UK Local Authority District Energy Vanguards Network

District Heating Policy Options in the UK: Workshop report

Workshop aims:
To stimulate discussion of policy options for district heating and to provide feedback from local authority vanguards to UK Government Department of Energy and Climate Change.

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Acknowledgements

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Introduction

The UK Government plans to publish its Heat Strategy in March 2013. DECC wished to test proposals relating to district heating with the members of the Vanguards Network. To this end the Vanguards met on Friday 15th February 2013 at Sheffield Town Hall.

The Workshop gave network members advance notice of the areas DECC proposes the Heat Strategy will address, and the opportunity to influence the final shape of policies. We reviewed the main proposals to provide feedback to DECC officers in order to inform the final policy. District energy extends across reserved and devolved energy policy matters, and input from both UK and Scottish governments was important in informing our discussions.

Main Topics addressed were:

- The role of a database for high level identification of areas likely to be suitable for district energy
- Provision of an Advisory Service
- Financial support for project development
- Mechanisms for underwriting risk to lower the cost of investment finance
- Technical standards for heat networks
- Model commercial and corporate structures and contracts
- Model customer charter and customer protection standards, including transparency in heat pricing

Attendance was by invitation only: 60 delegates participated, representing 26 local authorities, UK and Scottish governments and agencies, two local authority owned ESCos, six commercial organisations and four academic institutions.

This report is structured by the six topics discussed in 30 minute sessions in the workshop. For some issues broad agreement was apparent, while for others opinions differed. Accordingly this report attempts to reflect faithfully these agreements and disagreements.

1   Identifying opportunities for district heating
Key points from discussion

➢ A database of opportunity could stimulate projects, inform local and national policy, or help coordinate organisations. The content of the database would depend both on the intended purpose, and the intended users (e.g. either commercial or public sector entrepreneurs).

➢ DH opportunities are constrained by local policies, relationships and fluid windows of opportunity as well as by physical, occupancy and ownership characteristics of an area.

➢ The effectiveness of a database is likely to be enhanced with local input, but engagement of local authorities (particularly those outside the Vanguards network) will depend on clearer policy direction from the centre and clear benefits to local authorities.

➢ Given the complex and contingent nature of DH development in current conditions, consideration should be given to whether construction of a national database (as opposed, say, to a library of existing feasibility studies) is the most effective use of resources if the goal is a step change in the level of activity

1.1   Content of database

Discussion centred on the content of a "database of opportunity" , and how this linked with different conceptions of its purpose. In some discussions, the needs of different database users, and their fit with contents and purposes were highlighted (see 1.2). Some common themes emerged:

A database should be built on heat demand information, and its utility would be generally increased with information at finer resolution than currently available in the English heat map. One group suggested that much useful data is held by energy supply companies, and that DECC should be able to require access to this data.

However, current heat demand information alone would be insufficient. Various layers helpful to identifying and developing projects were discussed including:

- Building characteristics to allow consideration of future heat use
- Multiple deprivation indices (such as health issues and fuel poverty)
- Development opportunities, planning decisions on major developments and development timescales
- Building ownership and key contacts
- Profile of building owners' ability to take on risk
- Sources of recoverable heat
- Information relevant to project costs (such as benchmark or comparative pipe prices)
- Information relevant to local energy development beyond heat networks (e.g. wind-related data)

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- Projects developed up to the point of being "shovel-ready"

Several groups expressed concern that a high-level database built on data currently available to central government would be of limited use as locally specific knowledge is crucial to understanding opportunities. One group suggested that a high-level view might help identify opportunities in rural areas, but the complexity and density of urban areas would make a database built on central information of limited value.

1.2   Intended purposes of a database

The broad purposes suggested by Vanguards were: project opportunity identification and development; local or national policy development; and coordination across administrative boundaries. Discussions highlighted differences in the data that would be most useful for different purposes, but also questioned whether a database could usefully be constructed to fulfil particular purposes. Some participants suggested that DECC would have to identify who would be responsible for starting any project in such a database: who would deliver the project and who would it be an opportunity for? One table suggested that answering these questions would lead to particular kinds of data being included or emphasised, and that this could be interpreted as the expression of a view as to who the "rightful owner" of district heating should be (broadly, local government or the commercial sector).

1.2.1   Project opportunity identification and development

Participants discussed the needs of different actors in identifying where to invest in project development. Commercial ESCos would find heat demand and physical characteristics useful, but would also need information on building ownership, development timescales, and key contacts. However, in order to invest business development resources in an area, they would also want to see links with local planning policies and/or policy priorities. Examples where commercial ESCos have recently withdrawn from certain areas were suggested to reflect not a lack of data, but a lack of local commitment.

Some participants were concerned that a database aimed at the commercial sector could lead to cherry picking of attractive sites, making it harder for LAs to use these opportunities to leverage investment into other areas in pursuit of policy goals (particularly fuel poverty and carbon mitigation).

Different views were expressed as to the value of a national database in helping LAs to identify and develop opportunities. Some experienced officers from London questioned the value of spatial databases for these purposes, suggesting that, to an experienced eye, high level opportunities for district heating are easy to spot without complex data. Turning these opportunities into viable projects required considerable information and hard work, and a national database may be of limited value for this purpose.

Others, however, suggested that a database could be used to stimulate activity in areas which are further behind. There were differences of opinion as to whether a database would be effective for this purpose, though on balance participants tended to hold negative views. Where participants did see scope for a database to stimulate new LA activity it was through providing the basis for local discussions, particularly in instances where heat is currently being wasted. However, participants noted important capacity

constraints, suggesting officers would require training in how to use the output of a heat map or opportunity database, and the value of expert facilitators in brokering local negotiations.

Where participants expressed scepticism that a database would stimulate activity, they suggested that the lack of engagement by LAs with DH is not solely due to lack of data or awareness of opportunities, but:

- Lack of central government policy direction to LAs for low carbon heat
- LAs facing budget cuts and increasing pressure on services are increasingly retreating to a role of commissioning others to provide statutory services
- Lack of clear benefit to LAs from pursuing energy projects

Some participants suggested these issues could be ameliorated by increasing LA access to benefits from projects arising from the database by allowing 100% retention of business rates. It was suggested that this could both turn LAs from passive to active promoters of district heating, and motivate them to contribute to development and maintenance of a central database.

1.2.2   Policy development

Both national and local policy development, and the role of a database therein, were discussed. Comparison was made with how Ofgem's up-to-date map of PV installations helps planning at a national level. A database which helped central government understand the scale of DH opportunity, and to compare viability across areas, may be useful to shape policy. There was however concern that a broad brush database could miss important issues shaping the opportunity structure in a local area and lead to perverse outcomes. Some participants also expressed frustration with the pace of policy development, expressing an opinion that little progress has been made since 2000 (though whether this group considered a database would help build momentum or not isn't clear).

At a local level, if the analysis underpinning the database was sufficiently robust it could be used as part of the evidence base for planning policies (e.g. requiring DH readiness in new developments adjacent to identified DH opportunities). However, experience from LAs in developing evidence-based planning policies (particularly in response to the former English Planning Policy Statement 1 Supplement on Climate Change) suggests that the rigour of evidence required by the planning inspectorate was probably higher than a national database could produce.

1.2.3   Coordination

A database of opportunity could in principle help coordinate activity across different parts of local government, particularly where two-tier arrangements are in place. County councils have considerable resources and estates to build anchor loads; can help districts develop their own schemes, or play a coordinating role. Some participants discussed examples where this was already happening. However, this depends on good relations. A database could also open links between public bodies (not just local government) in an area where potential for shared schemes exists.

Coordination between local and national levels was also discussed. For

example, some suggested linking the database to a centralised procurement framework similar to the public sector procurement framework in Scotland. Others regarded coordinated action across LAs as a way of creating development portfolios which could help leverage Treasury funding and reduce perceived risk.

1.3   Data curation and ownership

Participants noted that there were different sources of data, and how these sources were brought together would have consequences for how the database was perceived and whether it would be kept up to date.

Some participants considered that for the database to be useful it would have to contain information which local government was in the best position to gather (such as building ownership and key contact information). Given that a requirement for local government to collect and report this information for a centralised system would likely be seen as an additional burden, it might be more productive to focus on LAs who are already actively engaged in DH. However, an advantage of a bottom up approach, with LAs feeding data to central government, is that it helps networking among officers for sharing of information and best practice. The recent removal of reporting requirements for English LAs under the localism agenda was cited as making this kind of coordination more difficult.

Other participants suggested that some of the required data is already centrally collected from local authorities (particularly by Defra), and careful consideration needs to be given to how existing data can most productively be integrated at local levels. Relevant data need not *all* come from LAs, and the example of Scottish Futures Trust current work to map every public sector building and occupants onto a GIS database was mentioned. The purpose is estate management and rationalization, but it could be a resource for planning heat networks.

The Scottish approach to heat mapping was discussed as a means of ensuring local data sources were fed into a database, while ensuring consistency across areas. This was also regarded as one model for local ownership, which several participants regarded as important to ensuring wider issues of regeneration, fuel poverty and carbon mitigation are addressed and linked to planning. The database would have value, and so local authorities may restrict access to it to prevent commercial cherry picking of opportunities.

There was some suggestion that the database could be structured in a way similar to highways as both are infrastructure. Central government sets the framework and it is then local authorities have a duty to deliver it. This model provides a framework for investment, and works well for highways.

Participants suggested that making the database useful at local level required GIS data which could be easily manipulated. A specific concern that local access would be restricted to a web-based mapping of the data output (such as a Google map), rather than access to the underlying information, was expressed.

1.4   Appropriateness of a database

In addition to the challenges of creating a database that reflects local knowledge and conditions, and which is useful at a local level, some

participants suggested that the idea of a database of opportunity was disconnected from the ways projects actually get developed. Some thought greater consideration should be given to whether the resources expended creating a database might be better used in some other way.

There were different opinions as to the role of a heat map in initiating project development: some officers considered this a helpful (if limited) starting point, while others suggested that *no* heat network has had its origins in a heat mapping exercise. Rather than being a linear process beginning with a heat map, experienced officers described the process as being much more "touchy feely": development processes were fluid and changeable, and the construction and maintenance of relationships in a shifting context of opportunities for coordinated action was more important than the relatively straightforward process of identifying areas with suitable heat loads. Others regarded DH as necessarily community-led, and noted that active LAs would already have some form of opportunity database (or at least awareness of opportunities), bringing into question the value of replicating this knowledge centrally.

Some participants suggested that construction of a useful database of opportunity would be a "gargantuan task," and risked diverting attention and resources *away* from project development. Alternative uses of scarce resources favoured by some participants focused on the needs of LA officers, or otherwise stimulating practical action. These included:

- Collating feasibility studies ("we are awash with feasibility studies") would be a helpful resource in ensuring future feasibility work is most productive, and possibly in resurrecting stalled projects; this could also underpin work on better understanding of why projects stall (to complement analysis of barriers faced by successful developments).
- Resources could be used to support an information sharing network among local authority officers; several groups mentioned the potential to build on the value of the Vanguards Network. For some, such networking was an important means of counteracting the fragmentation consequential on the localism agenda.
- Focusing development resources into areas where there is a good chance they will lead to deployment of heat networks, rather than spreading resources thinly across the whole UK/England.

Experience of how LAs handle the results of feasibility studies suggests a need for resources to be used in supporting officers evaluating (and sometimes challenging) these results.

2   Supporting project development
Key points from discussion

➢ Participants were in favour of a support service. This could either adopt a "hands on" or a "hand holding" approach – both have advantages and disadvantages, but on balance discussions favoured the latter.

➢ Support service should help build embedded capacity in LAs to build momentum, overcome the current precarious reliance of DH programmes on very small numbers of people, and make local government a "knowledgeable client" in interaction with consultancies and contractors.

➢ Support would be valuable throughout development process but should be flexible to accommodate local specificities (particularly in post-feasibility stages of development) and to enable innovative approaches (such as new city-region development agencies)

➢ Standardisation is one route to overcoming knowledge asymmetries which challenge LAs, but may be limiting or stifling. Preferred alternatives include impartial expert advice, developing shared resources and libraries of earlier work, and supporting networking among LA officers.

2.1   Need for development support

The suggestion that government might invest in development support was generally welcomed. Various knowledge limitations within councils were identified, including relevant business skills, foresight of likely costs (particularly development costs and particularly at the early stages of investigation), unfamiliarity across different departments with the local benefits of DH, and understanding the likely stages of a development process. In addition, several participants suggested that LAs can be in a weak position (e.g. knowledge asymmetries) when dealing with consultants and/or contractors. Experienced LAs are frequently asked for advice from less experienced authorities, suggesting both a need for support (among inexperienced LAs) and one source of expertise (within experienced LAs) that could be drawn on.

However, the role of a central support unit needs to be defined as this will determine the skills it will require. Possible elements of this role discussed include:

• Set out a framework or route for decision making.
• Act as a one-stop shop for support and resources across the development process.
• Provide clarity on policy direction.
• Provide information on incentives.
• Provide information on the right questions to ask. This will depend on the metric the local authority wishes to use – e.g. fuel poverty, carbon reductions, energy security etc.

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- Support development of locally appropriate business models, balancing the economies of generic models against bespoke local requirements (particular circumstances, attitudes to control and risk, etc.).
- Provide procurement specifications.
- Advise on the range of opportunities (and associated funding) that district energy can link in with, and how these can be brought together.
- Hold a library of resources and case studies.
- Establish suitable framework agreements.
- Provide skills audits to identify appropriate requirements for local authorities.

Some of these functions are explored in more detail below, as is the point (raised by several participants) that there are multiple different ways of providing support, and that support needs may evolve as projects develop (and thus become more place-specific) and local capacity is built.

There was some discussion as to how well-resourced a central unit might be, with some participants suggesting a "reality check" was in order, given budget limitations for central government departments. This led to questions as to how the unit would cope with demand, and a suggestion that prioritisation might follow the approach used by DEPDU in London.

2.2   Structure and approach of a support agency
At a high level, discussions suggested a support agency could be developed according to one of two different models. Under "model 1" the support service would take on much of the work of developing projects (a "hands-on" approach). Under "model 2" the support service would function more as a guidance body, able to give impartial expert advice to local authorities as they brought in suitable sources of project-oriented help and advice (a "hand-holding" approach). Model 1 was compared with London's DEPDU service, and model 2 was likened to the Carbon Trust's Strategic Design Advisory services.

A "model 1" approach would involve the support service in hands-on development of projects. This approach may work where there is very little DH expertise in a local authority. Some participants suggested economies of scale could be achieved by appointing a single organisation to take on development work (or even a limited range of development work such as feasibility analyses). However, some reservations about this approach were expressed. In London a difficult liability issue has to be managed, as the engineering consultancy provides the advice to LAs, but the GLA (which owns the DEPDU programme) is liable for defects in that advice. In addition, procurement of centralised expertise on this model would represent a significant *up front* cost, which would reduce the availability of funds to be used more flexibly (e.g. to invest as "risk capital" in locally specific development needs).

An important suggested advantage of a "model 2" approach was greater flexibility and scope to build capacity within LAs, which many participants considered to be important. DH development often relies on the drive and initiative of individuals in LAs (one of which described herself as "the lone nutter" without whom there would be no DH work in her

council). Without capacity building this means programmes or projects can collapse if the individual leaves the authority. Previous funding programmes have helped LAs bring in external expertise, but have not funded capacity building. Local ownership of knowledge and expertise is regarded as key, even if LAs don't necessarily recognise this from the start.

A "model 2" approach should give LAs guidance on policy process delivery, with outline of the basic steps to take on project delivery. Raising the technical understanding of DH at a local level is seen as critical in order that LAs can engage with the market as an "intelligent client". Other aspects of this approach included a list of approved or recommended consultants/agencies who could do feasibility studies/reports, or even some means of verifying figures produced by commercial partners. It was noted that there are a few very good consultants in the UK, but many who do not understand DH.

A key question for any agency would be supporting the coordination and interconnection of stakeholders. Demonstrating feasibility is not difficult; the complexity comes with numerous partners. This has costs and drains away the project budget.

2.3   Sharing and transparency
The highest standards of objectivity and independence would be critical to the success of any agency. Some participants noted that some organisations (commercial and public sector) have a tendency to shape advice in favour of the products and services they offer.

A recurrent theme was the value LAs place on being able to share knowledge with each other, rather than reinvent wheel every time, making a repository of information and skills an important component of a support service.

EST Scotland ran quarterly workshops (2001-05) on regional bases to help LAs understand DH and to share local/regional knowledge and discuss current issues/developments. This practitioner focus with a "facilitating" network was seen as a good model, because it avoided common problems of project development.

The reluctance of commercial organisations for their feasibility work to be made public should be tackled. Participants frequently cited how useful they would find a bank of case studies including consultancy reports (technical, governance, financing) to help understand different approaches to DH, and to ensure LAs ask the right questions when they procure advice. Some suggested that a function of a support service could be to facilitate a Peer Challenge Review process for feasibility work to weed out poor quality work.

There was discussion of alternative approaches to development and procurement, which could avoid the need for a LA to procure delivery. By making feasibility studies openly available, other actors could take up project delivery without the LA procuring this work.

2.4   Local capacity building
Discussions reported above suggested a strong desire among participants to see capacity within local government developed. A DH champion is essential to coordination within the council and across stakeholders, and to assiduously scan the horizon for project and financing opportunities.

Capacity building would also enable momentum to build in supported localities, freeing the support service to move into areas where DH is less developed. Specific areas of capacity requirement included handling feasibility analyses, stakeholder engagement and business models.

Seconding-in from consultancies was seen as one way of immediately strengthening capacity within LAs, while officer expertise would gradually improve. Some London boroughs have adopted this approach. However, as the ability of the LA to manage the "banks of consultants at the door" was repeatedly cited as a reason to strengthen capacity, the potential for conflicts of interest (and perceived conflicts) between the LA and the seconding consultancy would need to be carefully managed.

Capacity building could be different at different scales. For some LAs there would likely be only one or two heat network opportunities, but for the larger cities with multiple sites for heat network development, a long term strategic programme could be developed and delivered by setting up a Greater X Decentralised Energy Delivery Body. The support service should be flexible enough to support both approaches. This is important: there is a risk that a London-centred agency would not be effective, because DH is local and needs people to be on-site. A central agency would work only if there is effective working in the locality; 'DH is not a one size fits all issue'. Continuity of the team throughout the process is desirable.

2.5   Engagement model

While some considered a fee for support services would be a barrier, others regarded it as important to ensure the service was only used by LAs with some commitment to project delivery. Similar advisory services in the past had required 50% funding from users. While this principal was supported by some, the current funding position for local government means a 20% user contribution might be more appropriate.

There was also some discussion of how to encourage LAs to use support, as this could be a challenge for those not already committed to DH. Some suggested the Scottish Public Bodies Duty (under the Climate Change (Scotland) Act) could provide a model, or the arrangements for highways where central government sets a framework and local authorities have a duty to deliver.

2.6   Development funding

Additional development funding would always be welcomed by LAs. It is especially "risk finance" where LAs face acute shortages (rather than capital investment). There were different views as to how this money could best be used, with some emphasising feasibility and scoping work and others stressing the need to fund the transition from feasibility, via legal, financial and business model development, to being "shovel-ready".

There was also some discussion as to how development funding resources could best be used given the possibility of drawing in European resources, particularly under the ELENA programme. England is regarded as too large by the EIB to qualify as a region, so ELENA funding could not be used for a single England-wide (or UK-wide) model. The old English regions would have been the right kind of scale to use ELENA funding, but in their absence

Local Enterprise Partnerships might be a suitable alternative.

2.7   Standardisation

Responses to the proposal to standardise contractual arrangements varied. Negative responses included concerns that either the standards would reduce competition and stifle innovation, or they would be too generic to be meaningful and consequently would be largely ignored. Supportive responses suggested there is scope for standardisation in some limited domains, such as governance arrangements and contracts/generic clauses for third party sales and new customers. However, these would need to be flexible and kept up to date.

Other approaches could achieve similar benefits, however, such as improving information sharing mechanisms between LAs (for example, on pricing formulae) or developing a bank of contracts which LA officers could scrutinise and use to shortcut the development process.

While participants asserted there can be no single model for DH, they also suggested that too many LAs start out with a blank sheet of paper. The development of a LA charter which set out what LAs would/should be looking for in agreements would be helpful, as would a suggested set of steps for LAs to go through, highlighting key issues at each stage. For example, it was suggested that having legal advice at an early stage can be very helpful in setting the frame for projects, rather than fixing the unintended problems when it is too late.

A complementary approach would be to develop a central "tool box" with a range of "fit for purpose" tools to address different issues, and suited to a range of political, technical and financial circumstances. Examples ranged from how to get best pipework costs to support for getting from feasibility stage to investment grade projects. It was emphasised that after feasibility, many unique project characteristics come to the fore, and require officer time and an associated budget.

The issue of ensuring sufficient standardisation within an area (particularly where multiple actors are developing DH) was also raised. One response was that it is difficult to solve the problem of getting the different stakeholders aligned without clearer policy commitment to DH from central government.

3 Integrating district heating with planning
Key points from discussion

➢ Planning policy can be powerful both in drawing new developments onto DH systems and increasing confidence by signalling local commitment to DH

➢ Building regulations can also be powerful, and can extend to retrofit as well as new build. Coordination between building regulations and planning can in many LAs be improved.

➢ Several sources of "friction" can make development and enforcement of robust DH planning policies challenging, underlining the importance of corporate leadership in order to tackle these issues as they arise.

➢ Planning policies are more likely to be adopted at a local level if they are embedded in clear DH policies at larger spatial scales (such as the London Plan or Scottish National Planning Framework). While some participants viewed the English localism agenda as offering new possibilities for DH in planning, most felt that the loss of clear guidance from central government is a significant challenge.

3.1 Role of planning

The majority view was that spatial planning is important. Heat zoning used in Denmark (which mandated connection, including retrofit) was mentioned as a particularly effective tool, though some participants questioned whether such an approach could be adopted in the UK, particularly given the very different prevailing energy circumstances, including mains gas.

Officers also, however, considered the UK model of planning to be a powerful tool which, with the right wording, evidence base and enforcement, could have significant impact on DH development. Examples were discussed where planning policy was crucial to establishing project viability and hence mobilising investment. This effect was based both on the immediate outcome that new development would be connected, but also on the commitment to support DH in the area signalled by the LAs adoption of the planning policy. Indeed, one officer suggested that legacy networks that had been languishing in the 1990s were reinvigorated in response to English 2007 planning policy guidance on decentralised energy[1] as their managers saw new opportunities that could arise from reinvestment.

However, some questioned the role of planning, in part on the basis that retrofit rather than new build is where greater carbon and cost savings are to be made. Some examples were discussed where development went ahead without the need for planning, and some officers preferred strategies which focus on retrofitting large heat loads (hospitals, social housing estates, universities) and building out, in which planning control would play only a minor role.

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[1] The Climate Change Supplement to Planning Policy Statement 1

The capacity of planning to drive DH development was also questioned, with some suggesting it is easy for developers to kill off local projects simply by dragging their feet. Some participants suggested planning powers are currently too weak to effectively insist on particular technologies such as DH.

Some participants noted that while planning policy is limited to granting or rejecting new development, building regulations can reach further, facilitating connection both of new buildings and of existing buildings where significant changes are being made. Rather than seeing planning and building control as alternatives, participants suggested better coordination between respective teams within local authorities is needed.

3.2   DH planning policies in practice
Several aspects of good practice in planning policy were discussed:

- Policies which are carbon related are most effective
- Policies should be based on whole-life costing rather than upfront costs. (One participant asked: what's the point of low cost housing if you have high cost heating?!)
- Policies should set out viability criteria. Planning cannot deliver bankable heat contracts, but needs to test developer claims on lack of viability, and place the burden of proof on the developer.

Some specific examples were also discussed, including a development in which the housing developer had contributed to investment in the energy centre as a way of meeting the sustainability requirements laid out in local planning policy.

Some participants discussed the circumstances under which planning policies are effective. It was suggested that policies cannot be too prescriptive on technical issues, but that there was a danger that developers would find ways around policies which are too flexible. Some thought that the solution to this was to set out clear overarching plans for development to restrict the number of get-out clauses, but that this would require corporate leadership.

Where a network already exists it is easy to get new developments to sign up. This works particularly well when carbon reduction as result of network connection is high, and can mean there is no need to force sign up via planning, particularly if building control includes demanding carbon or sustainability criteria.

3.3   Planning challenges
While planning policies based around existing networks are relatively easy, proposed networks are more challenging. Some LAs are reluctant to adopt planning policies which require connection to networks that do not yet exist, as the LA cannot confidently guarantee that the network will be developed within a given timeframe (such as 5 years).

Planning policies may result in the authority having to introduce developers to an established ESCo. This leaves the authority exposed to reputational risk if the ESCo misbehaves or refuses to connect development. This issue is exacerbated by the fact that heat (unlike gas or electricity) is unregulated. An example was discussed where a city authority has decided in response to

establish island ESCo's for new developments.

Some participants suggested that getting DH into planning permission is simple (though see 3.4 below), but policing it is difficult. There is a tension between planning departments, who are generally supportive, and Development Control, who have a different set of incentives. The capacity within local authorities to police DH planning policies is also limited, but this issue is not insurmountable (for example, the GLA retain BRE for technical evaluation of energy strategies submitted alongside planning applications). The standard building energy models, BREEAM and SAP, are not very good at dealing with connection to district heating. For this reason they are not included in the London Plan.

Some participants suggested planners fear developer flight if planning policy is perceived as too onerous or restrictive. This was highlighted particularly as an issue in a discussion of using planning policy to prevent extension of the gas network into new development areas.

The use of PFI contracts for major developments can be a barrier to DH connection, as once the process has started retrofit is not possible within the contract period. PFI developers prefer to use "out of the box" solutions rather than respond to local circumstances.

District heating infrastructure contrasts with other infrastructure (such as schools in relation to new housing development) as there are no established rules of thumb linking development characteristics with carbon reduction requirements.

Planning departments were felt, by some participants, to be generally under-resourced, and funding cuts would both exacerbate this problem and encourage greater defensiveness within council silos as different departments seek to avoid cuts. Stronger policy direction to LAs from central and devolved government could help stimulate more activity from planning.

Where administrative boundaries cut across areas suitable for DH, coordination and cooperation across LAs can be challenging.

3.4 Planning guidance
The planning context for LAs in England has changed significantly over recent years. In the past, the Climate Change supplement to Planning Policy Statement 1 (PPS1) explicitly guided planning authorities to develop evidence-based decentralised energy policies, and had a funding stream attached to support creation of the evidence base. The role of evidence, and the resources required to develop robust evidence, were seen as important to the effectiveness of PPS1 guidance. The localism agenda has abandoned the PPS1 approach. Several officers argued that this had tied the hands of central government, preventing it from issuing clear policy direction to local authorities on decentralised energy.

Some participants expressed strong views on these reforms in England, commenting that "no policy is worse than bad policy" and that the loss of supportive guidance not only undermined capacity to develop local plans, but also led to hesitancy in enforcement of building regulations, creating something of a "shipwreck". One participant suggested the direction of travel

in Scotland might be the same, as one Scottish city has recently rescinded its local higher standard of building regulations.

The creation of Neighbourhood Plans under the Localism Act creates challenges for district energy planning policies in England, as plans do not usually consider DE. Their rationale as a means of relaxing LAs' hold over planning is interpreted as making it very difficult for LAs to guide development.

However, some participants tried to find opportunities for DH planning policy within the reformed English system. For example, the salience of high energy prices meant that neighbourhood planning would likely be highly receptive to planning policies which support low cost energy options (harnessing benefits of efficiency in a context of increasing resource scarcity, and source flexibility). The new Neighbourhood Development Orders could be used to grant outright planning permission for DH.

3.5   Adopting planning policies

Participants agreed that a robust evidence base is a critical underpinning of planning policies around DH, which otherwise would be subject to challenge; hard evidence is needed to justify zoning and to defend that line on a map. However, some participants perceive a fundamental lack of carbon/energy literacy amongst LA planners as a challenge to achieving this evidence-based approach. It was noted that BRE has provided training for planners in DH and the TCPA provides helpful material on their website.

For London boroughs DH is already in the London Plan, making it easy to get it into core strategies and local development frameworks. DH would benefit from similar spatial strategies in other parts of the country as well as Scotland.

Some groups discussed how DH policies could guarantee either that lower prices or long term performance would match claims. The extent to which the poor performance of 1960s and 1970s systems (which is matched only by the poor quality of the social housing into which these systems were often built) affects current perceptions of DH. These perceptions vary across places: officers discussed differences in how recently old, poorly performing networks have been removed and the age of decision makers (principally councillors) as possibly accounting for different local perceptions. It was acknowledged that the reputation of DH is fragile and easily undermined (in one city, by a newspaper report on a new system which referenced the failings of a project in the 1950s!).

3.6   Alternative routes to planning for DH becoming more common

The top-down PPS1 approach, while favoured by many, was not seen as the only way to achieve widespread DH planning policies. Indeed, one participant suggested this may not be the most effective approach given the risks of resistance to top-down directives. A perceived lack of coordination between DECC and CLG was also offered as reason to doubt that a return to central guidance would be forthcoming. Instead, a scenario was discussed in which the Core Cities with cities under the devolved administrations lead by example to drag other authorities along.

TCPA/CHPA guidance to planners was seen as having the right ingredients for planners, albeit somewhat oriented to the policy environment of the PPS1

supplement. The guidance has been taken up by very few authorities, perhaps reflecting the drawbacks of the PPS1 approach. The guidance could be redeveloped and relaunched (version 2.0). BRE training for planners was also mentioned as a good starting point.

An alternative route into planning in England was considered to be via Local Enterprise Partnerships. These are considered to be at the right scale to develop an overarching view of decentralised energy in an area. Their recently granted borrowing rights mean they could fund some development/delivery work. As LEPs are aligned to a growth agenda, finding locally meaningful ways in which DH can contribute to economic development would be key for this route (e.g. overcoming development bottlenecks created by the schedule for distribution network development) and building support for the adoption of DH planning policies.

4   Ensuring customers are protected
Key points from discussion

- ➢ Customer protection measures can have a range of impacts across DH development and operational models, building confidence and ensuring both customers and providers are treated fairly.

- ➢ Different customers and different types of scheme have different protection issues, but owner occupied and private rented households are most likely to require a formalised system of protection.

- ➢ Transparency in pricing is generally seen as beneficial, though it can be adopted in several different ways. Avoided cost approaches can reassure customers they are making a saving, but other approaches could increase confidence further.

- ➢ Administration of a consumer protection scheme could take many forms, with responsibility for administration and whether the costs are proportionate being key questions.

4.1   The need for consumer protection
Consumer protection, and more generally improving trust and transparency, was seen as important for a number of reasons including: the (usually) monopoly position of a heat supplier; challenges in making connection to an unregulated heat supplier a condition of planning consent; and the positive reputational impact (particularly within LAs) that some formalised protection measures would bring. The possibility that customer protection measures could stifle innovation should be handled carefully.

However, there was very little discussion of actual examples where customers had suffered bad service and/or complained. This absence of evidence was discussed by one group, which noted that it wasn't necessarily evidence of lack of complaint, as there is anecdotal evidence that complaints are currently pushed from one organisation to another, without coming to a single location where they can be counted. Complaints are sometimes made to CAB and Consumer Focus.

Several groups thought the discussion would benefit from evidence on customer protection in other countries, including formal protections (e.g. regulation) and opportunities to participate in the governance of schemes (e.g. through consumer representation at board level).

4.2   Coverage
Commercial subscribers were perceived not to need protection, but domestic users do. For these schemes, protection would be two-way, defending the rights of the consumer, but also protecting the supplier in case of bad debts.

In social housing cases, where there is often a tri-lateral relationship between a heat provider, a landlord and a tenant, any customer charter should address the rights and responsibilities of all parties, not just the tenant and landlord. However, in these cases, there are some structural protections built in, as both landlord and company are usually concerned to protect their reputations. Agreements often contain complex pricing formulae and penalty clauses

which help regulate relationships. Officers suggested access to examples of extant agreements would help them negotiate their own.

The need for customer protection for owner-occupiers was felt to be more acute, as these consumers would not have a large landlord to negotiate on their behalf with a heat supplier. Here the reputation impacts of dispute between user and heat provider may be less powerful, and the householder is in a position of relative weakness, particularly with regard to enforcement of agreements.

4.3   Contents of a customer charter
Issues which could helpfully be incorporated into a customer charter included:

- Security of supply;
- Response time and guarantees in the case of the heat supply failing;
- Supplier of last resort arrangements;
- Transparency and accountability around pricing;
- CO_2 (for commercial customers);
- Metering arrangements;
- Code for disconnections for vulnerable customers.

In relation to pricing, a range of views was expressed. Transparency was agreed to be important for consumers, though this can mean different things: for example transparency in the relationship between a consumer's energy use and their bill, or transparency in how a consumer's charges relate to their providers costs and income. It was noted that conventional energy providers do not generally provide transparent information of the latter type (for example, the element of electricity bills that goes to fund the Feed-in-Tariff).

Assuring consumers that prices are fair was thought by some participants to be challenging. DH operators currently weight fuel and service charges differently, and some participants thought it would be difficult to agree a customer charter covering this and other features of pricing. Offering tariffs based on avoided cost can create challenges: for example one company includes £150 as the annual cost of boiler maintenance when calculating "cheaper than gas," but participants were not sure how many people on gas actually face costs of this scale. Some participants suggested that indexing heat tariffs to RPI, but with a reasonable cap, would build more resilient consumer confidence than simply indexation against alternative fuels. Some companies bundle energy costs and building performance together in their tariff comparisons, offering lower heating costs than other (less efficient) buildings in the area. There was also some suggestion that heat tariffs should be collected and published so consumers could compare their arrangements with others'.

For the non-price aspects of consumer protection, some commercial companies simply carry policies over from the regulated sector. For example, this covers the documentation that customers get, guarantees on how the service provider will act, and transparent pricing calculations. Some participants suggested that with this approach customers may not even notice

they are dealing with a non-mainstream energy supply!

4.4   Scheme administration

Some groups suggested that a UK scheme should be made obligatory and it was noted that this would entail enforcement and penalties. There was some discussion of current approaches of industry bodies to developing customer charters; the current split within the industry across two trade associations could, if participation were made voluntary, lead to different schemes and standards.

Various different bodies to administer a consumer protection scheme were suggested, including trading standards authorities, central government, the Vanguards network or a new body. The independence and impartiality of such a body would be important characteristics. It was suggested that an ombudsman or arbitrator would be proportionate, removing the need for expensive legal action.

4.5   Heat regulation

This led into a broader discussion of regulation. Some participants raised the challenges and consequences of a Heat Act as a reason not to set up a body to regulate customer protection, while others considered such regulation, treating heat as a utility, would be a positive development. In contrast, a drawback of full regulation mentioned was the cost burden this would impose, as regulation on the model of Ofgem would result in large costs being passed on to small companies. One discussion did not resolve the balance between the costs and benefits of the different approaches, but proposed regulation *at an appropriate time*.

5   The role of technical standards for district heating networks

Key points from discussion

➢ Minimum technical standards for some aspects of DH systems could help safeguard their long term carbon and energy performance, particularly where commercial imperatives might otherwise lead to systems that degrade over time.

➢ Various materials and engineering standards already apply in the UK, either explicitly or through the import of components.

➢ Some technical aspects of DH design which are crucial to performance are not amenable to standardisation, relying instead on design skills underlining the importance of engineers' track record and possibly accreditation.

➢ Technical standards may play a role in ensuring systems in an area are compatible and can "link up later".

5.1   Purpose of standards

There was a wide range of opinions as to what the purpose of technical standards would be, with some groups seeing multiple benefits while others saw very few. The following issues were discussed (not all participants agreed with every point):

- Ensuring that different systems in an area can join up in future,
- Ensuring adequate quality in installation and materials to avoid repeat of the poor quality systems of the 1960s and 1970s,
- Ensuring each technology connected to a network (sources and subscriber systems) meets efficiency standards
- Driving economies of scale in (future) domestic manufacturing of equipment, where all equipment would be manufactured to a set standard
- Making procurement more straightforward
- Incorporating DH into building regulations
- Support for planning
- Building reputation and confidence

There was some discussion about installation and materials standards. Some felt that quality in these areas should be regulated by contractual agreements between parties rather than externally imposed standards. For example, the degrading of insulation on pipework over time might be acceptable to a developer if the cost of heat losses do not outweigh the savings in materials costs. However, others suggested that standards might help ensure that networks meet criteria other than financial viability, such as carbon emissions or resource efficiency, which are important parts of the rationale for policy support.

Some participants queried whether technical standards would be the best approach for achieving high levels of system performance. An alternative

approach would be for a procuring authority to specify performance standards, putting the responsibility (and risk) for technical failure on the contractor. Some felt this was a better approach than trying to price and standardize every element.

Some participants also noted that over-rigid standards could stifle innovation. Minimum standards, rather than optimum standards, might help alleviate this issue.

5.2   What would be covered?

It was felt that a number of aspects of heat network management would be suitable for standards:

- Dosing – rust prevention for infrastructure;
- Heat metering (not necessarily at a consumer level, but on the network);
- Technical specification of interface units;
- A national standard for laying pipes;
- Pipes and joints specification, for example their lifespan.

However, members felt that other aspects, around heat supply and flow rate, should be kept more flexible.

There are some existing standards, including AM12, European piping standards, building regulations and CHPQA. Some participants felt importing European standards would not be difficult as much equipment is already imported, though differences between the British building stock and other European countries (for example, in average room sizes) could argue for British standards.

The competence of the system designer is important in achieving high technical standards, and this would probably be the case even in the presence of a set of technical standards. The bespoke nature of heat networks means that, even within a framework of codified standards, poorly performing systems could emerge, because part of system quality relies on non-codifiable skills of design. However, professional accreditation for DH engineers could be further explored.

5.3   Other issues

Knowledge sharing was suggested as being helpful as there are numerous ways to design a system. A design guide could also help, covering the three phases – design, installation and maintenance – common to systems ranging from City to local scale. Should DECC commission this?

During these discussions, two groups proposed an obligation on utilities to remove redundant sub-surface infrastructure.

6   Financing district heating
Key points from discussion

➢ Public and private finance both play a role in DH development. The European Investment Bank is an attractive source of public finance, while participants were more sceptical about the Green Investment Bank.

➢ Finance for capital investment is in some respects easier to mobilise than finance for project development. Perceptions of risk, however, are crucial to the cost of capital, making de-risking and underwriting important for financial viability.

➢ Pension funds are increasingly interested in infrastructure but require larger investments than most UK projects. Scale may also be an issue in using the UK government's mechanism for underwriting infrastructure investment, as this appears to be focused on much larger projects.

➢ DH can create considerable local benefits (particularly in social housing) and can be a more productive investment (financially and in carbon terms) than other options for local government. However these are not encapsulated in a GVA model, leading risk-averse LAs to transfer control to the private sector.

6.1   Finance sources

Various finance sources have been used or investigated by LAs (including planning obligations, Community Infrastructure Levy and Zero Carbon Allowable Solutions). In the current financial climate there is interest in leveraging in as much private finance as possible, though European public finance was considered to be very attractive for investing in heat networks: interest rates are low (lower than Public Works Loan Board), and loans can be long term. However, the EIB generally looks to invest at least €50m. The distinct issue of EIB technical assistance funding (for development rather than capital investment) was also discussed, with participants noting the challenging leverage requirements and potential for claw-back within five years.

EU structural funds in principal could be used to finance DH infrastructure, though this investment route might be politically challenging as it would shift the balance of net payments with the EU, affecting national negotiating positions over EU budgets.

Some participants noted a mismatch between available loan tenors and the (longer) lifetimes of project assets. As the democratic cycle falls short of these periods, cross-party support is crucial.

Some discussions suggested that the perception of risk is more significant than capital costs. The perception of risk, irrespective of how good the system is, can prevent it going ahead. Risk is related to pre-investment cost well before anyone connects – what happens when you can't connect on time?

Discussing the Green Investment Bank (GIB), one view expressed was that there are cheaper capital sources, and that the GIB will only overcome

liquidity issues. A developer argued that projects should not need GIB funding if projects are commercially investable. Another participant noted that the GIB will not change the risk climate.

6.2   Financial models

Combining public finance with private sector delivery models can be challenging due to State Aid rules. There were suggestions that investing in fuel poverty reduction could be acceptable under State Aid additionality rules (though other funding streams to tackle fuel poverty might be more appropriate than public borrowing). Centralised guidance on what State Aid rules do, and do not, preclude in relation to DH would be very helpful.

The case of a private sector developer using its balance sheet to fund projects was discussed. This is currently a sustainable model, given projected growth. It is looking at sources of external finance. It was noted that there is an increasing appetite in pension fund markets, especially in Europe

Other financial models discussed were use of a community interest company, and refinancing existing assets, using pension fund capital, to provide the capital to expand schemes.

One group drew attention to the different risks associated with producing heat, using heat and owning the network; these activities consequently have different funding profiles. Separation of these components could reduce risk and the perception of risk. Heat networks in Copenhagen were mentioned as using this differentiated risk/financing model

6.3   LA commitment

Some groups discussed examples where LA authority reluctance to make a financial commitment (due to risk aversion or lack of funds) led to what participants perceived to be sub-optimal outcomes: significant benefits were transferred to the private sector (which was willing to finance the initiatives) with a loss of LA control. Some argued that DH will pay back in cash terms (and carbon savings etc) in ways that other LA investment will not. There are however problems with LA commitment at critical points. One source of difficulty was pinpointed as the lack of a GVA analysis toolkit for DH similar to those used for transport infrastructure projects.

6.4   Risk and underwriting

Significant risks and challenges in project implementation included:

- The sale of heat and covenants on heat sale;
- Price risks (particularly gas prices in relation to fracking);
- Fuel supply and security of fuel price (including challenges around biomass and shrinking waste arisings with increased recycling);
- Carbon content of fuel, and the penalties associated with missing carbon targets.

However, several participants also drew attention to the challenges of mobilising risk finance for project development, and reiterated points made in the morning, that if LAs are to have a role in developing DH, then financial assistance is needed to underpin that.

The prospect for central government to underwrite loans for DH was

generally welcomed, and seen by some as essential for systematic development of the sector. The current mechanism for government underwriting is centred on "nationally significant projects", raising the question as to whether or how DH funding could relate to this opportunity.

Examples where local authorities underwrote investment in heat networks (often by financing providing finance themselves) centred on examples with public sector anchor loads, and/or schemes designed to alleviate fuel poverty. Arms-length ESCos may fit this approach, with the council retaining step-in rights.

Rather than unpick the details of risk underwriting (such as identifying *which* risks would be underwritten and which would not), participants were more interested in the possible consequences. Some asked whether government underwriting would open up access to different sources of finance, particularly institutional investors. While a de-risked, long term, low return investment might suit these investors, the scale of investment they look for is often far larger than current project scales.

6.5   Incentive mechanisms

Discussion turned to incentives, and whether a policy mechanism to support infrastructure, rather than fuel source, could support heat network development. This would be equivalent to a system charge and could justify a low, long term rate of return.

It was also thought that an incentive could be designed for the first km of any pipe built. This could help new heat loads and sources join heat networks. Ideally, this would be kept as simple as possible. In terms of governance, no heat network controller (on a multi-source/owner network) should be able to prevent network growth or extort other members. Ensuring governance models help separate entities think as one group is therefore important.

6.6   Other benefits

In Aberdeen there is evidence of the adjunct benefits: lower chest and pulmonary complaints reduce costs on NHS; LA rental income improved; lower turnover and waiting list for flats rather than waiting list to leave flats. Better use of whole flat rather than one room; warm water to bath the kids.

That translates into investment case through improved rental income for LA; improved building stock; lower costs of housing voids. Important to cost in bad debt risk of end users.

ECO funding, given its fuel poverty objectives, could be used to invest in heat networks. However, this is likely to be a limited opportunity given the way ECO spending criteria are structured. In addition, working to access funding such as ECO takes a long time and slows development.

Cross cutting themes

This section draws out some of the themes that cut across discussions in order to highlight the links participants made between the six topics.

Fragmentation

The challenges of fragmentation were a recurrent theme, with participants recognising a wide ranges of resources and expertise that exists in the UK, but difficulties accessing them. Proposals for different forms of standardisation (e.g. in relationships with consultants and contractors or in customer protection) were noted as having potential to stifle innovation, and alternatives based on improving transparency and sharing across DH initiatives were proposed. These included sharing consultancy advice on financial, legal and technical issues, establishing a library of feasibility studies, and opening access to different schemes consumer protection arrangements, which would all help overcome knowledge transaction costs.

Development support and capacity

Although the second discussion explicitly focused on possibilities for increased support to LAs in DH development, this issue resurfaced in several of the discussions, suggesting this is an important priority for participants. For example, while challenging, mobilising finance for capital investment is less challenging than funding development work. In several discussions, the importance of capacity building and access to the right skills and expertise were emphasised. The locally-specific character of DH and the importance of brokering relationships, means that centralised determination of opportunities and standardisation of procedures, while potentially helpful, may be limited in leading a step change in deployment if not accompanied by capacity building.

Leadership and policy direction

While noting the limitations of some forms of centralised intervention, participants emphasised that local authorities' ability to develop DH initiatives is strongly influenced by the clarity of policy direction from other levels of government. In particular, the loss of planning guidance in England along with the broader "localism" agenda were cited several times as *creating* significant challenges to DH. Clearer policy direction could take several forms, including increasing LA access to tax revenues created by decentralised energy, and would contribute to building support among senior officers and local elected representatives.

Corporate leadership is important to ensuring local DH policies and programmes succeed, for example in ensuring planning policies and building regulations are better coordinated, adequately resourced and sufficiently enforced. In addition, local commitment is important to building confidence and mobilising private sector development and finance.