13 December 2022

Climate Emergency Policy and Scrutiny Committee

Report of the Head of Carbon Reduction

Portfolio of the Executive Member for Environment and Climate Change

York: Local Area Energy Plan

Summary

1. In March 2022, the Executive Member for Environment and Climate Change approved the allocation of £90,000 from the 2021/22 Carbon Reduction Budget and £20,000 from 2022/23 budget to carry out a Local Area Energy Plan for York.

2. A Local Area Energy Plan (LAEP) is regarded as a critical enabler to decarbonisation, given that spatial planning is one of the biggest opportunities local authorities have to deliver net zero.

3. Over the last 8 months, the council has been working with the Energy Systems Catapult (ESC) and the York & North Yorkshire Local Enterprise Partnership (LEP) to produce a LAEP for York alongside a wider regional North Yorkshire LAEP.

4. A LAEP is a holistic spatial approach to decarbonising an area's energy system that provides decision-makers with the detailed information needed to support informed policy and investment decisions.

5. The LAEP is a report, spatial plan and pipeline of investable projects to support the energy transition, at best value, for the council and the city. It provides an optimised, cost-effective, and evidence-based pathway to achieving our target.

6. To decarbonise the energy system in York, the LAEP identifies the requirement for:
   - 73,000 heat pump installations
   - 20,000 new connections to a district heat network

- 44,100 homes retrofitted with insulation, glazing and draughtproofing improvements
- 91,000 fully electric vehicles
- 24% of homes generating their own electricity with rooftop solar
- 920MW of large-scale renewable generation

7. The decarbonisation of York's energy system will require investment of around £3.8billion and save 1.2 million tonnes of CO_2 cumulatively to 2050, equivalent to more than eight return flights to New York for every household.

Recommendations

8. Scrutiny Committee is asked to:

   i. Review the York Local Area Energy Plan
   ii. Provide any recommendations for the LAEP to the Executive Member for Environment and Climate Change

   Reason
   To support the accelerated delivery of decarbonisation to achieve the council ambition for York to be net zero by 2030.

Background

9. City of York Council (CYC) announced a climate emergency in March 2019; subsequently setting an ambition for York to be carbon neutral by 2030.

10. Achieving net-zero by 2030 will be extremely challenging. It will require combining a whole system approach with local stakeholder knowledge to deliver a comprehensive, data-driven and cost-effective plan for decarbonisation. This approach is at the heart of a Local Area Energy Plan.

11. There is no one-size-fits-all approach to achieving Net Zero. Every local area has its own unique characteristics. LAEP considers buildings, transport systems, local industry, energy generation and distribution assets, geographic and spatial constraints, and social factors including fuel poverty to produce a tailored place-based plan for decarbonisation.

12. The LAEP for York was produced in alignment with 3 other LAEPs for North Yorkshire. This approach ensured efficiency savings and will lead

to an integrated approach to infrastructure investment and delivery, leading to a more effective use of available funds to realise York's net zero 2030 ambition.

13. Local Area Energy Planning is a 7-step process:

    i) Identify and Engage Stakeholders – The LAEP process and its outputs will need to be owned and led by one organisation but formulating and taking strategies forward will require collaboration with key stakeholders.

    ii) Set Area Vision, Objectives and Targets – Our net zero ambition for York sets the framework for activity towards 2030. Ambitious but achievable interim targets must also be set to drive short-to-medium term change and allow progress to be tracked.

    iii) Create and Understand the Local Area Energy System – Informs what changes are required to make the necessary low carbon transition and providing a baseline from which the future local energy scenarios can be built from.

    iv) Investigate Future Local Energy Scenarios – Creating cost effective and robust scenarios of future local energy system infrastructure to enable decisions to be made on energy network and system choice.

    v) Produce a Local Area Energy Strategy – The output from the Local Area Energy Planning process. It consolidates the findings and outputs of the evidence base and represent the output of the collaborative and open dialogue from stakeholders to help plan the delivery of the energy networks and changes to homes and buildings needed to deliver a low carbon future.

    vi) Lead and Implement – Implementation will need to be an iterative and collaborative process. A planning horizon over the next decade is likely to involve the need to consider several iterations of technological innovation and research-led development.

    vii) Monitor and Review – Setting out the process to manage, monitor and review the strategy over time.

York Local Area Energy Plan

14. York's LAEP was produced through extensive desk-based research, data analysis, modelling and stakeholder engagement. It divides York into 'Zones' for analysis were identified based on areas served by primary substations, using data provided by the electrical network

(Northern Powergrid) that identifies buildings connected to secondary substations that are in turn connected to each primary substation.

15. The LAEP covers all major sources of emissions within York (over 90% of total emissions):

    a. Buildings - 44,100 homes will require fabric upgrades so that 83% of all homes are insulated to their full potential. This can be achieved at an estimated cost of £185m and will reduce household energy bills and improve living conditions.

       Fabric upgrades can be 'basic' (draught proofing, loft and cavity wall insulation) or 'deep' (double or triple glazing, internal or external wall insulation, floor insulation and door upgrades). Basic upgrades are recommended across much of the housing stock built after 1914, whereas older homes are likely to require deep upgrades.

       Prioritising the delivery of building fabric upgrades in areas with high levels of fuel poverty will maximise the impact of bill savings and the health benefits of warmer homes, whilst also reducing the need for expensive upgrades to the electrical network.

    b. Heating - 91% of homes in York have a gas boiler heating system. To achieve net zero, all of these will need to be replaced. Due to the timescale of our net zero ambition, it is recommended that heat-pumps are installed in 73,000 homes with a further 20,000 connecting to district heat networks.

       Gas heating systems in the majority of non-domestic buildings will also need to be replaced by a heat-pump or through being connected to a district heat network (with exceptions for when high temperatures are needed).

       High temperature industrial processes can be converted to hydrogen systems; however, these are not thought to be available until the mid-2030s.

    c. Transport – The LAEP only considers decarbonisation of the energy system, the impact of reducing overall vehicle use will be considered in separate pieces of work.

       The Electrification of all remaining vehicles will be required to reach net zero. It's estimated that this will be 113,000 electric cars and

vans and charging provision will need to increase to service this number of EVs.

While 48% of households have off-street parking, suitable for home charging – which is thought to be the most cost-effective and convenient way of charging – prioritisation of additional public charging infrastructure will be crucial to ensure an equitable transition to low carbon transport.

d. Local Generation - Due to the necessary electrification of the heating and transport systems, York's annual demand for electricity is projected to increase from 773 GWh to 1,273 GWh. Ground mounted and rooftop solar, alongside onshore wind will be able to meet all of this demand; with the modelled potential for 1,240MW of generation capacity in York for £840m investment.

   If fully developed, 105 MW of domestic solar PV could be installed, contributing 91 GWh/year; available non-domestic roof space could host up to 215 MW of PV capacity if fully developed contributing 207 GWh/year of electricity; and around 3,900 hectares of land could be suitable for ground-mounted solar, which is enough space to host 950 MW of capacity; 800 hectares of suitable land was identified for wind turbines in areas of Hambleton and Ryedale, immediately adjoining the York area boundary, sufficient to build 28 MW of capacity.

e. Networks, Storage and Flexibility - A total investment of £20m in capacity upgrades is estimated across the high and low voltage networks to accommodate the changes in this pathway.

   The amount of headroom currently available on the high-voltage network varies significantly across York. Some zones have very little headroom available whereas other have sufficient capacity for small, near-term projects.

   The low voltage network has areas that are likely to see significantly more peak demand increase than others. Innovations in flexibility have the potential to delay and reduce the scale of electricity network reinforcement but network reinforcements will still be needed.

16. To accelerate delivery, the LAEP identifies a number of priority projects. Priority Projects are either:

- Low regret - common under various scenarios but may require further enabling action before they can be progressed
- Quick wins - which can be carried out in the near term without major blockers
- Focus zones - specific areas within the LAEP boundary that have a cluster of near-term components

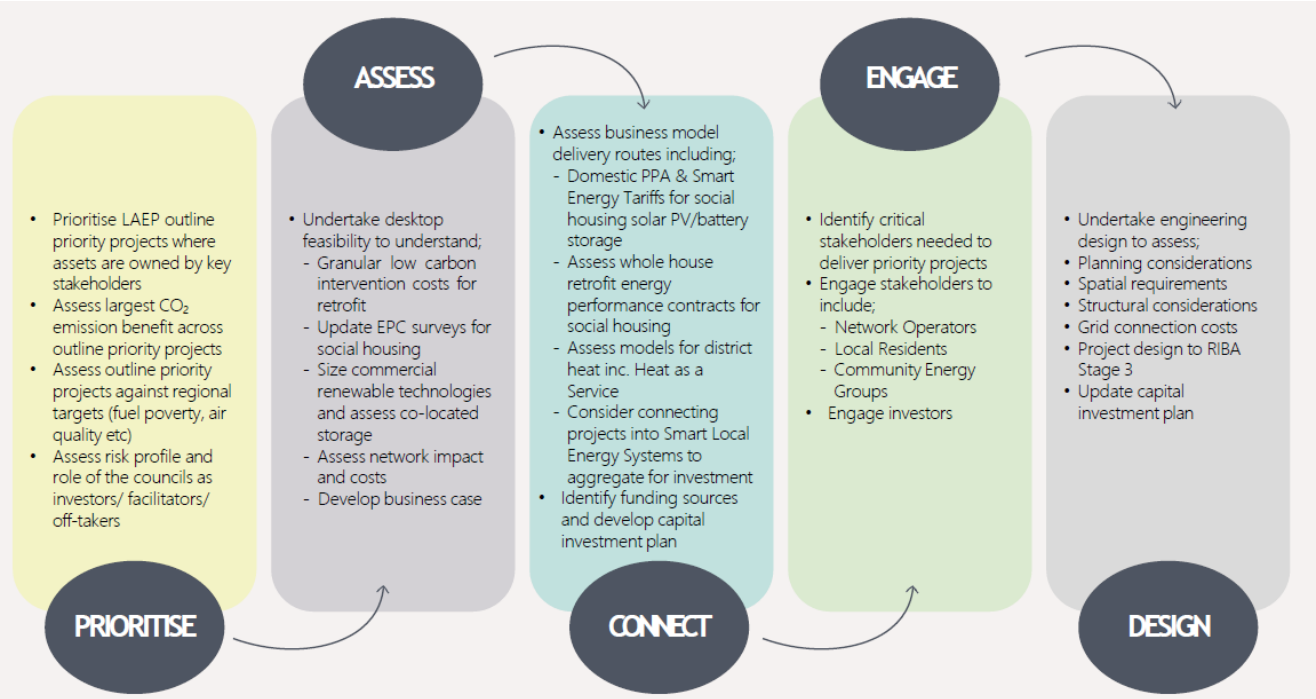
Local Area Energy Plan – York 2030 Annex

17. As York's LAEP was produced alongside the North Yorkshire LAEPs the document is set for net zero 2040. However, due to York's net zero 2030 ambition, additional information has been provided to show the acceleration of action needed to meet this timescale.

18. In most areas of work, the overall target remains the same. The differences are primarily expressed in terms of the delivery rates of various technologies and interventions. Changes/upgrades would need to happen at a significantly faster rate with network upgrades and availability of hydrogen posing significant risks to the 2030 ambition.

Next Steps

19. The LAEP report concludes stage 5 of the full LAEP process. The next stage is to lead and implement; with the report setting out a suggested process for this:



20. Should devolution for York & North Yorkshire take place, it will provide an opportunity to take forward projects identified in the LAEP.

21. Creation of a LAEP Delivery Group with leadership groups for different sectors could help coordinate actions, ensure a wholistic approach, provide a central contact point, support decision making and help with the identification and removal of barriers. This could be a role fulfilled by York Climate Commission.

22. Continued stakeholder outreach could be considered to ensure that local communities are engaged in the challenge of reaching Net Zero, feel that their voices have been heard and are supportive of the change required.

Implications

- **Financial** – Financial implications are noted within the content of the report. All projects will be subject to individual feasibility studies and business cases. None of the projects included have been accurately costed.
- **Human Resources (HR)** – There are no HR implications associated with the report.
- **Equalities** – Consideration needs to be made to the equalities impact of a transition to a decarbonised energy system. All projects would require individual Equalities Impact Assessments.
- **Legal** – There are no legal implications associated with the report.
- **Crime and Disorder** – There are no crime implications associated with this report
- **Information Technology** – There are no IT implications associated with this report
- **Property** – There are no property implications associated with this report

Contact Details

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Report Approved ✓ **Date** 05/12/2022

Wards Affected: **All** ✓

For further information please contact the author of the report

Background papers

https://modgov.york.gov.uk/documents/s157446/EMDS%20Local%20Area%20Energy%20Plan%20March%202022.pdf

Annexes

Annex A: Local Area Energy Plan – Overarching Report

Annex B: Local Area Energy Plan – York Chapter

Annex C: Local Area Energy Plan – 2030 Ambition

Annex D: Local Area Energy Plan – Modelling Approach