



Supporting clean growth and the decarbonisation of heat

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Introduction

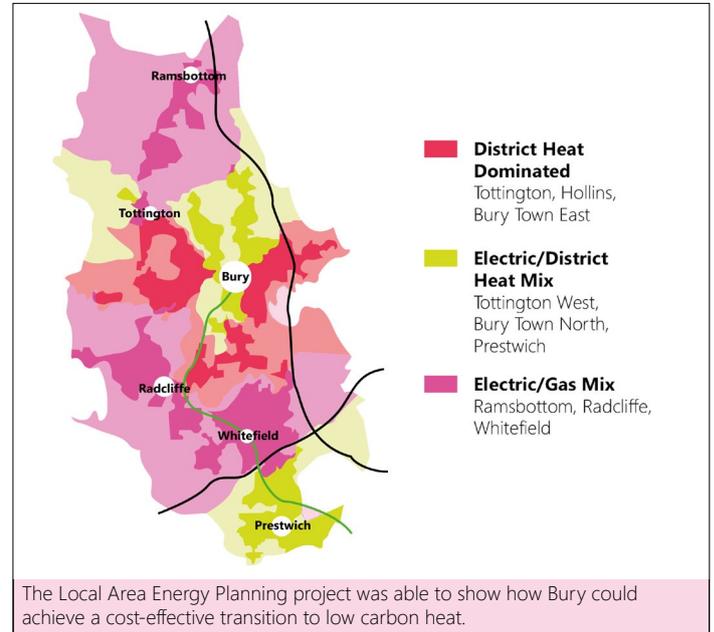
Energy is an essential part of national and local economies. It is required for everything from heating and lighting our homes and offices to transporting our goods and powering our industries. For the UK to decarbonise, significant change will be needed, both to the existing energy networks, as well as building heating systems and fabric.

Every local area is unique. The characteristics of buildings, existing energy networks and people can change substantially from place to place, and the changes needed to decarbonise will be specific to each area. Such a significant transition will call for close coordination between many different stakeholders, including local and national government, network operators including gas, electricity and heat, energy suppliers, local communities and businesses, as well as individual consumers.

The challenge

Currently, there is no structured planning process in place to help manage the transition to a low carbon energy system. In urban planning, “masterplans” establish a long-term view of how an area – be it urban or rural – should be developed, providing a clear and consistent framework for change, rather than stipulating exactly what is going to be built where and when at a building-by-building level.

To decarbonise the UK’s energy system efficiently, and at least cost, Local Area Energy Planning was designed to provide a similar long-term framework for transforming local energy systems in the UK.



The innovation

Pioneered by Energy Systems Catapult, a new, whole system approach to Local Area Energy Planning has been piloted in three different local areas of the UK – Newcastle, Bury in Greater Manchester and Bridgend in Wales as part of the Smart Systems and Heat Programme.

To investigate the lowest cost decarbonisation pathways in these three pilot areas, the Catapult used the Energy Technologies Institute’s EnergyPath Networks™ analysis framework. Underpinned by a whole system approach and data from a wide range of sources, the framework was used to explore different future scenarios by modifying the input data (such as the cost of carbon content in different sources of energy). **This process provided the insight required to map out the options available for decarbonisation and to build consensus among key local stakeholders and communities.**

The studies in the three areas found that while there are similarities between them, the decarbonisation options available were highly specific to local conditions, existing buildings and infrastructure. **In the final reports, it was concluded that no single solution would be able to meet national, and increasingly ambitious local, decarbonisation targets.**



CASE STUDY: LOCAL AREA ENERGY PLANNING

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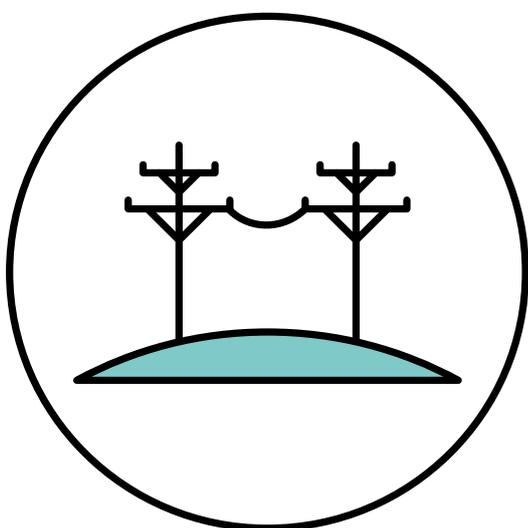


In addition, the pilots provided an insight into how the three areas could secure a value-for-money transition to low carbon. **The reports found that the decarbonisation of heat in the three areas could be achieved for just 15% above the cost of decarbonising electricity alone. However, if not well planned, the costs could be significantly higher.**

The outcomes

Local authorities, energy network operators, and other key local stakeholders involved in the pilots gained:

- Experience of a collaborative data-driven, whole system planning approach to transforming local energy systems, focussed on the challenge of decarbonising heat
- Collaborative investigation of future local energy scenarios in each of the different areas, sharing data, information and expertise between local government, gas and electricity network operators
- Insights and evidence to help inform the development of a pipeline of innovation projects in the context of a long-term plan for energy system transformation
- Identification of opportunities and risks to help support more open dialogue, future engagement and investment in building retrofit, heat, gas and electricity networks



The impact

The work undertaken by the Catapult provides a framework for scaling a whole system approach to Local Area Energy Planning across the UK. It has already enabled three local authorities to scope out how to meet decarbonisation targets in the most efficient, cost-effective way, and the pilots have demonstrated how Local Area Energy Planning could be adopted across the country.

The Catapult's Local Area Energy Planning reports were highlighted in the Department for Business, Energy and Industrial Strategy's 'Clean Growth – Transforming Heating' overview of evidence, where it was acknowledged that 'consideration is needed as to the full extent of the role played by local actors in shaping the transition to low carbon heating'.

The importance of local leadership in driving emissions reduction has also been recognised in the government's Clean Growth Strategy, and local planning was recognised as having a key role to play in their response to the consultation, 'A future framework for heat in buildings'.

Access the full set of reports. If you are interested in collaborating with us on Local Area Energy Planning, please email us.

The next steps

Work with the three local areas is informing the development of Smart Energy Plans as part of [Phase 2 of the Smart Systems and Heat programme](#). This involves identifying a range of near-term innovation and deployment projects in response to the challenge of decarbonising heat and wider energy system transformation.

The UK Research and Innovation "Prospering from the Energy Revolution" programme is supporting the design of local, smart energy systems that are ready for roll out in the 2020s.

We are also working with a number of other local areas to support the scale up Local Area Energy Planning across the UK and increase the accessibility and application of the methods and tools we have developed.