

Boost for low carbon future as National Grid scoops £11 million for ground-breaking test projects

Pioneering 'green gas' schemes secure £11 million of Ofgem innovation funding

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- **Hydrogen heating pilot scheme at Keele University aims to cut carbon emissions**
- **Gas bills test project could open the door to more biogas**

Two ground-breaking pilot schemes that could transform the way Britain heats its homes and industry and usher in a low carbon energy future have secured £11 million in Ofgem funding.

National Grid Gas Distribution, together with Northern Gas Networks and the HyDeploy Consortium, has been awarded £6.8 million by Ofgem's Network Innovation Competition.

The funding will be used for a pioneering green heating initiative, using Keele University's gas network in Staffordshire.

And a second trail-blazing pilot scheme, that aims to further open the door to lower carbon, 'green' gas through updating the way gas bills are calculated, has been granted £4.8 million.

The HyDeploy project at Keele University aims to inject hydrogen into the existing natural gas network. Hydrogen is a clean, carbon-free gas that does not contribute to climate change.

It would make up a maximum of 20% of the volume of gas in the network. Those using the gas won't notice any difference to their supply, no changes will be required to gas appliances, and it will be no less safe than using natural gas.

If the project is successful, this will enable hydrogen to be blended with natural gas in gas networks across the country. Potentially, the project could prevent 120 million tonnes of carbon reaching the atmosphere by 2050.

The project will help towards the Government's tough 'decarbonisation' targets. It has pledged to cut Britain's carbon dioxide emissions by 80% of 1990 levels by 2050. Heating accounts for one third of emissions.

Using Britain's existing world-class gas network, HyDeploy could pave the way for a clean, low carbon gas grid, keeping homes warm and powering industry.

David Parkin Director of Network Strategy at National Grid Gas Distribution, said: "Ofgem's decision to award National Grid £6.8 million recognises the important role for the UK's world class gas grid in delivering low carbon heat. We believe introducing a hydrogen blend nationally has the potential to save over 6 million tonnes of carbon emissions every year."

Professor Mark Ormerod, Deputy Vice Chancellor and Provost of Keele University, said: "Energy and sustainability is a key overarching institutional priority for Keele University, and we are delighted to be a partner in this important, highly relevant and prestigious project. This collaborative project tackles one of the major societal challenges and has the potential to be highly impactful and lead to a significant reduction in carbon emissions".

Martin Alderson, Asset Management Director for Northern Gas Networks, said: "This is an extremely exciting time for the energy industry. We believe this project will prove blended hydrogen gas can be distributed and used safely and efficiently in the existing gas network, an essential pre-requisite for the wider deployment of clean, cost-effective hydrogen in the UK gas grid."

The three-year pilot will start in 2017. The Ofgem funding, together with £760k contributed by National Grid and Northern Gas Networks, will be used to provide hydrogen production and injection facilities at Keele University and to run a rigorous experimental testing and safety programme.

Keele was viewed as the perfect test site for the project. Keele is Britain's biggest university campus. The university owns and operates its own gas network, which is independent of the national gas network.

With more than 340 residential, teaching and business premises, the campus closely resembles a small town. This project will run on part of the university's gas network, which supplies 17 buildings and more than 100 homes for researchers and staff.

The project has been developed by National Grid Gas Distribution, Northern Gas Networks and the HyDeploy consortium. The consortium includes Keele University, The Health and Safety Laboratory (HSL), hydrogen production company ITM Power and clean energy firm Progressive Energy. It is supported by gas experts KIWA Gastec and engineering company Otto Simon.

The second successful Innovation funding bid has seen National Grid Gas Distribution team up with DNV GL, a global oil and gas advisory company to run a three-year pilot study.

The study will look to update the way gas bills are calculated, to take into account more of the 'green', lower carbon alternatives to natural gas likely to be powering homes and businesses in the future.

The initiative aims to cut out the use of propane – a costly greenhouse gas – which is currently being added to bio-methane and other lower carbon gases for gas billing reasons. This should open the door to more green gas entering Britain's gas pipeline network and cement its essential role in meeting the UK's carbon reduction targets for 2030 and 2050.

David Parkin Director of Network Strategy at National Grid Gas Distribution, said: "Ofgem's decision to award National Grid £4.8 million for this programme reflects how serious the UK's gas grids are about delivering low carbon heat, as well as delivering a sustainable gas future which works for consumers as well."

National Grid Gas Distribution will be working in a partnership, which includes DNV GL, a global advisory company which provides software, technical assurance and independent expert services to the gas and energy industries.

Hari Vamadevan, Regional Manager, DNV GL Oil & Gas, said: "We are delighted that this outstanding project has received Ofgem sponsorship. We believe it is important to assess the financial consequences for gas consumers in a future where alternatives are being sought to facilitate a lower carbon outlook."

Gas consumers are charged on the basis of the amount of energy their gas contains (calorific value). However, the energy content of gas is not measured at people's gas meters.

Instead, gas network operators, such as National Grid, measure the calorific value of the gas being injected at each entry point on their pipeline networks and work out an average calorific value.

Because new, lower carbon alternatives to natural gas, such as bio-methane, have a lower energy content than natural gas, the current energy calculation process requires that bio-methane producers have to add propane, a costly greenhouse gas, to bring it up to the average calorific value of the traditional gas sources.

The pioneering pilot will look at how customers can be billed using the calorific value of the gas they actually receive, rather than using an average.

This should remove the need for alternative, low carbon gas producers to add costly propane to their gas to bring it up to an average calorific value, and so open the door to more environmentally-friendly alternatives to natural gas.

The study will look at a number of methods for achieving this, including using smart meters to record the calorific value of gas being used by homes and businesses.

The successful bids are among a host of initiatives being pursued by National Grid Gas Distribution as part of its 'Future of Gas' vision, to see Britain heating its homes, powering its industry and fuelling its vehicles on low carbon – or even no carbon – energy.

The company is exploring low carbon alternatives to natural gas to support the Government in its drive to reduce greenhouse gas emissions and tackle climate change in an affordable and sustainable way.

Last week the company signed a £6.3m deal to help fund the world's first commercially operating BioSNG (bio-substitute natural gas) plant in Swindon, which will make gas from household waste.

The facility will accept 10,000 tonnes of waste from the local area and produce enough green gas to heat 1,500 homes or fuel 75 heavy good vehicles. The technology has the potential to provide enough gas to fuel all of Britain's heavy good vehicles or meet one third of its domestic heating demand.

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Notes for editors

Keele University

Founded more than 60 years ago to meet the demands of a new kind of society, economy and world, Keele University is the largest campus university in the UK, nestled in 600 acres of countryside in the heart of Staffordshire. The innovations and discoveries of Keele academics are key contributors to wider social and global issues. Keele is a leading world player in many research areas, including primary health care, secondary health care, environmental science, astronomy and the life sciences; and in areas of the humanities and social sciences, including music, history and English literature."

About Northern Gas Networks

Northern Gas Networks own all the gas mains in the North East, most of Yorkshire and northern Cumbria transporting gas to 2.7 million homes and businesses. The network consists of 37,000km of gas mains, enough to stretch from Leeds to Sydney, Australia and back. Our mains replacement programme will see 3,800km of old metal gas main replaced with modern plastic equivalents by 2021. For more information please visit our website www.northerngasnetworks.co.uk

DNV and GL have merged to form DNV GL

We are now the world's largest ship and offshore classification society, the leading technical advisor to the global oil and gas industry, and a leading expert for the energy value chain including renewables and energy efficiency. We've also taken a position as one of the top three certification bodies in the world. Read more here: www.dnvgl.com/merger.

Notes to Editors:

National Grid is pivotal to the energy systems in the UK and the north eastern United States. We aim to serve customers well and efficiently, supporting the communities in which we operate and making possible the energy systems of the future.

National Grid in the UK:

- We own and operate the electricity transmission network in England and Wales, with day-to-day responsibility for balancing supply and demand. We also operate, but do not own, the Scottish networks. Our networks comprise approximately 7,200 kilometres (4,474 miles) of overhead line, 1,500

kilometres (932 miles) of underground cable and 342 substations.

- We own and operate the gas National Transmission System in Great Britain, with day-to-day responsibility for balancing supply and demand. Our network comprises approximately 7,660 kilometres (4,760 miles) of high-pressure pipe and 618 above-ground installations.
- As Great Britain's System Operator (SO) we make sure gas and electricity is transported safely and efficiently from where it is produced to where it is consumed. From April 2019, Electricity System Operator (ESO) is a new standalone business within National Grid, legally separate from all other parts of the National Grid Group. This will provide the right environment to deliver a balanced and impartial ESO that can realise real benefits for consumers as we transition to a more decentralised, decarbonised electricity system.
- Other UK activities mainly relate to businesses operating in competitive markets outside of our core regulated businesses; including interconnectors, gas metering activities and a liquefied natural gas (LNG) importation terminal – all of which are now part of National Grid Ventures. National Grid Property is responsible for the management, clean-up and disposal of surplus sites in the UK. Most of these are former gas works.

Find out more about the energy challenge and how National Grid is helping find solutions to some of the challenges we face at <https://www.nationalgrid.com/group/news>

National Grid undertakes no obligation to update any of the information contained in this release, which speaks only as at the date of this release, unless required by law or regulation.

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