Heat Networks and Governance[1]

Background

Following, the announcement that £300 million would be made available to support development of heat networks in the UK,[2] the Department of Energy and Climate Change (DECC) has sought feedback on early stage proposals regarding the best use of these funds.[3] On April 12, a special session at the Heat Networks and Governance workshop was dedicated to eliciting such feedback from stakeholders. The Heat Networks and Governance workshop itself was co-sponsored by DECC, the Energy Technologies Institute and the UK Energy Research Centre and brought together more than 70 stakeholders from industry, government and academia.[4] This document provides a summary of key points raised throughout the workshop and was informed particularly by the dedicated feedback session. The key points and recommendations are aimed at supporting DECC's Heat Networks Team as they move into Phase 1 of the funding cycle.

[1] An ad hoc Steering Group helped to shape the event discussed in this document and also had a chance to comment on this document prior to its release. The core of the Steering Group included Nicola Butterworth, UK Department of Energy and Climate Change; Mike Colechin, Energy Technologies Institute; Keith MacLean, UK Energy Research Centre Advisory Board; Amber Sharick, UK Energy Research Centre; and Dr. Janette Webb, University of Edinburgh. Guy Boulby, UK Department of Energy and Climate Change; Dr. William Burns, UK Energy Research Centre; Dr. David Hawkey, University of Edinburgh; John Saunders, UK Department of Energy and Climate Change; and Dr. Michael Weston, UK Energy Research Centre also made critical contributions.

[2] The Chancellor's statement on heat networks in November 2015 Spending Review "The government will provide over £300m of funding on heat networks over the next five years ….. leveraging around £2bn of private and local capital investment….. expected to lead to the construction of some 200 large heat networks in towns, cities and communities across England and Wales heating commercial offices, public sector buildings like hospitals and schools, as well as flats and houses by 2025." Guy Boulby, Heat Networks in the UK (2016). Presentation available upon request. A scaled-down presentation is available via the UK Energy Research Centre website. (2016). *Heat Networks & Governance Issues*. [online] Available at: http://www.ukerc.ac.uk/events/heat-networks-governance-issues.html [Accessed 16 May 2016].

[3] The Heat Networks Delivery Unit had a session dedicated to this feedback on the 12 April 2016 at the Heat Networks and Governance workshop. Additionally, they have indicated that they are seeking feedback from stakeholders from April-June 2016 to inform the first round of funding which will take place in March 2017. Guy Boulby, Heat Networks in the UK (2016). Presentation available upon request. A scaled-down presentation is available via the UK Energy Research Centre website. (2016). *Heat Networks & Governance Issues*. [online] Available at: http://www.ukerc.ac.uk/events/heat-networks-governance-issues.html [Accessed 16 May 2016].

[4] For a list of organizations that attended, *See* UK Energy Research Centre. (2016). *Heat Networks & Governance Issues*. [online] Available at: http://www.ukerc.ac.uk/events/heat-networks-governance-issues.html [Accessed 16 May 2016].

Key Points

- The £300 million is aimed at supporting 200 projects and eventually leveraging millions in additional funds from local governments and industry partners. That being said, there was concern that £300 million spread over 200 projects would not result in a pipeline of strong projects for a viable industry. Rather than 200 projects struggling, many stakeholders hope to see strong projects, of various sizes, eligible for several stages of funding that take them from early stages of development through to pipes-in-the-ground and even expansion stages.

- Heat Networks are part of the UK plan to meet greenhouse gas emission reductions commitments.[5] Communities and local authorities, however, are looking to multiple benefits from heat networks that are varied and might not be included/valued in traditional valuations for financing or even carbon accounting. These multiple benefits include basic provision of services, positive health outcomes, reductions in fuel poverty and even the creation of a revenue stream.[6] Relegating heat networks to a means of meeting the Carbon Budget undervalues their worth in other areas of the trilemma—security and affordability. Finding a valuation that includes the multiple benefits would allow for both proper accounting and more informed decision-making.

- In addition, UK energy policy treats heat networks as a means of future proofing and opening up options for a low carbon energy system. The envisaged system services from heat networks include heat recovery, grid balancing, demand management, energy storage and flexibility, all contributing to reduced total costs. These benefits are not, however, systematically captured in current investment models, and there is no established route to address the problem. The commercial viability of heat networks is likely to depend on incorporating the value of these system services in planning and investment appraisals, and should include consideration of risk pooling with incumbent networks.[7]

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[5] Element Energy has modelled the potential contribution heat networks can make to climate abatement in the UK. Guy Boulby, Heat Networks in the UK (2016). Presentation available upon request. A scaled-down presentation is available via the UK Energy Research Centre website. (2016). *Heat Networks & Governance Issues*. [online] Available at: http://www.ukerc.ac.uk/events/heat-networks-governance-issues.html [Accessed 16 May 2016].

[6] *See*, for example, "The NHS is also keen to support local heating schemes that provide access to cheap energy to local communities because of our concern that with rising energy prices, energy scarcity and other energy supply issues, fuel poverty is increasing. Those who are fuel poor are more likely to suffer ill health. The NHS therefore has a stake in the development of infrastructure for sustainable, low cost, low carbon district heating." NHS Sustainable Development Unit, (2009). *Government Consultation on a National Heat and Energy Saving Strategy*. Cambridge. Available at: http://www.sduhealth.org.uk/search/resources.aspx?q=heat+and+energy+saving&zoom_query=heat+and+energy+saving [Accessed 16 May 2016].

[7] For more information on this, as well as ongoing work looking at local governments' energy investments, partially funded by ETI and the UKERC, contact Dr. Janette Webb, University of Edinburgh. (2016) *Staff Profiles.* [online] via http://www.sps.ed.ac.uk/staff/sociology/webb_janette

Key Points (Continued)

- Despite being network infrastructure that has a lifetime of 40 years, heat network projects in the UK are evaluated against a short-term counterfactual, i.e., natural gas, which has an increasingly limited role to play in the future.[8] The choice of counterfactual should focus on future-proofing and incorporate the evidence-base on the role of fuel choice across appropriate timelines. International comparative analysis can provide insight into possible approaches—for example, the City of Rotterdam[9] accepts a limited role of gas in the future and is considering alternatives for evaluating the business case of heat networks.

- Much energy rhetoric focuses on the role of the consumer. In the case of heat, the entire population is the end-user and any of us at any given time are vulnerable should there be no heat, e.g., in winter or during an illness. Incorporating end-users into heat governance processes and decision-making is vital for the long-term health of the industry as well as for meeting the needs of the communities these networks are meant to serve. Likewise, system checks and balances, such as performance standards and evaluation procedures should be implemented early on to make sure that heat network delivery does not suffer from the trust issues facing other energy markets, i.e., electricity service providers.[10]

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[8] UK Energy Research Centre, (2016). *Role of gas as 'bridge' to a low carbon future in the UK is limited, new research finds - includes live blog of launch event*. [online] Available at: http://www.ukerc.ac.uk/news/role-of-gas-as-bridge-to-a-low-carbon-future-in-the-uk-is-limited-new-research-finds.html#sthash.gGgTTdzP.dpuf [Accessed 16 May 2016]. McGlade, C., Bradshaw, M., Anandarajah, G., Watson, J.and Ekins, P. (2014) A Bridge to a Low-Carbon Future? Modelling the Long-Term Global Potential of Natural Gas - Research Report (UKERC: London).

[9] Madsen, A. (2016). Telephone interview on Rotterdam's approach to evaluating the investment worthiness of heat network projects with A. Sharick, 19 May.

[10] This is part of the discussion around various attempts to bring mandatory and voluntary regulation and standards to the sector. *See*, for example, CIBSE, (2015). *Development of a new Heat Networks Code of Practice*. [online] Available at: http://www.cibse.org/knowledge/cibse-technical-symposium-2015/development-of-a-new-heat-networks-code-of-practic [Accessed 16 May 2016].

Recommendations for Funding

1. Include a mechanism to allow for the funding to be recycled. This might be a combination of grant and loan with re-payment going into a revolving fund.
2. Allow funded projects that meet clear indicators to be eligible for additional future funding phases.
3. Likewise, perhaps encourage local authority capacity building by providing directly, or incorporating the expectation in contract delivery, for specified technical assistance to complement the infrastructure grant and loan.
4. Standardize procurement processes and contractual structures by providing a series of framework documents to reduce project development timelines and delivery costs. This could include model enterprise structures—public, private, public-private-partnerships, and mutual—and standard procurement documents. This would build on efforts by DECC's Heat Networks Delivery Unit and the embryonic District Energy Procurement Agency (as well as others active in this space).
5. A portfolio of project types should be supported and include variation in size, business models and locations.
6. Incorporate future-proofing for expansion of network and load, and use of low carbon or recovered heat.
7. Incentivize network developments which maximize heat load density and diversity, through multi-stakeholder collaboration.
8. Incentivize linkages amongst site-specific networks.
9. Evaluate performance of heat delivery, carbon savings and other benefits in order to incorporate lessons learned.

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