

Green Gas Guide



Helping biomethane producers
get their gas into our grid

together
we are
the network

Introduction to biomethane



Securing the UK's future energy supplies

About this guide

This guide is for biomethane producers in the North of England who are seeking to inject their locally sourced green gas into the distribution network.

It provides an overview of how to connect to our network; the commercial opportunities and sources of further help and advice.

Whether you are well advanced with your biomethane project, or simply want to learn more about the market, we hope you'll find this booklet useful.

The UK is committed to bring all greenhouse gas emissions to net zero by 2050.

Biomethane is set to become an important element of the nation's future energy strategy, helping to meet environmental targets while reducing reliance on gas imports.

This clean, sustainable fuel can be transported to homes and businesses using the existing gas distribution network - avoiding the costs of widespread infrastructure upgrades. Existing household appliances, such as cookers and boilers, won't need replacing.

Retaining gas as part of our energy mix, rather than complete dependence on electricity, will also avoid the need for unsustainable upgrades to electricity distribution networks which would see customers' bills soar.

Net zero greenhouse gas emissions by 2050



As the UK continues to seek out new forms of energy, exciting opportunities exist to make a profit and a difference to the environment by selling gas to the grid.

Introduction to biomethane

A quick introduction to biomethane

Biomethane is a clean, sustainable gas produced from organic material such as green waste; food industry waste; agricultural waste and industrial waste.

In a biological process known as anaerobic digestion, microorganisms break down the material in the absence of oxygen. One of the end products is biogas.

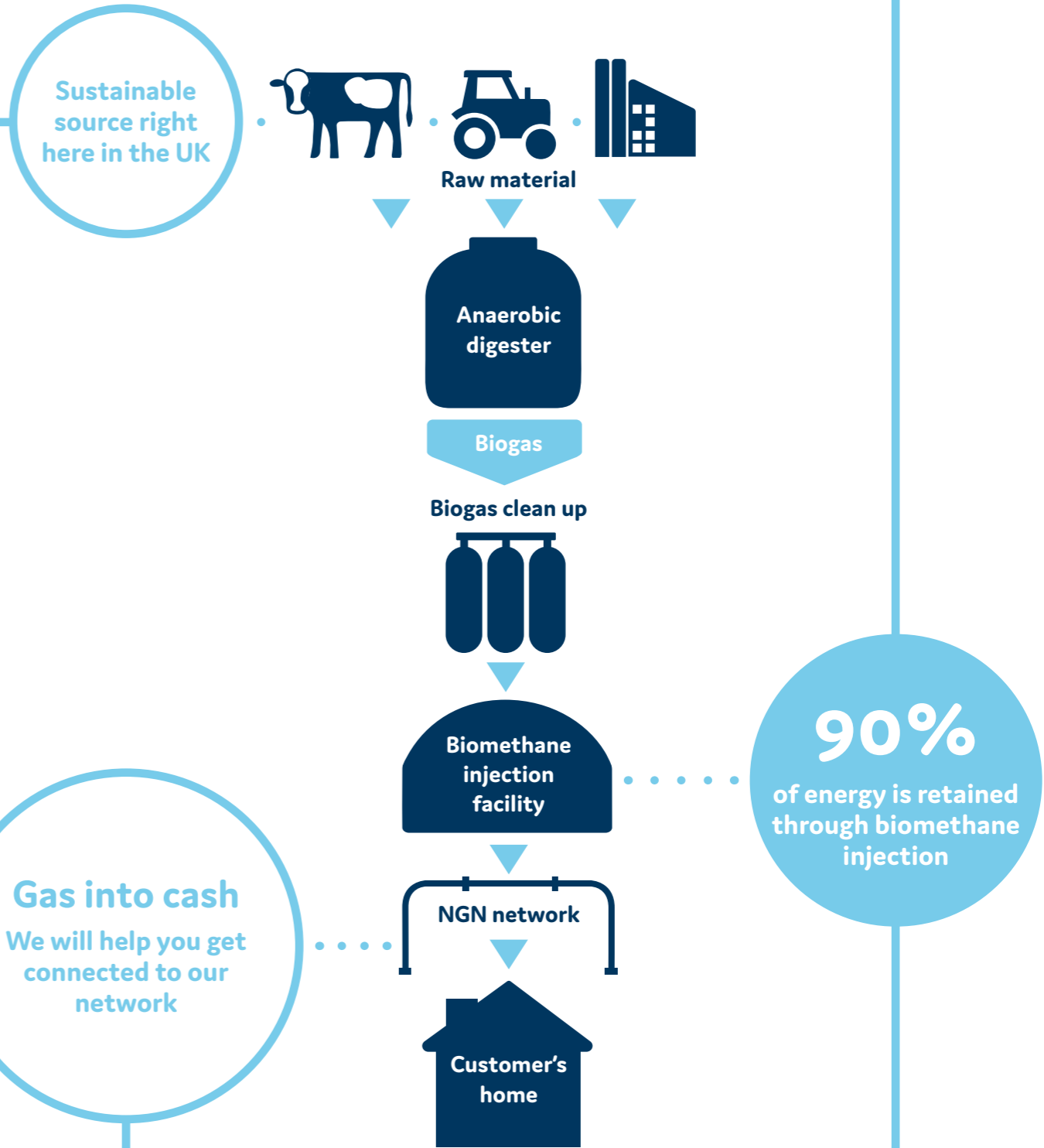
This gas can be combusted to generate electricity and heat, or can be cleaned to remove impurities and upgraded to biomethane, to be injected into the gas distribution network.

Injecting biomethane into the grid is far more energy efficient than using the gas to generate electricity. That's because around 90% of energy is retained through grid injection, compared to just 65-70% when combusted to generate electricity.

Combustion also leads to the escape of methane into the air, which contributes to the build-up of harmful greenhouse gasses.



The Biomethane Production Process



Gas into cash
We will help you get connected to our network

90%
of energy is retained through biomethane injection

About Northern Gas Networks

People, pipes, passion

As the North of England's gas distributor, **Northern Gas Networks (NGN)** keeps 2.7 million homes and businesses in the **North East, Northern Cumbria and much of Yorkshire** cooking on gas.

25,000km²
in the area we serve



Working with biomethane producers

If you are a biomethane producer, we can help you get your gas into our network, through a comprehensive design consultation and connection service.

You will have a dedicated key account manager working with you every step of the way. **We want your project to succeed!**

We'll help you understand available capacity on our network; the most suitable connection point and the equipment, processes and costs involved. We'll also guide you through all the legislative and legal issues to ensure that your project complies with regulatory standards.

Our patch contains a mix of large cities including Newcastle, Sunderland, Leeds, York, Hull and Bradford and more sparsely populated rural areas.

We don't generate the gas, we transport it through a vast network of underground pipes stretching 37,000 km. During peak periods of demand, we transport four times as much energy as the electricity networks.

Safety, reliability, integrity and great customer service are at the heart of our business. We have won many national awards for the quality of our customer service, and pride ourselves on being great people to work with.



4X

as much energy transported during peak times as the electricity networks

37,000km

km network of underground pipes

2.7m

homes & businesses cooking on gas through our network

The market opportunity



Helping farmers to diversify

Diversification of Farming

The biomethane industry is opening up valuable new revenue streams for local farmers, such as Ridge Road Farm in East Garforth.

Here the farm has teamed up with NWG Bioenergy Limited, supplying this on site Anaerobic Digestion plant (AD) with over 14,000 tonnes of crops each year. Here these crops are mixed with other farm wastes to create biomethane for grid injection. The farm also receives the by-product, a biofertiliser, returning valuable nutrients back into the soil.

The project produces over 700 cubic meters of biomethane per hour. NGN continues to work very closely with NWG Bioenergy Limited to ensure that all of the regulatory and engineering standards are fully met.

over
700m³
of biomethane
produced per hour

The market opportunity

As the UK looks for new ways to meet its low carbon energy targets and reduce reliance on fossil fuels, biomethane is set to become an increasingly prominent part of the nation's energy mix.

Producers can gain an income stream by selling their biomethane to the grid, through a financial support programme called the Renewable Heat Incentive (RHI).

Renewable Heat Incentive

Funded by the UK Government and administered by the energy regulator Ofgem, RHI provides financial incentives for renewable heat producers, including biomethane producers.

For the non-domestic sector, RHI provides a guaranteed subsidy, payable for 20 years, to eligible producers.

Government support for biomethane projects, through RHI, is designed to promote confidence among producers, and stimulate the market in this exciting fuel for the future.

Connecting to our gas network

Getting your biomethane facility connected to our gas distribution network is an involved process, but we can help you every step of the way.

Here are some of the key technical and legislative issues to be aware of:

Available capacity

To get your gas online, there needs to be adequate capacity in the local gas distribution network – or in simple terms, room in our pipes and we can help you find a suitable connection point.

Quality of gas

Your biomethane must meet a certain regulatory standard, known as the Gas Quality 8 Standard, before it can be injected into our network.

We will assess your biomethane facility and make recommendations to ensure your product is ready for the grid.

This might involve adding propane to your gas, to increase the calorific value or purifying your gas so that it meets the required standard.

The right engineering solution

A connection project always involves a number of key elements. These are outlined in the diagram below, along with who is responsible for what.

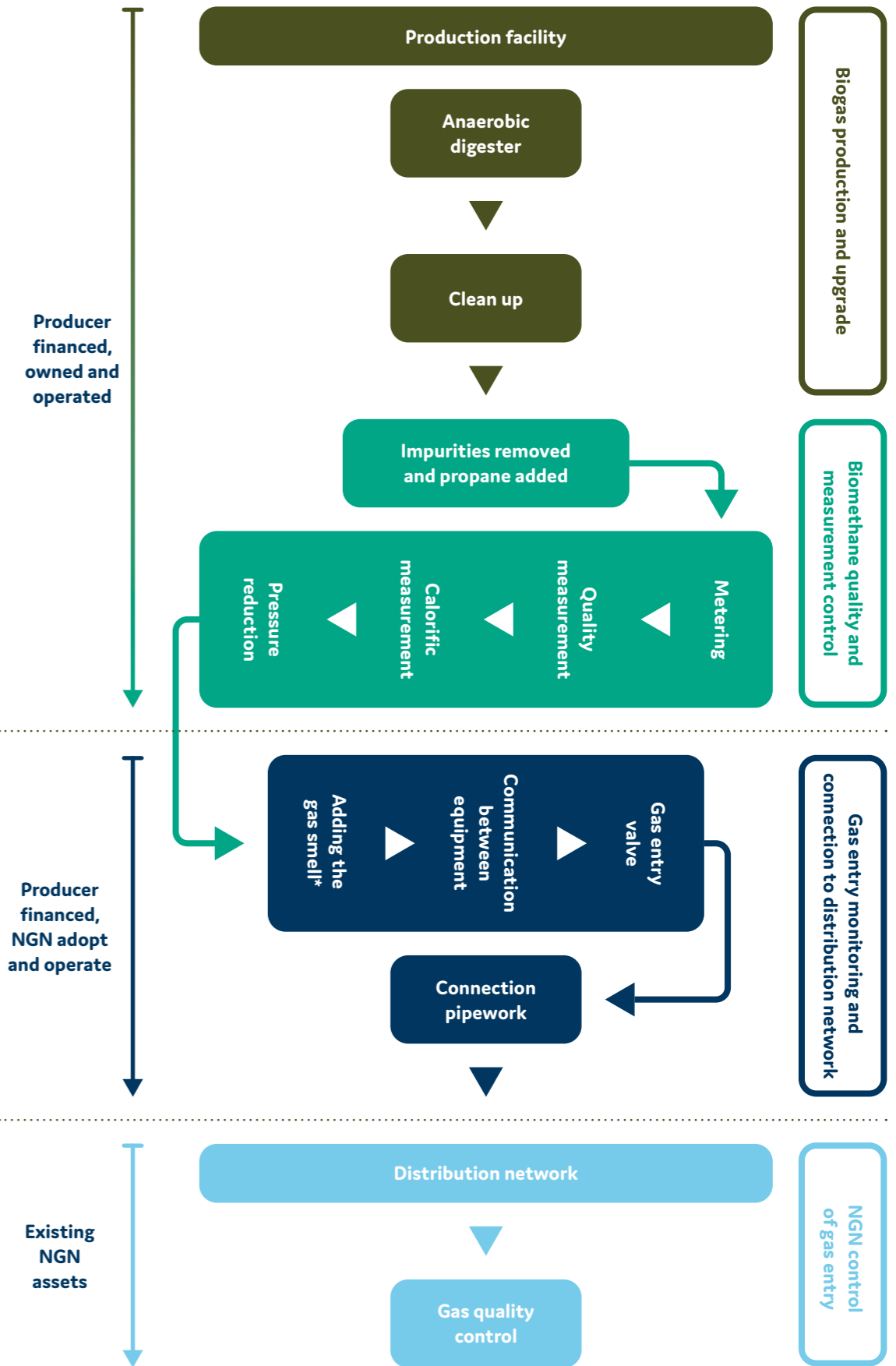
Types of connection

There is more than one way to connect to our gas distribution network. We will work with you to develop the best solution based on the location of your production facility in relation to the preferred connection point on our network.

NGN's distribution network consists of different types of mains which vary in pressure, volume and flow. These mains are categorised as high, intermediate, medium and low pressure mains. Connections into these mains can vary considerably in cost, complexity and construction. We support providers to make sure the right main is selected.



The right engineering solution



*Currently under review

Working with you: a five stage process



We will work with you every step of the way to get your biomethane facility connected to our network so you can start turning your gas into cash.

Stage 1: Network capacity

We'll meet to discuss your project, its scope and objectives. Armed with this knowledge, we'll produce a free, high level report for you, identifying available network capacity and the feasibility of your project.

If the initial assessment is encouraging, we'll move on to a more detailed 'capacity study'. This sets out your connection options; the available capacity of the local network under different conditions (e.g. cold days and warm days); proposed pipeline route; plant and equipment and indicative costs for the project.

Stage 2: Reserving your connection

Once your capacity study has been completed, you will be able to reserve your connection point on our network.

Your connection point will be reserved for 9 months, with the option to extend the reservation for a further 6 months if you end up needing more time to commit to a construction agreement.

Stage 3: Designing your connection

Our engineers will work up a detailed design for the connection or you may wish to commission your own design, which we would then validate.

Stage 4: Paperwork

There are several crucial agreements that need to be signed before the project can progress to injecting gas into the gas distribution network.

These include the Network Entry Agreement, the Adoption Agreement and the Construction Agreement. The Network Entry Agreement can be downloaded from our biomethane website

– biomethane.northerngasnetworks.co.uk

Stage 5: Construction and completion

It's time to make your plans a reality. Depending on the agreed design solution, the construction work may need to be carried out by an NGN appointed contractor (e.g. if you are connecting to a high pressure main) or an approved provider of your choosing.

Once you are ready to connect, we will carry out a site examination, to ensure everything has been completed according to our network adoption criteria.

If your project meets all the requirements, we'll get you connected so that your biomethane, and revenue, can start flowing!

Turning sludge into power

Northumbrian Water's award-winning anaerobic digestion plant at Howdon on Tyneside produces biogas from sludge – the by-product of the sewage treatment process.

The gas was used to generate electricity, however Northumbrian Water have invested to upgrade and purify the biogas into biomethane so it can be injected directly into the grid.

The company currently injects up to around 1500 cubic metres of gas per hour into the grid, helping to heat homes and businesses in the area.

Contact us

We'd love to talk to you about your biomethane project.

**Please contact us on
0191 511 4505**

**Or visit our website
biomethane.northerngasnetworks.co.uk**

where you will find more details about our 5 stage connection process, as well as a documents library.



northerngasnetworks.co.uk

 @NGNgas

Smell gas? The National Gas Emergency Service is available 24 hours a day.

FREEPHONE 0800 111 999*

*All calls are recorded and may be monitored

biomethane.northerngasnetworks.co.uk

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