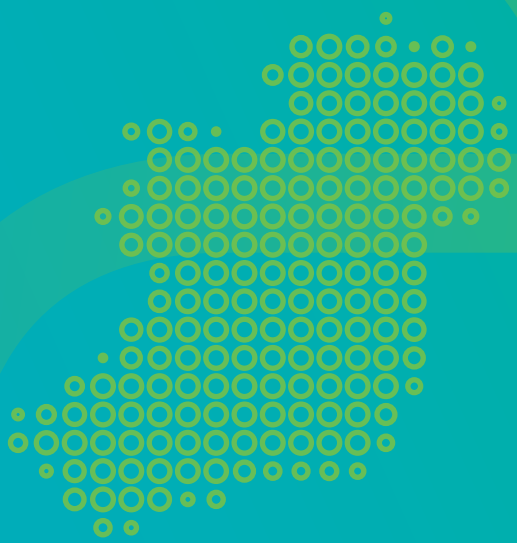
Gas Networks Ireland

Ireland's Gas Network

Delivering for Ireland



November 2021

Ireland's gas network
Delivering for Ireland

Ireland's gas network plays a critical role in providing a cleaner, competitive and secure energy supply for Ireland. Powering over half of the country's electricity and supporting renewable generation, it delivers a safe and secure supply of gas to over 706,000 customers, 365 days a year.

Operated by Gas Networks Ireland, the gas network is of strategic importance to Ireland and has, for decades, facilitated job creation and economic growth. Flexible, reliable and resilient, it plays a central role in ensuring Ireland's competitiveness and attracting overseas investment. It is a vital cog in Ireland's economic success.

As Ireland's energy system evolves in response to the challenge of climate change, the gas network has the capability and is ready to play a key role in our transition to a low carbon future.

Accessible

- **706,000 customers connected in Ireland**, including **11 power stations** and **307 large industrial and commercial** customers
- **22 counties** connected
- **End-to-end connections** process provided by Gas Networks Ireland, as network operator
- Operated in collaboration with **three gas producers, 28 gas shippers** and **nine retail gas suppliers**

Flexible

- **Energy supply** for power generation, heat and transport
- **Gas-fuelled combined heat and power** (CHP) technology offers **increased energy efficiency** and **potential reduction in fuel costs**
- Provides **solutions to meet Ireland's long-term climate goals**, such as compressed natural gas (CNG) and renewable gases, including biomethane and hydrogen
- Adapting to realise a **net-zero national gas network for Ireland by 2050**
- Aligned with the **EU's target for a net-zero carbon economy by 2050**

Reliable

- Powering **51 per cent of Ireland's electricity**[1], **31 per cent of Ireland's primary energy** and over **41 per cent of Ireland's heating**[2]
- Essential **backup for intermittent renewable electricity generation**
- **Dependable supply** crucial for economic and societal growth, job creation and attracting international investment
- **Meets demand** in harshest weather conditions
- **No capacity restrictions** on the network

Safe

- **Safe** and **secure transportation of gas**
- **Quality management** (ISO) **standards** and **safety procedures** embedded and prioritised
- **Regulated network**, compliant with legislation, licences and directives
- Overseen by the regulatory authority for the gas market in Ireland, the **Commission for Regulation of Utilities (CRU)**

Meeting the challenge of 2020
Gas demand and new connections

Gas demand

During 2020, as Covid-19 presented significant challenges for Ireland, the delivery of gas was not negatively impacted, with safe service maintained throughout for shippers and customers. Gas demand remained stable, with the gas network powering **51 per cent** of the country's electricity requirements[1], **31 per cent** of Ireland's primary energy needs and over **41 per cent** of Ireland's heating[2].

In 2020, gas powered 51% of Ireland's electricity and 41% of Ireland's heating

Overall gas demand in 2020 was 0.3 per cent lower than in 2019. With a total of **57.88 TWh** of gas used, approximately **34 per cent** of supplies came from the Corrib gas fields, less than **2 per cent** from Kinsale gas fields prior to its closure in July 2020, and **64 per cent** was imported through the gas interconnectors from Scotland[3].

Covid-19 impact on key sectors

Gas demand from some sectors finished ahead of 2019, while some sectors particularly affected by Covid-19 saw notable decreases.

Pharma	Hospitals	Hotels	Travel	Construction
+5%	**+2.4%**	**-11%**	**-24%**	**-25%**
in 2020	**in 2020**	**in 2020**	**in 2020**	**in 2020**

In 2020, power plants accounted for **56 per cent** of total networked gas consumption. The industrial and commercial sector consumed **30 per cent**, while the residential sector, with an increase of **6.1 per cent**[4], consumed **14 per cent**.

Who connected during 2020?

Over 706,000 Irish homes and businesses avail of a safe, efficient and secure supply of natural gas, 24 hours a day, 365 days a year. In 2020, our New Connections team adapted to the challenges of operating during the pandemic with essential connections prioritised during the initial Level 5 restrictions.

496 GWh	60 GWh	29 GWh	16 GWh	14 GWh
40	**519**	**2,435**	**1,598**	**12**
Large industrial users	**Business users**	**Mature homes**	**New homes**	**New apartment blocks**

During the year, an additional **519 business users, 40 large industrial customers, 12 apartment blocks** and **over 4,000 homes** were connected to the gas network[3]. Significantly, the 12 apartment blocks, **including almost 2,500 new apartments**, were designed to comply with Part L of the Building Regulations using a combination of natural gas, combined heat and power, solar technologies and electric heat pumps, exemplifying the complementary use of technologies to provide best-in-class solutions to the market. With natural gas solutions capable of meeting all building regulations requirements for both domestic and commercial premises, including Nearly Zero Energy Building (NZEB) standards, the clear and competitive advantage to developers is evident.

Gas value chain in Ireland

A wide range of stakeholders are engaged in the delivery of natural gas for Ireland. These span the breadth of the supply chain from production to delivery to the customer.

How it works

Gas producers (1) produce the gas and **shippers (3)** deliver to the gas network, which is owned and managed by the network operator, **Gas Networks Ireland (2).** Within the Irish market, **nine suppliers (3)** provide gas to **gas customers (4).** Customers engage with Gas Networks Ireland to secure a connection to the network and pay their chosen gas supplier to deliver gas to their homes and businesses. The **Commission for Regulation of Utilities (CRU) (5)** is the regulatory authority for the gas market in Ireland.

1. Gas producers

Produce gas for gas shippers to deliver to the gas network. Shippers also source and import gas from the UK.

Nephin Energy

equinor

VERMILION ENERGY

2. Network Operator - Gas Networks Ireland

Gas Networks Ireland operates and maintains the gas network in Ireland, facilitating the delivery of gas to end customers by transporting gas through the network for shippers.

Gas Networks Ireland

3. Gas shippers and suppliers

28 shippers and suppliers utilise the gas network in Ireland. Of these, **9 are actively supplying** gas to end users in Ireland.

Bord Gáis Energy

electric Ireland

energia

Prepay Power

Naturgy

IBERDROLA

Panda

sse Airtricity

FLO GAS

4. Gas customers

Customers engage with Gas Networks Ireland to secure a connection to the gas network and pay their chosen gas supplier to deliver gas to homes and businesses on a daily basis.

5. Regulator

The regulatory authority for the gas market in Ireland is the **Commission for Regulation of Utilities (CRU)**. The CRU is responsible for approving the charges for use of the gas network and for regulating the safety of the network.

The CRU also issues network operator and shipper and supplier licences to allow these parties to undertake gas transportation and shipping/supply activities. It also sets supplier codes of practice and approves regulated policies, as well as ensuring customer protection.

The CRU regulates Gas Networks Ireland's tariffs using a price control mechanism, which sets the allowed revenue to be recovered from shippers.

CRU An Coimisiún um Rialáil Fóntais Commission for Regulation of Utilities

Managing Ireland's gas network
The network operator

Gas Networks Ireland operates and maintains the gas network in Ireland. Our principal activity is the safe transportation of natural gas on behalf of our customers. The network currently supplies energy to **11** power stations, **307** large industry and more than **706,000** business and residential customers.

Gas Networks Ireland employs **522** people directly, with further indirect employment provided through contracting arrangements with key service providers. Committed to **growth, gas innovation and sustainability**, our day-to-day operations are guided by five core values: **Collaboration, Customer Service, Performance, Safety** and **Integrity**. We are committed to ensuring the highest standards of performance in respect of our network, employees, contractors and customers.

Our core activity includes:

- **Maintaining and operating** the gas network
- **Transporting** natural gas safely to our customers
- **Safety response** to all publicly reported escapes of gas and the delivery of safety awareness campaigns
- **Connecting** all new gas customers to the network, including work on service pipes and gas meters at customers' premises, on behalf of all gas suppliers
- **Ensuring compliance** with legislation, licences, directives and regulations
- **Facilitating the process of switching supplier** for gas customers, in one of the most competitive retail gas markets in Europe.

Customer service

The provision of service excellence to our shippers and customers is a core value for Gas Networks Ireland. We continually monitor our customer satisfaction score targets and, in 2020, attained a score of 76 per cent in a new 'Customer Centricity' metric measuring our commitment to embedding customer focus across all interactions.

In 2020, there were[3]:

- **41,049 customer appointments** granted within the time frame requested
- **57,220 customer appointments** attended with 99 per cent delivery
- **1.66 million** meter reads
- **448,785 customer contacts** handled by our Contact Centre, inbound and outbound
- **15,516** day-to-day operational issues resolved on behalf of gas supply and shipping companies by our Regulatory Operations team.

Gas Networks Ireland also leads on promoting public safety awareness campaigns including Gas Emergency Service, Dial Before You Dig, Registered Gas Installers, Meter and Carbon Monoxide.

If you smell gas call
1800 20 50 50
24hr emergency service

Operating sustainably
For a clean energy future

Gas Networks Ireland's sustainability strategy is underpinned by the delivery of a safe, affordable and clean energy future for Ireland, through the decarbonisation of our network and the reduction of emissions across all sectors of Irish society. We are committed to managing our operations in an environmentally responsible manner, while supporting the social and economic development of the communities we operate in, and the wider economy.

Sustainability highlights[5]

Participated in the Carbon Disclosure Platform (CDP) for the first time. We received a B- CDP rating, exceeding global, European and sector averages

Increased stakeholder initiatives by 51%

Exceeded the public sector energy efficiency target of 33% by 2020, achieving a 47% improvement

Signatory of Business for Nature - Call to Action

Signed up to 'Elevate' - diversity and inclusion pledge

Commenced construction of a Hydrogen Innovation Centre in Dublin to test how best to introduce hydrogen safely for use in Irish homes and businesses

Retained Business Working Responsibly Mark - in line with ISO26000

5 ISO Management Systems recertified: ISO14001 Environmental Management, ISO50001 Energy Management, ISO45001 Occupational Health and Safety, ISO9001 Quality Management and ISO55001 Asset Management

Donated €250,000 to 33 charities

Launched a new Female Talent Development Programme

Business supporter of the All-Ireland Pollinator Plan and implementation of the Biodiversity Enhancement Programme

1 in 6 employees volunteered on our community programmes

Signed up to phase two of the Low Carbon Pledge

*CDP is a global non-profit that drives companies and governments to reduce their greenhouse gas emissions, safeguard water resources and protect forests. CDP scores, run from A to D and allow companies to understand their performance in reducing carbon emissions and identifies areas to focus on.

Notable achievements

- Winner of the **Sustainable Energy Achievement award** and the **Green Large Organisation of the Year** award at the 2020 Green Awards
- **One of six organisations shortlisted** for the Green Business of the Year award
- Winner of the **Health and Safety Initiative of the Year award** for our 'HazCon' app at the 2020 Networks Awards
- One of only **40 companies** in Ireland to hold the **Business Working Responsibly Mark.**

BUSINESS WORKING RESPONSIBLY

NETWORK AWARDS 2020 WINNER

GREEN AWARDS 2020 WINNER Green Large Organisation of the Year

GREEN AWARDS 2020 WINNER The Sustainable Energy Achievement Award

Future focused commitment

Gas Networks Ireland remains committed to continuously improving our practices to ensure we operate sustainably. With interim sustainability priorities mapped for 2021, 2025 and 2030, our ambition is to deliver **a net-zero national gas network for Ireland by 2050.**

By 2030

- **50% reduction** in greenhouse gas emissions intensity
- Achieve **2030 science-based targets**
- Deliver r**enewable gas targets** on the network

By 2050

- **Net-zero national gas network** realised for Ireland.

Ireland's gas network – a na

Gas Networks Ireland

Delivering Ireland's energy

31% [2] of Ireland's total energy demand

51% [1] of Ireland's electricity generation

41%+ [2] of Ireland's heating

36% of gas used in Ireland sourced indigenously from Corrib and Kinsale gas fields (2020)

76.3TWh transported through the network for Ireland, Northern Ireland and the Isle of Man

2 subsea interconnectors

14,617km pipeline

- 2,477km high pressure steel transmission pipes
- 12,140km lower pressure polyethylene distribution pipes

Delivering on safety

Health and Safety

'Initiative of the Year' Award

for our 'HazCon' app at the Networks Awards 2020

14,928 responses to calls from the public supported by public safety awareness campaigns

29 minutes average call (on site) response time

ISO Management Systems recertified

ISO14001, ISO50001, ISO45001, ISO9001, ISO55001

Delivering for Ireland

€112m capital expenditure

€447m revenue

€2.7bn publicly-owned, national asset

€70m dividend payment to the Exchequer

522 staff directly employed by Gas Networks Ireland (September 2021)

Aurora Telecom, a division of Gas Networks Ireland, owns and operates the **most modern, carrier grade, backhaul dark fibre** network in Ireland

Delivering for the future

23% expected growth in gas demand between now and 2029+

Natural gas emits **40%** less CO_2 than coal and **22%** less CO_2 than oil [6]

4 public and **3** private compressed natural gas (CNG) stations delivered

10 further public stations in development

Hydrogen Innovation Centre in development with meters and appliances being tested for use with a variety of gases and hydrogen blends

300,000 houses in close proximity to the network with potential for connection [7]

1st commercial flows of renewable gas on the gas network (2020)

1st Renewable Gas Central Grid Injection (CGI) Facility granted planning permission in Mitchelstown, Co. Cork

Scheme established for the issuing of electronic certificates to track renewable gas delivered to the Irish gas system

+ Gas Networks Ireland Network Development Plan 2020.

tional asset of size and scale[3]

Transmission System

Delivering new connections

8,091
new commercial and residential customers connected to the network with

635GWh
new natural gas demand contracted (2020)

706,000+
customers in **22** counties, with **307** large industrial and commercial customers, including **11** power stations

519 small to medium businesses, **40** large industrial customers, **4000+** homes, **12** apartment blocks **contracted to connect to the gas network** (2020)

Delivering for customers

117,419
'Pay As you Go' meters on the network (September 2021)

3,459
gas credit top-up outlets in Ireland (September 2021)

62%[4] of total residential consumption accounted for by Dublin postal districts and county

41,049
customer appointments with c.99 per cent delivery

1.66m
meter reads undertaken in 2020

448,785
customer contacts handled by our contact centre

113,000+
'Change of Supplier' actions facilitated in 2020, affording customers the option to achieve better value

1.25m
gas supplier switches completed since the gas market opened to competition in 2004

Delivering on corporate responsibility and sustainability[5]

Green Awards 2021 Winners

1. Green Large Organisation of the Year
2. Green Business of the Year

586
employee volunteering hours

Low Carbon Pledge
committing to 50% carbon footprint reduction by 2030

€12,648
fundraised by employees

30,000+
hours of additional education for young people across Ireland supported

1 of only 40 Irish companies to hold the Business Working Responsibly (BWR) Mark

33 community projects supported

Participated in the Carbon Disclosure Platform (CDP) for the first time achieving a **B- rating**

€780,000 approved for **16** R&D projects

€250k donated to **33** charities

1in6 employees volunteered on our programmes

The key role of gas in Ireland[8]

Power generation

Given its flexibility, natural gas is the optimal complementary energy source to intermittent renewable energy such as wind and solar, and remains the fuel most required to assist Ireland's transition to a low carbon economy.

The importance of gas in Ireland's energy mix was again demonstrated in 2020, with the gas network powering 51% of the country's electricity requirements and more than 85% at its peak in August. **The gas network's ability to respond to changing profiles is an increasingly important feature for the electricity grid as intermittent renewable electricity generation continues to grow**. *Figure 1*, showing an excerpt of the fuel mix for 2020, illustrates the vital role of gas for security of electricity supply, providing flexible, secure supply when renewables are less available. The partnership between flexible gas-fired power generation and intermittent renewable generation is key to enabling Ireland's renewable integration ambition into the future. **The interdependence between gas and electricity is beneficial for Ireland, providing and maintaining competitive energy prices and a secure and reliable supply of energy.** *Figure 2* illustrates the significant role gas continues to play in power generation. This is likely to increase in importance in the future, as the grid adapts to meet the increasing electricity demand predicted by Eirgrid[9] and Ireland addresses the challenge of delivering 80% renewable electricity by 2030, in line with current Government policy[10].

Security of supply

Figure 3 illustrates the changing picture in relation to the sources for gas used in Ireland. In 2020, as the Kinsale gas field ceased production in July and the Corrib output continued its decline, **approximately 36% of Ireland's gas demand was supplied from indigenous sources. The balance of supply, at 64%, was imported via the gas interconnectors from Scotland.** This interconnectivity affords Ireland access to the GB gas market; one of the largest and most liquid gas markets.

Ireland's renewable gas injection point in Cush, Co. Kildare had its first commercial flows during 2020 and, together with plans for the development of other renewable gas facilities, can help to offset the decline in current indigenous production. In parallel, Gas Networks Ireland completed the construction of a hydrogen innovation centre in Brownsbarn, Co. Dublin, and is assessing the potential for hydrogen on the network.

The large energy storage capability and flexibility of the network mean it can ramp up to meet high heat demand during extreme cold periods, or it can provide extra fuel for power generation when the wind doesn't blow and the sun doesn't shine. Gas-fired generation continues to play a key part in meeting Ireland's electricity generation requirements, with gas fired power plants on occasion delivering over 80% of Ireland's electricity generation in what is, at times, a tight electricity system. Recognising the importance of the gas network in the energy transition, the Department of the Environment, Climate and Communications (DECC) is carrying out a comprehensive review of the security of energy supply of Ireland's natural gas and electricity systems. The focus of the review is the period to 2030 in the context of ensuring a sustainable pathway to 2050.

The gas network is resilient and designed to withstand the most severe weather conditions. ***Figure 4*** demonstrates this resilience, where, during the severe winter weather of 2009-10, the gas network continued to deliver gas safely and securely, with additional capacity available, should this have been required.

Future demand

During 2020, gas supply was constant and delivered without interruption to service. This is testament to the resilience of the network and its proven capability to deliver on gas demand in all conditions. According to Gas Networks Ireland projections, reflected in *Figure 5*, **gas demand in Ireland is expected to grow by 23% between now and 2029[8].**

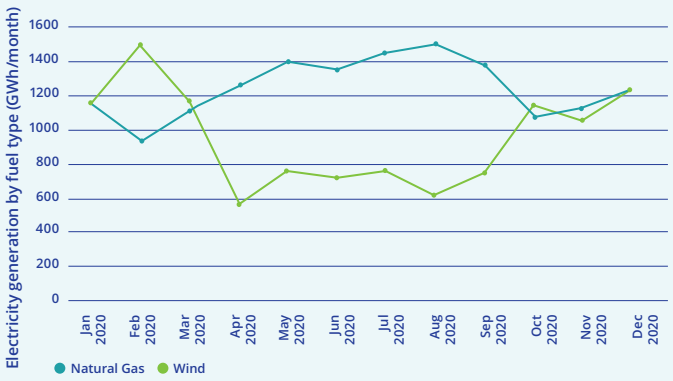
The main drivers for growth are within the power generation sector, and include:

- significant projected growth in electricity demand and the need for additional gas-fired power generation to meet this demand
- expected growth in electricity demand of 33 per cent by 2029[9]
- projected growth in industrial and commercial sector gas demand, in line with growth in new connections
- the phasing out of coal and peat.

Gas demand came close to record levels over a number of days at the beginning of January 2021. Notably, on the 'peak day' for Republic of Ireland (ROI) gas demand (January 8th) electricity interconnectors operated as net exporters of electricity to Great Britain (GB). This, combined with high electricity demand and moderate wind generation in ROI, drove high demand for gas-fired power generation. **Closing at 6.1 TWh, gas demand for January (2021) was the highest monthly gas demand level in over a decade and the third highest ever.** The only time gas demand was higher in Ireland was in 2010, when the country experienced some of the coldest weather on record.

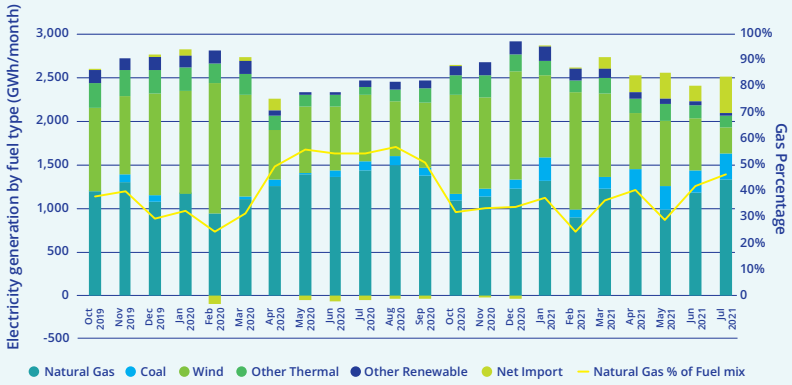
As electricity demand continues to grow, and as Ireland moves to achieve the target of 80% renewable electricity by 2030[10], the role of the gas network has never been more critical.

Figure 1 Electricity generation (GWh)



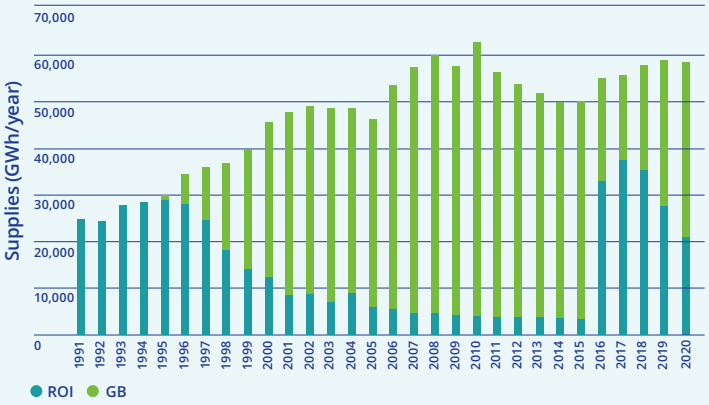
Source: SEAI

Figure 2 ROI power generation fuel mix (monthly)



Source: SEAI

Figure 3 ROI historic annual indigenous gas production and imports from GB

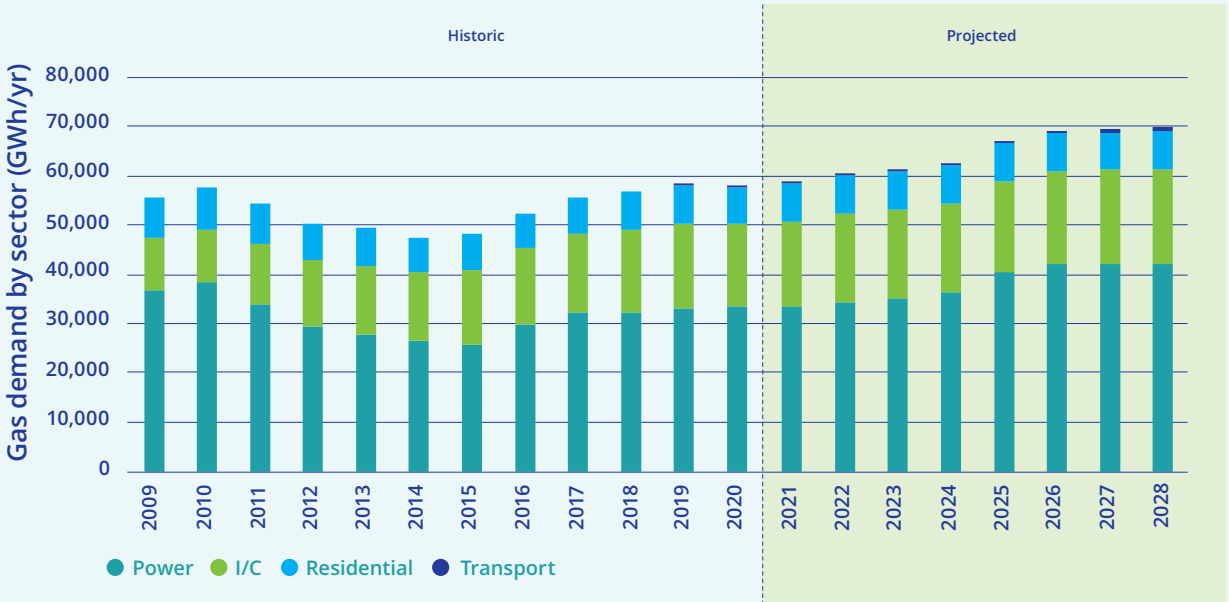


Source: Gas Networks Ireland Network Development Plan 2020

Figure 4 Historic ROI peak day demand vs available gas supplies

Source: Gas Networks Ireland Network Development Plan

Figure 5 ROI historic and projected annual gas demand



Source: Gas Networks Ireland Network Development Plan

The future role of the gas network

Climate change is one of our most urgent global issues and Ireland faces significant challenges in meeting EU and national climate targets and objectives. With a commitment to becoming net zero by 2050, Ireland's Climate Action and Low Carbon Development (Amendment) Act 2021[11] puts the national climate objective on a statutory footing and actions for each sector are detailed and updated periodically in the Climate Action Plan.

The gas network has a key role to play in delivering on this ambition. Through proven technologies, such as CNG for heavy transport, and globally recognised renewable gases, such as biomethane and hydrogen, the gas network will substantially reduce Ireland's carbon emissions while complementing intermittent renewable electricity and ensuring a secure energy supply.

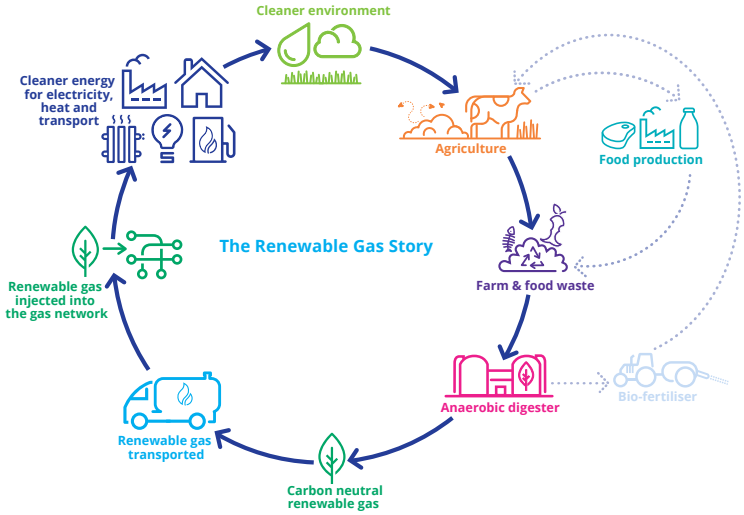
Net-zero carbon by 2050

By gradually replacing natural gas with renewable gases, such as biomethane and hydrogen, Gas Networks Ireland is striving to deliver a net-zero carbon gas network by 2050 and to reduce emissions across a number of key sectors, including those that are traditionally difficult to decarbonise, including transport, agriculture, industry, heating and power generation.

Proven technologies

Biomethane

A carbon-neutral renewable gas made from farm and food waste, biomethane is fully compatible with Ireland's existing infrastructure, technologies and appliances, and has already begun replacing natural gas in the network, with domestically produced biomethane entering the network in Cush, Co. Kildare and a second entry point, a Central Grid Injection (CGI) facility, planned in Mitchelstown, Co. Cork. With planning approved and technical design underway, this CGI facility will take biomethane produced from facilities off-network and within a radius of up to 100 km.

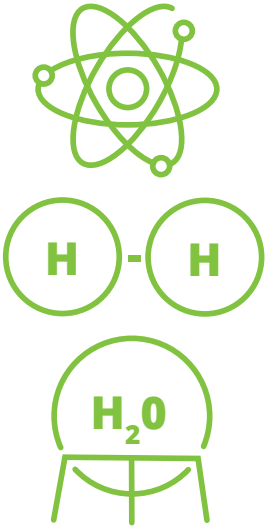


As well as offering an immediate decarbonisation solution for transport, industry, heating and power generation, and the ability for businesses to power their operations via renewable gas made from their own waste in a truly sustainable circular economy, the EU's Farm to Fork Strategy highlights biomethane as a key element in decarbonising agriculture – a particularly important focus for Ireland.

The European Commission has identified Ireland as having the greatest potential per capita to deploy biomethane[11] and the Irish Government's Climate Action Plan has set a current target of 2.9% (1.6 TWh) of gas on the network being biomethane by 2030[10]. In order for renewable gas to deliver as a decarbonisation solution for Ireland, policy support will be required. The recently published Government public consultation on the Introduction of a Renewable Heat Obligation in Ireland is a notable first step in this direction.

Hydrogen

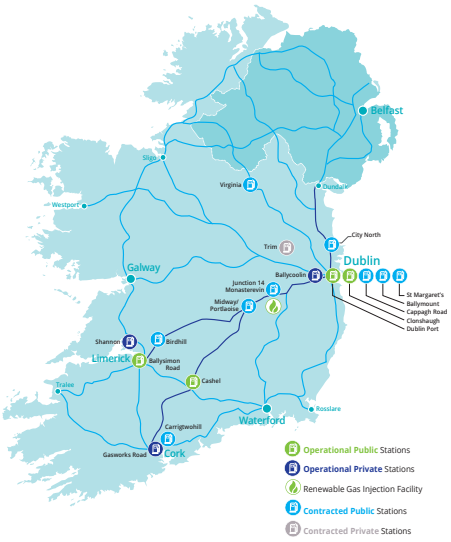
A carbon free renewable gas that can be made from excess renewable electricity and stored until needed, hydrogen is vital to both Ireland's and the EU's ambition for a net-zero energy system by 2050. Hydrogen also demonstrates how greater integration between Ireland's gas and electricity networks can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



Ireland's gas network is considered one of the safest and most modern in the world. To ensure it is capable of safely transporting and storing hydrogen, **Gas Networks Ireland has invested in a Hydrogen Innovation Centre at its Citywest Campus at Brownsbarn, Co. Dublin, where pipelines, meters and appliances are being tested for use with a variety of gases and hydrogen blends.** Currently it is understood that blends of up to 20% hydrogen are compatible with existing gas infrastructure. A rigorous testing programme will take place to confirm the level of hydrogen that Ireland's gas network can facilitate.

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.



A proven, reliable and cleaner alternative to diesel, Ireland's CNG consumption in the first half of 2021 doubled in comparison to the same period in 2020. With **four** public and **three** private CNG stations now operational, and a further **ten** in planning and development, Gas Networks Ireland is paving the way for sustainable transport and supply chains and enabling the two million gas vehicles across Europe[13] to extend their routes to Ireland.

As well as continuing to roll out a national CNG fuelling network in partnership with Ireland's forecourt operators and hauliers, Gas Networks Ireland launched a €2.9m CNG Vehicle Grant Scheme to support the purchase of up to 400 new gas-powered vehicles and help Irish transport operators to make the sustainable transition to CNG and play their part in reducing transport emissions nationally.

Clean energy future

Transitioning to a clean energy economy requires a balance between sustainability, security and affordability. Leveraging existing national assets and capabilities will ensure Ireland meets its targets effectively. Gas Networks Ireland continues to partner with key national and EU stakeholders, industry bodies, researchers and communities to plan for and deliver a clean energy future for Ireland.

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