EXPERT COMMISSION ON DISTRICT HEATING

Recommendations to The Scottish Government

14 NOVEMBER 2012

Expert commission on district heating recommendations

Policy context

District heating is an important means of achieving both carbon emission and fuel poverty targets as well as contributing to the development of a low-carbon economy and local economic regeneration. Reductions in carbon emissions as a result of substituting district heating for other forms of heating average 30-40% and fuel bill reductions can be of the same order. Installing district heating in, for example, previously electrically heated tower blocks can therefore take many of the inhabitants out of fuel poverty. District heating also has significant economic benefits for both the national and local economies, including creation of significant numbers of jobs in the construction and operation of district heating systems and the retention of wealth in the local economy as a result of fuel bill savings. Finally, district heating networks can support the development of renewables by allowing the flexible integration of conventional and/or a variety of renewable heat sources in one system, allowing cost-effective incorporation of intermittent or cyclical sources of heat, for example from wind turbines, solar thermal arrays etc.

A step change in the rate of development and installation of district heating in Scotland would therefore make a significant contribution to implementation of several of the Scottish Government's key policies: to achieve such a step change in district heating the actions set out below are recommended by the Expert Commission.

Vision and action plan

The Scottish Government needs to set out a clear vision and road-map for district heating in Scotland. The development of a vision and road-map will be important in producing the focus across a range of policy areas which will be needed. It will also provide confidence for the district heating supply chain to invest in Scotland.

We consider it important that the plan and road map do not only promote renewably fired district heating, but also recognise the important catalytic role that gas CHP could play in stimulating the DH sector. Currently carbon savings from high-quality CHP can be of the same order of magnitude as some renewables and costs are currently significantly lower. The favourable finances of gas CHP engines can allow the economic construction of heat networks which will eventually be converted to renewables.

Given that district heating developments have long timescales and so to achieve a step change in district heating will be a project of some years, the Commission believes that development of this vision and road-map should be undertaken rapidly in order to avoid adding to this timescale. It is therefore proposed that the vision and road-map should be completed by December 2012.

***Recommendation 1*:** The **Scottish Government**, working with the **district heating industry** and other stakeholders, to set out a clear vision and road-map for district heating in Scotland by December 2012.

Overarching measures

Targets

The Commission has agreed that a target is required, given the wide range of actions required across government and the level of ambition that is needed to produce the step-change in levels of district heating with which the Commission has been charged.

The target should be derived from an analysis of the requirements flowing from the Climate Change Act and in particular the need to have made "significant progress by 2030" towards a largely decarbonised heat sector by 2050, as required by the Report on Proposals and Policies (RPP) setting out specific measures for reducing greenhouse gas emissions. District heating represents a significant opportunity to decarbonise the heat sector as heat networks can remove any requirement for individual adoption of low or zero-carbon technologies by end users. Given the long timescales for district heating projects it is appropriate to set reasonably long-term targets; it was felt that both a 2030 target and an intermediate 2020 target would be needed. Targets should be achievable but stretching in order to maximise impact on policy.

The Commission were conscious that information on the level at which targets should be set is not yet available. In setting targets, the first tasks are to establish a baseline for existing installations and the underlying rate of increase under a business as usual scenario; these parameters are not currently known.

***Recommendation 2*:** That the Scottish Government commission work to establish baseline information and allow it to set stretching yet realistic targets for penetration of district heating in 2020 and 2030, based on the emissions trajectory defined by the Climate Change Act. This should happen with some urgency so that district heating policy can be quickly driven by a common level of ambition.

Without prejudging the results of this work, the Commission's current view is that the most useful targets would be in the form of a specified percentage of Scotland's total heat load to be supplied by district heating, irrespective of the source of heat used, i.e. not restricted to renewables.

As well as the targets discussed above, it would also be useful to consider setting a subsidiary target or targets for the public sector, over which the Scottish Government has the most direct influence; this would mean that the public sector could act as a leader in transforming the district heating market. This would be especially helpful

because public sector buildings are often suitable anchor loads for district heating schemes and therefore their participation can unlock significant potential. For simplicity and effectiveness, one such target should probably be on the basis of a set proportion of the public sector estate being connected to a district heating system by 2020 and 2030. In addition, there is one more specific target which may also be appropriate: conversion by a medium-term deadline of all multi-storey social housing to district heating where there is a viable business case. There are particular advantages for district heating in serving this type of property and this is reflected in a number of existing schemes of this type. As such, it probably offers the best prospect of a "quick win" target which would serve as a useful and encouraging waymark on the district heating roadmap.

The Commission notes that the setting of such targets for the public sector and multi-storey properties would have significant resource implications; COSLA and the SFHA have pointed out that even when the whole life savings are significant there will still be a need for initial capital resources. Schemes such as the district heating loan scheme can help with these and recommendations about sources of funding are made below.

***Recommendation 3*: Scottish Government** to include within the brief for the work above the investigation of options for setting subsidiary targets for a set proportion of the public sector estate being connected to a district heating system by 2020 and 2030 and for conversion by a medium-term deadline of all multi-storey social housing to district heating where there is a viable business case.

District heating co-ordinating team

Many more district heating opportunities could be identified and developed if best practice and experience could be shared more widely across the public sector in Scotland. In addition, key interactions with major stakeholders in the supply chain and elsewhere could be accelerated and efficiencies identified if these could be done on a national basis. It is proposed that a small team is set up with responsibility for supporting delivery of district heating and sharing of best practice: this could be within the Scottish Government or as part of an appropriate external organisation or agency.

This team could, if appropriate, also implement other recommendations below, including:

- licensing of district heating operators
- production of templates for legal and contractual documents
- co-ordinating seminars,
- sharing good practice and other support for planners, those developing district heating projects etc.

***Recommendation 4*:** The **Scottish Government** to fund a small team supporting district heating development and co-ordinating exchange and sharing of good practice for a period of at least three years, reflecting the long development cycles of district heating projects.

Local authority champions

Local authority involvement in or facilitation of district heating is critical; either as a funder, anchor load user or via other functions such as planning. Many examples of successful Scottish district heating projects are as a result of specific internal champions within local authorities such as Shetland and Aberdeen, however, such champions are not common and knowledge of district heating in local authorities is patchy. There is a strong case for funding for posts in local authorities for a district heating officer whose job is to be a champion and make something happen, complementing and liaising with the district heating co-ordinating team. It is suggested that funding should be put in place to which local authorities can apply individually or on a regional basis for the costs of a three year post promoting and supporting district heating initiatives: the 3 year term reflecting the long development timescales of such projects. The need to apply rather than automatic eligibility for funding will ensure that funding is targeted on councils with a demonstrable commitment to promoting district heating and hence a favourable environment for the post; for example it is envisaged that a completed or at least progressing heat map would be a requirement to demonstrate commitment.

***Recommendation 5*:** The **Scottish Government** to support district heating champions with appropriate skills in local authorities with a demonstrable commitment to district heating; such support to be available for a period of at least three years, again reflecting the long development cycles of district heating projects.

Heat mapping

As heat maps underpin several of the other recommendations continuing rapid progress on heat maps is an important requirement for overall progress on district heating.

***Recommendation 6*:** The **Scottish Government** and **local authorities** to take forward heat mapping of Scotland as a priority with the aim of completing all local authority heat maps by September 2013**.**

Anchor loads from public buildings

Many potential district heating networks only become commercially viable once a long-term ‘anchor load’ is signed up to the scheme, the revenues from which often make the difference between a positive and negative business case. In many cases those significant anchor loads are public sector buildings, so it is clear that the public sector can be the key to unlocking district heating network development.

It would be extremely helpful in stimulating the market if public sector authorities, e.g. universities and colleges, NHS, local authorities etc. were directed to use heat from district heating schemes where consideration of best value including whole life cost-benefit and contribution towards carbon reduction targets shows district heating to be the best option, i.e. a presumption to connect.

***Recommendation 7*:** The **Scottish Government** and other public bodies such as **local authorities, NHS Scotland** and the **higher education sector** to adopt a policy of connecting their estates to district heating schemes**.**

Local authority awareness and buy-in

Given the strong local authority role in district heating, it would be very useful to hold a seminar through COSLA (Convention of Scottish local authorities) for senior local authority managers (chief executives and directors) to obtain corporate buy-infor district heating as an approach. There are similar arguments for the Scottish Federation of Housing Associations (SFHA) to hold a similar seminar for senior housing association managers. It would also be very useful for the Scottish Government to hold further seminars for other major public sector users of heat and electricity such as Scottish Water, universities etc.

***Recommendation 8:* COSLA and the SFHA** should hold seminars on district heating for senior local authority and housing association managers respectively. The **Scottish Government** should hold similar seminars for other key public sector stakeholders. Support for these seminars to be provided by the **district heating industry** (practitioners on the Commission indicated willingness to do this).

Template documents

A significant barrier to development of individual district heating projects is the process of drawing up suitable legal and contractual documents which is seen as onerous and costly, particularly by the public sector. However, there is no reason why standard document templates should not be used, customised as required, for many schemes which have similar legal and contractual requirements. These templates could be prepared centrally through the Scottish Government using best practice and lessons learned from existing district heating schemes. This would offer significant cost savings across the public sector whilst speeding up project development, reassuring investors, and ensuring consistency in approach across the country.

Recommendation 9: The **Scottish Government** to commission appropriate standard legal and contractual document templates for district heating projects.

Planning and regulation

Wayleaves and access

Practitioners report multiple problems because there is no right of wayleave for district heating pipes, this can often lead to longer and more expensive pipe runs, legal delays etc. There is also a need for a right of access for repairs and the right to gain access to a property to install a prepayment meter if the customer defaults; these are already available to other utilities.

***Recommendation 10*:** The **Scottish Government** should ensure that district heating companies have the same wayleave and access rights as other utilities**.**

Planning issues

There is a difference in the level of expertise amongst planning officers concerning district heating; the knowledge base can vary significantly even within a single authority as well as between authorities. There is a strong case for the Scottish Government to issue further clear guidance on both national and local aspects of planning for district heating. It would also greatly simplify the development of district heating schemes if installation of local connections which conform to required standards(see below)became permitted development.

This is on the tactical level, there is also a clear case at a strategic level to designate areas of encouragement for district heating to help establish a market; in these areas district heating would be actively presumed. It is felt that regulation would be too prescriptive but that instead guidance to local authorities should be issued to incorporate such areas of encouragement into long-term planning; they should be included in the National Planning Framework (NPF). It would be sensible to locate these areas where heat maps indicate suitable demand and load diversity to minimise pipework costs and justify infrastructure investment; the rapid roll-out of these maps is therefore also crucial.

Recommendation 11: The **Scottish Government** should issue guidance on both national and local aspects of planning for district heating**. Local authorities** should designate areas based on heat maps where district heating would be the presumption for new developments or refurbishments. The **district heating industry** should support seminars on district heating planning issues for planning practitioners and stakeholders(practitioners on the Commission indicated willingness to do this)

Long term energy supply contracts

Many public sector organisations believe that they cannot sign up to long term energy supply contracts for due to uncertainty over best practice; some regard it as essential to reassess contracts on a frequent, often annual basis in order to assure value. The public sector is thus reluctant to sign 15 year plus contracts for heat

supply for anchor public buildings in district heating developments. However, value should not refer exclusively to price or short-term contracts but also brings in technical considerations and whole-life project assessment and should refer to the public sector's obligations under the Climate Change (Scotland) Act 2009 to reduce CO_2 emissions. Procurement Scotland, which currently negotiates on behalf of the public sector across Scotland for the provision of gas, electricity and water, have recently developed a framework for the procurement of heat from biomass with no restriction on the length of contract signed. Guidance is needed from Procurement Scotland/Scottish Government which defines how the public sector can sign up to long term energy supplies from district heating.

***Recommendation 12*: Procurement Scotland/Scottish Government** to issue guidance which defines how the public sector can sign up to long term energy supplies from district heating whilst still demonstrating value on a whole life cost basis.

Procurement framework

Quality of advice and expertise is crucial to developing high-quality district heating projects. The Scottish Government could play a key role here by setting up a procurement framework for district heating consultants who could then be used by local authorities and others in the public sector with confidence and at the most economical rates.

***Recommendation 13*: Procurement Scotland** to set up a framework contract for district heating consultants who meet defined standards and prices.

Heat supplier licences

There should be some form of relatively light touch licensing for district heating operators to protect customers, particularly domestic customers; without such protections it would be difficult to justify public support through the other recommendations made here for what is, for the customer, a monopoly supplier. The Commission proposes a Scottish heat licensing organisation which accredits installers and operators who meet defined design and operating standards and use a standard heat supply agreement which contains robust clauses guaranteeing supply and customers' rights for all tenancies and provides full transparency on price. (It is noted that transparency is the requirement, not standard pricing, as each scheme has different financial structures and hence formulae for cost recovery). There will be a need to develop technical standards for the design stage; for operating standards the Commission's view is that the existing combined heat and power quality assurance (CHPQA) standards are appropriate for combined heat and power (CHP) projects but standards will need to be developed for heat only projects.

Recommendation 14: The **Scottish Government** should create a licensing body for district heating or add this to the responsibilities of an existing agency or organisation. Licences should be issued only to suppliers who meet defined design and operating standards and use a standard heat supply agreement which contains robust clauses guaranteeing supply and customers' rights for all tenancies and provides full transparency on price. The **Scottish Government** should also commission work to define appropriate technical standards for design of district heating systems and for operating standards for heat only district heating**.**

Business rates

There are different views within and between local authorities on business rates and some projects are being rated differently than others, with significant financial implications. There should be clear guidance from the Scottish Government and a favourable regime for district heating with full exemption for district heating projects serving only domestic properties, as in England; the current Scottish Statutory Instrument(SSI) intended to achieve this falls short of its goal. This would both send a strong signal of support and also aid scheme finances.

Recommendation 15: The **Scottish Government** to consider the case for relief from business rates for district heating projects serving only domestic properties and partial exemption for those serving a mixture of domestic and non-domestic properties in line with the proportion of domestic properties connected to the network.

Promotion of district heating by the Scottish Environment Protection Agency (SEPA)

In development of any heat grid the connection of sources of "waste" heat from industrial premises and power stations has the potential to significantly reduce capital costs and such connections are common elsewhere in Europe. However, very few connections of this type are found in Scotland because companies do not see their waste heat as a resource. The Scottish Government should ensure that SEPA has the power to require producers of significant amounts of waste heat to facilitate its use where this is economically viable.

Recommendation 16: The **Scottish Government** to ensure that SEPA have the power to require producers of significant amounts of heat to investigate options for capture and use of their waste heat and to facilitate the supply of waste heat to a network where this is economically viable.

Funding

With the participation of the public sector through anchor heat loads based on the recommendations above, the resulting guaranteed revenue streams will mean business cases for many more schemes will be viable and stimulate more private sector investment. Local authorities who wish to invest in district heating can access

Public Works Loan Board (PWLB) funding. However, there are four areas where additional funding would be useful in encouraging development of district heating:

- Seed corn development funding to take projects forward in the early stages to the point where a business case can be demonstrated and other funding secured; for example the cost of developing technical and financial feasibility studies from heat map data can be a substantial barrier. Support should be available for organisations wishing to establish technical feasibility, commercial viability and funding requirements of potential district heating schemes. Support for producers of heat required by SEPA to capture and use waste heat should also be eligible for such development grants. This funding could perhaps be in the form of a loan paid back when the project is financed, following the example of Scottish Government loans for community renewables.
- Housing associations, which cannot access PWLB funds, find low-interest, unsecured finance very helpful e.g. the existing Scottish Government district heating loan scheme and this scheme should be continued and expanded with a higher maximum loan limit than the present £400K to accommodate larger schemes. It would also be a beneficial enhancement of the scheme if the start of repayment could be delayed until after the district heating system is producing a revenue stream from sales of heat, rather than from the point of funding as is currently the case.
- There is also a significant issue concerning integration and expansion of heat pipe networks; typically much of the capital cost of a district heating system is for the pipe network. When developing projects these costs are kept to a minimum, with pipes often being sized for the needs of the planned network but not for future growth in heat demand and in network expansion. However, the pipe network is likely to last for at least 40 years so there is benefit in 'oversizing' main sections of the pipe network in order to cater for future load growth. In addition, current district heating systems in Scotland are typically localised "island" networks; extending and connecting these island schemes with heat mains would share heat demand and supply across a diversified network allowing the gradual evolution of conurbation-wide heat grids. However, oversizing and connecting up isolated systems are difficult to finance, despite their advantages in scale, resilience and accessibility for much larger numbers of customers. There is a general consensus amongst stakeholders that obtaining private sector finance for oversizing and heat mains is difficult because such financing depends on projections of growth in sales of heat, is invested in non-removable assets and involves a technology which, whilst well proven abroad, is relatively unfamiliar to investors in Scotland and the UK. However, there is strong public interest in expanding heat networks in Scotland to address climate change and fuel poverty targets and it is therefore suggested that financing these costs through some form of subsidy or underwriting would be an appropriate role for public funds: such

funding could ultimately be recoverable once the additional capacity was generating revenue from additional heat sales and public finance could then be replaced by more conventional private sector finance. The Scottish Futures Trust would be the appropriate body to investigate options in this area.

- Grants or loans to connect to district heating systems for individuals and business users to encourage connections and thus support the market. Funding will be available for some, but not all households through the forthcoming energy company obligation (ECO) but other household and business users will not be supported.

The Commission is also clear that any support offered for the above purposes should be via stable long-term funding regimes as district heating projects by their nature require multi-year development and implementation periods.

Recommendation 17: **Scottish Government** to consider providing initial development funding through either grants or loans to take projects forward in the early stages to the point where a business case can be demonstrated. The existing **Scottish Government district heating loan scheme** to be continued and expanded. **Scottish Government** to ask the **Scottish Futures Trust** to investigate options for public funding or underwriting for heat mains and oversizing. **Scottish Government** support through loans or grants for connections to district heating networks where such support is not available through the ECO.

Future of the Commission

Although the current work of the commission is focused on production of these recommendations, we propose that it should have a role to play in their implementation as well. The expertise brought together in the Commission would be very useful to the Scottish Government in developing the vision and road map for district heating in Scotland and also in providing advice and stakeholder feedback on policy proposals to implement these.

Recommendation 18: That the **Scottish Government** consider how to utilise the expertise represented by the **Commission** in the development and review of its district heating vision, road-map and policies.

Contributors:

Expert Commission members have jointly drawn up and endorsed these recommendations. A list of members is given below, together with the organisations they work for. However, Expert Commission members have contributed their expertise and knowledge as individuals and their views should not be taken as necessarily representing the views of their employers.

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