



Department
of Energy &
Climate Change

OFFICIAL

Heat Networks Delivery Unit

Chris Parkin, DECC on behalf of John Saunders

16th June 2015



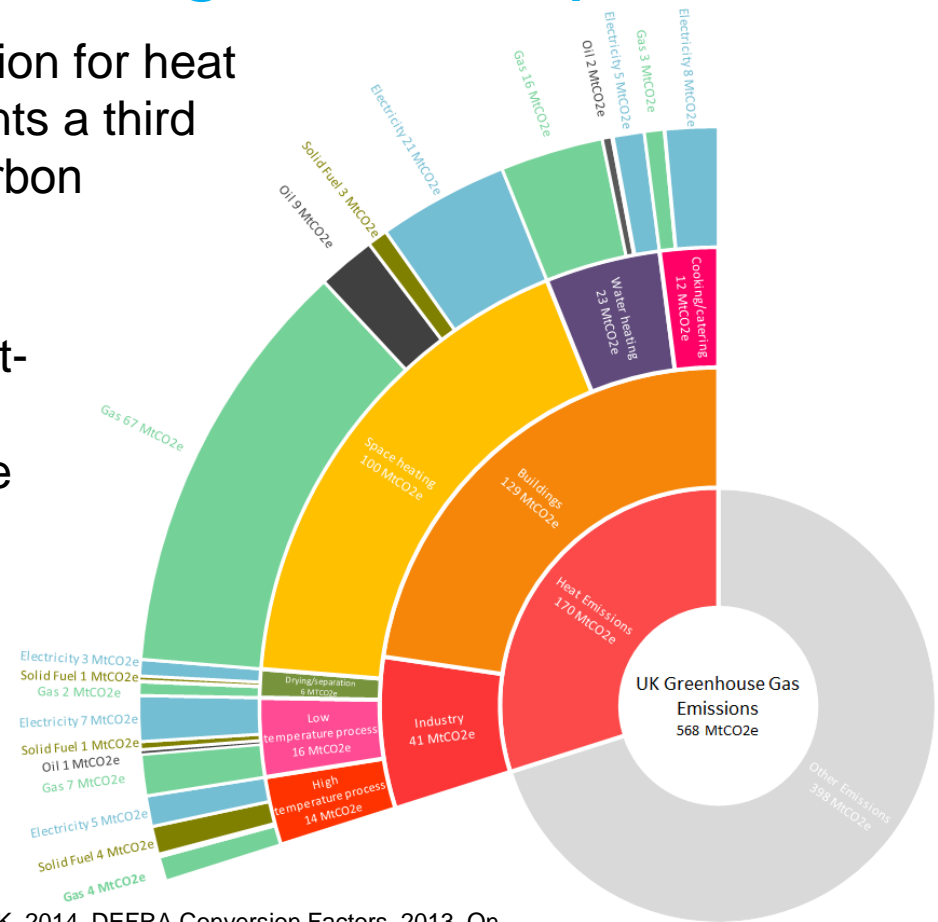
Reducing emissions from heat is typically best approached by first cutting that demand using energy efficiency measures.

However, energy efficiency on its own will not come close to eliminating demand, and the deployment of low carbon heat will also be necessary.

Why decarbonising heat is important

Fossil fuel combustion for heat production represents a third of the UK's total carbon emissions.

All modelling of cost-effective ways of meeting the Climate Change Act's 2050 target sees emissions from space heating reaching nearly zero.



Source: Energy Consumption in the UK, 2014, DEFRA Conversion Factors, 2013. On modelling, see any unconstrained UKTIMES, RESOM, ESME or NG FES outputs.

Decarbonising Heat in Buildings

2050

Dense Urban
– 22%

Suburban – 59%

Rural – 19%

Heat networks are a more efficient option for denser urban areas where there is limited space for individual heat pumps. Coupled with heat storage they can help balance the grid.

Lower energy demand in all sectors through increasing thermal efficiency of buildings and changing consumer behaviour

High efficiency condensing boilers remain a useful technology in this sector for some time

Gas absorption heat pumps use gas more efficiently...
...as do hybrid systems containing a boiler and an electric heat pump

High electric heat pump penetration faces fewer barriers in homes that are less clustered, starting with buildings off the gas grid, which are more likely to have space and be using high carbon and more expensive fuels like heating oil.

Diagram not to scale

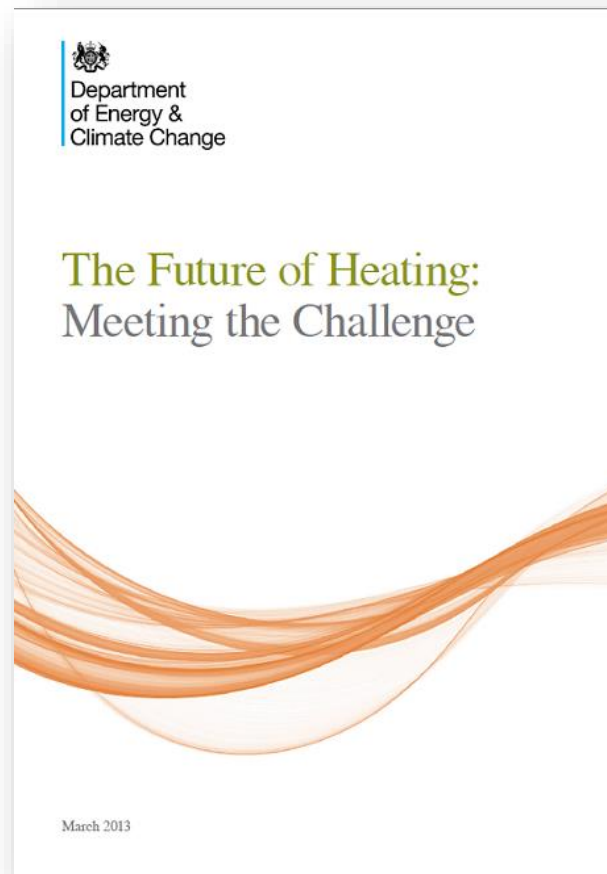
UK Building Stock



'Future of Heating Meeting the Challenge', was published in March 2013 and established the Heat Networks Delivery Unit (HNDU).

Its remit is to "encourage and enable Local Authorities in England and Wales to undertake the development stages of heat networks".

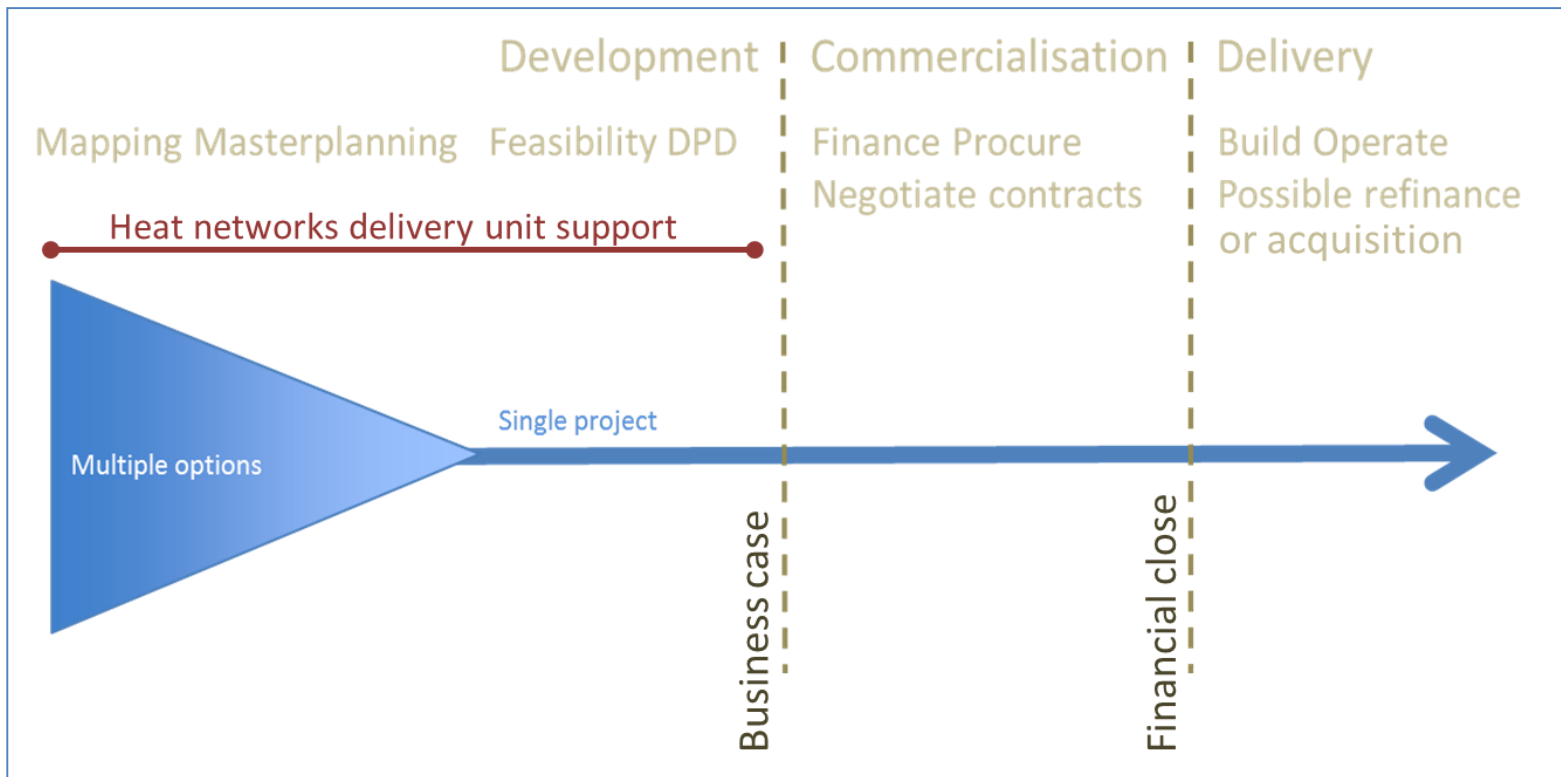
Translating National to Local



- Local Authorities in England or Wales
- Grant funding up to 67% of total eligible external costs
- Mapping, masterplanning, feasibility and detailed project development
- HNDU support = grant funding + guidance



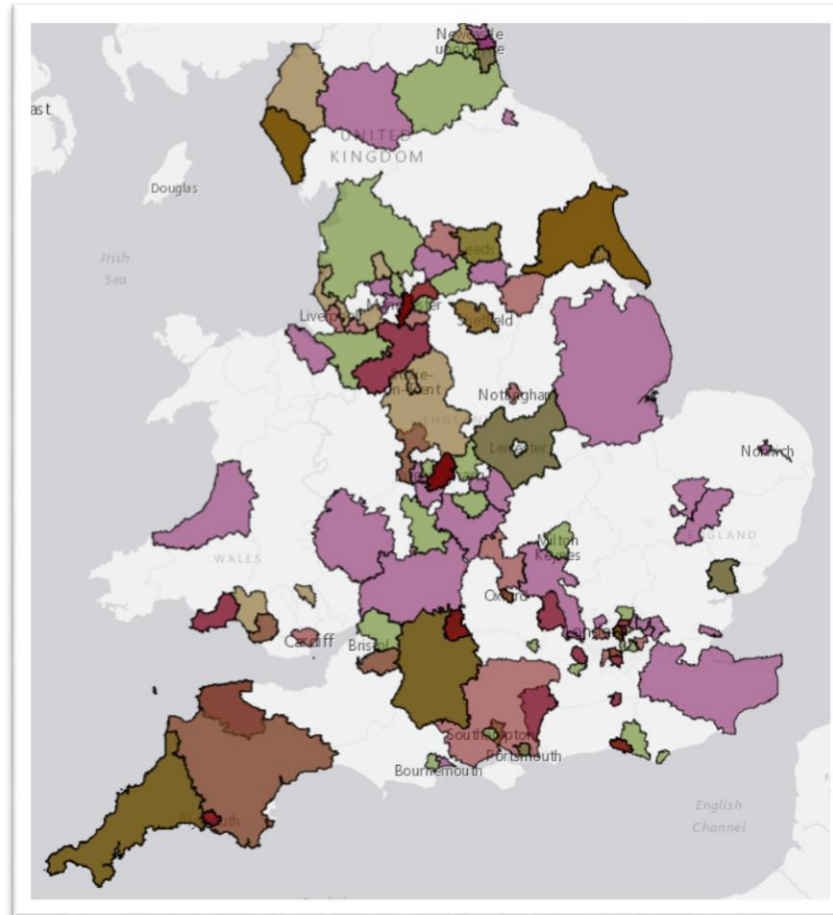
HNDU support for Local authorities





The portfolio consists of different heat supplies including energy from waste, secondary heat, renewables (biomass, heat pumps, deep geothermal) and gas sources.

The HNDU Portfolio



- 180 unique projects
- 115 local authorities
- £9.7 million grant funding and 33% match
- 21 projects at detailed project development



Energy generation in the NHS estate is well developed which means there are significant opportunities.

The NHS is an extremely high heat and power user, making it a perfect load for a heat network.

The NHS and Heat Networks

Stakeholder Opportunities

Supply:

Supplying a network outside of a campus boundary can significantly improve the efficiency and run times of onsite CHP

Opportunities for oversizing of CHP to utilise greater power generation with heat export.

Demand:

There has been a movement away from steam systems which could mean alternative supply options are in scope

There's an opportunity to take advantage of off-site generation

This could reduce both capital and revenue expenditure on plant

Greater potential for lower carbon supply sources



As with many stakeholders, there are several barriers to the NHS becoming a key partner in a heat network development.

The NHS and Heat Networks

Stakeholder Barriers

Many NHS sites have long term contractual arrangements through PFI arrangements or incentivised O+M.

There can be little appetite to depend on off-site generation, especially in critical care facilities.

It can be difficult to engage with the right people within the site in order to progress projects and there tends to be a campus mentality.

There have been estate uncertainties, growth and contraction, due to the allocation of different status between sites (purple etc)

The supply parameters for the site may not be conducive to a wider network and some sites have moved to a fully decentralised system.

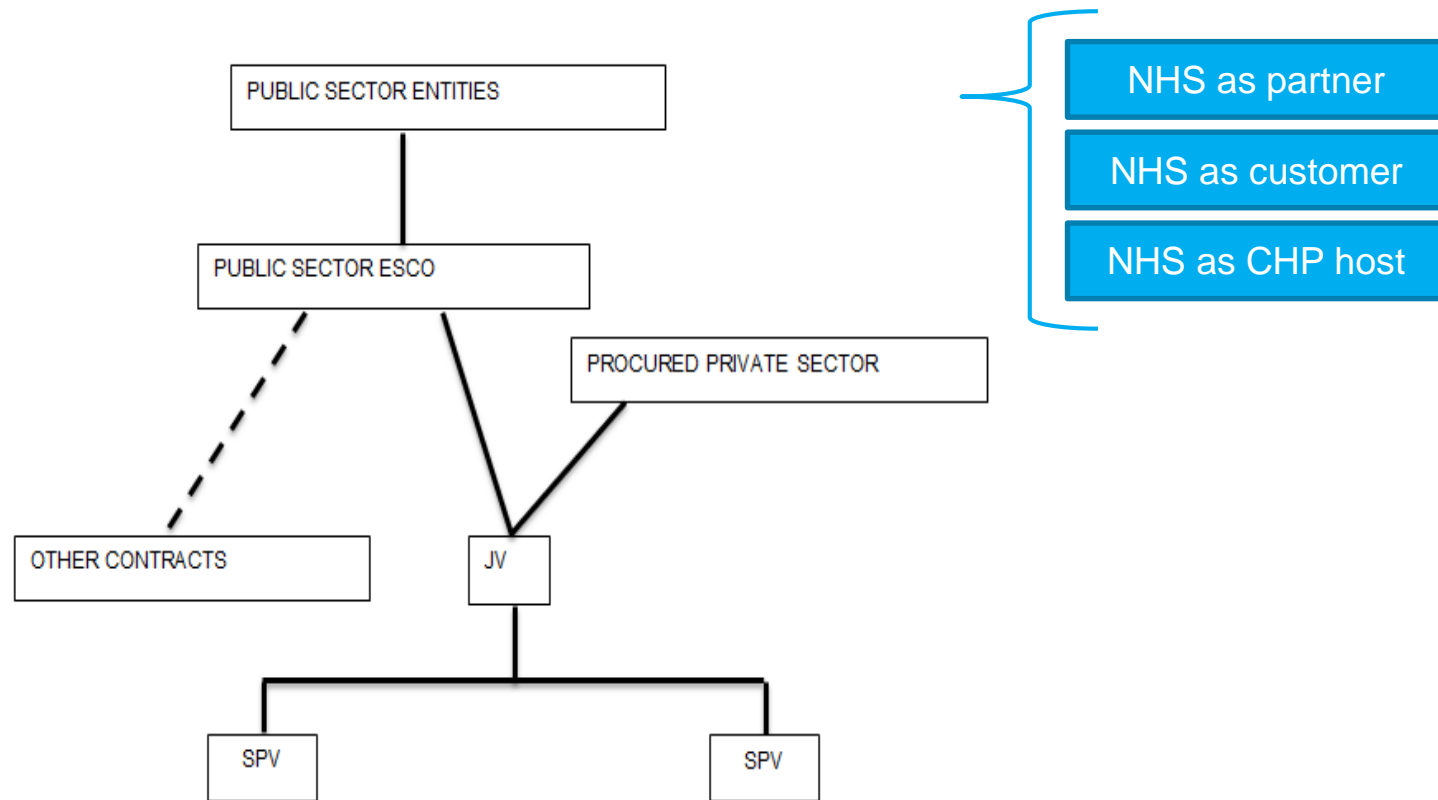


The scheme is made up of a County Council, three District Council's, a university and a NHS site.

These partners would be both customers of the scheme and partners in a public sector ESCo before procuring a private partner for a JV.

Funding provided for detailed technical, legal and commercial.

Case Study 1





The scheme is made up of a County Council site, a hospital and a PCT campus.

The drivers are rationalisation and consolidation of plant across all estates, increasing resilience and reducing capital and revenue spend.

Funding provided for detailed techno-economic feasibility.

Case Study 2



2 existing heat networks:

- i. Medium Temperature Hot Water (MTHW) heating network served by
 - 1 MW biomass boiler and
 - 1.5MW of gas boilers
- ii. Steam (and hot water) heating network with new gas CHP in development

Opportunity for all stakeholders to maintain elements of the network plant.

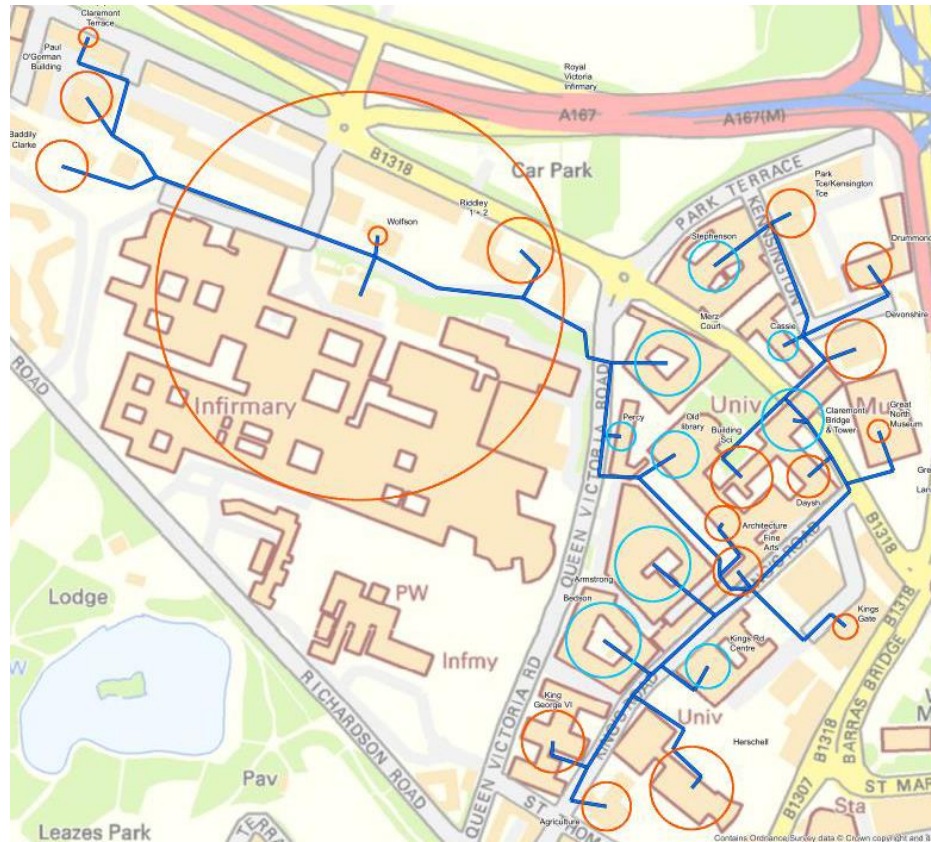


This scheme is seeking to utilise excess CHP capacity hosted by a NHS site.

The proposal is for this heat to be supplied into a local network to serve Civic buildings leading to a revenue stream and better CHP utilisation

Funding provided for detailed technical, legal and commercial.

Case Study 3



An NHS site would act as heat supplier to a network, securing a long term revenue stream.

NHS site is likely to be bound contractually to deliver a minimum amount of heat.

The NHS site sees additional benefit as it is able to utilise all electricity generated.

There's potential for better CHP utilisation with increased run time.



For further information please contact:

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Or visit: <https://www.gov.uk/government/publications/heat-networks-funding-stream-application-and-guidance-pack>