

Cambridge University Science and Policy Exchange 2021: Local Area Energy Planning: Evidence base for heat zoning

To: Environment and Green Investment Committee

Meeting Date: 20th January 2022

From: Steve Cox, Executive Director, Place and Economy

Electoral division(s): All

Key decision: No

Forward Plan ref: N/A

Outcome: To start to build the skills, knowledge and evidence bases to inform the development of heat zones and low carbon heat networks for Cambridgeshire market towns.

Recommendation: Members are asked to:

- a) Note the Cambridgeshire University Science and Policy Exchange (CUSPE) 2021 research report on Local Area Energy Planning: Evidence base for heat zoning, attached as Appendix A;
- b) Agree next steps as set out in paragraph 2.7

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1. Background

- 1.1 In October 2016, Cambridgeshire County Council initiated an annual collaboration with the Cambridge University Science and Policy Exchange (CUSPE), which brings teams of researchers together to explore challenges faced by the County Council and wider public sector.
- 1.2 This year again, researchers have shown strong interest in projects relating to climate change. For 2021 two streams of research have been delivered, with the first focused on the Cambridgeshire Decarbonisation Fund and the second, the focus of this report, on Heat Zoning as part of Local Area Energy Planning.
- 1.3 In October 2021, Government published its Heat and Buildings Strategy (HBS) which sets out how the UK will decarbonise its homes, commercial, industrial, and public sector buildings. To meet net zero by 2050 virtually all heating and hot water for buildings will need to be decarbonised and during the 2020s markets will be developed along with supply chains, skills, and delivery. Decarbonisation will be delivered through improving energy efficiency of buildings, heat pumps (both individual and via heat networks) and establishing where, and how hydrogen could be used for heating buildings.
- 1.4 Building the market for heat pumps and heat networks is a key element of the HBS. They are proven scale-able options for decarbonisation of buildings and will play a substantial role shifting reliance off fossil fuels and managing energy bills. However, significant effort is required to build the market including ensuring heat pumps are no more expensive to heat and run than gas boilers and to incentivise investment into heat networks. Government has committed £338million investment during 2022/23 to 2024/25 into a Heat Network Transformation Programme to enable local areas to deploy heat network zoning and scale up delivery of heat networks and building the UK market.
- 1.5 On 29th December 2021 BEIS announced it had appointed Ofgem to become the heat networks regulator to give consumers, investors, and developers confidence in heat networks. Ofgem will help facilitate the growth of the new 'Heat Networks Market Framework' to encourage capital investment into local projects to reduce bills, tackle fuel poverty and support local regeneration. The aim is for heat networks to meet approximately a fifth of all heat demand for buildings in the UK.
- 1.6 The Final Report of the Cambridgeshire and Peterborough Independent Commission for Climate Change (October 2021) identified the following recommendation:
 - The Cambridgeshire and Peterborough Combined Authority (CPCA) and constituent authorities should support local area energy planning that identifies heat zones for buildings (e.g., suitability for district heating or community networks) and retrofit priorities.
 - Develop local energy plans, working with stakeholders, to have a key role in preparing for the decarbonisation of heat in buildings: identify which heat and energy efficiency options and national policies apply; consider zoning areas for specific heating solutions; engage with communities to build community understanding and willingness to take action.

- 1.7 The outcome of this report and the CUSPE research is to start to build the skills and knowledge to inform the development of heat zones and heat networks for Cambridgeshire market towns.

2. Main Issues

2.1 What is Heat Zoning?

BEIS has been working with Local Authorities during 2020/21 to develop its heat zoning methodologies. Heat zoning is the **identification and designation of areas within which heat networks are the lowest cost, low carbon solution for decarbonising heating for homes and non-domestic buildings.**

In October 2021 Government consulted on the first steps towards developing the necessary legislation and processes for heat zoning including:

- the methodology to be used for identifying and designating heat network zones
- roles and responsibilities of different parties involved in the zoning process
- requiring certain buildings within zones to connect to a heat network
- requirements on certain parties to provide information to identify and designate heat network zones
- whether heat networks in zones should meet a low carbon requirement
- approaches for how heat networks are deployed in zones
- proposals to ensure that consumers within zones are not adversely affected
- the enforcement, monitoring, and reporting regimes under zoning

The results of the consultation are due in February 2022. This will build on Government's Heat and Buildings Strategy which identified heat network and heat zoning as one of the key points in its ten-point plan.

2.2 What is the aim of the CUSPE research attached as Appendix A?

For Cambridgeshire to decarbonise, it will need to undertake Local Area Energy Planning (LAEP) to identify the most cost-effective low carbon solutions for heating and powering buildings, and to electrify transport. However, LAEP is complex. Establishing the evidence bases will be challenging. For example, identifying energy demand must account for changes over a 24-hour period and also seasonally. This will also need to include future growth demand and how improved energy efficiency will impact energy demand.

- 2.3 The idea behind this CUSPE research project was to start to break down Local Area Energy Planning into manageable bite sized chunks. By focussing on one aspect, in this case heat networks and heat zones, a better understanding of what evidence is needed and how easy it is to get the data would inform resource and skills planning for Local Authorities ahead of Government's heat zoning legislation coming forward. It will also, along with many other data sets and energy plans already underway e.g. for new housing developments; form the building blocks towards a robust long term

investment and delivery programme for decarbonisation of Cambridgeshire buildings. District Council Local Plan and policy development will be key to this process as will UK Power Networks Business Planning and Economic Development incentives.

- 2.4 The objective of the CUSPE research was to review the proposed BEIS heat zoning methodologies and the Energy Systems Catapult methodology for Local Area Energy Planning, to identify heat demand in the market towns of Huntingdon, Ely and March to inform potential opportunities for starting heat networks and heat zones. Please note, the research is not fully comprehensive. It provides initial analysis on heat demand, recognising that not all data was available to the researchers or how partners and stakeholders would prioritise different influences such as fuel poverty, deprivation or new developments. However, this initial data analysis can sit alongside other data to inform a more detailed technical and commercial assessment of where heat zoning will provide the greatest benefits. The heat zones suggested in this report are therefore indicative only and subject to further development.
- 2.5 In summary, the researchers brought together available data relating to low- and zero-carbon space heating and hot water and their analysis covered:
 - mapping current Electricity and Gas demand using BEIS Consumption Statistics for Domestic and Non-Domestic electricity and gas consumption from 2010 to 2019.
 - Research into a range of low-carbon technologies and heat sources which can be used as part of a heat network
 - Compared the carbon intensity of current heat supply with the expected carbon intensity of each technology over time, incorporating gradual decarbonisation of the electricity grid into those calculations.
 - Compared projections with National Grid's four Future Energy Scenarios: Steady Progression, Consumer Change, Systems Change, and Leading the Way.
- 2.6 Why choose Huntingdon, March and Ely as case studies for testing heat zoning methodologies?

Government's focus for decarbonisation of heat has largely focussed on cities and large urban areas. More recently it has started to focus on 'off-gas' communities dependent on oil. The Council is already collaborating with Government on Swaffham Prior, a rural off-gas community to deliver a heat network to decarbonise heating and hot water in a rural community with 'hard to treat' homes.

The gap is market towns or smaller urban areas with less dense housing and commercial energy demand. It is estimated that a quarter of the population of Cambridgeshire (and Peterborough) live in market towns. Market towns are an important feature of the economic geography of Cambridgeshire and remain a central destination for work, retail and leisure supporting rural communities (CPIER 2018). Focussing on the market towns for this research will provide insights relevant to Cambridgeshire and its towns to aid discussions with government on the market frameworks and incentives that may be required for the decarbonisation of smaller towns.

2.7 Next steps

- With Local Authority partners, review how the CUSPE research can inform the development of heat zones and heat networks in Cambridgeshire including additional work that would need to be commissioned.
- With partners and stakeholders, include Local Area Energy Planning into the CPCA Climate Action Plan (currently under development) and scope what and how a LAEP can be developed for Cambridgeshire. The end goal of the LAEP is to develop a long-term energy infrastructure investment and delivery programme for decarbonising and retrofitting Cambridgeshire buildings and transport.

3. Alignment with corporate priorities

3.1 Communities at the heart of everything we do

Engaging communities in energy planning will help deliver the switch from fossil fuels and support communities to manage the costs of their energy bills. Cambridgeshire must look to plan how it is retrofitting buildings for greater energy efficiency, switch from fossil fuels to low carbon alternatives and plan for local energy generation where possible. One part of this energy planning will be collaborating on heat zoning to identify the lowest cost options for decarbonising heat for buildings and communities.

3.2 A good quality of life for everyone

The CUSPE 2021 research report attached as Appendix A has no significant implications. If the Council agrees to collaborate with partners and businesses on the set up of a Carbon Advisory Service and a Decarbonisation Fund these could deliver quality of life benefits through cutting carbon emissions; improving air quality and investing in local projects that improve nature that help with health and wellbeing.

3.3 Helping our children learn, develop and live life to the full

No significant implications.

3.4 Cambridgeshire: a well-connected, safe, clean, green environment

21.6% of all carbon emissions in Cambridgeshire are from homes. This includes heating and hot water and electricity for appliances. There are also emissions from the commercial, industrial, and public sector buildings but the exact volume of carbon emissions associated with heating and hot water is not yet clear. By undertaking Local Area Energy Planning and heat zoning this will identify the lowest carbon and least cost heating solutions to decarbonise Cambridgeshire buildings.

3.5 Protecting and caring for those who need us

Fuel poverty is a key concern. Planning for greater energy efficiency and increased local energy supplies will offer better opportunity to manage energy bills in the long term.

4. Significant Implications

4.1 Resource Implications

If the research is taken forward, there are financing and staff resourcing implications. More specialist consultancy work is needed to inform Local Area Energy Planning and heat zoning. However, there are potential benefits to the Council including:

- Identifying the most cost-effective low carbon solutions for decarbonising the Council's buildings
- Opportunities for the Council to identify land for energy schemes that benefit the community and provide commercial returns
- Support the Council's role in place making by identifying how and what 'infrastructure' places need to live low carbon lifestyles

4.2 Procurement/Contractual/Council Contract Procedure Rules Implications

There are no significant implications at this stage.

4.3 Statutory, Legal and Risk Implications

There are no significant implications at this stage.

4.4 Equality and Diversity Implications

There are no significant implications at this stage but as plans are developed, they will be subject to an equality impact assessment.

4.5 Engagement and Communications Implications

To progress Local Area Energy Planning and heat zoning, partners, businesses, and communities must be engaged to understand what and why energy planning is needed.

4.6 Localism and Local Member Involvement

No significant implications.

4.7 Public Health Implications

No significant implications from the report but there are potential health benefits from Local Area Energy Planning and heat zoning as these will cut carbon emissions resulting in air quality improvements.

4.8 Environment and Climate Change Implications on Priority Areas

These have been assessed based on progressing Local Area Energy Planning and heat zoning.

4.8.1 Implication 1: Energy efficient, low carbon buildings.

Positive/neutral/negative Status: Positive

Explanation: Carbon emissions reductions through switching off fossil fuels and improved energy efficiency

4.8.2 Implication 2: Low carbon transport.

Positive/neutral/negative Status: Positive

Explanation: Identifying the energy infrastructure and investment to support EV charging.

4.8.3 Implication 3: Green spaces, peatland, afforestation, habitats, and land management.

Positive/neutral/negative Status: Neutral

Explanation: Energy infrastructure and generation will require land. Where possible this will look to brownfield land, but this may not always be the case. In which case, the energy project would be subject to planning policies and conditions including Biodiversity Net Gain.

4.8.4 Implication 4: Waste Management and Tackling Plastic Pollution.

Positive/neutral/negative Status: Positive

Explanation: Air quality improvements through reducing emissions.

4.8.5 Implication 5: Water use, availability, and management:

Positive/neutral/negative Status: Neutral

Explanation: No impact.

4.8.6 Implication 6: Air Pollution.

Positive/neutral/negative Status: Positive

Explanation: Air quality improvements through reductions of greenhouse gas emissions.

4.8.7 Implication 7: Resilience of our services and infrastructure and supporting vulnerable people to cope with climate change.

Positive/neutral/negative Status: Positive

Explanation: Increasing local energy supplies and security.

Have the resource implications been cleared by Finance? Yes

Name of Financial Officer: Sarah Heywood

Have the procurement/contractual/ Council Contract Procedure Rules implications been cleared by the LGSS Head of Procurement? Yes

Name of Officer: Henry Swan

Has the impact on statutory, legal and risk implications been cleared by the Council's Monitoring Officer or LGSS Law? Yes

Name of Legal Officer: Fiona Macmillan

Have the equality and diversity implications been cleared by your Service Contact?

Yes

Name of Officer: Elsa Evans

Have any engagement and communication implications been cleared by Communications? Yes

Name of Officer: Amanda Rose

Have any localism and Local Member involvement issues been cleared by your Service Contact? Yes

Have any Public Health implications been cleared by Public Health?

Yes

Name of Officer: Iain Green

If a Key decision, have any Environment and Climate Change implications been cleared by the Climate Change Officer?

Yes

Name of Officer: Emily Bolton

5. Source documents

- The Final Report, Cambridgeshire and Peterborough Independent Commission for Climate Change, October 2021
- Cambridgeshire and Peterborough Independent Economic Review (2018)
- Government proposal for heat network zoning, October 2021
- Government's Heat and Buildings Strategy, October 2021
- Local Area Energy Planning

6. Source documents - Location

[Final Report, Cambridgeshire and Peterborough Independent Commission for Climate Change, October 2021](#)

[Cambridgeshire and Peterborough Independent Economic Review \(2018\)](#)

[Proposals for heat network zoning - GOV.UK \(www.gov.uk\)](#)

[Heat and buildings strategy - GOV.UK \(www.gov.uk\)](#)

[Local Area Energy Planning: The Method - Energy Systems Catapult](#)