

**NORTH EAST LINCOLNSHIRE HEAT NETWORK MAPPING &
MASTERPLANNING PROJECT
BRIEFING SESSIONS 13th JUNE 2017**

3pm - Briefing Session

Q: What effect will the scheme have on Fuel Poverty?

A: It is a dilemma for NELC that currently none of the heat network schemes as currently described reach fuel poor areas. We need to acknowledge that this is the first phase. It is very much an initial technical assessment and how to reach fuel poor areas is something the project will need to consider as it develops. NELC will also need to speak to stakeholders and understand and take their plans into account.

Comment - In 3 of the scheme areas there is new build including new homes, some of which will be affordable but tackling fuel poverty remains a concern.

A: It was suggested to include in the comparison against success criteria scheme option(s) covering existing residential buildings and fuel poor customers. Since including existing residential customers is challenging from an economic perspective these schemes may not perform well on that basis, but could be deemed preferable to meet other objectives.

Q: As user energy efficiency increases- what will be the effect on the viability of the scheme?

A: Through the stakeholder engagement process the project has built into the analysis planned improvements from currently available Local Authority figures, these are already included in the calculations. Where energy efficiency increases the heat sales can decrease which can affect the IRR. The project will need to monitor the impact of demand side risks, and needs to look at projecting demand over the 25 year lifecycle, striking a balance between energy efficiency and supply.

Q: How is heat distributed around the hospital?

A: Data and information have been received from the hospital, however it was not clear whether the hospital utilises a steam or a water system. Could expect to extract heat via Water Source Heat Pump (WSHP) and would only look to go to 60/80°C but can top this up to the required temperature with a Gas Boiler. Another alternative is that the existing distribution system might still be suitable for water even if used for steam currently. The feasibility stage would explore further what might be required and how best to meet the needs. NELC will be meeting with the hospital to continue dialogue as we move into the feasibility stages to understand the site situation better. This will be highlighted as a potential risk to the project based on WSHP if the distribution system is not compatible.

Q: One slide on the presentation showed the cost of heat generation. Was this point of delivery or the point of generation as they seem quite high?

A: Slide 37 from the presentation shows all the costs for the scheme, including all the costs of distribution, divided by the kilowatt hours. This is a discounted number but these costs correspond to the average total cost of producing a unit of heat. It is important to understand that in order to make a fair comparison with the counterfactual (being a gas boiler), we should be considering all the costs involved including the capex of the boiler, standing charges and operational costs, not just the

unit price of gas at the point of delivery. The unit gas price is typically between 3 pence/kWh to 5 pence/kWh but when you include in capital and whole life costs it can be actually closer to 10 pence/kWh.

Comment - The schemes presented seem very reliant on the RHI. Can any of these be enriched by using solar PV and solar thermal?

A: Introducing Solar technologies does not improve the costs or viability of these schemes. You could bring in solar but would still be dependent on the RHI. The RHI is very high for solar thermal reflecting the high costs involved.

Comment - part of the thinking of the government is that although we might want to reduce carbon, the costs involved to do so might not stack up. This is why the government has introduced the availability of grant funding to enable the viability of using low carbon technologies in schemes. NELC need to talk to the Government about grants available that would make the lower carbon options viable. Another rationale for the introduction of the RHI is that it will drive the market so that the technologies come down in costs over time, enabling low-carbon projects to stack up and become viable on their own over time. This will help drive the increasing economic viability of the low-carbon technology options.

Comment: Advances in battery storage are going to make an enormous difference to costs and viability as the technology advances.

Q: What would happen if the anchor customer withdrew support?

A: It would be a contractual requirement that the anchor customer is tied in over the economic lifetime of 25 years of the scheme. In UK there isn't currently a culture of using heat networks so it is about making the case to the participants, including the anchor customer, for savings as well as other factors such as carbon savings and fuel poverty alleviation. If the anchor load stakeholder does not buy in, the scheme will not get off the ground. There must be a clear benefit for the anchor customer to be on board. Key schemes elsewhere have collapsed as the key anchor load has pulled out. NELC are going to continue to work inclusively and closely with the key stakeholders as NEL moves through to the later stages of the Heat Network Project.

Q: Has the use of multi-technologies been considered, as well as considering charging different rates at different times i.e.: time of use tariffs?

A: At this stage of the heat networks project, it is a first approximation and a comparison of different technologies. There will be opportunities in the later stages of the project to look at the mixed technology options that may be beneficial. Time of use tariffs have not been looked at, at this stage.

Comment - Time of use tariffs seem to be moving towards more use and regulation. The utilisation of combinations of technologies and combinations of tariffs may be the difference between a scheme working or failing.

A: We agree that large time of use tariff differentials in the future could improve the business case for heat networks served by heat pumps with substantial thermal storage capacity, and especially of networks served by a mix of technologies which could be dispatched in a cost-optimal way. This is beyond the scope of the current study, but should be examined during later stages of detailed scheme design. The demand-side response is on the NELC's radar.

Q: Won't NELC want to look at the most profitable scheme in order to benefit NELC and the community?

A: Yes, NELC will be looking at the commercial opportunities for the benefit of the community but will also be looking at the option of working with the private sector.

Q: What about saving energy?

A: NELC are also looking at energy saving grants. Heat networks are just one tool for lowering energy bills and reducing carbon emissions.

Q: A Gas fired CHP unit life expectancy is only 10 years. Would you change this out half way through the project lifespan for something else that is lower carbon?

A: It would be usual to get the initial Gas CHP scheme up and running for the first 10 years and once technologies such as Water Source Heat Pumps (WSHP) have matured and come down in price, you could then consider swapping the original Gas CHP out for this as an option. You would of course need to look at the economics as to whether it would be viable.

Q: How do the findings of the Heat Network project so far compare with elsewhere in the country in terms of the options recommended?

A: NEL looks pretty good in comparison with elsewhere. NEL have a lot of waste heat sources, but the sources are further north to the centres of heat demand than we might have wished. For most of the NEL schemes, we have been able to get real data but we haven't been able to with the Cold Stores as yet. Once we have real data from Cold Stores the analysis can then be refined. Overall for NEL the heat density is lower than it is in city areas which are filled with numerous large buildings (especially high rise), however there is certainly plenty of potential in NEL to go after. Although there is only one scheme that is currently coming in at around 10% IRR, these are actually quite rare elsewhere also. There are a good number of potential schemes in NEL at the 6% IRR level which is also more commonly seen around the country.

6pm Evening Briefing Session

Comment - if committing to a single source of heat for a number of properties and that source goes down, the back-up supply needs to be large enough to cover the peak demand.

A: Quite often networks have back up gas boilers to cover this eventuality. It is also normal to have auxiliary boilers for peak demand. In terms of capital cost the cost of auxiliary gas boilers is quite small.

Q: Biomass options need to consider supply chains to ensure ongoing demand is met properly. What type of biomass was considered?

A: Default biomass considered would be woodchip.

Comment - There are no local sources of biomass. However we import 4 million tonnes per annum through our local ports. We have the biggest import of biomass nationally.

Q: What if the main players are not interested in being part of a heat network?

A: NELC need to ensure that we engage properly with the key stakeholders at every stage of the project, so we know which of the potential clusters are viable. For example in terms of proposed Scheme 1.1, the Diana Princess of Wales hospital is the anchor load and the key stakeholder, but if they are not interested it would not happen. NELC need to ensure that through proper stakeholder engagement we have buy in to enable potential schemes to progress to the next stages of the Heat Network development.

Comment - 13% IRR is good. Why is the discount offered for the heat price only a 10% discount on the counterfactual?

A: The 10% discount versus the counterfactual is used as a default discount for all of the schemes. If it became a municipal system there would be the option to make the price lower for customers. Need to balance the IRR with the discount offered on the heat price.

Comment - Schemes that attract new business to the area should prioritised.

Q How possible or likely is it that NEL would get a grant? Also don't grants have to be applied for quickly?

A: HNIP capital grant funding was brought in, in late 2016 and seven authorities have already been awarded a grant. Colchester, was one of these and they only started their Heat Networks project 1.5 to 2 years ago. Heat Network projects and grant applications can actually move really quickly through to the later stages of commercialisation and realisation. There are application deadlines every 6 months and once awarded the money must be spent within 2 years. For new build areas one of the limiting factors will be the time and the rate at which users can be brought into the area. Phasing in around existing infrastructure is based around end of life of existing systems.

Q: From the time funding is received what is the deadline for progressing a scheme through to installation and production?

A: In Colchester they were given a 2 year timescale to have infrastructure in the ground. Customers don't have to be signed up at this point. NELC have a member of HNDU/BEIS on the project team working with the authority who can advise and look at how we might tackle schemes and which schemes that could be taken forward.

Q: What is waste heat?

A: This is heat left over from other industrial activity that would otherwise be lost and unused. One example might be a small power plant which is generating electricity by burning gas and there is a lot of heat produced by that process - it is about capturing that heat at various points in the production cycle. Would need to capture at 110-120°C. We may have to compensate the power plant for slightly reduced energy generation. Energy from Waste (EfW) is another example.

Comment - There is no waste heat in the areas of heat demand.

A: There is waste heat in the area but distribution network development and distance from demand is the issue. In the Stallingborough Enterprise Zone the study has speculated that there might be sources that become available due to site development so there is talk of using nearby waste heat sources.

Q: Is the project looking at energy from waste?

A: Yes. There are existing opportunities but there is also a lot of new interest in further developing energy from waste in the area. Through the Contracts for Difference EfW developers can benefit from a guaranteed electricity sale price of up to around 12 pence /kWh (normally the wholesale price of electricity is around 4-5 pence /kWh) when waste heat is utilised (for example, in heat networks). Competing organisations could come into the area and need to get rid of the waste heat to enable them to benefit from these higher charging tariffs. NELC advised that there is waste heat around but it is a case of matching up the potential opportunity with potential clusters.

Comment - the presentation from these briefing sessions and the Q&A discussions that took place afterwards will be available on the internet.