbon.

We also set out firmus energy's views on proposed approaches for funding innovation in GD23, which include;

- Addressing the funding gap for innovation development activities and project facilitation; and
- Accounting for the uncertainty arising from specific policies that will arise from the DfE's Energy Strategy.

Innovation and sustainability will be a key focus of Northern Ireland's energy landscape during the GD23 period, and firmus energy are preparing to ensure our business and our modern infrastructure is best placed to optimise our opportunity to contribute to the journey to net zero carbon.

14.6 Business Plan Assessment

firmus energy has provided a Business Plan Assessment for our GD23 Business Plan (as a supplementary submission to the Utility Regulator), and we welcome this new element of the Utility Regulator's price control review.
We are confident that our Business Plan meets the Utility Regulator's expectations for our submission and also clearly sets out;

- How customers have informed and guided our plans for GD23
  - With further commitments to focus on services for vulnerable customers
- Our ambitions to deliver significant growth in the GD23 period
  - For example, 55% growth in our customer base, including 73% growth in our owner occupied customers
- Our commitments to maximise and expedite our contribution to decarbonisation in Northern Ireland
  - Domestic connections will typically convert to natural gas from home heating oil, making immediate carbon savings of up to 48% per household
  - 5 innovation projects have been presented to the Utility Regulator (covering biomethane, hydrogen and synthetic methane injection to our network), which we are keen to progress in GD23
- Our commitment to continue to deliver best value for our services and operations for customers in the GD23 period
  - Distribution tariffs will reduce by 11% for the GD23 and the period to 2045, when compared to GD17 distribution tariffs.

Innovation and sustainability will be a key focus of Northern Ireland's energy landscape during the GD23 period, and firmus energy are preparing to ensure our business and our modern infrastructure is best placed to optimise our opportunity to contribute to the journey to net zero carbon.

taking natural gas further

firmus energy