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Gas Networks Ireland

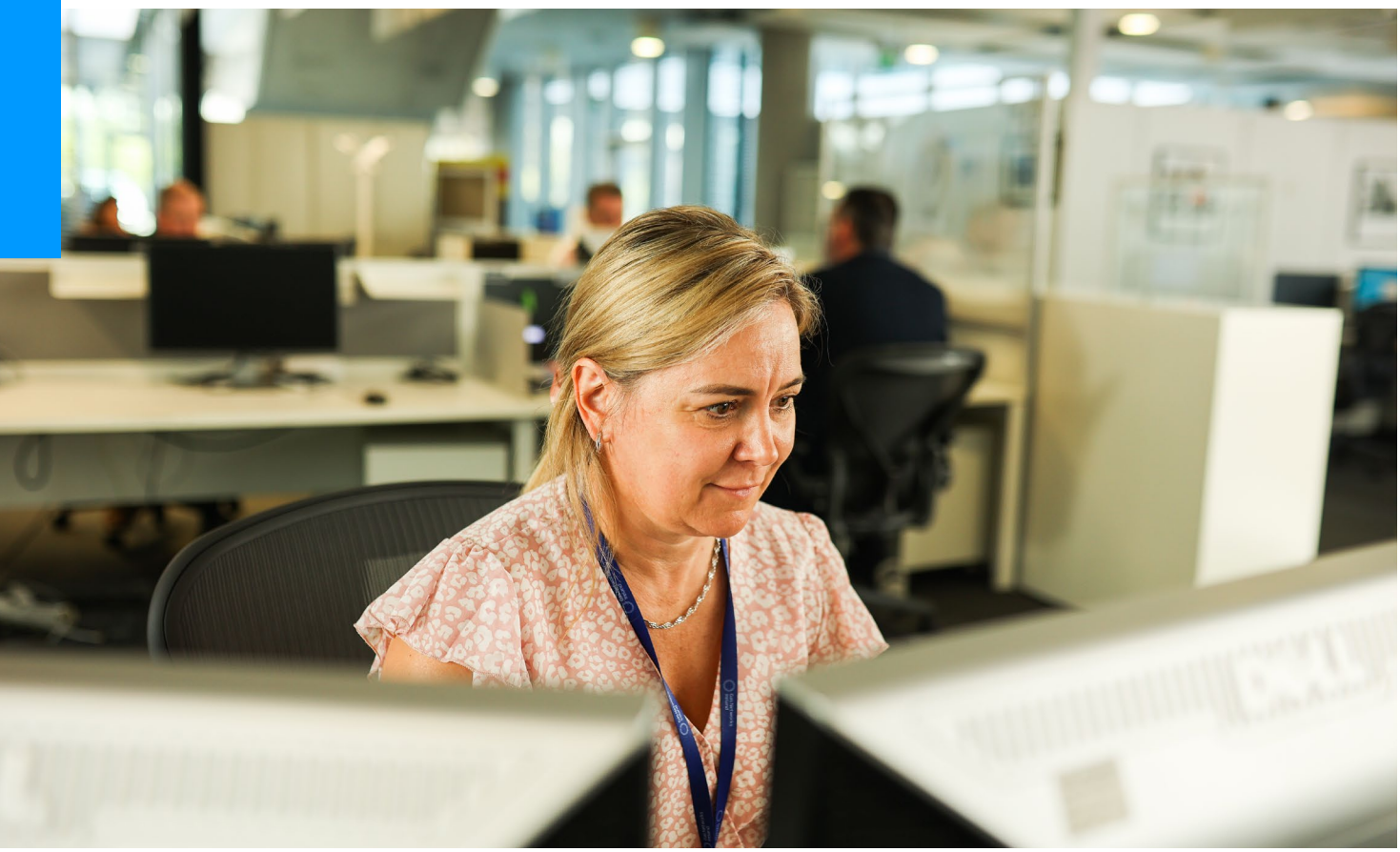
Systems Performance Report 2022

Gas Networks Ireland

Contents

1 Executive Summary

Since 2008, Gas Networks Ireland has produced two performance-related reports annually, the **Customer Performance Report** and the **Systems Performance Report**. The 2022 Systems Performance Report provides an overview of how both the natural gas transmission and distribution networks have operated during the year, in relation to all network systems activities.



After the stagnation of the Irish economy during the Covid-19 pandemic in 2020/2021, the lifting of pandemic measures in 2021 led to the start of economic recovery. However, this recovery was hindered because of the evolving conflict in Ukraine early in 2022, resulting in energy price increases and gas security challenges.. In Ireland, the biggest impact experienced to date has been the unprecedented increase in wholesale gas pricing. Despite the challenges presented by the war in Ukraine, Gas Networks Ireland was able to maintain the performance of its system in line with key performance indicators (KPIs).

Analysing gas usage and the main customer segments for the year 2022, exit capacity reflects the amount of capacity booked by shippers on the transmission system. The amount of space reserved by shippers for each customer on the distribution network is referred to as the Supply Point Capacity (SPC). As of 31st December 2022, 268 GWh was the total exit capacity booked for Power, Daily Metered (DM) and Non-Daily Metered (NDM).

- **Power** - Since 2017, we have seen strong growth in capacity booking mainly due to increased power demand. 2021 was slightly lower than 2020, mainly due to two prolonged outages at gas plants for a significant part of the year.
- **DM I&C** - bookings have increased since 2017 mainly due to increased load from large energy users, new town anchor load connections and the economic recovery. We saw a slight decrease in 2020 and 2021 primarily due to Covid-19 impacts, lower 2022 likely caused by the high cost of gas. Compressed Natural Gas (CNG) bookings are also included in this sector.
- **NDM** - bookings have remained relatively stable since 2017 despite strong economic growth, mainly due to increased energy efficiency. We saw a slight decrease in 2020 and 2021 primarily in the I&C sector due to Covid-19 impacts.

A total of seven power generation connection contracts were secured in 2022, to increase electrical generation capacity. This helped deliver projects that secured capacity payments in the SEMO/ EirGrid Capacity Auction process. There was growth in the Large I&C sector with continuously increasing demand for natural gas supply to provide data centre operators, pharmaceutical and public sector development. Because of the energy crisis and the competitive impact of the SEAI grant supporting heat pumps, 2022 was a challenging year for the mature housing sector with meter fits decreasing by 25% between 2021 and 2022.

Across the three connections categories, the performance in 2020, 2021 and 2022 was as follows:

Category	2020	2021	2022
Mature Housing Connections	3,408	3,513	2,612
New Housing Connections	4,220	2,311	1,612
I&C Connections	465	395	401

Gas Networks Ireland endeavours to operate and maintain an efficient system by investing in replacement and maintenance of the pipeline assets through capital programmes. Decarbonisation of the energy sector will present Gas Networks Ireland with future demand challenges that will require the integration of renewable gases while also maintaining gas supply across the country. These challenges will require planning and consideration of how the network will be used in the coming decades. Gas Networks Ireland is committed to the decarbonisation of the gas network through the integration of renewable gases such as biomethane and hydrogen. Although biomethane volumes are currently small, they are expected to increase significantly in line with the new national target of up to 5.7 TWh set under the recently announced Sectoral Emissions Ceilings and the forthcoming Renewable Heat Obligation Scheme. Gas Networks Ireland has renewed its commitment to other decarbonisation projects such as CNG.

Gas Networks Ireland measures its performance against a few key metrics comparing it to the performance in the previous year but also measuring against KPIs that have been set out and agreed with the Commission for Regulation of Utilities (CRU). In terms of pipeline length and number of customers, the figures for 2022 have remained in line with the figures for 2021 with there being only a 1km increase in the transmission pipeline length. The number of transmission connections for 2022 also remained in line with 2021, showing 28 large daily metered sites (same as 2020) and DM connections falling from 19 to 18.

'Shrinkage Gas' is own use gas and/or natural gas required to replace 'Unaccounted for Gas' (UAG) and gas used for fuel within the network. Despite a 2.16% increase in throughput compared to 2021, overall shrinkage efficiency improved as a percentage of RoI throughput of 1.23% in 2022, compared to the 2021 figure of 1.26%. There are several Key Performance Indicators (KPI) that Gas Networks Ireland is required to achieve in the areas of safety, system availability, meter data services and maintenance days with all target KPIs being achieved in 2022.

1.1 Key Performance Summary Matrix

Category	Metric	Report Section	2021 Performance	2022 Performance	Notes
Infrastructure	Length of Transmission Pipeline	3.1 - Total length of pipe in transmission system	2,476 km	2,477 km	
Infrastructure	Length of Distribution Pipeline	9.4 - Total length of pipe in distribution system	12,188 km	12,219 km	
Connections	Total Number of connections to the Transmission Network	3.2 - Total number of connections	47	46	28 LDM & 18 DM connections
System Throughput	Total Gas Transported	4.1 - Throughput	56,259 GWh	57,473 GWh	76% - Moffat 24% - Corrib 0% - Inch
System Throughput	Total Demand	4.2 - Demand Change	55,247 GWh	56,506 GWh	
System Throughput	Fuel Usage	4.3 - System Efficiency	686 GWh	680 GWh	Reduction is as result of the improvement in operational efficiency
System Throughput	Unaccounted for Gas (UAG)	4.4 - Transmission Unaccounted for Gas	254 GWh	253 GWh	2022 Transmission UAG similar in magnitude to that of 2021
System Throughput	Total Shrinkage Gas (Own use gas and gas to replace UAG)	4.5 - Shrinkage and balancing % of Throughput	1.26%	1.23%	

Category	Metric	Report Section	2021 Performance	2022 Performance	Notes
System Throughput	System Balancing Actions	4.5 - Shrinkage and balancing % of Throughput	249	101	
Capacity Bookings	System Balancing Volume	4.6 - Carbon usage/ emissions	591 GWh	258 GWh	
Capacity Bookings	Compressor Station carbon emissions	4.6 - Carbon usage/ emissions	99,914 TCO2	102,339 TCO2	Increase due to increased use of compressors at Moffat
Capacity Bookings	Exit Capacity Bookings	4.7 - Capacity Bookings	254,815 GWh	268,372 GWh	
Capacity Bookings	Entry Capacity Bookings	4.8 - Entry Capacity Booking Process	188.90 GWh	213 .58 GWh	
Gas Point Registration Office	Total number of Gas Points Registered	5.1 - Overview of GPRO	717,599	720,514	
Gas Point Registration Office	New Registrations	5.1 - Overview of GPRO	6,832	5,132	
Transmission Gas Safety	Third Party Damage (instances of unauthorised excavation in the pipeline wayleave)	7.1 - High Level Gas Safety Statistics	2,082	2,526	
Transmission Gas Safety	Third Party Damage Prevention Detected Encroachment Events	7.1 - High Level Gas Safety Statistics	37	34	
Code of Operations Obligations	GTMS System Availability	8.1 - System Availability	100%	99.97%	
Code of Operations Obligations	Meter Read Access Rates	8.4 - Meter Reading Access rates	83%	84%	

Category	Metric	Report Section	2021 Performance	2022 Performance	Notes
Code of Operations Obligations	Meter Read Rate	8.4 - Meter Reading Access rates	2.52	2.60	
Distribution System	Distribution Gas Flows	9 - Distribution System	16,741 GWh	15,466 GWh	
Distribution System	Distribution Unaccounted for Gas (UAG)	9.2 - Distribution UAG	0.27%	0.46%	The Distribution UAG percentage for 2022 was higher than in 2021 but still lower than previous years
Distribution System	Total number of connections	9.3 - Total number of connections	715,093	717,180	
Distribution System	New Connections (Total)	9.7 - New connections during year	6,219	4,625	
Distribution Gas Safety	Third Party Damage	10.3 - High Level distribution safety statistics	403	441	
Distribution Gas Safety	Third Party Damage - Total inward enquiries	10.3 - High Level distribution safety statistics	23,047	23,219	
Distribution Gas Safety	Emergency Reports Total no. of calls received via the 24-hour emergency number	10.3 - High Level distribution safety statistics	26,956	31,291	

2 Introduction

The Gas Networks Ireland Systems Performance Report has been produced to comply with the licence conditions pertaining to "Overall standards and performance" of the four licences held by Gas Networks Ireland, granted by the Commission for Regulation of Utilities (CRU).

Gas Networks Ireland is responsible for developing, maintaining, and operating the gas transmission and distribution systems. The Gas Networks Ireland system connects the Republic of Ireland (RoI) to Scotland, Northern Ireland (NI) and the Isle of Man (IoM). Gas Networks Ireland does not purchase, trade or sell gas to customers; it transports the gas on behalf of suppliers and shippers who purchase the gas from the wholesale gas market, and in turn use the transportation services of Gas Networks Ireland to deliver gas to 713,000 businesses and homes throughout Ireland. The Gas Networks Ireland system includes infrastructure in RoI, regulated by the CRU; NI, regulated by the Utility Regulator (UR); and South West Scotland, regulated by Ofgem.

- The natural gas network is differentiated by prevailing pressures:
- High pressure transmission infrastructure, which operates above 16 barg (the total length of transmission pipeline is 2,477 km); and
- Distribution infrastructure, which operates below 16 barg (the total length of distribution pipeline is 12,219 km).

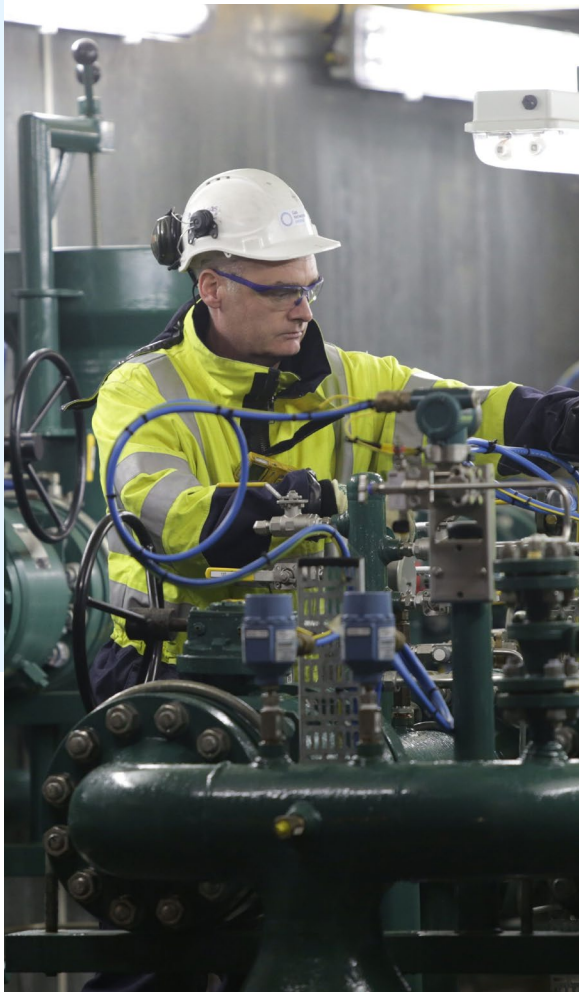


Figure 2.1: Gas Networks Ireland transmission pipeline map

Natural gas is transported to 713,000 customers through a network of 14,696 km pipelines, 24 hours a day, 365 days a year. Gas Networks Ireland is responsible for connecting all customers to the network, regardless of their supplier. The company manages a 24-hour gas emergency service, which handled 14,550 callouts in 2022.

Throughout this report, data is presented in graphical form. The corresponding figures and statistics are in the appendices, presented in table format, and may be referred to for interpretation of graphs and factual performance.

3 Transmission System

This report is produced to comply with condition 17 of the Transmission System Operator Licence and condition 13 of the Transmission System Owner Licence. Gas Networks Ireland's primary responsibility is to transport gas from entry to exit points on the network on behalf of customers, while ensuring that the network is operated safely and efficiently.

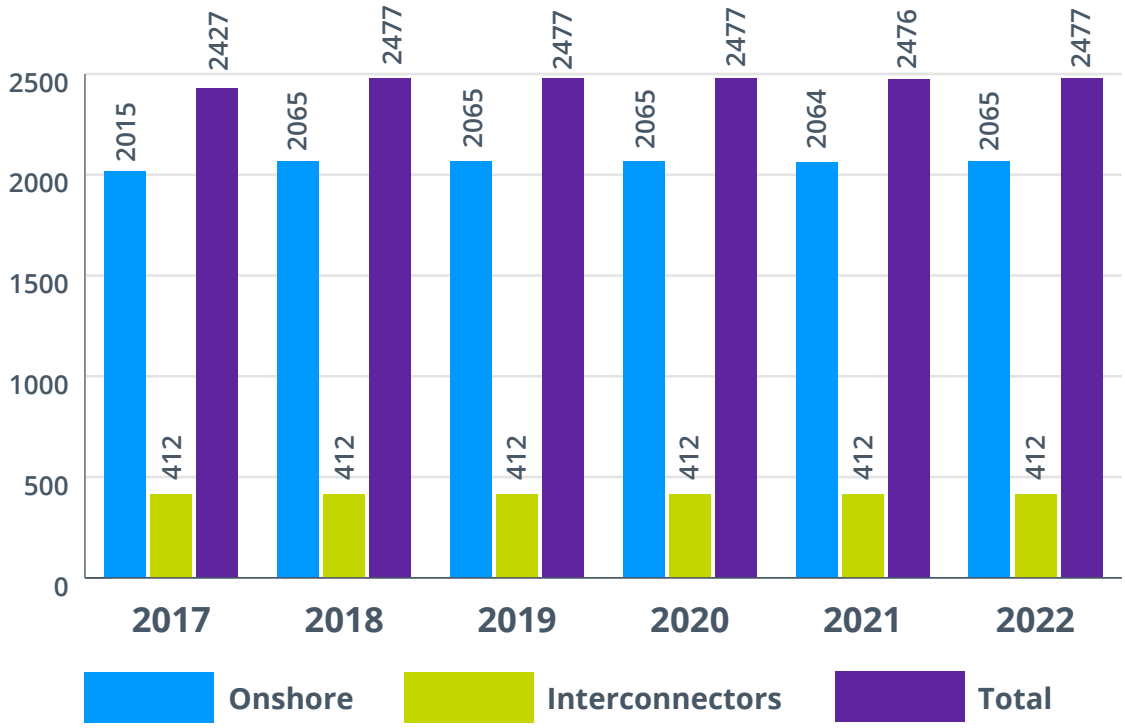
The natural gas network consists of 14,696km of pipeline, of which 2,477km is high pressure steel transmission pipelines. The RoI transmission system consists primarily of the high pressure (70 barg) ring-main linking Dublin, Galway, and Limerick. It also consists of a number of spur lines to Cork, Waterford and lower pressure (40 barg and 19 barg) local area (regional) networks in large urban centres. In addition, the Mayo-Galway pipeline connects the ring-main to the Bellanaboy terminal, Co. Mayo, where gas from the Corrib gas field enters the Irish transmission system. The addition of the Corrib entry point at the end of 2015, brought the total number of entry points on the transmission system to three including Moffat and Inch, see Figure 2.1. However, Inch was decommissioned in 2021, and so there are now two entry points.

The natural gas network is comprised of high-pressure steel transmission pipes and low-pressure polyethylene distribution pipes. The transmission pipes link Ireland's major urban areas and connects Ireland to the UK. Power stations and some large industrial customers are also directly connected to the transmission network.

3.1 Total transmission pipeline length

The length of the transmission pipeline network has remained consistent over the last number of years with minor variations, due to adding new transmission customers or decommissioning. At the end of 2022 the transmission network was 2,477 kilometres in length. The transmission system pipeline network consists of both onshore and offshore pipes.

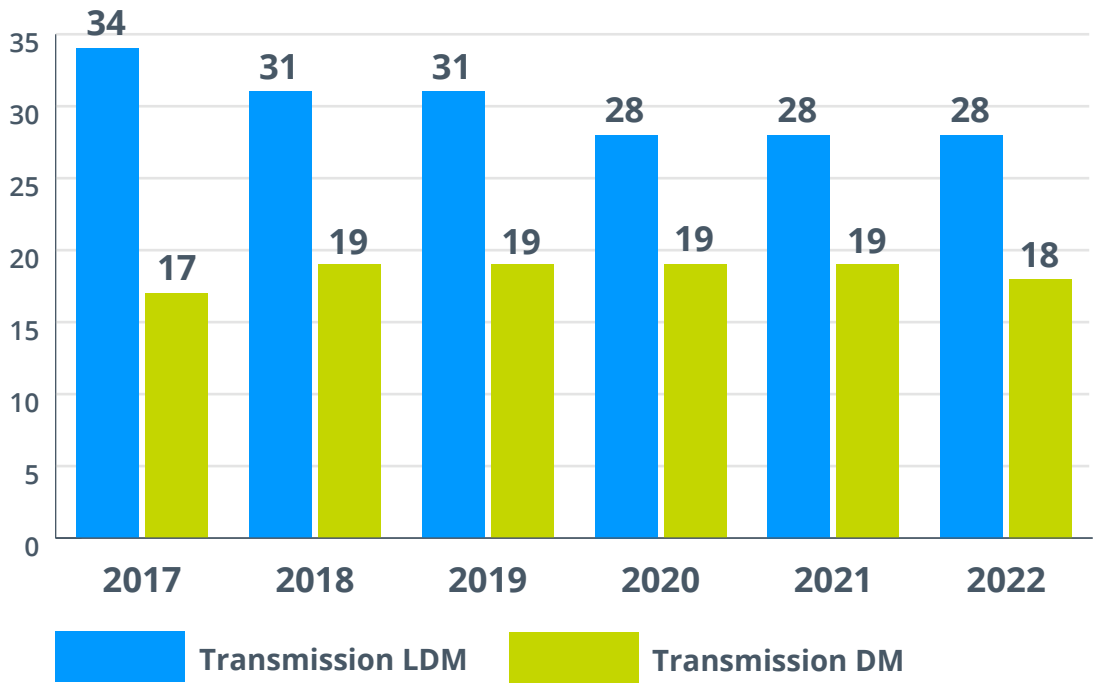
Figure 3.1: Transmission pipeline length



3.2 Total number of Connections

The total number of connections to the Gas Networks Ireland transmission network in 2022 was 46; of these 28 were Large Daily Metered (LDM) sites and 18 were Daily Metered (DM) sites, see Figure 3.2.

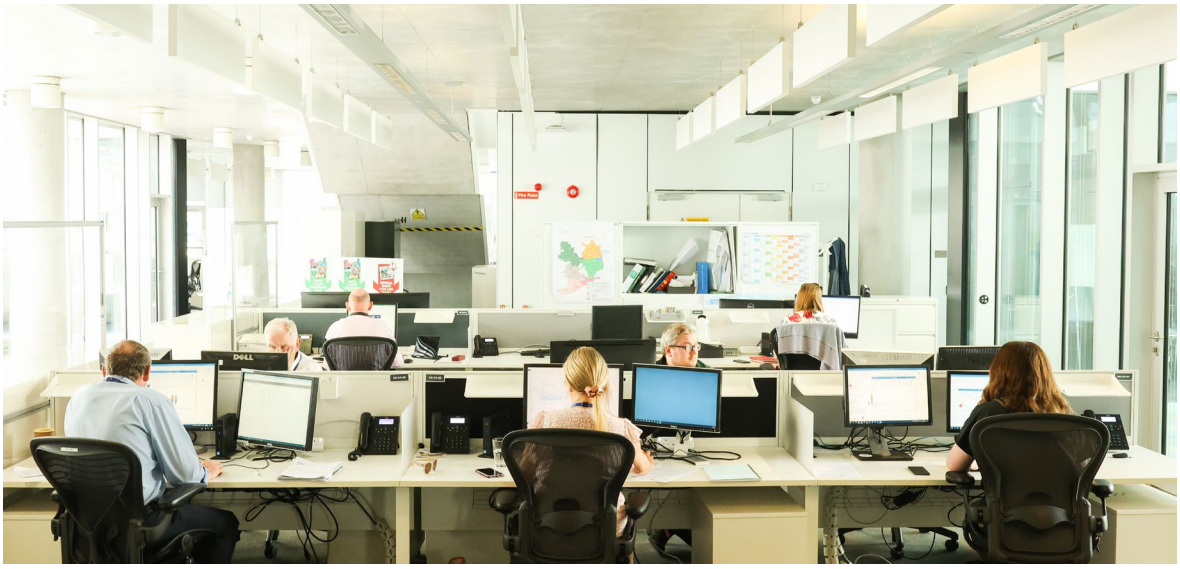
Figure 3.2: Total no. of transmission connections



4 Transmission System Data

Managing the flow of gas from the entry points to the end consumer is a sophisticated 24-hour operation. It involves continuous monitoring of gas flows, temperatures and system pressures through a Supervisory Control and Data Acquisition (SCADA) system for both transmission and distribution networks. SCADA uses process data telemetry from all the operational sites and installations to monitor and operate the entire gas network. In addition to the SCADA system, Gas Networks Ireland utilises a number of additional systems to assist with the operation of both the transmission and distribution networks. These include the Geographical Information System (GIS), Maximo work management system, the RAP system for non-routine operations, and online access to Gas Networks Ireland IT infrastructure and systems.

The transmission network is operated by Grid Control, which operates on a 24/7 basis. Grid controllers are responsible for operational and commercial functions. The operational element of the control room is facilitated by SCADA to operate the network including system flows, temperatures, pressures and alarm management safely and efficiently. The commercial aspect of gas transportation is facilitated by the Gas Transportation Management System (GTMS) through which the grid controllers ensure supply and demand balance. This is achieved through management of the daily nomination and allocation process, ensuring that the correct volume of gas is always transported to meet shipper, customer, and system requirements.



4.1 Throughput

System throughput is the total physical volume of natural gas transported through the Irish gas network by Gas Networks Ireland. The total gas transported for ROI in the calendar year 2022 was 57,473 GWh, which represents an increase of 2.16% from 56,259 GWh in 2021. This includes 62 GWh of fuel gas transported for NI, which was burned at the Beattock Compressor Station. Gas transported for RoI power generation in 2022 increased by 10% in comparison to 2021 figures. A summary of the gas throughput from 2018 to 2022 is illustrated in Figure 4.1.

Figure 4.1: System Throughput

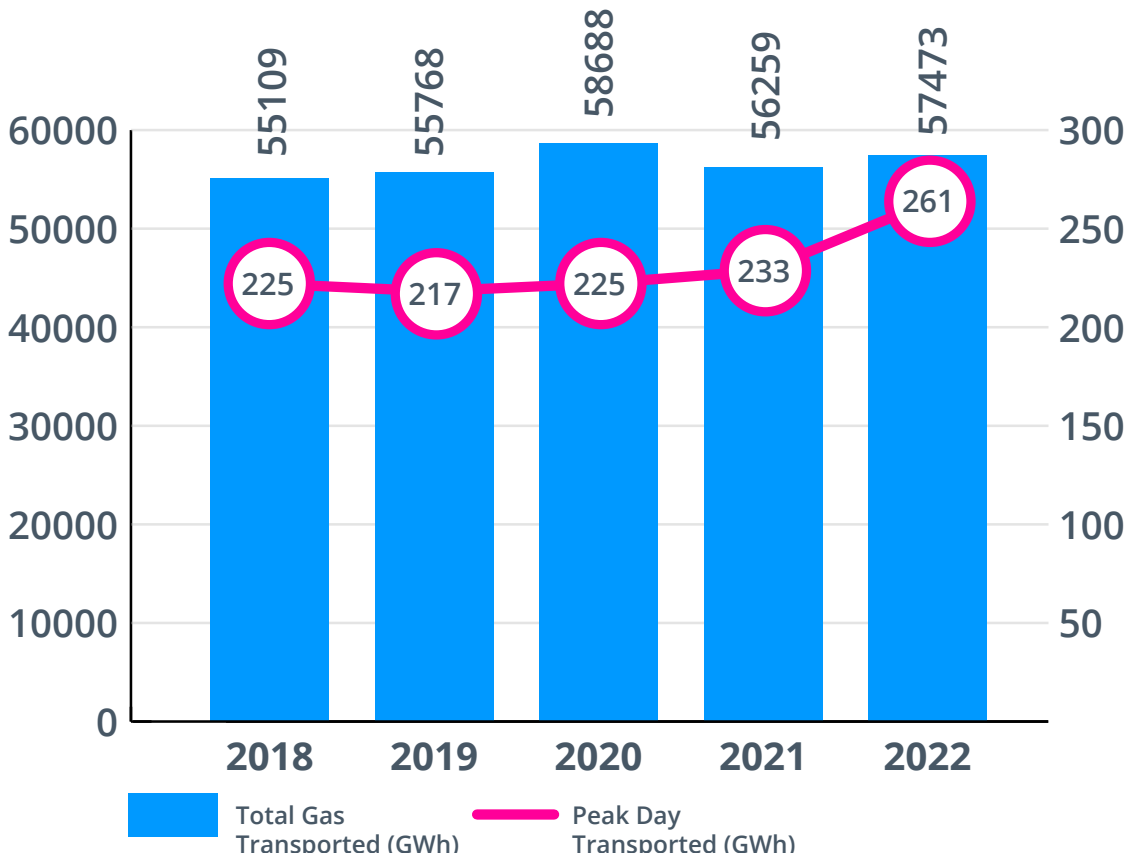
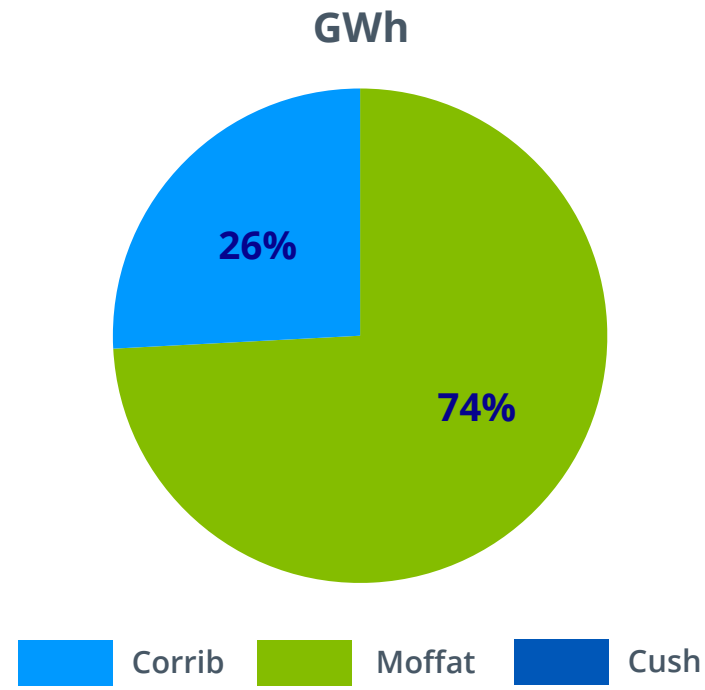


Figure 4.2: System throughput per entry point (Calendar Year 2022)[1]



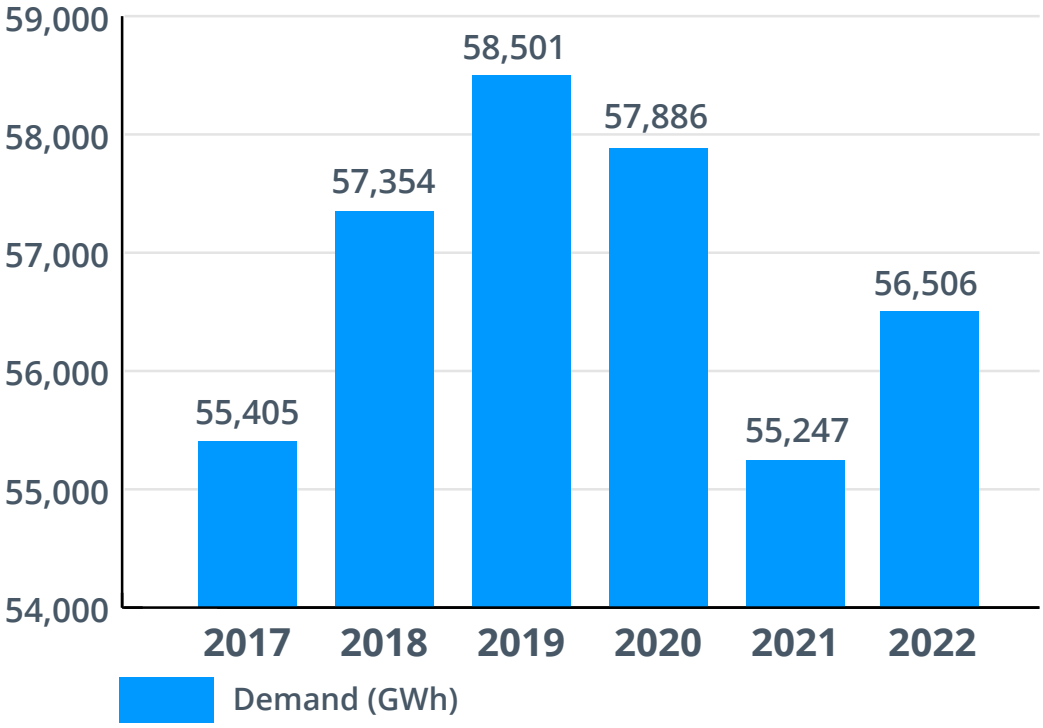
1 Inch was decommissioned during 2021 and so the throughput here was 0%. Going forward, Ireland has three entry points: Moffat, Corrib and Cush RNG entry point

4.2 Demand change

Demand is the total amount of gas physically off taken from the gas network in Ireland each year (excluding Unaccounted for Gas (UAG) and fuel gas). Figure 4.3 reflects the demand for gas in 2022, which increased by 2% compared to the 2021 demand. There was a 10% increase in demand in power generation and a 9% decrease in demand for non-daily metered (NDM). Daily metered (DM) and large daily metered (LDM) recorded no change and a 6% decrease respectively. The reason for the overall decrease in gas demand was due to energy price pressure due to the ongoing war in Ukraine which commence February 2022 and milder weather.

- **Power Generation** increase of 10% was recorded.
- **LDM** the Industrial and Commercial (I & C) sector had a decreased demand of 6% in annual demand.
- **DM** has no change comparing to 2021.
- **NDM** The NDM sector experienced a decrease of 9%.

Figure 4.3: Demand change



4.3 System efficiency

(a) Delivery

The amendment to the EU Network Code in October 2015 saw the removal of the requirement for shippers to maintain a Zero Imbalance Position (ZIP)[2]. This had resulted in higher variability in entry-exit nominations at the Moffat interconnection point (IP). To mitigate against having large upward nomination movements late in the gas day, and to strive towards more efficient use of the compressor stations in onshore Scotland, Gas Networks Ireland together with National Gas Transmission and PTL agreed to allow the use of exit nominations to better predict an accurate end of day entry quantity earlier in the gas day. To allow Gas Networks Ireland to do this, there was consultation (Moffat IA Consultation Paper) with National Gas Transmission, PTL and CRU. Resulting from this was modification to the Code of Operations to allow Gas Networks Ireland profile flow within the day based on anticipated demand rather than Entry Nominations, but always ensuring the final profile was based solely on Entry Nominations, in keeping with the EU Balancing Code. This was approved by all the relevant regulators and implemented in October 2021.

Following implementation of the changes made arising from the joint code modification we can see the fuel gas efficiency at Moffat has improved.

(b) Fuel Usage

Fuel usage of 680 GWh for 2022 reduced from 686 GWh in 2021 per Figure 4.4. This reduction is as a result of the improvement in the operational efficiency resulting from the changes as outlined above. The bulk of this fuel gas volume continues to be predominately driven by reduced Corrib entry gas and increased Moffat entry gas. Delivery of gas through Moffat requires operation of Beattock and Brighouse Bay compressor stations, which results in very high-pressure gas being received at the two landfall stations in Ireland, located at Loughshinny and Gormanston. Pressure must then be reduced to enter the RoI network. This requires the use of boilers to heat the gas prior to pressure reduction.

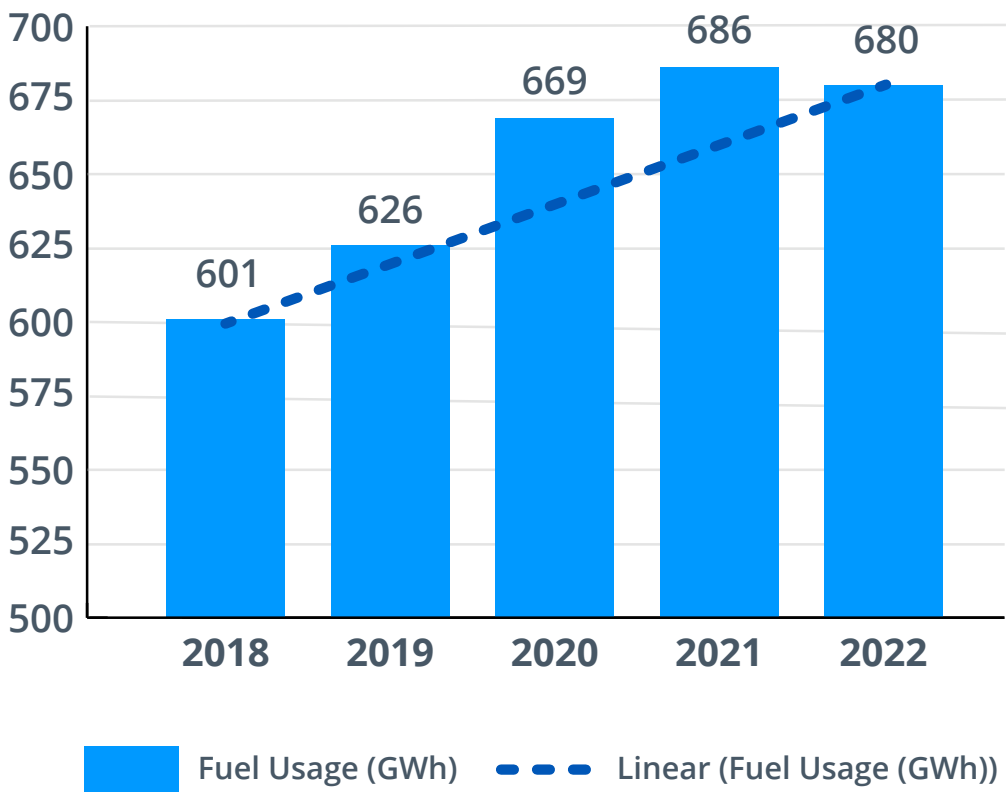
2 ZIP always required that Total Entry Nominations = Total Exit Nominations during a gas day. The requirement has now moved to an end of day requirement.

(c) Meter Read Verification

Transmission meter read verifications give an indication of the number of transmission connected gas points that require meter reading adjustments as a result of failed meter reading validation[3]. Figure 4.5 shows that 1.49% of all transmission site-metering validation checks carried out in 2022 resulted in adjustments (i.e., approximately 92 transmission site-metering monthly adjustments performed out of 5,178 metering validation checks in 2022). Adjustments are required to ensure accurate reading when a meter is out of tolerance, configured incorrectly or replaced.

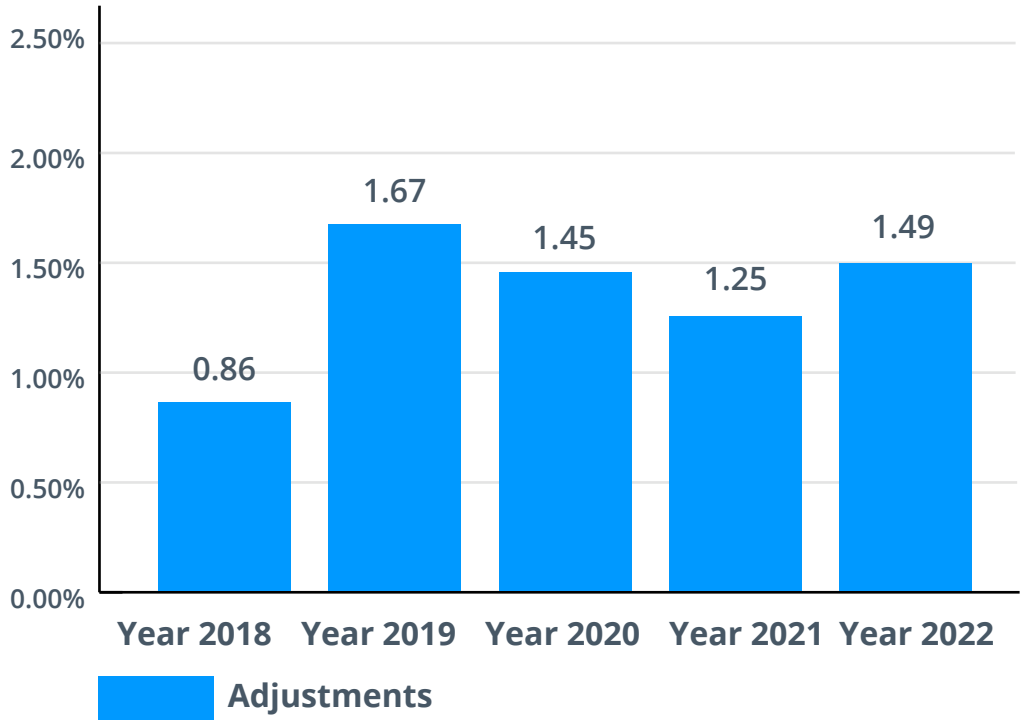
Gas Networks Ireland continues to improve its daily and monthly metering validation checks, ensuring more accurate end user allocations.

Figure 4.4: Fuel usage



3 Adjustments typically arise as a result of (i) a communications failure – e.g. a site telemetry failure resulting in advances in the site meter not properly communicated to GTMS via SCADA. (ii) an issue with the meter correction equipment on site

Figure 4.5: Meter read verification.



4.4 Transmission unaccounted for gas

Unaccounted for Gas (UAG)[4] means natural gas which is lost or otherwise unaccounted for in the transportation system or any localised part thereof. Figure 4.6 relates to transmission UAG[5] as a percentage of the overall system throughput.

UAG can be attributed to a few possible factors including the following.

- Gas measurement – The received gas at the entry points differs in terms of its composition and energy value. This leads to measurement uncertainties in terms of the fixed gas component values on fiscal metering flow computers; and
- Operations and maintenance – venting of gas, purging of pipelines, meters, gas chromatographs and gas leakage.
- Inaccuracies or errors relating to metering data, line-pack data, and any potential measurement equipment errors, Transmission fugitive emissions, etc.

Gas Networks Ireland has maintenance and calibration policies in place for all meters and instrumentation to ensure measurement accuracy of gas entering and exiting the system. Gas Networks Ireland's general pipeline and above ground installation (AGI) maintenance policies seek to prevent leakage and minimise venting of gas.

UAG remained consistent with levels seen in 2021, 253 GWh in 2022 vs 254 GWh in 2021.

4 Volume as a % of total gas

5 Transmission UAG is calculated as Entry (Metered Entry- Stock Gas Movement) Minus Exit (Metered Exit + Shrinkage + Own Use Gas)

Figure 4.6: Transmission UAG (% throughput)

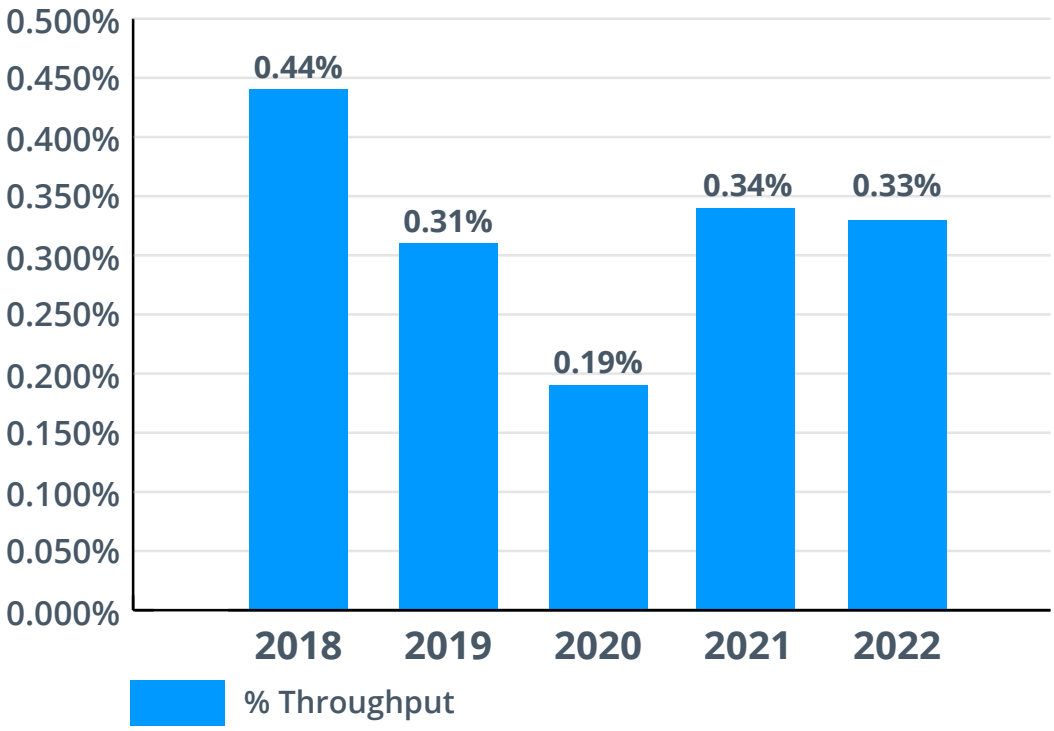
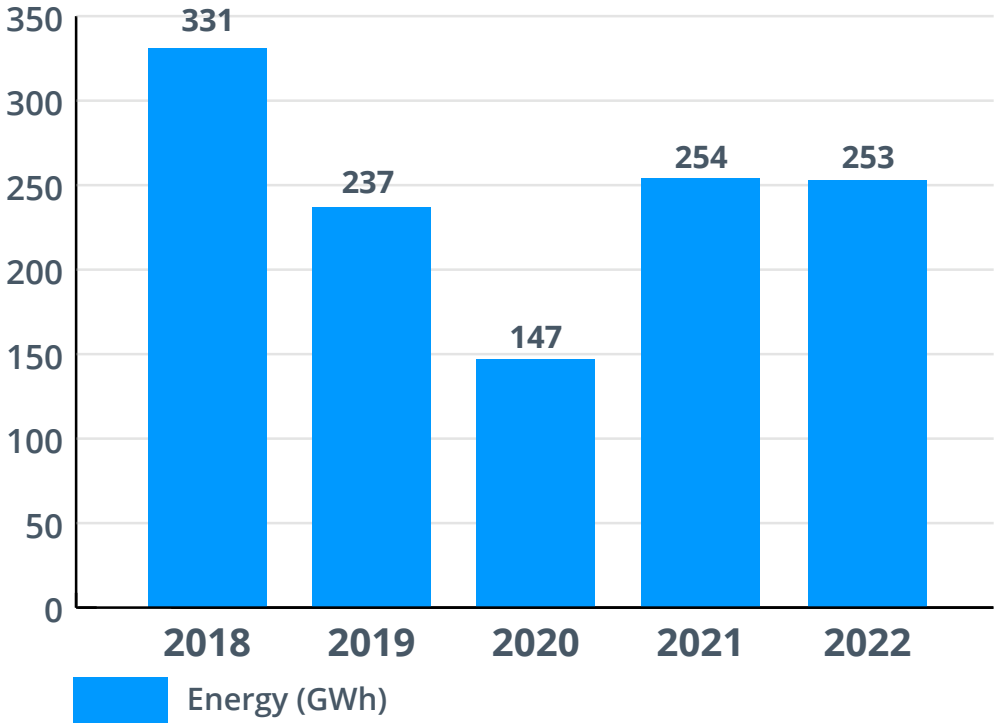


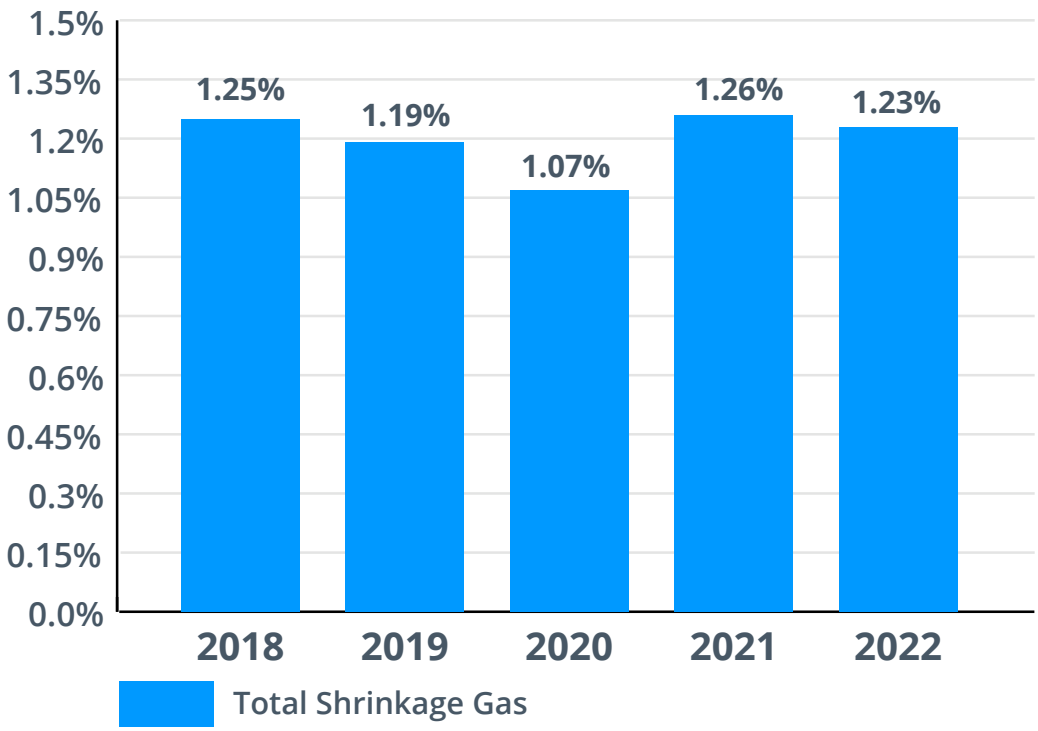
Figure 4.7: Transmission UAG (energy – GWh)



4.5 Shrinkage and balancing

'Shrinkage Gas' means own use gas and/or natural gas required to replace 'Unaccounted for Gas' (UAG) and gas used for fuel within the network. Figure 4.8 shows shrinkage gas attributed to the RoI system as a percentage of throughput of 1.23% in 2022, an improvement on the 2021 figure of 1.26%.

Figure 4.8: Shrinkage as % of throughput.



While both the fuel gas and Transmission UAG components of shrinkage had small improvements in 2022 when compared to 2021, it is important to note that the volume of gas transported on the network in 2022 was higher than the volumes transported in 2021, which demonstrates that while the actual volumes of shrinkage remained in line with 2021, the shrinkage efficiency improved.

Gas Networks Ireland continues to successfully utilise the trading platform to secure shrinkage gas, in place of tendering for a shrinkage contract.

A balancing action means buying or selling gas as required to match the amount of gas entering and leaving the system. On 40 days in 2022, balancing actions were taken. Now that Gas Networks Ireland is completing all

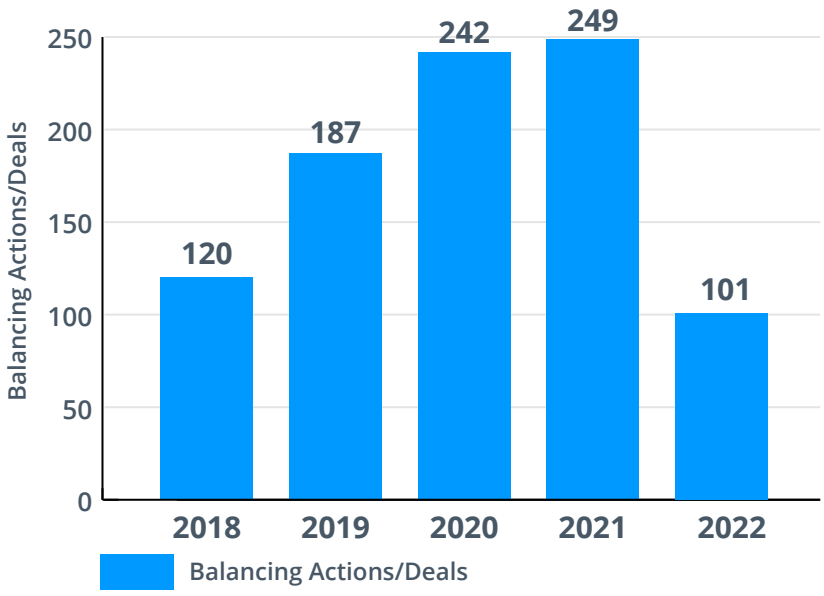
balancing actions on the trading platform, there is opportunity to take smaller, more frequent balancing actions to continue to foster liquidity at the Irish Balancing Point (IBP). Over those 40 days in 2022, 101 individual transactions took place.

In addition, significant improvements in shipper behaviour in terms of nomination imbalances has contributed to the reduction in balancing volumes and actions needed to maintain sufficient line-pack[6] for network service and operational safety. This is illustrated in the table below:

Table 4.1: System balancing actions[7]

Action	2018	2019	2020	2021	2022
System balancing actions (number of)	120	187	242	249	101
System balancing volumes (GWh)	429	458	633	591	258
System balancing as a % of total volume	0.60%	0.60%	0.80%	0.79%	0.34%
ROI Shipper imbalance as % of total ROI flow	0.51%	0.38%	1.00%	0.62%	0.25%

Figure 4.9: System balancing actions.



6 Natural gas occupying all pressurised sections of the pipeline network

7 Since the 1st of June 2018 Gas Networks Ireland uses the trading platform as its primary source for balancing actions in order to ensure that these necessary balancing actions are cost efficient.

4.6 Carbon usage/emissions

Gas Networks Ireland is committed to managing its impact on the environment. Transmission system activities such as the operation of compressors affect the environment and we recognise our responsibility to manage and minimise this impact. As part of our commitment to sustainable environmental and energy practices, Gas Networks Ireland has documented environmental and energy policies[8]. The environmental policy addresses the key areas of climate change, biodiversity, waste, resource use and procurement. The energy policy specifically addresses issues of energy performance and energy efficiency[9], including the implementation of an Energy Management System in accordance with the requirements of ISO 50001. We have also committed to making design decisions which integrate energy efficiency considerations in the final design, ensuring optimal operation throughout the life cycle of the plant, equipment and services of the gas network.

Gas compressors are used by Gas Networks Ireland to move gas through, and around, the transmission system. As a participant in the UK Emissions Trading System (UK ETS) Gas Networks Ireland has an emissions allowance for CO2 emissions and is committed to monitoring and reducing emissions from its compressors. While also complying with environmental legislation in respect of the compressors, such as noise monitoring and mitigation. To meet legal obligations, it is essential to develop and maintain a robust strategy for operations, maintenance, upgrading and replacement of the compressors. This is being achieved through the capital programme; further details of which is provided in section 6.

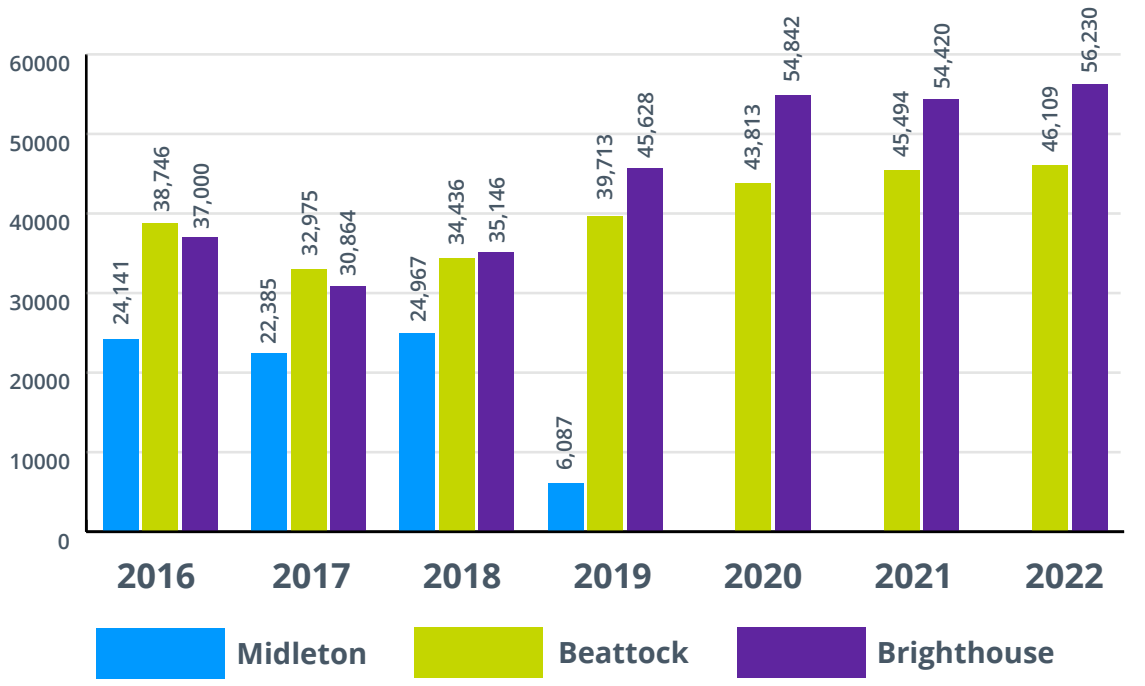
8 Environment and Energy Policies

9 In 2018 Gas Networks Ireland published its first Sustainability Report which highlights progress in implementing sustainable development across all aspects of operations.

The greenhouse gas emissions (measured in Tonnes of CO2 equivalent) at each of the compressor stations primarily stem from the consumption of fuel gas. This consumption of fuel gas increases as the throughput increases. Consequently, as the volume of gas supplied from indigenous sources diminishes annually, there is a requirement to transport larger quantities of gas through the compressor stations in Scotland. This, in turn, results in an observable rise in fuel gas consumption and associated emissions.

The impact of greenhouse gas emissions produced at each of the compressor stations based on fuel gas consumption is measured in Tonnes CO2e. Emissions reduce with lower fuel gas consumption but increase when subject to high flow variation (e.g., intra-day peaks). This variation arises where the compressors are forced to operate outside their most efficient operating range.

Figure 4.10: Compressor station carbon emissions



4.7 Capacity bookings

Gas Networks Ireland transports natural gas around the country on behalf of licensed natural gas shippers. These shippers are required to reserve capacity (space) in the natural gas network to guarantee a secure supply to each of their customers. Exit capacity reflects the amount of capacity booked by shippers on the transmission system. The amount of space reserved by shippers for each customer on the distribution network is referred to as the Supply Point Capacity (SPC). On the 31st of December 2022, 268 GWh was the total exit capacity booked for Power, DM[10] I&C and NDM[11] for the year. This is shown in Table 4.12 and illustrated in Figure 4.11.

Power - Since 2017, we have seen strong growth in capacity booking mainly due to increased power demand. 2021 was slightly lower than 2020, mainly due to two prolonged outages at gas plants for a significant part of the year.

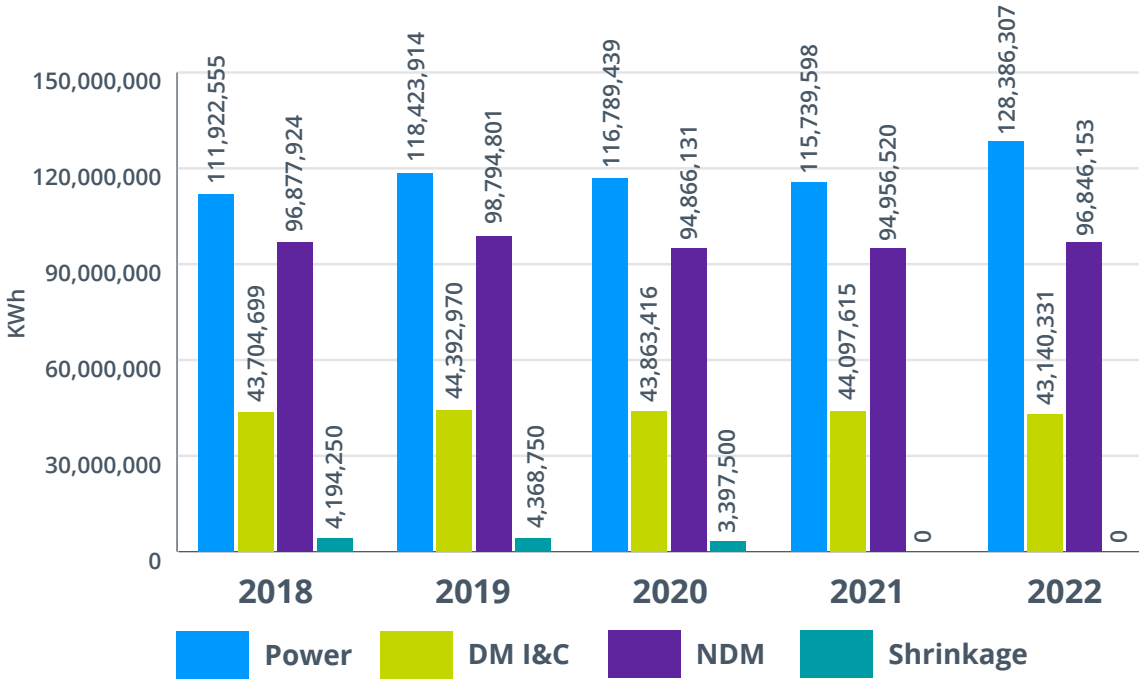
DM I&C - bookings have increased since 2017 mainly due to increased load from large energy users, new town anchor load connections and the economic recovery. We saw a slight decrease in 2020 and 2021 primarily due to Covid-19 impacts, lower 2022 likely caused by the high cost of gas. CNG bookings are also included in this sector.

NDM - bookings have remained relatively stable since 2017 despite strong economic growth, mainly due to increased energy efficiency. We saw a slight decrease in 2020 and 2021 primarily in the I&C sector due to Covid-19 impacts.

10 In this instance Daily Metered (DM) customers refers to Daily Metered (DM) and Large Daily Metered (LDM) customers i.e. any customer which consumes over 5.55 GWh annually. CNG also included within this sector.

11 The Non-Daily Metered (NDM) sector refers to those who consume less than 5.55 GWh of gas annually. This covers small Industrial & Commercial (I&C) customers and residential properties.

Figure 4.11 Exit capacity bookings



On 31st December 2022, 121 GWh was the total SPC for DM I&C, NDM I&C and Residential customers as shown in Table 4.12 and illustrated in Figure 4.12.

Figure 4.12: Distribution SPC bookings

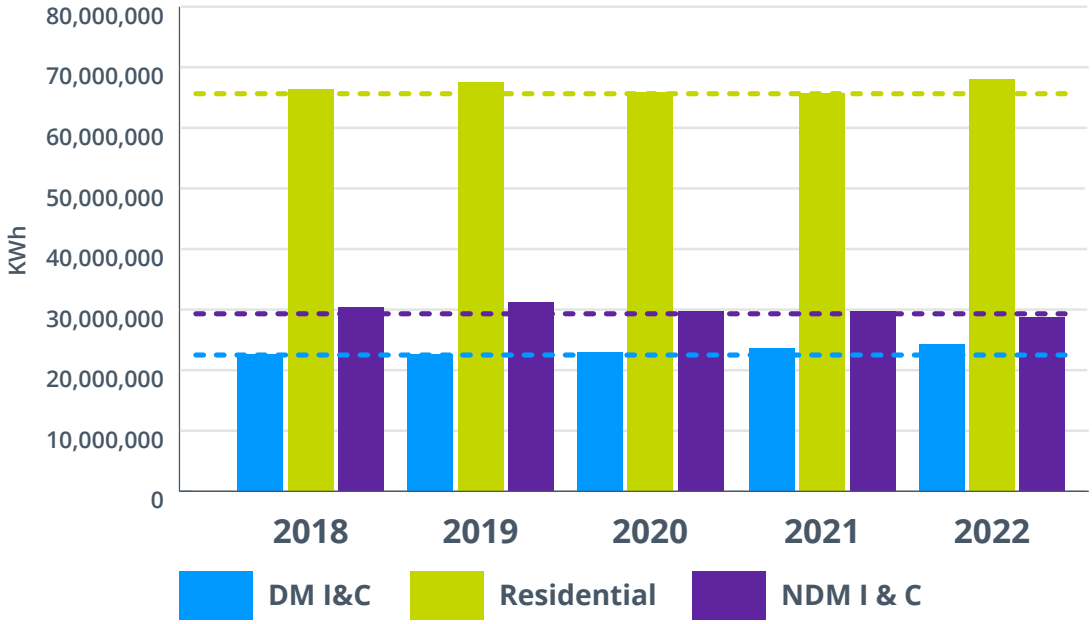


Table 4.12: Exit capacity and Distribution SPC bookings (kWh) (kWh)					
	31/12/18	31/12/19	31/12/20	31/12/21	31/12/22
Power	111,922,555	118,423,914	116,789,439	115,739,598	128,386,307
DM I & C	43,704,699	44,392,970	43,863,416	44,097,615	43,140,331
NDM	96,877,924	98,794,801	94,866,131	94,956,520	96,846,153
Shrinkage	4,194,250	4,368,750	3,397,500	0	0
Total	256,699,428	265,980,434	258,916,486	254,815,762	268,372,791
Distribution SPC (kWh)	31/12/18	31/12/19	31/12/20	31/12/21	31/12/21
DM I & C	22,603,166	22,682,300	22,960,478	23,650,604	24,271,891
Residential	66,438,547	67,530,069	65,874,125	65,725,621	68,032,604
NDM I & C	30,346,708	31,191,411	29,805,925	29,805,925	28,741,464
Total	119,388,420	121,403,780	118,640,529	118,980,290	121,045,958

Note: as part of the CRU's tariff network code decision (CRU/19/060), it was decided that from 2020/21 onwards, shrinkage should be included in the allowed revenue as it is a transmission service. Following this change, there was no longer a requirement to book shrinkage capacity.

Also, in recent years the annualised bookings (which includes short-term) are reported on. Previously, annual bookings were reported on, but as short-term volumes increased, Gas Networks Ireland has taken an annualised total to ensure that the full data is captured.

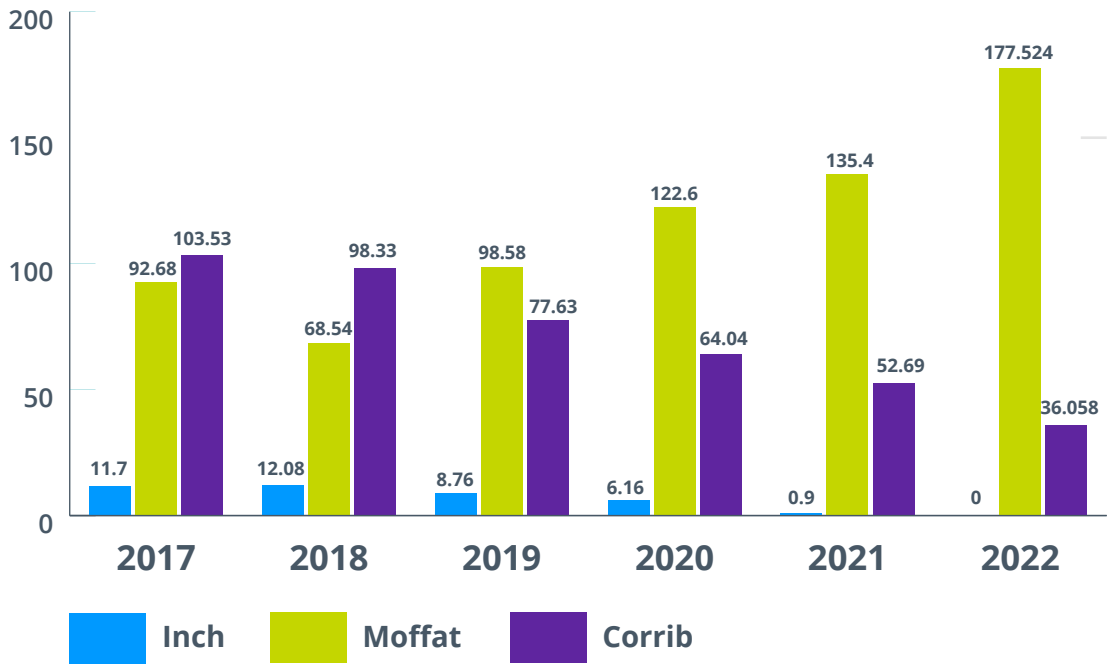
4.8 Entry capacity booking processing

Entry capacity means capacity at an entry point to the transmission system required to take delivery of natural gas to the transportation system. There are various rules concerning the entry booking process outlined in the Code of Operations. The entry capacity booked at Corrib is predominantly annual, with some short-term capacity booked as required. This pattern was also observed at the Moffat point.

As Corrib production continues to decline and Inch has been decommissioned, bookings are shifting back towards Moffat as the marginal source of gas.

It should be noted that these are annual capacity bookings at each of the entry points. In addition, there are short term products available which have not been included.

Figure 4.13: Annual entry capacity bookings (GWh)



4.9 Performance standards

There were no transmission safety incidents reported to the CRU either under statute or guidelines in 2022.

Table 4.2: Transmission service standards 2022

Customer Commitments	KPI	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Safety & Quality	0	0	0	1	1	1	0	0	0	0	2
Reportable Safety Incidents											

5 Gas Point Registration Office

5.1 Overview of GPRO

The function of the Gas Point Registration Office (GPRO) is to maintain a register for each Gas Point through which a natural gas customer is supplied; this includes registrations and de-registrations. The change of shipper (CoS) process within Gas Networks Ireland is managed by the GPRO. This process is essential in order to facilitate an open market and enable competition between suppliers, by allowing customers to easily change from one shipper to another. The GPRO is responsible for all supply point ownership transfers within the Gas Point Register.

The GPRO provides information and reports to the CRU and industry on historic activity; it processes corrections and amendments, and it maintains the I&C listing, the vulnerable customer and priority customer lists[12]. The total number of gas points registered as of 31st December 2022 was 720,514. This was a 0.4% increase on the number registered on the same date in 2021. The total number of new Gas Points registered during the year 2022 was 5,132. There were 860 gas points deregistered during the year[13].

2022 saw large swings in Change of Shipper activity with a record quarter and month for Change of Shipper activity contrasting against a considerable slow-down in Q4. The high gas prices impacted the shippers, with some minimising customer acquisition activity for portions of the year when gas prices were high. Retail gas prices increased dramatically in 2022, which was a factor in two different gas suppliers exiting the market in Supplier of Last Resort events, with GPRO coordinating the move of 13,600 GPRNs over to Bord Gáis Energy as Supplier of Last Resort. Many suppliers in the Irish market slowed down their Change of Supplier activity due to the severe increase in the wholesale cost of gas.

Ireland remains one of the most active markets for customer switching in Europe. There was a 4.6% increase in switching activity in 2022 when compared to 2021. Many factors can influence switching behaviour; such as consumer sentiment and inertia, points of differentiation between the suppliers, attractive offers, recruitment and retention campaigns.

There was an increase of 38.5% in the number of historical consumption requests during 2022, such as requests for bulk data releases from the Central Statistics Office (CSO), Sustainable Energy Authority of Ireland (SEAI) and the Office of Government Procurement (OGP). The data requests were to fulfil reporting requirements on energy consumption at various sites and for the population.

12 Vulnerable customers

13 The criteria for deregistration of GPRNs is that they have been locked, no end-user assigned and no consumption has been recorded at the premises for 18 months.

Category	LDM	DM	NDM I/C	NDM Domestic	2022 Total	2021 Total	% Change from 2021
Gas Points Registered @ 31 Dec 2022	43	274	27,264	692,933	720,514	717,599	0.4%
Total Gas Points Registered during 2022	0	4	426	4,702	5,132	6,832	-25.0%
Gas Points Deregistered during 2022	N/A	N/A	133	727	860	785	9.6%
Tariff Exempt NDM Supply Points @ 31 Dec 2022	N/A	N/A	151	1,834	1,985	1,489	33.3%
Total Tariff Exempt NDM Supply Points during 2022	N/A	N/A	157	2,464	2,621	1,894	38.4%
Change of Shippers							
Jan - Dec 2022	0	189	1,878	126,163	128,230	122,582	4.6%
Historical Consumption Requests Jan –Dec 2022	4	174	10,757	N/A	10,935	7,892	38.5%

Category	31st December 2021	31st December 2022	% change
Transmission LDM	28	28	0%
Transmission DM	19	18	-5%

Figure 5.1: Total gas points and market activity

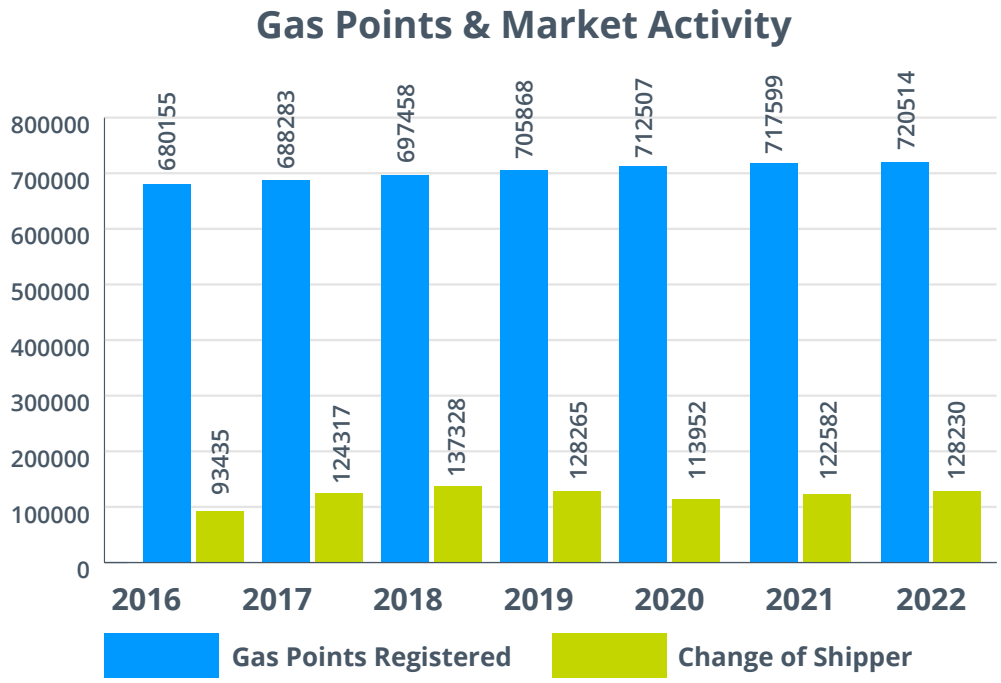
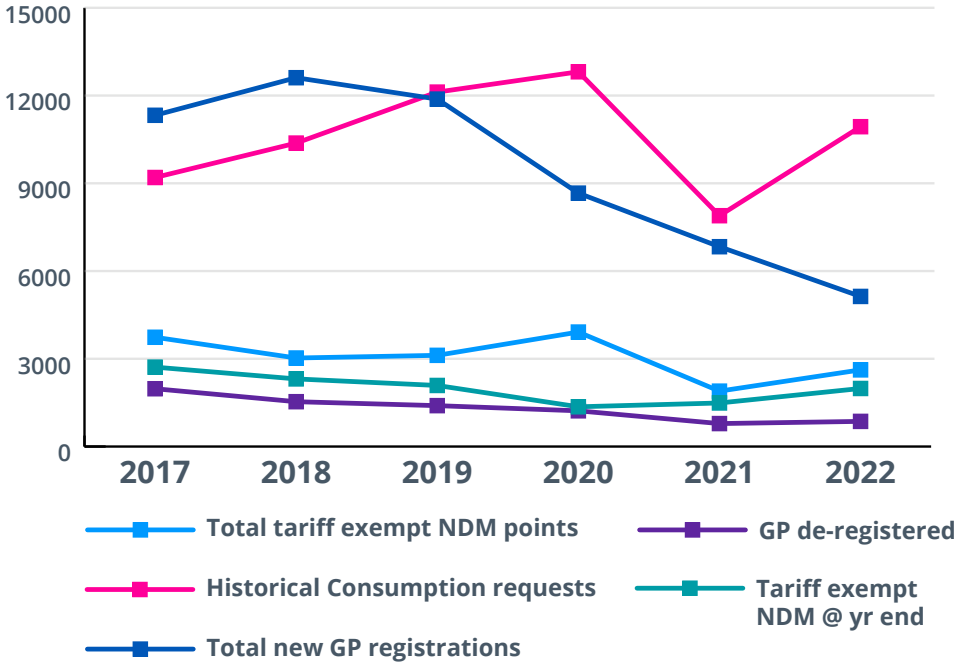


Figure 5.2: Gas point activity by year[14]



14 For a meter to be considered Tariff Exempt, it has to be locked more than two months and no customer registered for more than one month. If there is no consumption two months after the lock, the GPRN becomes tariff exempt (G701N message to supplier).

6 Achievement of Capital Programme

As part of the price control process, the CRU determines Gas Networks Ireland allowed revenue based on a five-year programme of capital works for the transmission network.

Additional works outside of the programme can be undertaken in the period if proposed by Gas Networks Ireland and agreed by the CRU. Gas Networks Ireland continues to work with stakeholders to extend the natural gas network to new towns. Gas Networks Ireland welcomes new sources of gas supply and remains willing to discuss prospective projects with project promoters.

6.1 Refurbishment

Refurbishment programmes involve the upgrading or replacing of certain network assets due to the age or condition of the existing asset. Examples of refurbishment projects include:

- Replacement of inefficient and ageing boilers at AGI locations with reliable and more efficient units;
- Upgrade works to bring pressure reduction sites into compliance with the ATEX[15] directive; and
- installation of attenuation measures to limit noise emissions in the vicinity of pressure reduction sites.

Some highlights from the refurbishment programme during 2022 included:

- Boiler replacement projects were completed at 3 AGIs - Gormanston AGI (extensive) and Diswellstown & Collinstown as part of the capacity upgrades
- Remediation of pipe supports was completed at 12 AGIs.

Security upgrades were completed at 22 AGIs.

15 The ATEX directive consists of two EU directives describing what equipment and work environment is allowed in an environment with an explosive atmosphere.

6.2 Reinforcement

Reinforcement programmes are carried out to increase the capacity of the network in response to increased demand. Examples of reinforcement projects include upgrades to increase the capacity of an above ground installation (AGI), adding new AGIs to the network or major pipeline projects.

During 2022, construction was completed at Collinstown AGI and also on Diswellstown AGI, as part of the AGI capacity upgrade programme. Drumgill AGI capacity upgrade commenced in 2022 and completion of those works are anticipated in early 2023.

Design and planning was progressed, and material procurements commenced, for the Southern Area Reinforcement (SAR) project, during 2022. Due to the increase in requests for new connections to the network in recent years, coupled with the cessation of gas supplies from the Inch Entry Point and the decrease in Corrib gas supplies, a capacity constraint in the southern region of the transmission network in the Republic of Ireland has been forecast. The natural gas network in Ireland began in the southern region due to the proximity to the first gas field off the Cork coast. This, combined with the second highest population density outside the Dublin area, resulted in a large domestic power generation and industrial load developing in the region. Following the closure of the Kinsale offshore gas field, the southern region has become the largest peripheral load on the network. The SAR project will address the forecast capacity constraint allowing the region to continue to operate and develop as an industrial and economic hub.

The constraint in the southern region was initially forecasted in the 2015 NDP in line with the predicted closure of the Inch gas supply into Cork. The SAR project was initiated to address this capacity constraint in the Southern region. The SAR project will raise the pressure the in the southern region, providing the increased capacity that is required to meet forecast demand.

6.3 Interconnectors

This programme involves the refurbishment and upgrading of assets on the onshore Scotland network, which is connected to the onshore Ireland gas network via two sub-sea interconnectors. These projects primarily involve works on the two compressor station sites at Beattock and Brighouse Bay in Scotland.

During 2022, a number of refurbishment projects were carried out including:

- An upgrade of Beattock Compressor Station to increase its operational flexibility, reliability and performance in order to meet current and future shipper/market demands and environmental and regulatory requirements.
- The ongoing replacement of 19 high priority valves at Brighouse Bay Compressor Station continued with 18 valves now replaced. The 19th is planned for replacement in 2023. A further 12 valves as part of phase 2 are identified for order and replacement in 2023 and 2024.
- The Air Intake Replacement project has commenced at both Beattock and Brighouse Bay Compressor Stations with one completed at Beattock in 2022.

In addition, a few significant projects advanced through design and planning during 2022, and are planned for construction commencement in 2023 including:

- Security upgrades at four sites on the onshore Scotland network, namely, Beattock and Brighouse Bay Compressor Stations, Twynholm AGI and Cluden Block Valve. The procurement competition for the design and build contract for the project was concluded in 2022. Construction works are planned to commence on two sites in summer 2023.
- Electrical system upgrades at Brighouse Bay Compressor Station. The design was completed in 2022 and construction works are planned to commence in 2023.
- Brighouse Bay Compressor Station Splitting project. The design and planning was progressed in 2022, including material procurements for the project. The project is planned for completion in 2024.

6.4 New Connections

There has been a significant increase in the requests for new connections to the transmission network during 2022, primarily power station developers who were successful in the EirGrid capacity auctions. While this is generally a cost neutral process where the connecting party pays for the connection, it requires Gas Networks Ireland personnel and contractors to provide the services (plan, design, and build), resources and materials for the connection, and becomes part of the price control works package to be delivered.

During 2022, Gas Networks Ireland progressed design and planning for approximately 20 new connection projects, and commenced material procurements for a number of those projects which are planned for construction in 2023 and 2024.

7 Transmission Gas Safety

7.1 High Level Gas Safety Statistics

Data presented in this section of the report is extracted from quarterly reports submitted to the CRU under the natural gas safety regulatory framework (the 'Framework'). All information has been provided to the best ability of Gas Networks Ireland at the time of submission to the CRU. The report includes Key Performance Indicator (KPI) measures and statistics that have been under continuous monitoring during 2022. The purpose of the KPIs is to identify opportunities for improvement and to ensure the network continues to be managed in a safe manner.

The reference numbers 1 – 5 denotes metrics grouping under the key safety regulatory objectives.

Table 7.1 Safety statistics

Reference Items		Compliance Monitor	2018	2019	2020	2021	2022
1A	Public Reported Escapes (PREs) (Reported Leaks)	Total Reported Escapes[16]	4	4	N/A	N/A	N/A
6B	Third Party Damage	Development enquiries requiring action	1070	1322	2204	2082	2526
1D	Third Party Damage Prevention Detected Encroachment Events	Category A - Pipeline Damage or Leak	0	0	1	0	0
		Category B - Serious Potential for Damage	5	14	13	18	7
		Category C - Limited Potential for Damage	42	22	36	19	27
		Total detected encroachment	47	36	50	37	34
1E	Transmission Pipelines	Line breaks (major leakage)	0	0	0	0	0
		Line damaged (sustainable level of leakage)	0	0	0	0	0
		Line damaged (no leakage)	1	1	1	0	0
2A	Pressure Control	Occasions where pressure drops below minimum design pressure	0	0	0	0	0

16 Transmission Public Reported Escapes have not been reported to CRU since 2020 (at the request of the CRU)

Reference Items		Compliance Monitor	2018	2019	2020	2021	2022
2C	Gas Outages	Occasions where pressure is greater than 1.1 x Maximum Operating Pressure	0	0	0	0	0
		Number of Unplanned Outages	0	0	0	0	0
3A	Gas Quality	Number of non-compliant events (constituent parts outside criteria)	0	2	0	0	0
3B	Gas Quality	% Availability of the gas measurement equipment	100%	100%	100%	100%	100%
4A	Gas Supply Emergencies	Local Gas Supply Emergencies 5,000 - 9,999 customers affected	0	0	0	0	0
		NGEM Emergencies > 10,000 customers affected	0	0	0	0	0
4B	Gas Emergency Exercises	Emergency Exercises planned per annum (minimum)	2	2	2	2	2
		Emergency Exercises undertaken	3	3	2	3	2
5A	Incidents	Gas Related Incidents	0	0	0	0	0

7.2 Third party damage

Third party development enquiries which potentially impacted on the transmission network and required response from Gas Networks Ireland stood at 2,526 in 2022, up slightly from 2,082 in 2021. The increase since 2020 is attributed to the launch in Q4 2019 of Gas Network Ireland's online 'Dial Before You Dig' service which resulted in a notable increase in enquiries. The outcomes of some of these engagements may ultimately involve a range of control measures including supervision of works near Gas Networks Ireland pipelines, but this is dependent upon whether or not the development work ultimately takes place, the nature of the work, and the proximity of it to the pipeline.

There were 34 total encroachments (instances of unauthorised excavation in the pipeline wayleave) detected in 2022, a slight decrease from the 37 detected in 2021. Since 2011, Gas Networks Ireland has classified transmission pipeline encroachments in line with the United Kingdom Onshore Pipeline Operators Association (UKOPA) model, these include:

Category A: Pipeline leak or damage.

Category B: Potential for damage; and

Category C: Limited or minimal potential for damage.

Category A is the most severe and includes actual damage to a transmission pipeline, wrap or sleeve. There were no Category A encroachments in 2022. Categories B and C relate to a level of potential damage and are differentiated by the actual activity and method carried out in the vicinity of the pipeline. Category B encroachments are deemed to have serious potential for damage while Category C have limited potential for damage. Gas Networks Ireland reviews each encroachment and monitors trends closely.

Gas Networks Ireland is committed to reducing encroachments and third-party damage on the gas network and has taken several steps to improve the 'Dial Before You Dig' service, culminating in the launch of an online service in Q4 2019. See Section 10.6 for further detail.

7.3 Update on the Safety Case

Gas Networks Ireland operates its activities in accordance with the Gas Safety Regulatory Framework. The Gas Networks Ireland Transmission System Safety Case demonstrates the safety management arrangements in place for the network.

Within the Safety Case Framework, a quarterly KPI report is submitted to the CRU for review. The Gas Networks Ireland Transmission System Safety Case was revised in May 2022 and was the current accepted safety case as of 31st December 2022. The Safety Case demonstrates the arrangements that are in place for:

- The safe control and operation of the transmission system.
- The management of the life cycle of the assets including design, construction, commissioning, maintenance and repair, reinforcement and renewal, and decommissioning and abandonment.
- Ensuring that staff meet the required standards of qualification and competence.
- Emergency preparedness.
- Ensuring that gas transported in the network meets required standards for gas composition and quality.
- Hazard assessment and mitigation of the risks to a level that is as low as is reasonably practicable associated with the transportation of gas.
- Compliance with relevant standards and codes of practice; and
- Cooperation with third parties.

Under the Framework, Gas Networks Ireland is required to conduct a full independent audit of its safety case every five years to ensure that the safety case remains a 'living document' within the organisation and fully reflects the current safety operating measures and practices.

7.4 Update on National Gas Emergency Manager Activities

Gas Networks Ireland was appointed as the National Gas Emergency Manager (NGEM) by the Commission for Regulation of Utilities in 2008 and developed the Natural Gas Emergency Plan (NGEP) for managing a network gas emergency. Revision 5 of the NGEP was approved by the CRU in October 2022 and is published on the Gas Networks Ireland website. The update has aligned the four emergency steps in the NGEP with the three Crisis Levels described in Regulation (EU) 2017/1938.

Regulation (EU) 2017/1938 establishes provisions aimed at safeguarding the security of gas supply in the EU and describes, inter alia, mechanisms for the coordination of response to emergencies at national, regional and EU level. Following the Russian invasion of Ukraine in February 2022, the security of gas supply to Europe and sharp increases in gas prices were the dominant themes across the European gas industry.

Gas Networks Ireland is a member of the ENTSOG (European Network of Transmission System Operators for Gas) ReCo (Regional Cooperation) Group of European gas TSOs which in the initial stages, met daily following the invasion of Ukraine to share information on European gas supplies particularly the supply of Russian gas to Europe. In accordance with Regulation (EU) 2017/1938 several European countries declared the 'Early Warning' crisis level indicating there was a threat to gas supply given the uncertainty across the industry. Several tabletop exercises were also completed to test agreed scenarios and the results shared with the EU Gas Coordination Group which met regularly during 2022. Gas Networks Ireland also worked closely with National Gas Transmission to share information on gas supply to Great Britain to provide reassurance to Irish gas stakeholders that restrictions to gas supply was unlikely. The frequency of the ReCo Group meetings was reduced to three times weekly in June and remained as such for the remainder of 2022.

The Natural Gas Emergency Plan (NGEP) is subject to annual testing and the 2022 emergency exercise, called 'Exercise Dara', was carried out over two days in September 2022. 'Exercise Dara' tested the interaction between the gas and electricity system operators in an energy emergency impacting Ireland, including the role of secondary fuel in maintaining electricity generation. The exercise also served as training for the National Emergency Coordination Group (NECG) which was convened to test the whole of government response to an energy emergency. A post exercise report was completed providing an overview of the exercise and the recommendations arising from the exercise.

Gas Networks Ireland also participated in the UK's Network Emergency Coordinator (NEC) annual emergency exercise ('Exercise Degree') which took place over four days during September and October 2022. The aim of this annual exercise was to demonstrate that the gas industry is prepared and able to meet its obligations in the event of a Network Gas Supply Emergency (NGSE) in the UK.

8 Code of Operations obligations

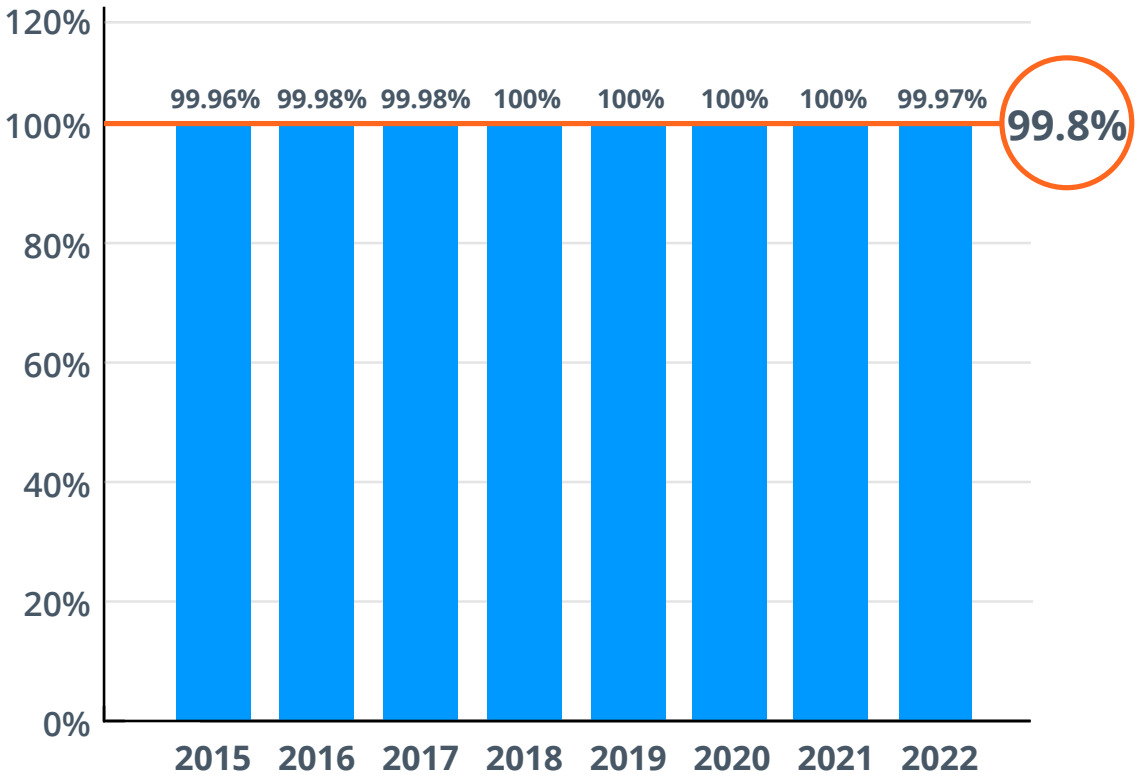
The Code of Operations (the Code) governs the relationship between the Transporter and the Shippers on the transportation (transmission and distribution) network. By signing Framework Agreements, Shippers accept and confirm compliance with the terms of the Code . In February 2005, the CRU approved the implementation of the initial Code which became effective on 1st April 2005.

The latest version of the Code (Version 5.03) was published in May 2023 and is comprised of Parts outlining the general principles of regulatory compliance, capacity arrangements (both entry and exit), nomination and allocation arrangements, balancing, Shipper registration, gas specification and quality requirements, as well as the various sections on congestion management, legal and general.

8.1 System availability

Grid Control is responsible for monitoring the Gas Transportation Management System (GTMS) and managing the daily nomination and allocation process, ensuring that the correct volume of gas is always transported to meet shippers' and customers' requirements. The KPI for GTMS system availability is 99.8%, this target has been consistently achieved over the years and in 2022 the system was available 99.97% of the time.

Figure 8.1: System availability



8.2 Invoice Circulation

The trading and settlements team in Gas Networks Ireland generates and issues transportation invoices for all shippers monthly. The invoices are for transmission and distribution capacity and commodity.

Table 8.1 - Trading and Settlements

Customer Commitment	KPI	2017	2018	2019	2020	2021	2022
Invoice circulation	By 12th day of month	100%	100%	100%	100%	100%	100%

8.3 Meter reading access rates

This process governs the receipt and validation of all meters read information for generic and volume corrected NDM gas points. The access rate in 2022 for credit was 84%, this is above the KPI of 80% which has been consistently achieved by Gas Networks Ireland over the past six years. This KPI is the expected average annual access rate for all NDM sites in total. The target is to maintain total access levels at 80% or above per annum. Increased number of call backs to sites and variation of start times in different areas has helped to achieve this consistency in access levels. The average time a meter was read per site in 2022 was 2.60 times.

The KPI for how often a meter is read per calendar year is 2.2 times. This covers the expected average read rate per individual site. The target is an average of 2.2 per annum.

During the COVID outbreak there were restrictions in place as to when, or even if, Gas Networks Ireland could call to certain areas to read. This meant there was a reduction in the number of actual calls made to collect read data. The KPI figure was changed from 3.2 to 2.2 to reflect this. During 2021 and 2022 the number of Meter Read resources was gradually increased back to pre-Covid levels so the KPI figure will be re-instated at 3.2. The target considers that if three calls are made to a site to take a reading there may still be times when access is not available. If this target average read rate was set at three per annum it would mean that to achieve it, access would have to be gained at each site every time a call was made.

Figure 8.2: Meter read access rates

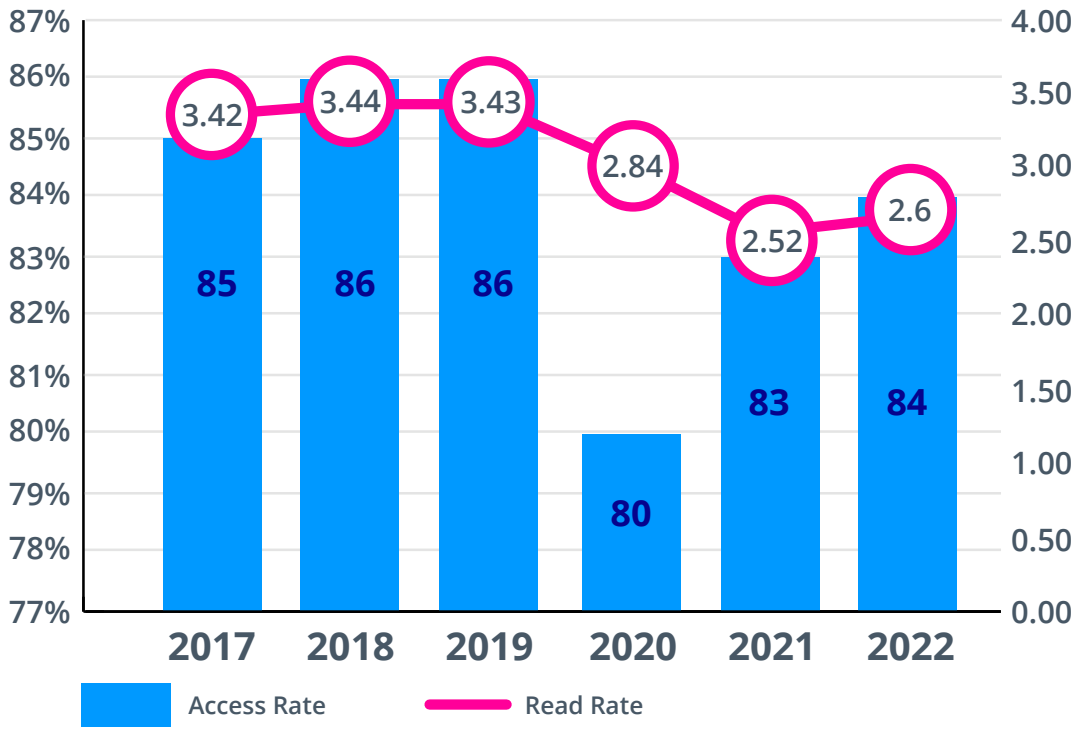
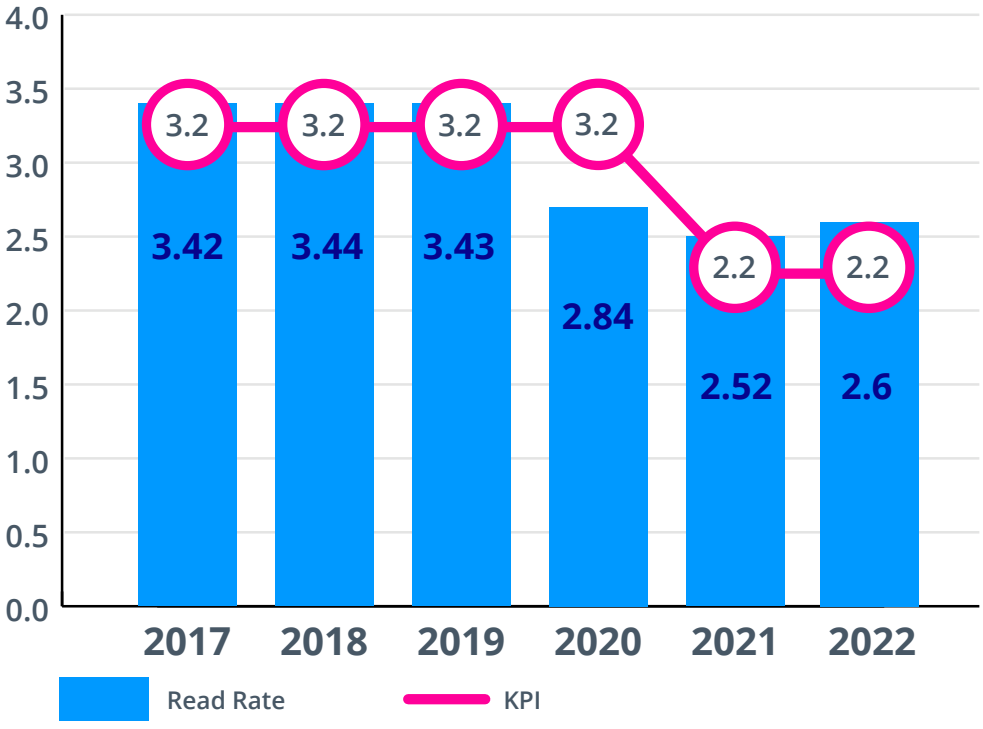


Figure 8.3: Meter read rate



8.4 Meter data services

In conjunction with the Code of Operations, procedures are in place that govern forecasting of demand at gas points and determining allocations by the transporter for the reconciliation process. The KPI for accuracy of forecasting, allocation, and reconciliation (FAR) is that 80% of reconciliation adjustments are less than or equal to 1,250 kWh for domestic customers and are less than or equal to 4,500 kWh for I&C customers. 2020 and 2021 saw a drop in the percentage of domestic (credit meters) and I&C reconciliations less than 1,250 kWh and 4,500 kWh respectively. This was due mainly to the effects of the COVID-19 pandemic restrictions and their subsequent removal. The pandemic affected the percentages as estimations are based on meter history unique to each gas point. When end-user behaviour changed suddenly due to COVID-19 related restrictions on movement and business operations, actual gas consumption was less matched to estimated consumption, resulting in greater reconciliations at some locations. Reconciliation performance for domestic (credit meters) has returned to baseline.

Table 8.2: Meter data services[17] [18]						
	KPI	2018	2019	2020	2021	2022
Forecasting, Allocation and Reconciliation (FAR) – Domestic Reconciliation (PPM Meters - 12 month Rolling)	80% within 1,250 kWh	99.32%	99.38%	98.72%	99.10%	99.40%
Forecasting, Allocation and Reconciliation (FAR) – Domestic Reconciliation (Credit Meters - 12 month Rolling)	80% within 1,250 kWh	92.37%	88.98%	89.85%	87.91%	89.28%
Forecasting, Allocation and Reconciliation (FAR) – IC Reconciliation (12 month Rolling)	80% within 4,500 kWh	75.49%	74.82%	69.62%	67.48%	68.58%

The decrease in the percentage of industrial and commercial (IC) reconciliations below 4,500 kWh between 2020 and 2022 is due to the disruptions caused to sector by COVID-19 restrictions.

Allocations are based on metered data unique to each gas point. After each new meter read, estimation parameters are updated; older meter read data drops out of the calculations and is replaced by newer meter read. Therefore, changes in end-user consumption patterns take time to be fully reflected in allocations.

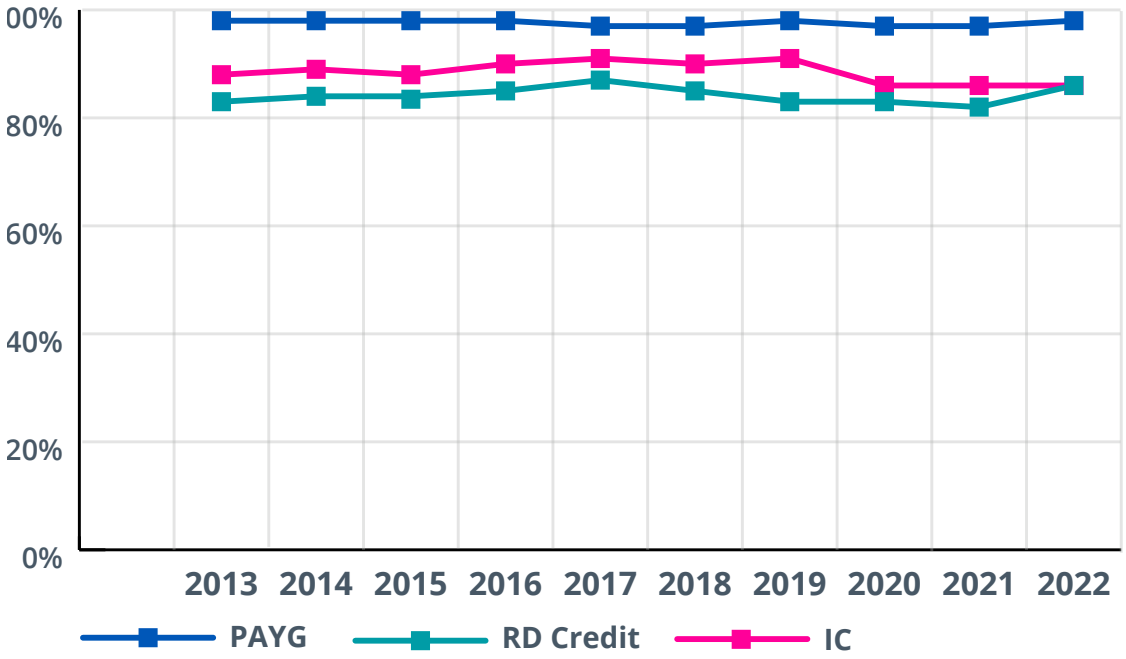
During the 2020 to 2022 period, end-user consumption patterns were less stable thus larger differences between consumption and allocations were observed.

17 Gas Meter Services | Gas Networks Ireland

18 NDM I&C annual quantity can be up to 5,550,000 kWh. The magnitude of reconciliation can vary significantly at I&C sites given the wide range of annual gas consumption

The following chart plots the percentage of reconciliations within 10% of annual quantity over the past 10 years up to and including 2022, this was included to normalize the data due to the wider range of consumption in I&C. Performance over this period has been stable apart from the period related to COVID-19 restrictions outlined above.

Figure 8.3: Percentage of Reconciliations <= 10 % of Annual Quantity



8.5 Provision of shrinkage gas quantity/costs estimates

'Shrinkage gas' is used to operate the system (own use gas) and to replace gas which is lost or unaccounted for. Gas Networks Ireland buys shrinkage gas to ensure the safe and efficient operation of the system and uses the trading platform to secure shrinkage gas in place of tendering for a shrinkage contract.

Prior to October 2020, the transporter recovered the cost of shrinkage gas for the transmission system from shippers (by reference to throughput). From October 2020, shrinkage is included in tariff calculations.

For distribution shippers that are not subject to an additional network code charge for shrinkage, there is a distribution shrinkage factor included in the tariff. Shrinkage charges are paid by shippers, on a pro-rata basis, based on throughput (their entry and exit allocations).

Imbalance charges are paid to or by shippers depending on whether they have positive or negative imbalances. Overrun charges are charges payable by shippers where their allocations exceed their relevant active capacity on a day.

8.6 Maintenance days interruptions

Gas Networks Ireland operates, maintains and repairs the transportation system in accordance with the provisions of the Code[19]. Maintenance days are days nominated by Gas Networks Ireland where part of the transportation system may be subject to maintenance. During maintenance days, natural gas available for offtake from that part of the transportation system may be reduced. The maintenance programme for the 2021/22 gas year was selected and presented to shippers for consultation in June 2021 and accepted for the 2021/22 gas year. From time-to-time additional unscheduled maintenance may need to be conducted due to unforeseen circumstances and ensures the operational integrity and security of the transportation system. Notice will be given to each affected shipper as soon as is reasonably practicable, recognizing that such maintenance is unscheduled.

For the 2021/2022 gas year, Gas Networks Ireland informed the shippers of two planned maintenance days affecting the Corrib entry point only prior to the gas year commencing. These dates were:

Date	Duration	Entry Point
22nd March 2022	1 day	Corrib
5th July 2022	1 day	Corrib

19 Part G, section 5, Code of Operations

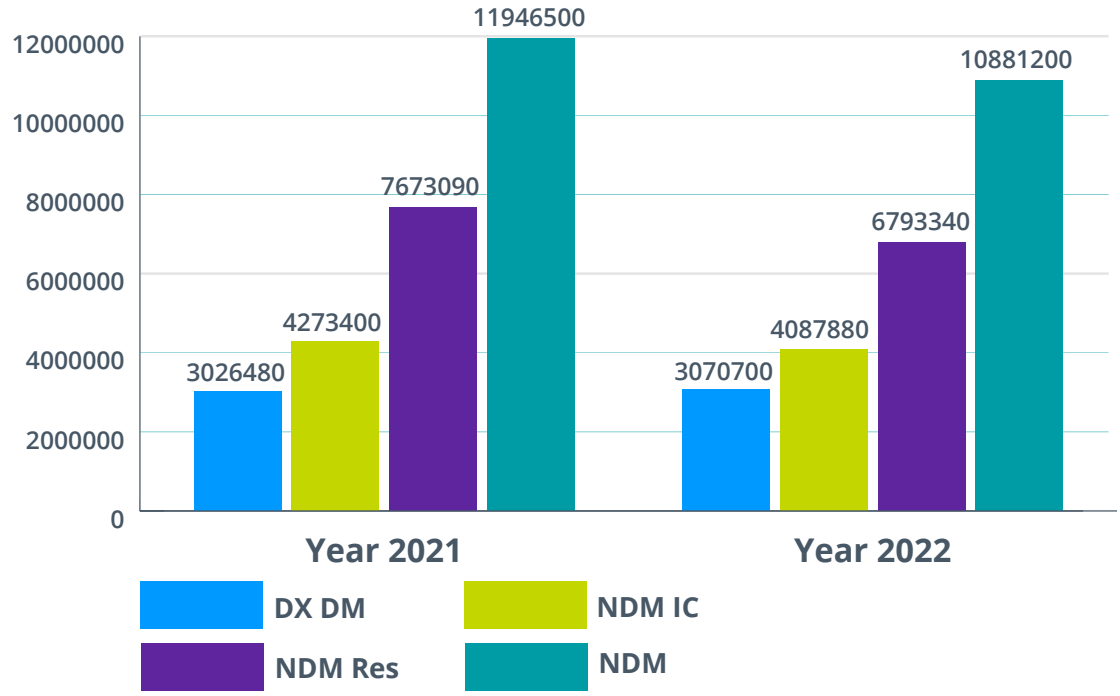
9 Distribution System

Gas demand in the DM I&C sector was 6% less in 2022 when compared to 2021. This decrease in DM I&C demand reflects the ongoing energy price pressure on the sector following the war in Ukraine which commenced in February 2022.

NDM sector gas demand is highly sensitive to weather. Based on a Composite Weather Comparison (CWV) comparison, the winter of October '21 to March '22 was warmer than the previous year, with a decrease of 5% in the total Composite Weather Variable (CWV)recorded. Similarly, overall, 2022 was 4% warmer than 2021 based on a CWV comparison. Gas demand in the NDM sector was approximately 9% lower in 2022 in comparison to 2021. When weather correction is considered, a decrease of 5% in NDM sector gas demand is observed. This decrease in NDM sector demand is related to the increased cost of gas following depressing demand because of the war in Ukraine.

In the NDM I&C sub-sector, demand was down by 4% in 2022 compared to 2021. When weather correction is considered, this decrease in NDM I&C demand reduces to 1%. In the residential NDM sub-sector, there was a reduction of 11% in gas demand. Allowing for weather correction, demand in this sector increased by 8% in 2022 vs. 2021.

Figure 9.1: Distribution system data

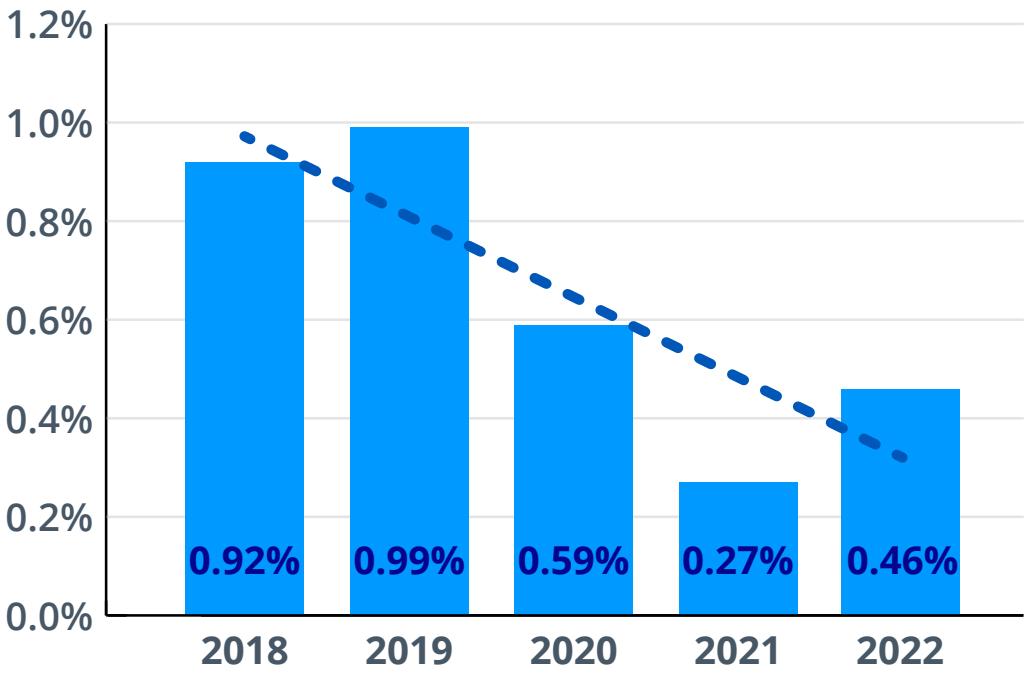


9.1 Distribution UAG

Unaccounted for Gas (UAG) on the distribution network represents total unallocated distribution gas. Distribution UAG causes include network leakage, gas escapes, theft of gas, gas quality variation, long-term no access and unregistered consumption. Distribution UAG is calculated, using a metering by difference formula[20] on a rolling 12-month basis. Distribution UAG as percentage of total distribution throughput in 2022 was 0.46%.

The Distribution UAG percentage for 2022 was higher than in 2021, but still lower than previous years, which reflects the continuing efforts of Gas Networks Ireland and the various initiatives they have undertaken to reduce Distribution UAG, including updating of the National Meter Correction Factor, but also the return to a post Covid-19 scenario and a lifting of the associated restrictions that impeded on meter reads which may have resulted in the lower than typical distribution UAG in 2021.

Figure 9.2: Distribution UAG (%)



20 Distribution UAG formula: UAG = (distribution throughput - LDM & DM consumption – read NDM consumption – un-reconciled NDM allocations) / total distribution throughput; 12 month Rolling Average as of end of December 2022.

9.2 Total number of connections (by category)

The total number of distribution connections in 2022 stands at 717,180. This is up by 0.3% on 2021. The largest increase was in the DM I&C sector experiencing a rise of 4.2% from 2021 as previously mentioned; see Table 9.1 below.

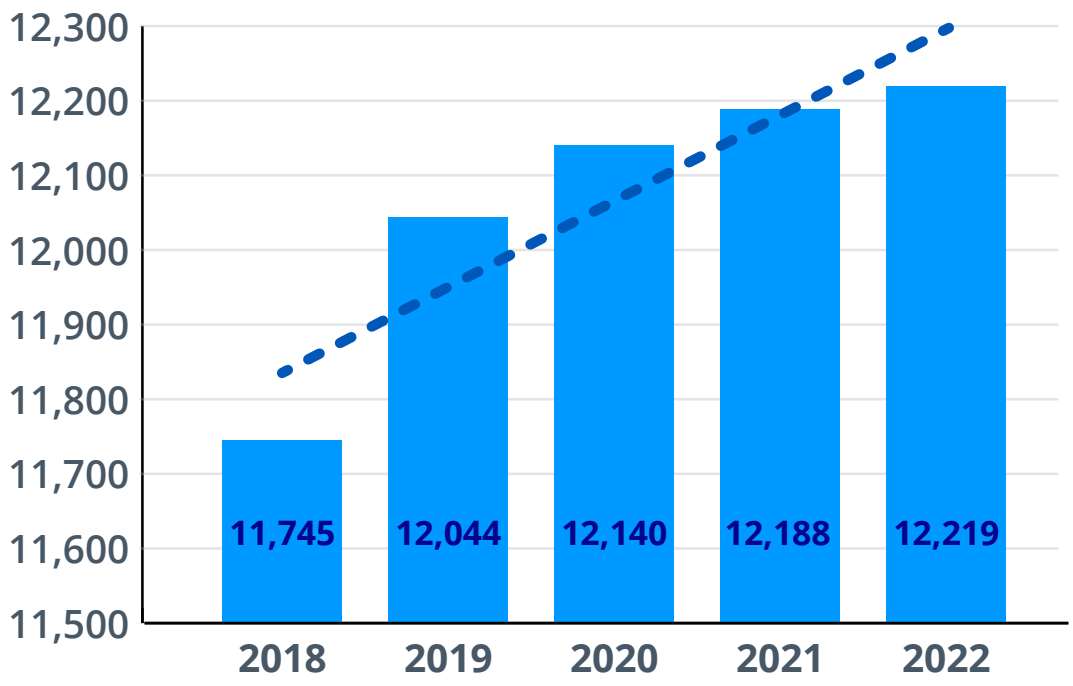
Table 9.1: Distribution connections by category

Connections	2017	2018	2019	2020	2021	2022	% Change from 2020
Dx DM I&C	232	230	236	243	262	273	4.2%
Dx NDM I&C	25,993	26,256	26,482	26,845	27,025	27,011	-0.1%
Dx NDM Res	657,638	667,340	675,728	682,980	687,806	689,896	0.3%
Dx Total	683,863	693,835	702,446	710,068	715,093	717,180	0.3%

9.3 Total length of pipe in the distribution system

The distribution network operates in two tiers: a medium pressure and a low pressure. The distribution network is predominantly polyethylene pipelines. As residential and business premises are added to the network, the length of pipe in the distribution network grows. The length of the distribution network at the end of 2022 is measured at 12,219 km. The distribution pipeline length has been growing incrementally in the last five years as shown below in Figure 9.3.

Figure 9.3: Distribution system length (km)



9.4 Achievement of distribution capital programme

As part of the price control process, the CRU determines Gas Networks Ireland allowed revenue based on a five year programme of capital works for the distribution network. The programme includes works relating to reinforcement, refurbishment and new supply. This includes new connections and servicing increased demand at existing connections. Additional works outside of the programme can be undertaken in the period if proposed by Gas Networks Ireland and agreed by the CRU e.g. the connection of a new town.

Examples of projects undertaken as part of the distribution capital programme are:

- upgrading works to bring distribution installations sites into compliance with the ATEX Directive.
- Remedial works at multi-occupancy buildings with more than six gas points.

Illustrated on the next page are some 2022 high volume programmes; the percentage of completion represents the percentage scope completed for the project versus the target for PC4.

Figure 9.4: Distribution capital programmes	
G4 Domestic Meter Replacement Programme	93% complete
I&C Meter Replacement Programme	Design 78% & Replacement 43%
G10 Meter Replacement	Design 71% & Replacement 49%
PE in Porches	Design 100% & Replacement 95%.
Dx AtEx Compliance	99% complete
Lithium Battery Replacement Programme	83% complete
Multi Occupancy Buildings – Phase 1	Desktop - 100%
	Site survey – 100%
	Detailed design – 64%
	Construction – 52%

9.5 Reinforcement

Reinforcement works completed in 2022 are listed below.

- Mounttown Lower, Monkstown, Dublin
- Dominic Street, Galway City
- Shelbourne Road, Dublin 4
- Diswellstown, Castleknock, Dublin 15
- Woodbine Park, Dublin 4
- Wynberg Park & Gleann na Smol, Dublin
- Newtownmountkennedy, Wicklow
- Porterstown Road, Castleknock, Dublin 15

9.6 New connections during year (by category)

Connections to the Gas Networks Ireland natural gas network are split into four main sectors as follows:

- Large Industrial and Commercial (LIC)
- Small and Medium Enterprise
- Residential – New Housing
- Residential – Mature Domestic

2022 began strongly with some very significant contracts secured in the power generation sector to provide gas connections to planned power plants in the coming years. These built on work carried out in 2021 to provide these developers with connection offers to meet their demands and to increase electrical generation capacity through the SEMO/ Eirgrid Capacity Auction process. A total of seven power generation connection contracts were secured in 2022.

Early in 2022, there were some positive signs of recovery in the commercial and mature domestic sectors after two years of reduced demand brought about by multiple factors including the global pandemic and a general move away from natural gas to electric heat pump technologies. These signs of recovery disappeared upon the invasion of Ukraine by Russia and the resulting global energy crisis that sent energy pricing to a record high. Connection orders in the commercial sector reduced by over 20% and by almost 30% in the mature domestic sector.

However, the multi-occupancy building (apartments) sector continued to thrive in 2022 with 12 contracts secured for central boiler solutions providing heating and hot water to 1,889 apartments in combination with other technologies such as combined heat and power (CHP), heat pumps and/ or solar PV panels. This sector continues to rely on natural gas solutions in conjunction with renewable technologies to meet the Part L of the Building Regulation standards.

Significant growth continued in the Large I&C sector with continuously increasing demand for natural gas supply to provide data centre operators, pharmaceutical and public sector developments with a reliable, versatile, secure, and cost-effective fuel to meet their energy requirements. With Ireland's economy continuing to grow, multi-national organisations continue to choose natural gas, with a view to moving to renewable gas, to power their industrial processes.

Following a strong 2021, Gas Networks Ireland received multiple power generation enquiries during 2022 and secured 11 transmission connection contracts to meet the demands of the power generation, data centres and manufacturing markets. These demands have been driven by the SEMO/Eirgrid Capacity Auctions with both T-3 and T-4 Capacity Auction results leading to important contracts for Gas Networks Ireland.

The increased energy pricing and uncertainty surrounding security of supply both contributed to a reduction in demand from the SME sector as small businesses struggled to cope with increased energy costs. While commercial meter fits remained stable between 2021 and 2022, the numbers of orders increased by almost 22%.

The mature housing sector also faced challenges in 2022 due to the energy crisis and the continued impact of competition from heat pumps which benefit from SEAI grant support giving them a competitive advantage. Meter fits in this sector decreased over 25% between 2021 (3,513) and 2022 (2,612), while new meter orders in this sector experienced a more significant decrease of 29% over the same period.

Meter fits and meter orders/sales generally correlate reasonably closely, changes in sales trends are typically followed by a similar change in meter fit trends. The two sets of figures are measuring different things (one is transaction focused while the other is based on meter fit completions). There is generally a lag between sales figures and meter fit numbers. Meter fit numbers are the best indication of new connections as sales figures could be delayed or cancelled.

As can be seen from the graph below, the overall meter-fit numbers and meter sales are in decline as meter fits in the traditional new housing sector reduce on the back of the switch to electric heat pumps outlined above and meter orders in this sector trend to zero based on the upcoming ban on fossil boilers in new dwellings by 2023.

Figure 9.5: New Connections Meter Fits by category

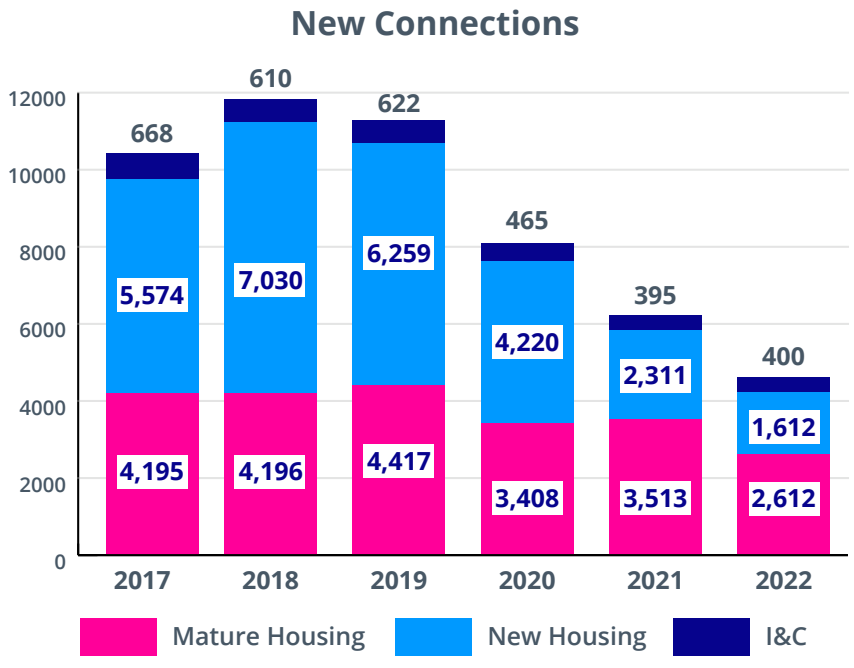
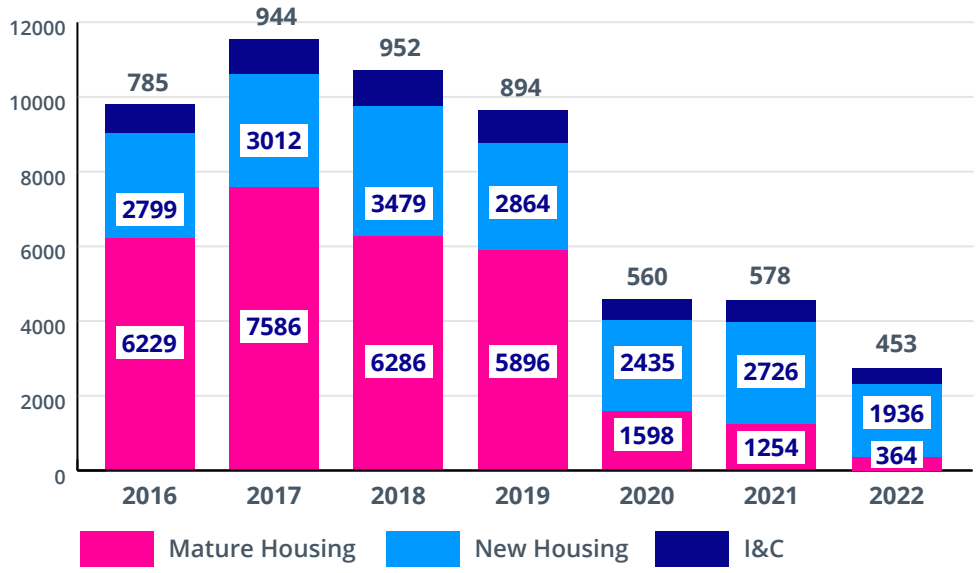
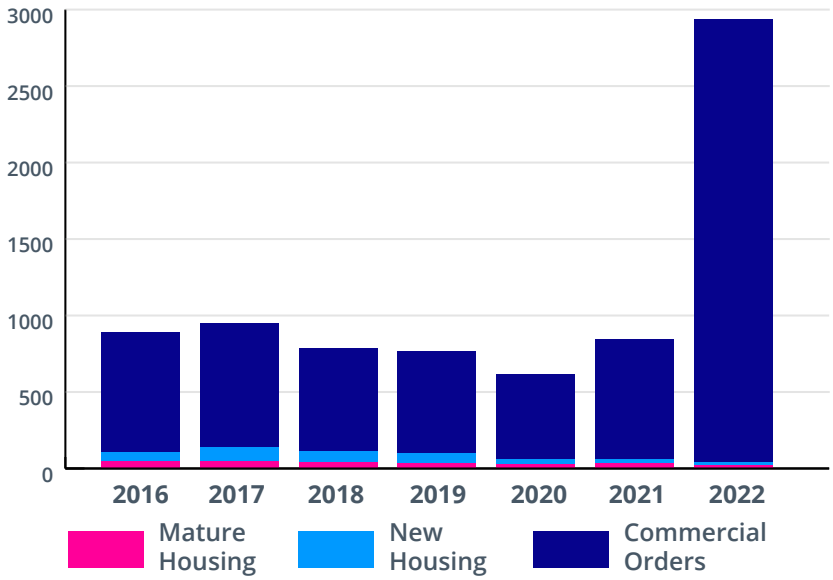


Figure 9.6: New Connections Meter Sales by category



The volumes contracted across all sectors reduced between 2017 and 2021, as can be seen in the graph below. However, these are now on the increase as the demand from large industrial & commercial, in particular the power generation sector developments, increase as a result of gas (including future renewable gas and hydrogen) remaining a critical part of the energy solution among these large energy users. The total volume of gas contracted in 2022 was 2,940 GWh with the largest proportion of this demand coming from the power generation sector.

Figure 9.7: New Connections Volumes Contracted by category.



9.7 Innovation and new technologies

Biomethane

Biomethane is the first renewable gas available to Gas Networks Ireland customers. This is a direct renewable replacement for natural gas and facilitates customers who use it to decarbonise their gas consumption without any change or investment in their equipment. Gas Networks Ireland has completed a number of measures which will facilitate biomethane production in Ireland, including the first biomethane injection site in Kildare, where two biomethane producers are injecting into the gas grid. A total of 41 GWh of biomethane was injected at this site in 2022.

In July 2022, the Government selected Gas Networks Ireland to be the certification body for renewable gas in the gas network. Gas Networks Ireland established a Renewable Gas tracking system to certify Guarantees of Origin, commonly known as Green Certs, and, has also developed a connection policy which has been approved by the CRU.

As part of our regular multi-year investment plans a number of further items have been submitted to the CRU for approval, including clarification about the ownership arrangements and charging arrangements for Central Grid Injection facilities, direct grid injection points as well as the medium term operating and capital investment costs in biomethane connections.

In late 2022, Gas Networks Ireland ran a request for information (RFI) process to establish interest in the development of a biomethane production plant in Ireland. This was to assist Gas Networks Ireland in planning its future networks and prepare for the delivery of biomethane plants to be connected to the gas grid, in line with the stated Government ambition to have 5.7 TWh of biomethane production by 2030. Delivering on this ambition, will help achieve climate change objectives and is aligned to the REPower EU targets for biomethane production on an EU-wide basis. There was a positive response to the RFI, with over 170 projects submitted and over 13 GWh of associated production capacity.

Gas Networks Ireland progressed two contracts with biomethane producers who are anticipated to become the first directly connected biomethane producers to the gas networks.

Hydrogen

A carbon-free renewable gas that can be made from renewable electricity and stored until needed, hydrogen is vital to both Ireland's and the EU's ambition for a net-zero energy system by 2050. Hydrogen also demonstrates how greater integration between Ireland's gas and electricity networks can support a low-carbon economy, while also enhancing energy security and diversity.

In 2022 Gas Networks Ireland progressed the programme of work focusing on preparing the gas network for safe and timely transition to hydrogen. The following was achieved in 2022.

- Set up the governance for the program management of hydrogen within Gas Networks Ireland.
- Undertook the technical and safety assessment of the existing gas network to accept blends and 100% hydrogen.
- Concluded the study on the domestic end user appliances compatibility with hydrogen blends of up to 20%.
- An updated version of the European hydrogen backbone was published which saw an acceleration of the ambition for gas networks are and repurposing of gas infrastructure to 100% hydrogen.
- Gas Networks Ireland has been very proactive in the different advocacy groups that we currently sit on for hydrogen such as Hydrogen Mobility Ireland, Hydrogen Ireland Wind Energy Ireland. Gas Networks Ireland were very involved in the hydrogen strategy consultation responses for each of these organizations in September.
- Gas Networks Ireland were one of the main sponsors for the Hydrogen Ireland conference in November.
- Undertook a feasibility study for a Cork hydrogen cluster to inform the potential partners of the technical and financial feasibility of such a project.

Finally, Gas Networks Ireland is participating in several key national research groups and projects including Hydrogen Ireland, Hydrogen Mobility Ireland, Hylight and H-Wind. Gas Networks Ireland is also part of several collaborative projects with TSOs and DSOs across Europe.

Compressed Natural Gas (CNG)

CNG involves the deployment of technologies which deliver gas that has been compressed to high pressures (over 200 bar) for use in transport. It is compatible with both natural and renewable gas and is particularly suitable for heavy commercial vehicles where electric solutions are not a viable option.

With four public and three private CNG stations operational in 2022, Ireland's CNG consumption fell back slightly on 2021 volumes in line with the geopolitical situation, despite a 25% growth in gas in transport vehicles. Additionally, a fifth public CNG station was fully constructed 2021, and awaits commissioning following approval of the CRU safety case. Amid challenging market conditions, the progress on Causeway station delivery has been slower than anticipated. In addition to the four operational public stations, a further five public access Causeway stations are at various stages of development, with delivery planned over the next two years. The potential for CNG vehicles to be fuelled by biomethane (Bio-CNG) offers a significant opportunity to fully decarbonise HGV transport in the future, which is one of the most difficult sectors to decarbonise. To this end, in Q4 2022, all operational CNG stations moved to supplying renewable gases.

10 Distribution Gas Safety

10.1 Overview of gas safety

Safety performance is a core value and top priority for Gas Networks Ireland. It underpins the company brand and its reputation of being a trusted and responsible gas infrastructure company. The network is constructed, operated, and maintained to the highest international safety standards, in line with CRU policies. The primary function of the network is to transport gas from entry to exit, on behalf of all customers, while ensuring the network is operated safely and efficiently. This is achieved using sophisticated information systems and grid controllers monitoring the system 24/7. The structure ensures that pressure is maintained within the system, alarms are responded to and escalated in a timely manner, the quality of the gas meets regulated requirements, and that processes and procedures are in place to manage a natural gas emergency, should it occur.

Compliance with national safety legislation including implementation of "a Safety Regulatory Framework for Natural Gas" is core to the operation of the business. The latest revision of Gas Networks Ireland's Distribution Safety Case was accepted by the CRU in December 2022. It demonstrates the Gas Networks Ireland arrangements for managing the distribution network. This is delivered through adherence to well established Irish and international codes and standards, reflected through internal processes and procedures. Gas Networks Ireland's management systems are certified as follows:

- ISO 45001 for safety management;
- ISO 14001 for environmental management;
- ISO 9001 for quality management;
- ISO 55001 for asset management; and
- ISO 50001 for energy management.

In 2020 all five management systems were recertified by the National Standards Agency of Ireland (NSAI) following a 5-day audit. This was the first time that the NSAI have audited five management systems at once. The management systems were subject to successful surveillance audits by the NSAI in 2021 and 2022.

Gas Networks Ireland has an excellent record in meeting all its safety, statutory and regulatory obligations. Its average response time to the 14,550 public reported gas escapes (PREs) received in 2022 was 28 minutes, well within the target of 1 hour. Gas Networks Ireland is committed to ensuring that all gas technical and operational personnel have the necessary levels of experience, knowledge and skills appropriate to their range of duties.

10.2 High level safety objectives

1. Minimising the Risk of Loss of Containment

Gas undertakings are required to demonstrate that they have suitable management systems and procedures in place for managing the risks that lead to, and arise from, loss of gas containment events.

2. Maintaining Safe System Operating Pressure

Gas undertakings are required to demonstrate that they have suitable management systems in place; for managing the risks that can result in dangerously high, or low gas operating pressure in the pipeline system(s).

3. Minimising the Risk of Injecting Gas of Non-Conforming Quality

Gas emergency incidents can arise due to gas of inappropriate quality being injected into the system. Gas undertakings are required to demonstrate that they have suitable management systems in place; for gas quality monitoring and managing the risks associated with the quality of gas that is injected into the system.

4. Providing an Efficient and Coordinated Response to Gas Emergencies

Gas emergency events can and do occur for a variety of reasons including the actions of third parties. For example, Gas Networks Ireland is required to demonstrate that it has suitable arrangements in place for: (i) managing the response to 'localised' gas emergencies; and (ii) undertaking the role of National Gas Emergency Manager (NGEM) during 'network' gas emergencies. Additionally, all natural gas undertakings are required to demonstrate that they have suitable arrangements in place for responding to the requirements of the NGEM, in the event of large-scale 'network' gas emergencies being declared.

5. Minimising the Safety Risks Associated with the Utilisation of Gas

The Framework provides for a comprehensive regime relating to the regulation of gas installers. The key aim of this regime is that all categories of 'gas works' designated by the CRU are only undertaken by competent gas installers, who are registered, and subject to ongoing regulation and inspection, by the Gas Safety Supervisory Body appointed by the CRU.

6. Promoting Public Awareness of Gas Safety

The Framework places duties and obligations on both individual gas undertakings and the industry generally for the promotion of gas safety awareness. This involves a combination of both individual and coordinated safety promotional activities.

Gas Networks Ireland submits quarterly reports to the CRU under the gas safety regulatory framework. The report includes measures and statistics that have been under continuous monitoring and improvement during the year.

10.3 High level distribution safety statistics

Table 10.1: High level gas safety statistics[21]

Ref	Subject	High level KPI	2018	2019	2020	2021	2022
1A	Public Reported Escapes	Number of External Leaks Detected	3,534	3,456	2,771	2,732	2,809
		Number of Internal Leaks Detected	3,771	3,771	3,758	3,713	3,658
1C	Third Party Damage	No. of Main Damages	89	122	82	64	62
		No. of Service Damages	461	528	401	339	379
1D	Gas in Buildings	Number of 'Gas in Buildings' events (i.e. all gas ingress from external infrastructure)	0	1	1	2	0
2B	Gas Outages	15 Customers affected	0	5	0	2	3
		100 Customers affected	0	1	0	2	0
4A	Public Reported Escapes	% attended within one hour	99.3	99.9%	99.96%	99.94%	99.85%

21 In 2022 Gas Networks Ireland responded to 14,550 Public Reported Escapes (PREs). In many cases there is no trace of gas. The figures illustrated in Table 10.1 are the actual number of leaks detected.

Ref	Subject	High level KPI	2018	2019	2020	2021	2022
4B	Gas Supply Emergencies	Local Gas Supply Emergencies 1,000 - 9,999 affected	0	0	0	0	0
		NGEM Emergencies - >10,000 customers affected	0	0	0	0	0
5C	Incidents (Occurring on Gas Network)	Reportable under Gas Legislation	0	0	2	0	2
5D	Incidents (Occurring on Gas Network)	Reportable under CRU Guidelines	3	6	2	5	1
5E	Incidents (Occurring on Customer installations)	Reportable under Gas Legislation	0	1	1	5	3
5F	Incidents (Occurring on Customer installations)	Reportable under CRU Guidelines	8	3	3	5	5
4D	Emergency Reports	Total no. of calls received via the 24hour emergency telephone number (1800 20 50 50/ 1850 20 50 50)	30,131	27,006	26,960	26,956	31,291

Ref	Subject	High level KPI	2018	2019	2020	2021	2022
6A	Third Party Damage	Total enquiries to 1800 427/ 747/ 1850 427 747 (inward communication)	1,565	1,420	962	1,071	1,027
		Total enquiries to distribution DBYD26 email/ post/fax/ calls (inward communication)	8,088	13,022 [22]	2,777	2,828	4,747
		Total responses from DBYD Online	N/A	N/A	16,656[23]	19,148	17,445
		Total inward enquiries	9,653	14,442	20,395	23,047	23,219

22 The figure of 13,022 includes 8,914 enquiries to the "traditional" email/ fax / phone Dial Before You Dig service plus 4,108 plots generated via the online Dial Before You Dig system which launched in Q3 (soft launch) and Q4 (public launch). Online DBYD figures measure the number of plots generated. Email/ fax/ post figures measure the number of enquiries (an individual enquiry may result in several plots being generated). 2019 figures cannot therefore be directly compared with historical figures.

23 From 2020, Gas Networks Ireland has reported on outward responses from the Dial Before You Dig online service. On the online system, each individual response (plot) is counted whereas for enquiries received by email, phone or fax it is the enquiry that is counted, regardless of how many plots are requested/ issued.

10.4 Distribution safety performance

There were 14,550 Public Reported Escapes (PREs) related to leaks on the Gas Networks Ireland distribution network in 2022. This is a decrease from the 14,646 PREs reported in 2021. In approximately 56% of these cases, no trace of gas was found. In most cases where gas was detected, the leaks were minor in nature and were made safe by Gas Networks Ireland technicians using standard methods.

10.5 Distribution safety performance

There was a consistently high safety distribution performance in 2022, a summary is outlined below:

- 0 gas in building events
- Three unplanned outages, with more than 15 customers affected
- 0 gas supply emergencies.

10.6 Promoting public awareness of gas safety

In the last quarter of 2019, Gas Networks Ireland launched a new online version of its 'Dial Before You Dig' mapping service. The new service resulted in a notable increase in the number of third party enquiries generated. At the end of 2022, there were 5,513 registered users of the system, up from 4,173 at the end of 2021.

Gas Networks Ireland promotes its 'Dial Before You Dig' service to a wide range of people and organisations involved in construction, utilities, farming and forestry via digital, social media and trade press advertising.

Gas Networks Ireland continued to promote its gas emergency service to gas consumers and the public via a multimedia advertising campaign in 2022. Due to ComReg changes to Non-Geographic Numbers (NGN) Gas Networks Ireland changed all of its external telephone numbers in 2021, including the emergency line. 1850 numbers were turned off in early 2022, however utility emergency and safety related numbers remain in operation until at least November 2023 by arrangement with ComReg. The total number of calls received via the 24-hour emergency telephone number (1800 20 50 50/ 1850 20 50 50) in 2022 was 31,291. By the end of December 2022, 78.2% of calls received were made on the new 1800 number up from 65% 12 months previously.

The multi-award-winning Gas Networks Ireland carbon monoxide advertising campaign continued during 2022 and received a refresh in the form of a new ad, utilising the same "Tommy McAnairey" canary character promoting the steps to take if your carbon monoxide alarm goes off.

10.7 Addressing gas meter tampering

Gas Networks Ireland's Revenue Protection Unit is tasked with the detection and prevention of gas theft and unauthorised interference with gas metering equipment and pipework. The Revenue Protection Unit also raises awareness of the dangers of gas meter tampering and the associated risk to life through targeted media campaigns.

Gas Networks Ireland plays a key role as an advocate for safety in relation to the natural gas network ensuring that the safety of both gas customers and the general public is always paramount. Gas Networks Ireland meters and pipes are installed by trained professionals, and only authorised personnel with appropriate certification make any alterations to Gas Networks Ireland meters or pipes.

In the interest of safety, the installation, removal, repair, service, maintenance or replacement of natural gas fittings and appliances within a premise are only to be carried out by Registered Gas Installers (RGI). It is a requirement for all RGIs to issue a certificate of conformance (completion certificate) in respect of gas works carried out.

Gas Networks Ireland works to highlight the safety risks and consequences relating to the unauthorised interference of a gas meters to gas customers and the public. Each year a meter tampering public awareness campaign is run by Gas Networks Ireland with the aim of driving awareness of the dangers of meter tampering. This campaign typically includes digital, social, direct, and outdoor media and primarily focuses on neighbourhoods that have been identified with high incidences of meter tampering. The target audience is gas customers, their neighbours, and members of the public with emphasis on key urban areas. More than 112,000 leaflets were distributed throughout 2022 to gas customers.

One of the primary roles of the Revenue Protection Unit is taking prosecutions against individuals it suspects of committing an offence or offences under the Energy (Miscellaneous Provisions) Act 2012. In 2022, Gas Networks Ireland brought successful prosecutions in three cases, by identifying gas theft and prosecuting individuals in the Kildare and Dublin district courts for unlawful interference, including securing its highest fine imposed by a judge to date of €10,500, which demonstrates how serious the court takes these cases. Both regional and local media reported on all the cases.

Our site investigations are another key focus for the Revenue Protection Unit This process runs in parallel with other avenues of siteworks that return meters that are suspected of meter tampering, but separate to, the prosecution process to identify meters that may be subject to interference. Following onsite testing, 174 meters were confirmed as tampered in 2022. Gas Networks Ireland engages with the customer via a prescribed lettering process; in order to avoid disconnection, the customer is required to pay a fee for the newly installed meter and a safety certificate of conformance which needs to be provided by a Registered Gas installer.

11 Conclusion

2022 was a challenging year for Gas Networks Ireland, as it was for businesses all over Europe. Gas Networks Ireland's ability to deliver key asset programmes and essential services to shippers and customers continued to be severely curtailed in 2022 because of the evolving conflict in Ukraine. Despite these challenges, Gas Networks Ireland was able to meet all KPIs related to the performance of the system.

Demand in 2022 of 56,506 GWh was slightly down on the 2021 figure of 56,506 GWh. Again, as in previous years, the supply of indigenous gas from Corrib and Inch decreased requiring an increase from the UK through the Moffat entry point. The supply of indigenous gas fell from 28% of the total in 2021 to 24% of the total in 2022. Also, due to improvements in operational efficiency fuel usage decreased by 1%.

There was a significant increase in the requests for new connections to the transmission network during 2022, primarily power station developers who were successful in the EirGrid capacity auctions. Furthermore, the multi-occupancy building (apartments) sector continued to grow in 2022 with 12 contracts secured for central boiler solutions providing heating and hot water to 1,889 apartments in combination with other technologies such as combined heat and power (CHP), heat pumps and/or solar PV panels.

Gas Networks Ireland is looking at innovative ways to deliver Ireland's low carbon energy future with targeted initiatives such as compressed natural gas for transport and renewable gas already underway. In addition, the GRAZE (Green Renewable Agricultural Zero Emissions) Gas Project is underway and will include a Central Grid Injection (CGI) point near Mitchelstown in Co. Cork. When operating at full capacity, the Mitchelstown CGI will have the potential to inject up to 700 GWh of renewable gas into the gas network.

Gas Networks Ireland has an excellent record in meeting all its safety, statutory and regulatory obligations. The network is constructed, operated, and maintained to the highest international safety standards, in line with CRU policies.

There were 14,550 public reported gas escapes (PREs) received in 2022 with 28 minutes being the average response time, well within the target of one hour. This is a decrease from the 14,646 PREs reported in 2021. In approximately 56% of these cases, no trace of gas was found. In most cases where gas was detected, the leaks were minor in nature and were made safe by Gas Networks Ireland technicians using standard methods. Gas Networks Ireland remains committed to delivering the highest safety standards, while operating in an environmentally friendly manner, ensuring that gas is used to power homes, businesses and essential services throughout Ireland, 365 days a year, irrespective of the weather and demand challenges that are placed on the system.

12 Appendices

12.1 Glossary of Terms

AGI Above Ground Installation

CRU Commission for Regulation of Utilities

CES Customer Effort Score

DM Daily Metered

FAR Forecasting, Allocation and Reconciliation

IBP Irish Balancing Point

I & C Industrial & Commercial

I/C Interconnector

km Kilometre

KPI Key Performance Indicator

kWh Kilowatt hour

GIS Geographical Information System

GP Gas Point

GPRO Gas Point Registration Office

GTMS Gas Transportation Management System

GWh Gigawatt hour

LDM Large Daily Metered

RNG Renewable Natural Gas

mWh Megawatt hour

MOP Maximum Operating Pressure

N/A Not Applicable

NDM Non-Daily Metered

NGEM Natural Gas Emergency Manager

NGEP Natural Gas Emergency Plan

No. Number

OBA Operational Balancing Account

PREs Public Reported Escapes

RES Residential

RGI Registered Gas Installer

RoI Republic of Ireland

SCADA Supervisory Control and Data Acquisition

SEAI Sustainable Energy Authority of Ireland

TPD Third Party Damage

TSO Transmission System Operator

UAG Unaccounted for Gas

UKOPA United Kingdom Onshore Pipeline-operators Association

ZIP Zero Imbalance Position

Gas Networks Ireland

The main contact details for
Gas Networks Ireland are:

General Enquiries
1800 464 464
Lines open Monday to Friday 8am – 8pm
and Saturday 9am – 5.30pm

24 Hour Emergency Service
1800 20 50 50

networksinfo@gasnetworks.ie

@GasNetIrl
gasnetworks.ie