



Pathways to Decarbonise Heat - HyDeploy Overview

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REA

2 May 2018

Cadent

Your Gas Network

Customer options for decarbonising their homes



Improve energy efficiency



Green gas



Hydrogen



Gas blend



Heat network



Heat pump or other electric heating

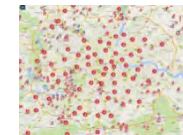


Solar



Wind

COST and DISRUPTION LIKELY TO BE THE BIGGEST FACTORS



Pathways to Decarbonise the Gas Network

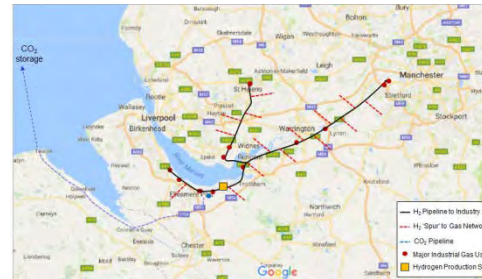
Biomethane



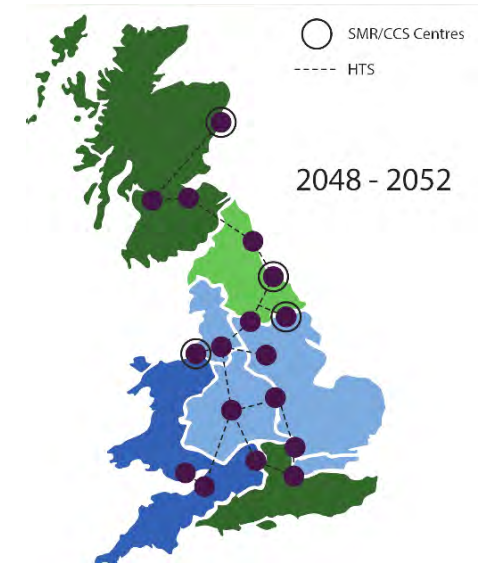
BioSNG



Hydrogen Blending



Hydrogen Conversion



UK Biomethane + BioSNG Potential
>100TWh = >1/3 domestic gas demand

A RANGE OF INNOVATIVE TECHNOLOGIES BEING DEVELOPED AND TESTED AT SCALE

Overview

To demonstrate for the first time that a blend of hydrogen and natural gas can be distributed and utilised safely & efficiently in the UK distribution network without disruptive changes for consumers.

Objective

29TWh of low carbon heat per annum equating to saving:

CO_{2e} of 120 million tonnes & £8 billion cumulatively by 2050

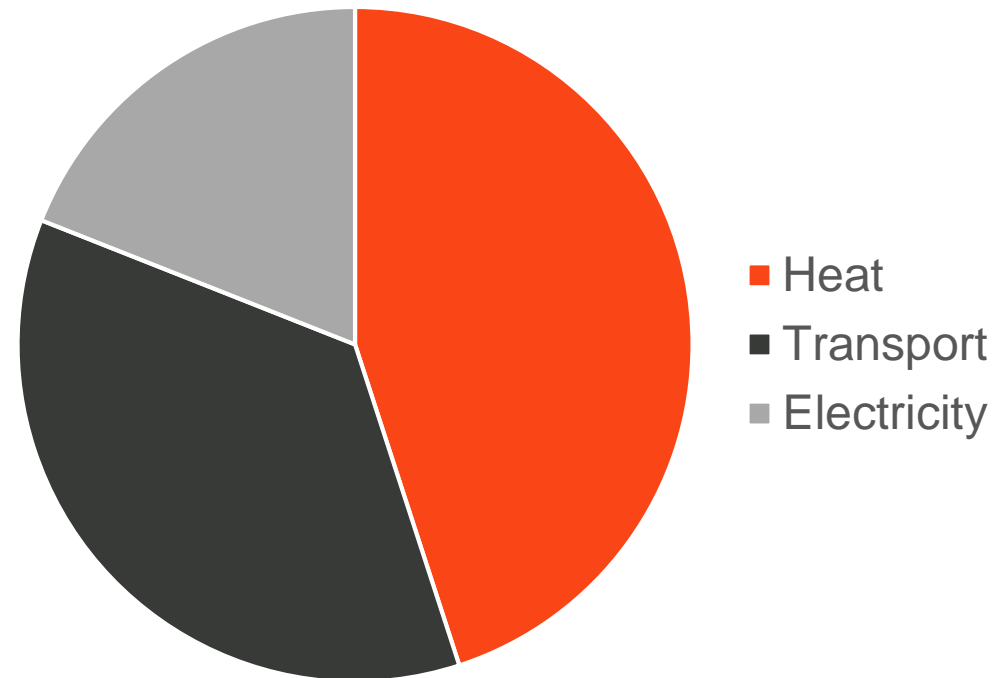


Heat

Heat represents nearly half of UK energy consumption.

We need to reduce the carbon impact of heat.

UK energy consumption by sector



Gas: flexible & convenient delivery of heat

Gas provides **80%** of heat at times of peak demand.

320TWh per annum to domestic customers.

Over **23 million** UK gas customers use the world class infrastructure.



Daily electricity and gas demand



The majority of domestic consumers will not change their existing heating provision unless significant financial benefits will be accrued, and only then if they have funding available..... If their current system was operating well and providing heat for their homes they would not change their heating systems and spend money unnecessarily.

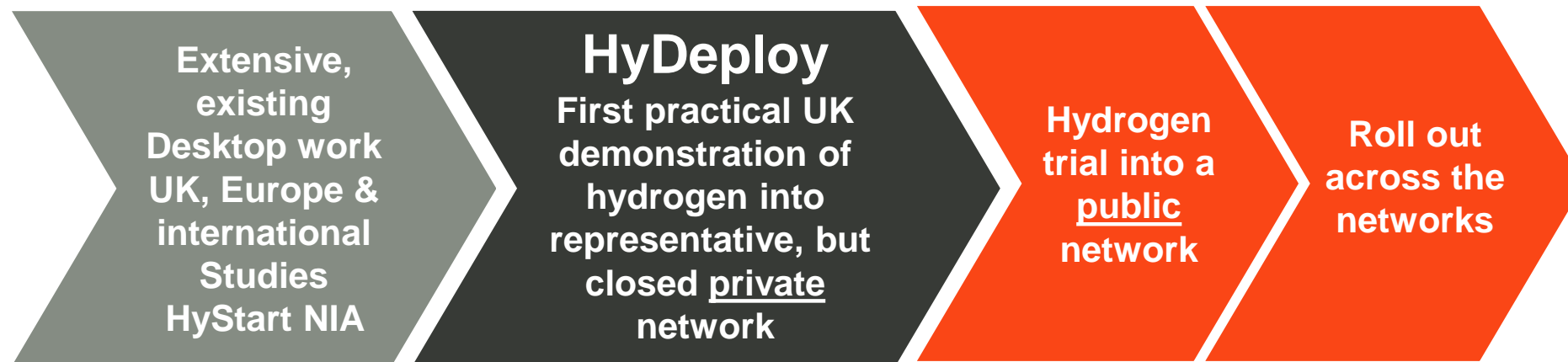
WWU NIA Funded Bridgend study, 2015

Blending hydrogen into the natural gas grid delivers low carbon heat to customers without requiring disruptive and expensive changes in their homes.



The HyDeploy Demonstration project

- HyDeploy: A reference work to be used by the industry now & into future.
- Build on existing work on the impact of H₂ on appliances & networks & best practice for running new gas trials.
- A closed private network is ideal for the first UK trial.



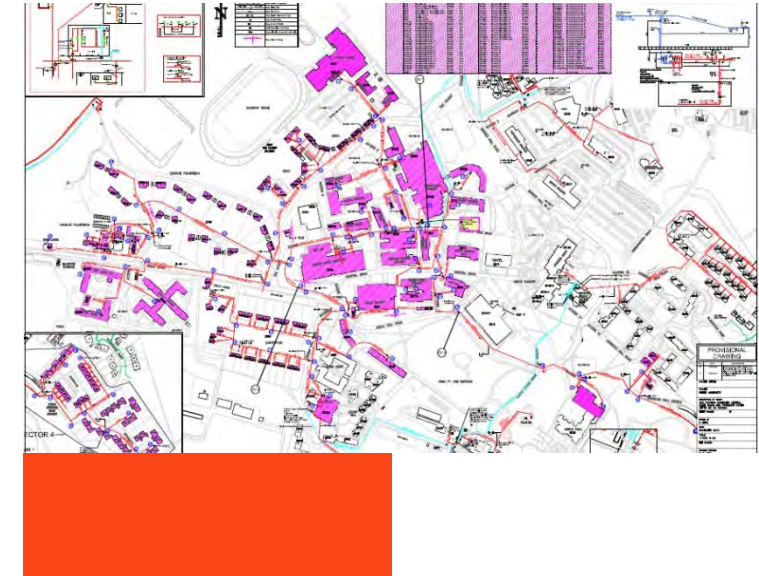
The Keele campus: a small town on gas

The Campus the size of a small town

- 101 residential houses
- 8 multi-residential buildings
- 17 extensive office blocks & laboratories
- 7 recreational & service facilities

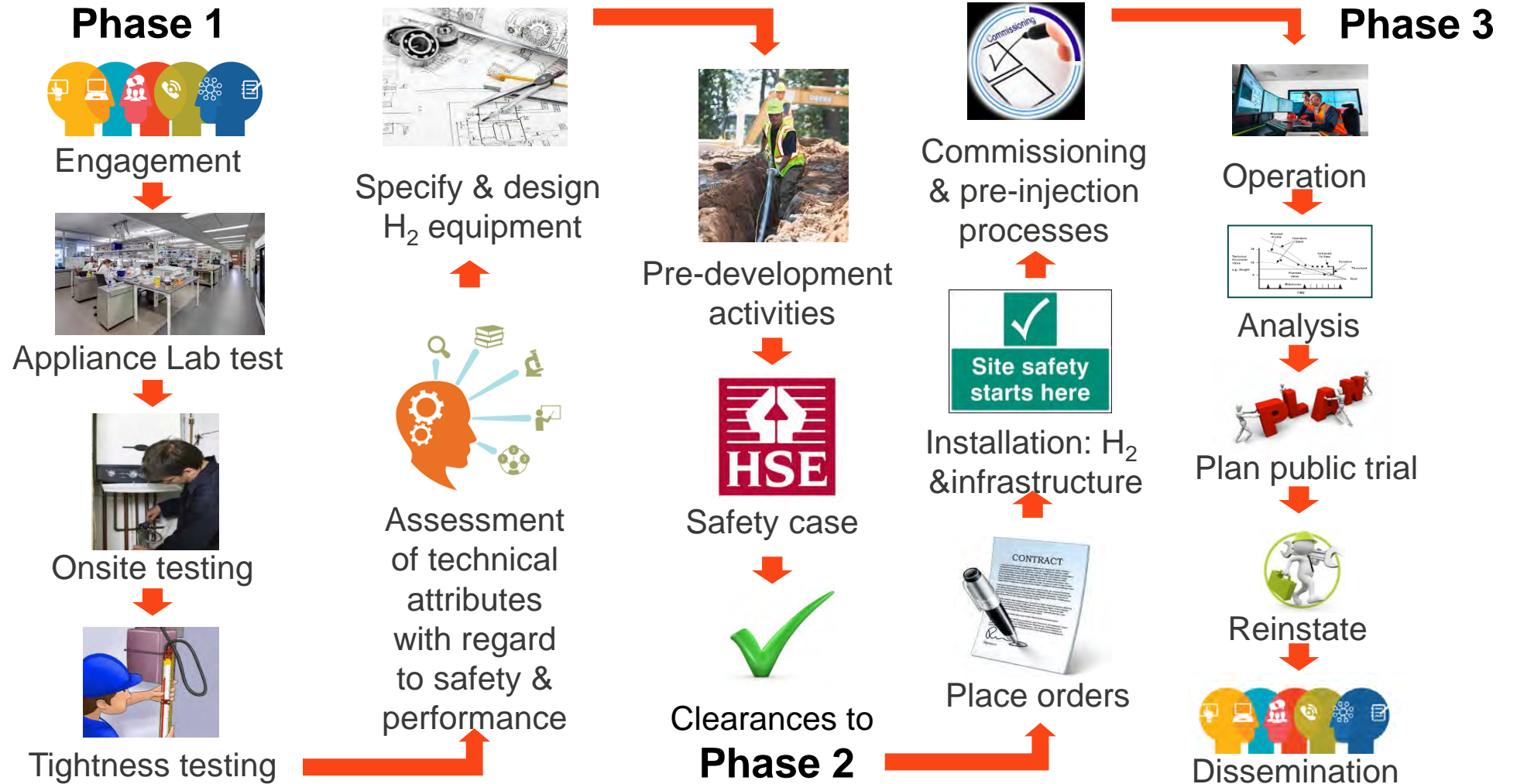
Keele is licensed transporter & supplier.

Engaged with BEIS and HSE to use its energy network as a *'Living Laboratory'*.



600 acre site

HyDeploy Programme overview



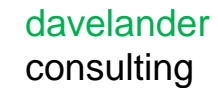
An expert consortium



Key stakeholder



Key suppliers and contractors



Customer impact



Customer engagement is a priority for the project team. Safeguarded by Keele's Ethics Committee and OFGEM.



Trial designed for minimal disruption, share learning from 'Opening up the Gas Networks' NIC at Oban.



Safety is paramount. Programme managed by Health & Safety Laboratory, and injection trials can only commence if the HSE is satisfied with the scientific evidence base.



Trial customers will be protected by conservative declared billing arrangements.

Stakeholder engagement and support

- Wide interest and support from across the industry
- Key stakeholders will contribute through the Advisory Board
- Dissemination of findings will be ongoing throughout the project



Outcome

A customer focused solution to deliver non-disruptive low carbon heat cost effectively

An expert consortium engaged with key stakeholders supportive of the project

A detailed demonstration programme designed to deliver expert knowledge and best practice to unlock low carbon heat delivery via the gas grid.



Thank you

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Cadent launch of EY report on options to support investment in BioSNG

Date: 9 May 2018

Time: 12 noon

Location: Canary Wharf

Email: stuart.easterbrook@cadentgas.com

Invite and/or report

Cadent

Your Gas Network