Pathways to Net Zero: Decarbonising the Gas networks in Great Britain: a report prepared by Navigant for the Energy Networks Association

On the 30th October, the Energy Networks Association (ENA) published a new report modelling pathways to achieve net zero in the UK energy system by 2050. Specifically, it considers two main scenarios: a Balanced Scenario where renewable and low carbon gases are utilised extensively alongside low carbon electricity; and an Electrified Scenario in which low carbon and renewable gas use is limited to cases where no reasonable alternative energy source exists (e.g. industry).

The ENA's report finds that the Balanced Scenario is £13 billion cheaper than the Electrified Scenario, significantly reducing overall net zero system costs. This is due to two principal factors:

- Equipment costs in buildings, where the wholesale adoption of electric heating necessitates new technologies (like all-electric heat pumps); and

- Power infrastructure updates, where to deal with much higher electricity peaks there is a significant increase in generation capacity and network reinforcement costs.

As such, the ENA concludes that a balanced combination of low carbon gases and electricity is the optimal way to decarbonise the GB energy system and reach net-zero emissions by 2050.

In addition, the report recognises that negative emissions provided by the use of biomethane or biomass in conjunction with carbon capture and storage (CCS) are critical to achieving net zero.

The mix of green gas in this report includes: blue hydrogen (hydrogen derived from fossil methane); green hydrogen (hydrogen derived from renewable electricity); biomethane (derived from anaerobic digestion and thermal gasification) and power to gas. In terms of biomethane, around one third is expected to come from anaerobic digestion with the remaining two thirds coming from the thermal gasification of biomass. The report further estimates that 50% of the biomass used in thermal gasification with be domestically produced and 50% imported from abroad.

Overall, this report highlights the need for four core elements to develop and dovetail in order to achieve net zero by 2050:

- The development and expansion of low carbon gas production;
- The electrification of transport, low-temperature industrial processes and areas of heat;
- The expansion of energy efficiency measures, GB-wide; and
- The development and roll-out of Carbon Capture, Utilisation and Storage (CCUS)

A full copy of the report and its recommendations can be found here.