Local Area Energy Planning

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Energy Systems Catapult advocates a whole systems approach

Joining up the system from sources of energy to the consumer

- Generation
- Transmission
- Distribution
- Buildings
- Consumer

Breaking down silos between energy vectors

- Electricity
- Heat
- Transport

Joining up physical requirements of the system, with policy, market and digital arrangements

- Physical System
- Digital System
- Market System
- Policy
The next steps in delivering net zero will need to answer many questions.

- **How to decarbonise buildings** and what combinations of fabric upgrades, heating systems and infrastructure in different local areas.
- Realising the **benefits and managing the risks of digitalisation** of the energy system for business and consumers.
- **Informing future gas network investment decisions** (including the potential role of hydrogen and low carbon gas).
- **How to minimise the costs of the transition to net zero** and deliver energy services people value, including integration of electric vehicles and low carbon heating.
Local Area Energy Planning provides a potential solution

- Supports the major decisions on decarbonising heat and the future of the gas grid
- Recognises the importance of place and regional variation
- Takes a whole energy system approach - to minimise cost
- Enables local leadership in supporting the clean transition
- Helps to drive action, investment and clean growth
- Stimulates engagement with consumers and communities

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We have been working with three local areas to develop and pilot a new whole systems approach.

Understand **local options and choices for heat** in whole system context

Collaboratively develop a **long term evidence based plan** to decarbonise

Resulting in data and insight to low regret options able to support carbon budgets
We found important local differences to an optimal local energy system design for example in decarbonising heat.
The detail of what and where is important
The social dimension is important too

Local Area Energy Plans need to be developed in collaboration

Engagement and consensus building is as important as evidence and data. Lack of capacity in local areas is an issue that needs addressing

Energy network operators need to be involved at an appropriate scale

Need for an iterative process – with stakeholders brought along during the journey.
Taking a cost optimal whole systems approach will keep down the cost of the low carbon transition

Cost optimal approach - total system cost to 2050 for 1 area

**£8 bn**

Alternatives have a higher cost

+ **£1b to £2b**

Plus opportunity to consider wider local social and economic benefits

**£??bn**

Maximum electrification or an uncoordinated approach

*Based on Bury pilot

**Leaving it late** – reaches the same energy system at Cost Optimal but isn’t delivered in a planned and efficient manner
Businesses could use this data to offer households tailored retrofits that prepare their homes for low carbon heat.

- Data about household and building
- Shows when cannot get comfort they want (e.g. lounge feels cold)
- Used to design retrofit that improves comfort and energy efficiency
- Prepares home for low carbon heating that suits that area

Supported by local smart energy plans.
Local Area Energy Planning provides a number of benefits

- Improve coordination and targeting of investment in housing retrofit and energy projects/infrastructure
- Provide better evidence to inform major decisions on heat and the future of the gas grid
- Define clear low carbon pathways - based on locally specific plans
- Establish new energy planning market and capability
- Minimise cost of delivering on Net Zero commitments through a coordinated whole system approach
- Devolve responsibility to local areas and support the clean transition alongside other local planning issues
Thank You

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Supporting documents

Local Area Energy Planning: Supporting clean growth and low carbon transition
Executive summary

Local Area Energy Planning: Guidance for local authorities and energy providers

Local Area Energy Planning: Insights from three pilot local areas
Executive summary
whole system approaches are needed

“Local areas are best placed to drive emission reductions through their unique position of managing policy on land, buildings, water, waste and transport”¹

Is considering a whole systems approach “given the potential for increasing interdependence across the electricity system, and more broadly, with increasing interactions with gas, and heat, transport, and beyond”²

Recommends - local decarbonisation and local heat plans³

“If our electricity, gas, heat, transport and waste sectors are all interdependent, then so must be the solutions for their decarbonisation. A whole-system approach means looking at optimal investment and operational decisions for the whole energy network, not just the individual parts”³

“We are committed to this whole systems approach to the energy transition, which will underpin our work on decarbonisation” & “we recognise the need for more local or regional energy planning”⁴

“Develop a strategy for low-carbon heat uptake beyond 2021. Aligning infrastructure investment in low-carbon heat with the UK’s climate change targets requires the UK Government to develop a strategy for decarbonised heat”⁵