The Voice of the Networks

Energy Networks Association

Decarbonising the Gas Networks

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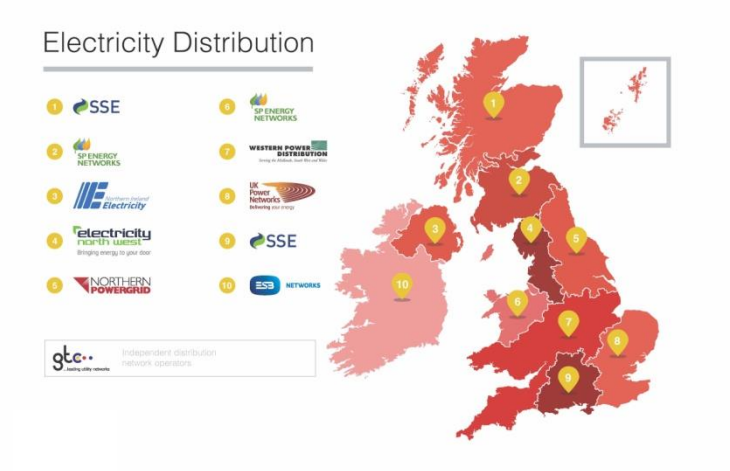
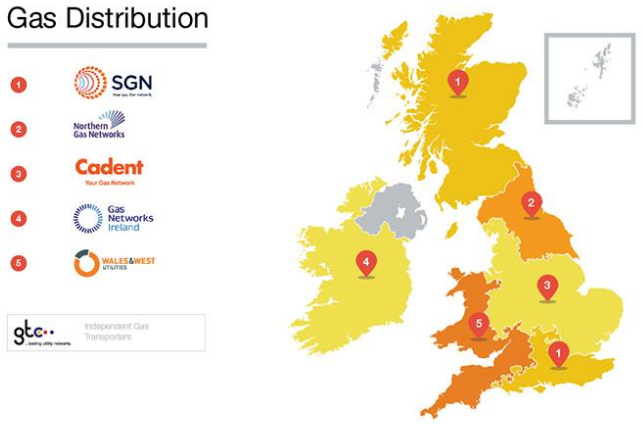
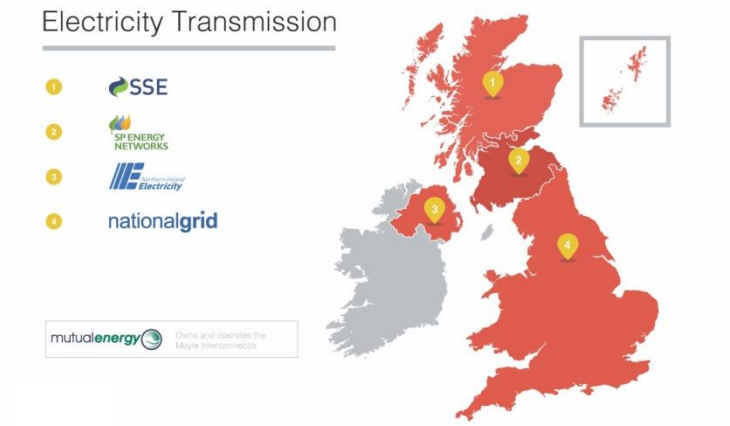
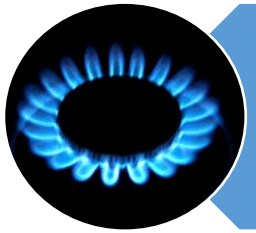






The Gas Networks

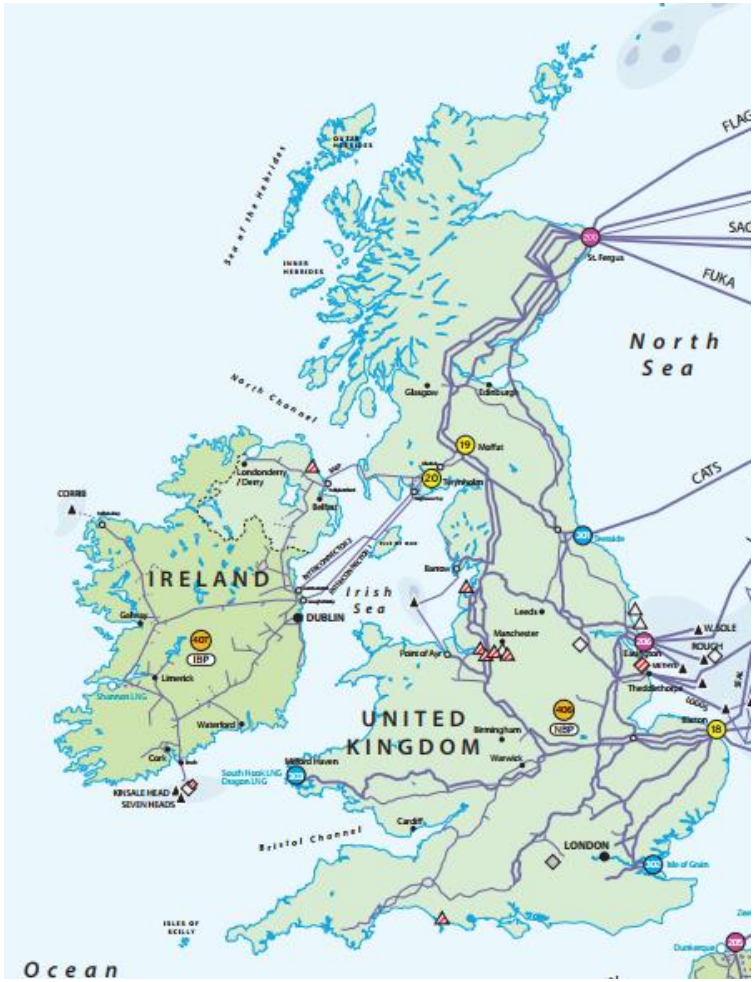
Customer Choice - Gas is the fuel choice for UK consumers, meeting the heating needs of almost 85% of domestic properties and the cooking needs of around 50% residential and service sector buildings.



Security – Over 80% of peak power and heat is delivered by gas. Without gas and the gas networks there is not enough energy for the UK to function or the means to transport that energy at peak periods.

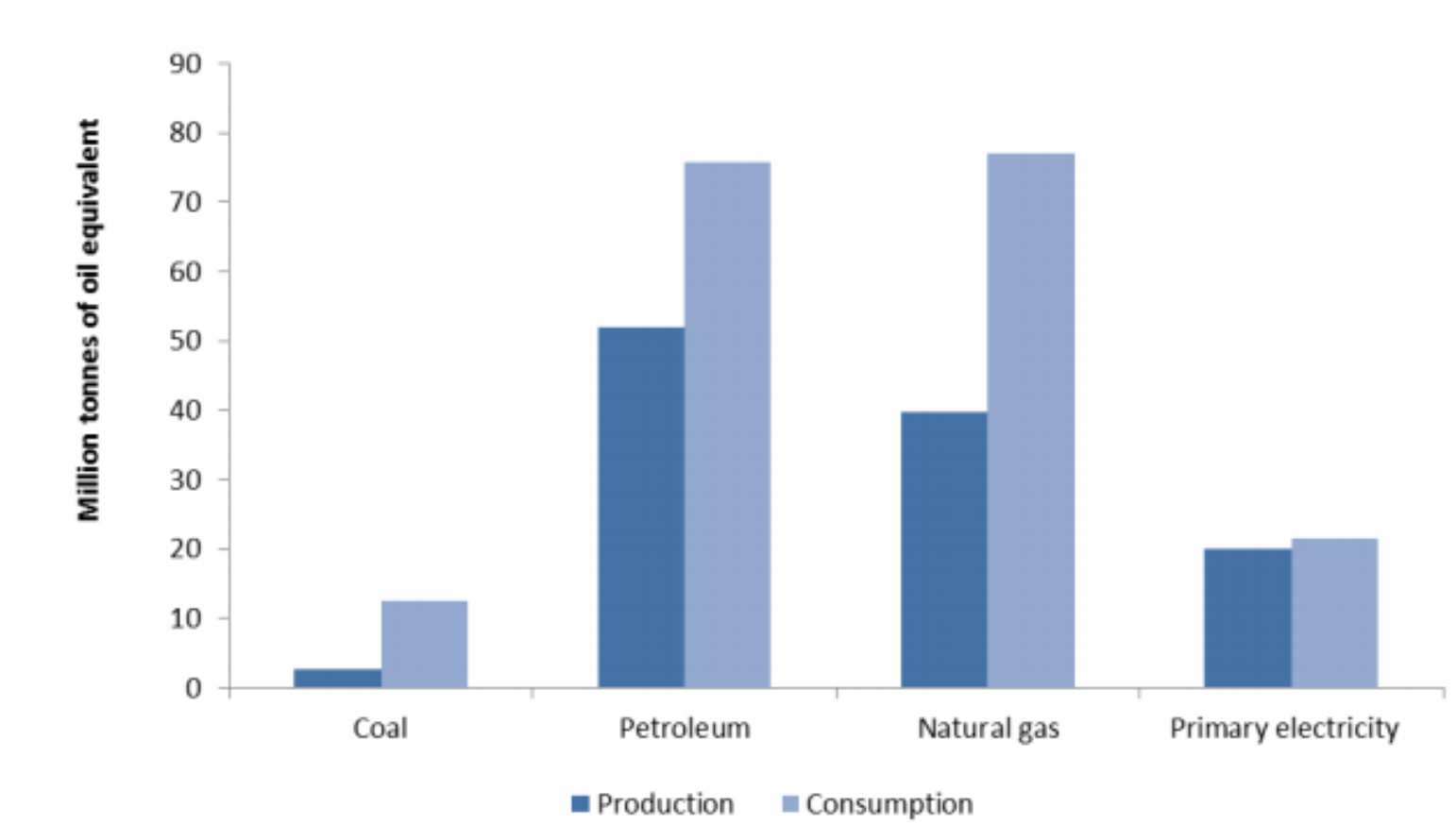
Sustainability – Gas is being decarbonised, and gas generation provides peaking balance for intermittent renewables, supporting low carbon electricity deployment.

Affordability - Heating your home by gas is around 3 times cheaper than using electricity and saves consumers over £400 per annum compared to alternatives.



How do we use energy?

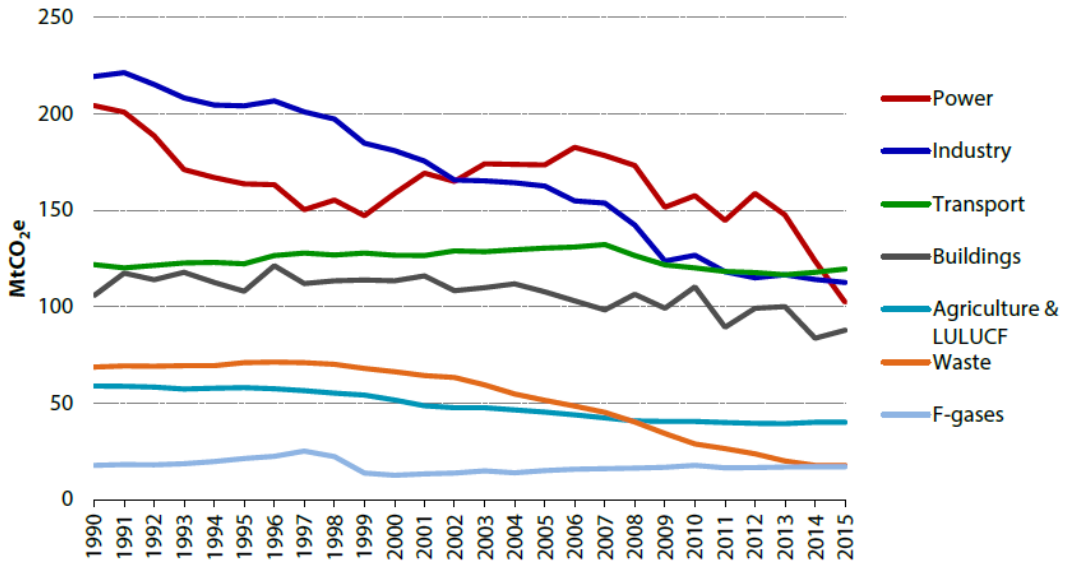
Chart 1.2: Production and consumption of primary fuels 2016



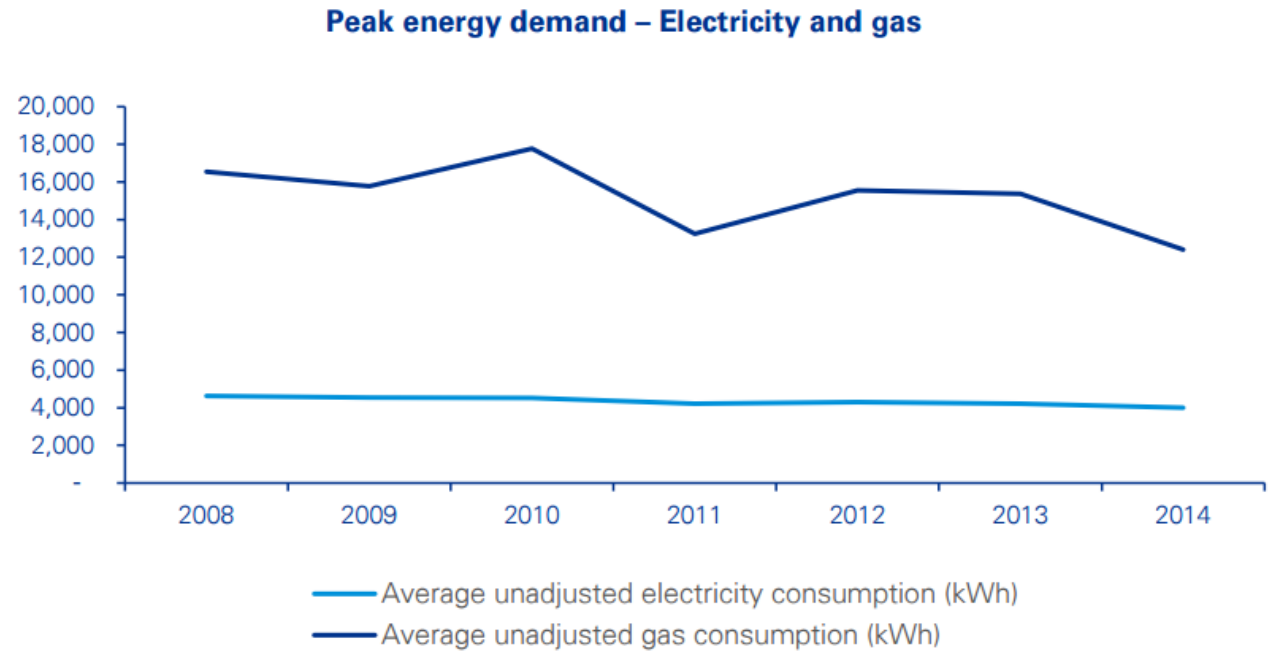
Source:
Digest of UK Energy Statistics 2017

Challenges: carbon and peak loads

Figure 1.2. UK GHG emissions by sector since 1990



Source: DECC (2016) *Provisional GHG statistics for 2015*; DECC (2016) *Final GHG statistics for 1990-2014*; CCC analysis.



Source: DECC, ECUK 2015 Tables 3.07

We can decarbonise gas

BIOMETHANE

First phase of the RHI has delivered 90 green gas plants across the UK (14 in Scotland)

BIO-SNG

Cadent demonstration plant in Swindon looking at turning domestic household waste into green gas for injection into the network.

HYDROGEN

The GDNs are working on collaborative innovation projects around Hydrogen. These are building on Northern Gas Networks' H21 Leeds Citygate, which investigated converting the existing gas network in Leeds to a hydrogen network.

GAS IN VEHICLES

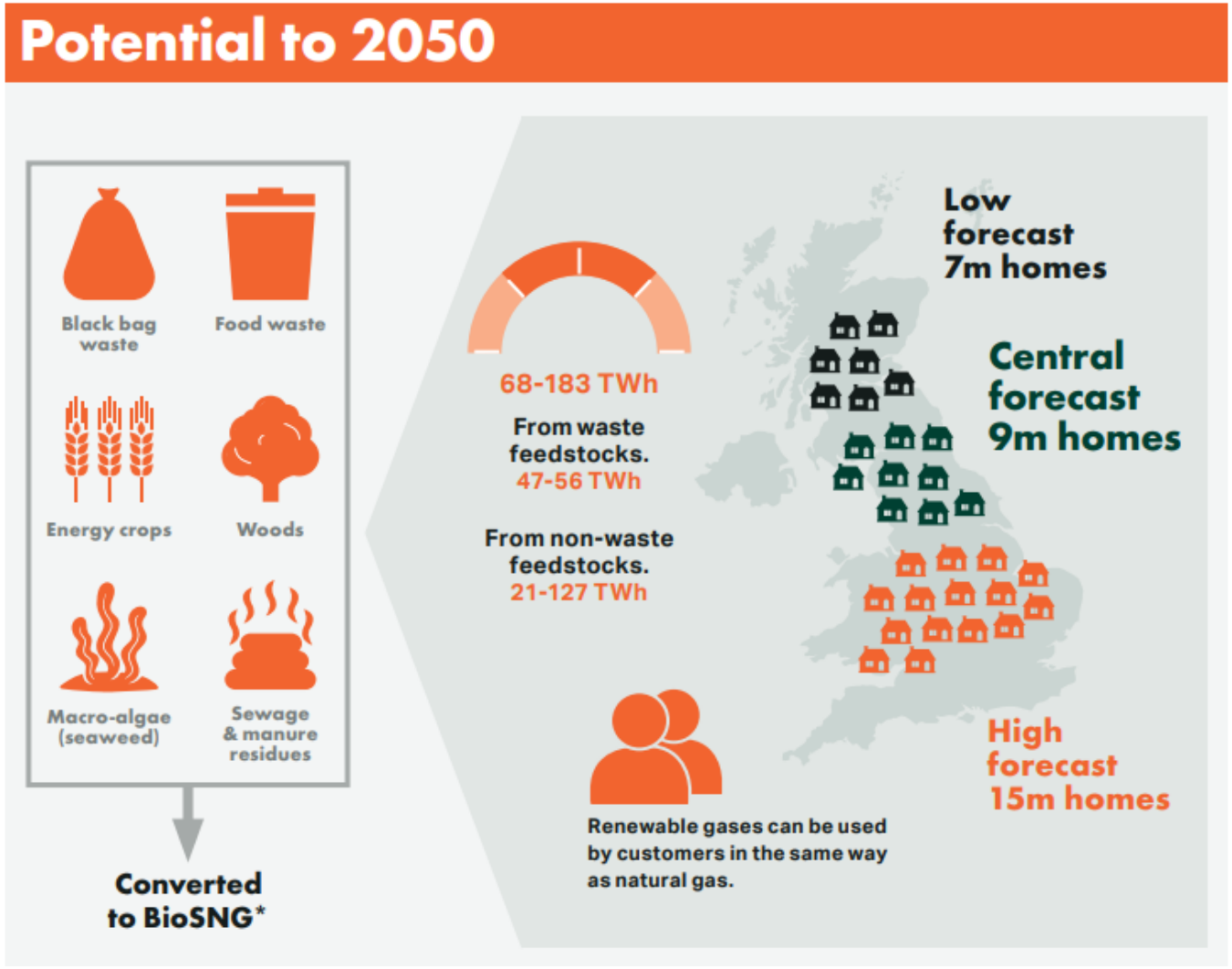
Green gas can make a significant contribution to decarbonising the transport sector, particularly HGVs. Cadent have connected the UK's first high pressure, CNG filling station for HGVs at Leyland.

What is biomethane delivering?

- Biomethane is generated by anaerobic digestion of organic material
- Injected into the existing gas grid and used in exactly the same way as natural gas
- Part of a Circular Economy vision – use LA collected food waste, commercial waste (e.g. from breweries, distilleries and food industry), farm materials
- Capacity to produce 3TWh of gas – c 1% of domestic demand

Biogas plant at Keithick Farm, Coupar Angus

Green gas potential



- Biomethane potential is limited by feedstock availability
- Cadent review of bioenergy feedstocks available – drawing on work by CCC – estimates enough gas could be produced for 7-15m homes by 2050
- Requires joined-up policy: energy, resources, water and farming
- Innovation on new feedstocks, production methods and efficiency required

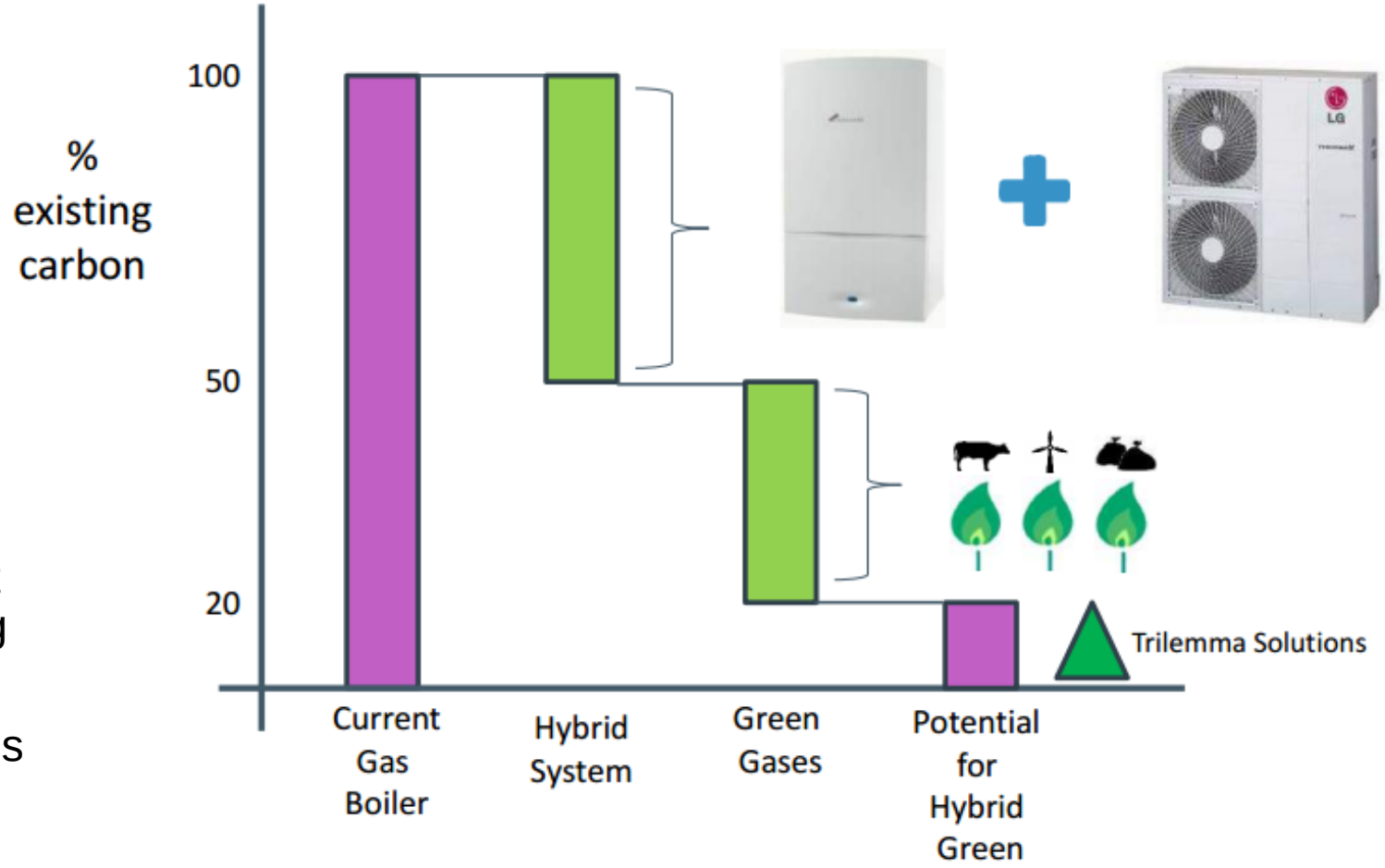
https://cadentgas.com/About-us/The-future-role-of-gas/Renewable-gas-potential

Making the most of green gas

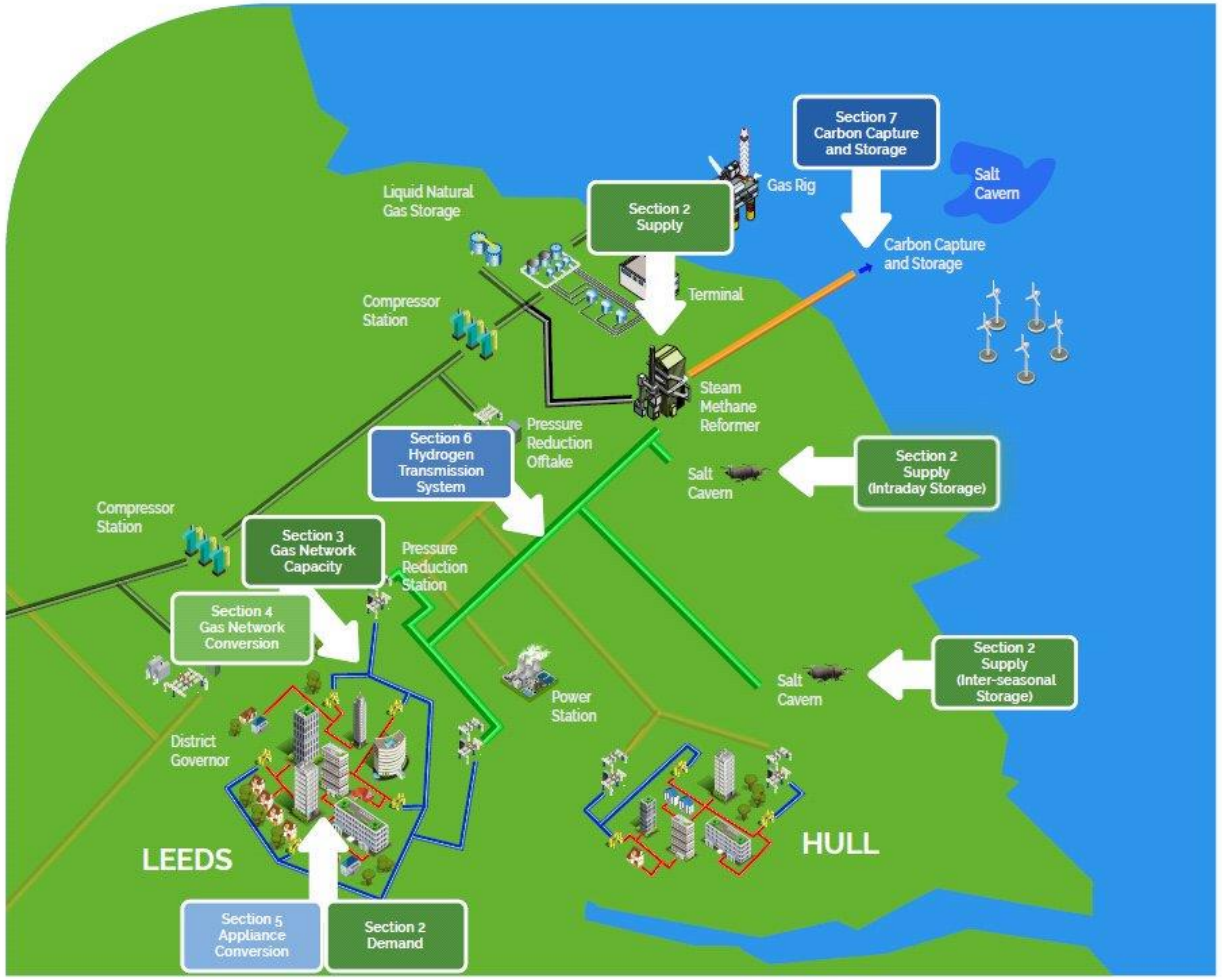
Freedom Project

Flexible Residential Energy Efficiency, Demand Optimisation & Management

- Joint gas & electricity distribution network innovation project
- Adds small heat pump and smart control system to existing heating system
- Trial on 75 homes in Bridgend this winter; results in 2018



Vision for a Hydrogen Grid



Why Hydrogen?

- Zero carbon energy carrier: combustion produces energy + water
- Uses existing grid infrastructure – avoids cost of reinforcing electricity network
- Allows existing heating systems to be retained – comfort/familiarity
- Can be stored to meet seasonal peaks

How are networks developing Hydrogen?

- H21 Feasibility Study for Leeds published 2016
- Collaborative innovation projects expanding feasibility work and developing safety case

KPMG 2050 Scenarios




	Evolution of Gas	Prosumer	Diversified energy	Electric Future
Practical obstacles	Low/Medium	Very high	Medium/High	High
Incremental cost	£104-122bn	£251-289bn	£156-188bn	£274-318bn
Incremental cost per consumer up to 2050	£4,500-5,000	£11,000-12,500	£6,800-8,000	£12,000-14,000

Taken from 2050 Energy Scenarios, KPMG for ENA (2016)

http://www.energynetworks.org/news/press-releases/2016/july/kpmg-report-analyses-long-term-role-of-gas-network-in-the-future-of-heat.html

Summary

- Heat is probably the hardest area of energy policy: every scenario for meeting carbon targets increases cost and disruption
- Innovative and integrated solutions are required to meet the challenge of heat decarbonisation
- Biomethane injection to the gas grid is delivering green gas and continuing to grow
- Decarbonised gas will have a vital role to play in delivering heat and supporting a low carbon economy – plan for ongoing role
- Governments and Local Authorities should take ‘low regrets’ action now; support innovation and evidence building

Engage with the Gas Networks

National Grid Gas Transmission workshop on the future of gas, Edinburgh, 3 Nov:

https://www.eventbrite.com/e/shaping-the-gas-transmission-network-of-the-future-have-your-say-tickets-38141139174

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Thank you

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