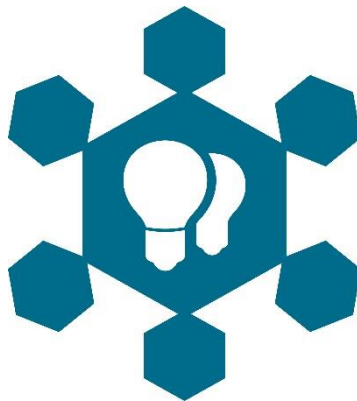
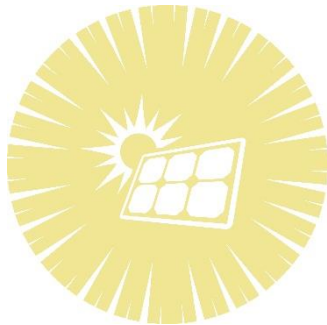


# Regional Decarbonisation: People, Place and Planning

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# Executive Summary



This report explores the possibilities for regional decarbonisation energy planning with a focus on the North East of England. Local Energy Planning (LEP), used here as an umbrella term for local and regional scale energy planning activities, has been rising in importance due to the localised nature of low carbon energy technology feasibility and potential benefits. There are two commonly used terms; local area energy planning (LAEP) and energy masterplanning (EMP). Common to both these approaches is the need to gather relevant local data and investigate technological deployment options to satisfy objectives. Where they differ is that the LAEP is a whole energy system and data-driven approach over a defined spatial area, EMPs on the other hand are more fluid in scope whether about a particular aspect of the energy system or for a particular institution, entity, or location.

Local and regional energy planning is expected to deliver a range of benefits not only from implementation but also from both the planning process itself. Benefits from planning include providing the stimulus for creativity and innovation, identifying where efficiency improvements can be made, and potential for projects to be linked together. Potential implementation benefits include providing businesses with greater certainty and clarity for investment decisions, scope for further collaboration activities and coordination of decarbonisation efforts and realising net zero emissions more swiftly than otherwise.

It is important to recognise how local energy plans may be viewed alongside other types of plans. A lack of statutory responsibility for local energy systems means that local energy plans, or projects identified by them, do not have the same status as Local Plans. This can create difficulties in obtaining planning authority approval, particularly if appears to contradict aspects of the Local Plan. In addition, local energy plans may not comply with the National Planning Policy Framework (NPPF). Ambitious Local Plans can be altered by the central government's Planning Inspectorate depending on interpretations of the NPPF in line with government policy. This should not deter local and regional governments from developing ambitious decarbonisation plans. Arguably the more that do, with public agreement and support, this can pressure central government to revise the NPPF.

## Collaboration

A stronger focus on collaboration is needed as opposed to what can often be more passive “engagement” activities. This should be not only with key stakeholders such as energy network operators, businesses and institutions in the region, but more widely including the public. Methodologies for both LAEP and EMP state the need for engagement but do not provide much detail or guidance in this area. Local planning authorities do conduct public consultations in the development of Local Plans for example. There is a risk however that pressures on funds and resources could impact on the capability to undertake such activities for other types of planning. Alternatively Local Plans could include energy planning, or at least certain aspects, and therefore included in public consultations taking place. LEP (LAEP or EMP) would still have a role in providing the techno-economic rationale for energy technology deployment in particular locations. LEP findings from spatial cost optimisation modelling exercises such as the LAEP should be considered alongside local societal and environmental knowledge and information.

## Vision

Before conducting a LEP a future vision for the region needs to be developed along with a strategic framework. This will provide direction for regional decarbonisation that reflects local and regional needs and character and the pace of delivery. A vision that has the buy in of

citizens can minimise resistance to the necessary changes and support the speed of decarbonisation that is needed. The vision and strategic framework could be conducted at the combined authority level. More detailed LEPs conducted at the local authority level with support from the regional combined authority and other bodies such as government Net Zero Hubs and key stakeholders such as energy network operators.

## **Beyond energy efficiency**

The new devolution deal for the North East region will create the North East Mayoral Combined Authority (NEMCA). This will have an extensive suite of powers and funding for housing, education and transport provide a great opportunity to put the region at the forefront of future green industries. Energy demand measures that go beyond efficiency measures such as more active travel for example, have been found to enhance wellbeing as well as making net zero emissions targets easier to achieve. We therefore recommend that NEMCA make energy demand reduction a prominent consideration in energy planning.

## **NEMCA next steps**

In developing a regional energy planning programme, we recommend that NEMCA identifies opportunities for effective collaboration activities at the outset. This will build on existing initiatives such as Net Zero North East England, and work that has already been undertaken by the North of Tyne Combined Authority and the North East Local Enterprise Partnership. While it is noted that the devolution deal refers to collaborating with partners and initiatives across the North and across the border into Scotland, we would stress the need as well for more "bottom up" collaboration within the region. In our report we outline a potential collaboration model with regional stakeholders fulfilling different roles.

An early collaboration activity could be developing a regional future vision with as wide a variety of stakeholders as possible. Part of the development could discuss and learn which places or parts of society need targeted support and potential options as well as where the early opportunities are. Local Plan development cycles for constituent authorities need to be appraised and where there is scope to incorporate decarbonisation measures and potential to link activities across the region for shared objectives.

There is great potential in North East England for improving the wealth and wellbeing of its citizens in a transition to a low carbon economy. Prioritising energy demand reduction that go beyond energy efficiency improvements will make important contributions to achieving wellbeing goals. The North East is a region rich in renewable energy resources with scope for the deployment of on and offshore wind technologies, and geothermal heating from disused coal mines. The region has a history of engineering having been at the forefront of the industrial era and has a strong digital and information technology sector. The Port of Blyth in Northumberland having been the home for the first offshore wind turbines in the UK is becoming a marine technology centre, and plans in Seaham, County Durham, for a new "garden village" using geothermal technologies. "The North East Evidence Hub"<sup>1</sup> has been created as an important regional data source to support monitoring progress.

This report is the result of a partnership between Durham Energy Institute at Durham University, the North East Local Enterprise Partnership and the North of Tyne Combined Authority (NTCA). The findings in this report are based on a review of the literature, interviews and a focus group with North East energy system stakeholders.

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<sup>1</sup> <https://evidencehub.northeastlep.co.uk>

# 1. Background



Durham Energy Institute at Durham University has been working in partnership with the North East Local Enterprise Partnership and North of Tyne Combined Authority to explore the challenges and benefits in developing a North East regional scale energy strategy, planning and implementation activities.

The seven local authorities in the North East have recently agreed a devolution deal with central government and campaigns are underway for the election of a new Mayor that will take place in May 2024. This follows the end of the 5 year devolution deal for part of the North East region - "North of Tyne". The North of Tyne Combined Authority represents the local authority areas Newcastle City Council, Northumberland County Council, and North Tyneside Council. The remaining authorities in the North East; County Durham, South Tyneside, Gateshead and Sunderland councils formed an informal (non-mayoral) collaboration when negotiations for a North East devolution deal with central government previously broke down around the time of the Brexit referendum[1].

The North East Mayoral Combined Authority (NEMCA) will represent the local authority areas from both the current North of Tyne Combined Authority and North East Combined Authority and with greater powers including housing, education and skills, and transport. A family of five regional organisations, North of Tyne Combined authority, North East Local Enterprise Partnership, Transport North East, Invest North East England and the North East Combined Authority will transition to become the new North East Mayoral Combined Authority.

This report explores the possibilities for strategic energy planning at this regional scale to deliver on climate ambitions in addition to realising other key objectives such as regional economic growth and wellbeing for its citizens. Note that it is not intended that the findings in this report form part of any planning process, the aim is to provide useful insights should NEMCA proceed with regional decarbonisation planning activity.

The discussion and analysis in this report are a result of a literature review, semi structured interviews, and a facilitated workshop with regional stakeholders. We explore the purpose and benefits of emerging local and regional energy planning approaches, and whether these may be the most effective way to realise local and regional climate ambitions. We consider whether alternative approaches in existing and emerging planning policy may realise net zero emissions targets more effectively. Finally, we make some recommendations for decarbonisation strategy, planning and implementation in the North East.



Local and regional authorities have a range of responsibilities and aspirations for their governing area, and planning activities guide decision making to deliver and realise these. Local authorities develop Local Plans that address how the land will be used in their area to meet needs and objectives, and parish or town councils develop Neighbourhood Plans focusing on local buildings and infrastructure [2]. These planning activities need to comply with the central government specified National Planning Policy Framework (NPPF) in England with the combined authority's regional development strategy providing further guidance [2] [3]. Note that the devolved governments specify their own planning frameworks [4]–[6].

NPPF, Local Plans and regional development strategies are therefore a critical enabler (or inhibitor) of progress on realising climate ambitions. There is a UK national legal commitment to achieving net zero emissions by 2050 and a 78% reduction (1990 baseline) by 2035, yet local authorities do not have a statutory responsibility for local emissions reduction nor the local energy system. The NPPF does state however that communities have responsibility for increasing use and supply of "green energy" [7].

The NPPF gives some guidelines when appraising the potential for renewable and low carbon energy. In this it mentions the need for policies to ensure that the right technologies are deployed in the right places, and that while there is no quota for emissions reduction, local authorities need to *maximise* renewable and low carbon energy technology deployment. NPPF updates are issued from time to time for certain technologies. The method considers planning constraints but does not include economic appraisals or deployment constraints.

It is noted too that the deployment methodology is energy supply side focused. Yet latest research finds that reducing energy demand beyond efficiency improvements is critical for meeting net zero emissions targets [8]. The NPPF refers to energy efficiency improvements these relate to reducing energy demand in buildings and in transport [9], but more radical measures are needed. The independent government advisory body the Climate Change Committee (CCC) find that substantial shifts in energy consumption behaviours and lifestyles in addition to adopting low carbon technologies are now needed to meet 2035 emissions reduction targets [10].

The Planning and Energy Act 2008 [11] included provisions that local authorities in England "may" include renewable and low carbon energy in their local development plans for "a proportion of energy used in development in their area". Energy efficiency standards are also permitted to exceed building regulations [section 1 of the Act (a) (b) and (c)]. National policy does allow local authorities to take action to deliver on climate ambitions to a certain extent.

The Planning Inspectorate in central government can however take decisions to alter Local Plans that result in developments moving away from decarbonisation targets, or at least slow progress. This occurred in a recent case in West Oxfordshire where area development plans for a new "garden village" included ambitious net zero emissions measures based on extensive consultation and agreement with the public. The Planning Inspectorate required the development plans to be rewritten taking out the climate measures arguing "*we are not satisfied (the Policy) is either consistent with national policy or justified*", causing severe damage to the local authority's net zero ambitions [12]. It is important therefore that regional and local government along with public support encourage central government to approve such local plans.

In the latest CCC independent review on the UK's net zero emissions progress, they report on research that they commissioned about the adequacy of the NPPF. The research was commissioned due to the NPPF's importance in shaping local plans. It was found that the NPPF was failing to allow planning decisions to contribute sufficiently to climate mitigation and adaptation [13, p. 371].

In this somewhat confusing planning landscape where local and regional authorities *may* include renewable and low carbon energy in their planning, and where there is a duty to *consider* sustainability, new planning approaches are emerging to assist with local decarbonisation policy and decision making. Given that energy supply and demand are the predominant source of greenhouse gas emissions, new local energy planning approaches are being developed and used. Under the broad umbrella term "Local Energy Planning" we describe and contrast two of the current main types referred to as "Energy Masterplan" and "Local Area Energy Planning" and contribute to clarifying the terminology.

This report has 6 sections: Section 2 discusses the purpose and benefits from local energy planning approaches. In Section 3 we consider whether these are the most effective way to realise climate ambitions and look to possible alternative approaches. Section 4 gives an overview of the North East region. Section 5 outlines some prospects for the new North East Mayoral Combined Authority, and Section 6 is a summary and recommendations as to potential ways forward.

The background is a solid teal color. Overlaid on this are several white geometric shapes. At the top right, there is a white rectangle. Below it, a white shape resembling a large 'L' or a stepped corner is positioned. In the center, there is a white square. At the bottom, there is a large white shape that is semi-circular on its right side and rectangular on its left side. The text '2. Local Energy Planning' is written in white, sans-serif font, positioned to the left of the central white square.

## 2. Local Energy Planning

The majority of local and combined authorities in the UK have made a "Climate Emergency Declaration" joining the international movement started by Darebin Council in Australia in 2016 [14]. The purpose of the movement is to move climate action onto a "war like footing" and therefore pledge to mobilise funds and resources to achieving the net zero emissions transition [15]. All the local authorities in the NEMCA region, and the two combined authorities NTCA and NECA (non-mayoral) have declared a climate emergency. The target date for net zero emissions varies among authorities, as does the scope with some referring to their own buildings and services whereas for some the target refers to the whole governing area - see Section 3.1.

It is argued that there are many benefits to decarbonising the local energy system, aside from addressing the climate emergency and realising climate ambitions. Decarbonisation measures can support delivery on local and regional authority responsibilities in areas such as health, economy and employment, poverty, housing and inequality [16]. Example decarbonisation measures include active travel (walking, wheeling, and cycling rather than using a car or bus) leading to improved physical fitness and general wellbeing; and energy efficiency measures such as insulation in domestic buildings that can reduce energy poverty, improve inequality, and improve the quality of housing. Making local energy investments can provide a revenue stream for local authorities, particularly important following a prolonged period of austerity measures. Local energy investments can include export opportunities (out of the locality/region), and ease congested networks [17].

Energy planning activities such as local area energy planning (LAEP) and the energy masterplan (EMP) assist with developing a local and regional strategy and identifying opportunities for targeted local and regional energy investments. While local energy planning is in its infancy, there are growing numbers of local and regional councils who have taken the step to conduct EMPs and LAEPs. There are a few sources that are tracking progress such as the Climate Scorecards<sup>2</sup> where authorities are scored on plans for climate action across a range of sectors, and the Energy Systems Catapult in identifying the progress that authorities are making on LAEP developments. Figure 1 below provides a map of LAEP progress so far.

It is notable that all the authorities in Wales are either working towards or has a LAEP. The Welsh government have fully embraced the LAEP approach and are providing resources to all Welsh LAs through funding and technical expertise from ESC [19]. In England, LAEPs have been developed for the Greater Manchester Combined Authority, North Yorkshire and York, Newcastle City, and Peterborough authority areas and there are a number who are in the early stages of LAEP development.

This does not however represent the full picture of local and regional energy planning activity. The Borderlands Initiative comprising a devolution deal and collaboration of councils either side of the border between England and Scotland have developed and published an Energy Masterplan, to inform an Investment Programme. A few masterplans have also been developed and published in Scotland. In discussions with local and regional authorities the LAEP approach is currently the most considered for supporting net zero emissions policy and decision making. The remainder of this section compares the two approaches, considering the benefits of each as understood from literature review and focus groups.

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<sup>2</sup> <https://councilclimatescorecards.uk/>

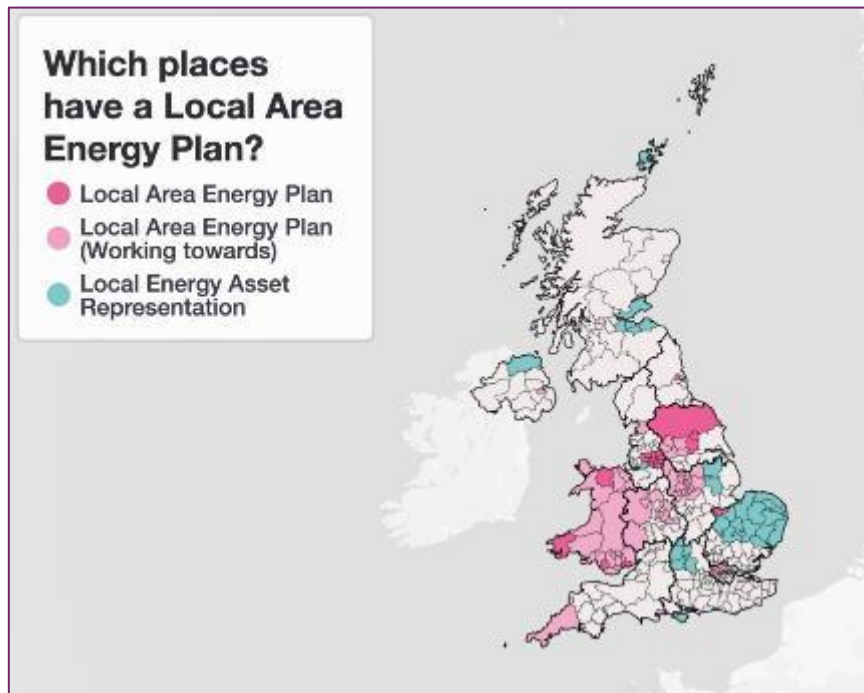


Figure 1. Which places have a LAEP? [18]

Local Area Energy Planning (LAEP) is an energy planning approach that has gained considerable interest in recent years. The leading provider of LAEP support for local and regional authorities, Energy Systems Catapult (ESC), define the LAEP as follows:

*"Local Area Energy Planning (LAEP) is a data-driven and whole energy system, evidence-based approach that sets out to identify the most effective route for the local area to contribute towards meeting the national net zero target, as well as meeting its local Net Zero target."* [20]

ESC's guidance states that the LAEP is designed to provide a possible future plan as to the "what, where, when and by whom" changes in the system needed to meet objectives e.g. net zero emissions by a certain date [21]. The LAEP is a fully costed spatial plan led by local authorities, comparable in detail to an urban masterplan. It is a long term strategy identifying nearer term actions and a basis for stakeholders to take investments and actions forward. However, the ESC state that the LAEP is not a plan to be followed precisely, or to be seen as a replacement for urban plans. It is envisaged that the LAEP provides a rationale for action. Further stakeholder and public consultation is to be expected in implementing resulting plans using the LAEP approach [22, p. 14], and further detailed analysis for investment decisions for an energy technology in a specific location [21].

The main purpose in the LAEP is for determining technology deployment options for decarbonising the local energy system. The distinguishing feature about the LAEP is the primarily "data driven" approach. The ESC in their service to local authorities use a quantitative model developed for the LAEP called the EnergyPath Networks (EPN) Model. The process involves ESC collaborating with local authorities to develop economic cost optimised low carbon energy technology solutions for the local spatial scale.

ESC outlines a 7 step process to developing a LAEP and this is summarised in Table 1. A key first consideration is the spatial scale for the LAEP. The guidance says that there is no

upper limit given on scale, but for a lower limit no smaller than a single borough or city council [20]. Their rationale is that a small scale creates difficulties in engaging with

stakeholders who are critical to the success of the plan, such as energy network operators and investors [20, p. 16].

It has been found however in practice that too large a scale can make the quantitative modelling extremely complex. The first combined authority to develop LAEPs, the Greater Manchester Combined Authority, found they needed to create one for each of the 10 sub-regions to do LAEPs effectively [22]. The 10 LAEPs were aligned with the previously developed regional strategic plan and framework.

**Table 1. LAEP process steps [20]**

<b>Stage in the Process</b>	<b>Description</b>
<b>1. Preparation</b>	Identification of the geographical area, the lead organisation and roles and responsibilities of other stakeholders, and resources, scope and assessing policy
<b>2. Stakeholder Engagement</b>	Appoint an organisation to lead on stakeholder activity, stakeholder map who and roles in the LAEP, define engagement activities
<b>3. Representing a local area</b>	Local area and its energy system, what are the data sources, and review outputs with stakeholders
<b>4. Modelling options for the future</b>	Agree potential scenarios and modelling approach with stakeholders, model costed options and assess them
<b>5. Scenario refinement &amp; selection</b>	Conduct techno-economic analysis, appraise wider factors, engage with stakeholders. Use these to decide on net zero pathways.
<b>6. Actions, priorities &amp; decisions</b>	Taking the pathways to net zero and identifying the actions that need to take place and when
<b>7. Create the plan</b>	Creating the LAEP

In research commissioned by the national energy regulator Ofgem, ESC and the Centre for Sustainable Energy (CSE) developed a LAEP methodology comprising of 4 main elements [23]:

1. Whole system approach and analysis based on robust technical evidence and consistent use of the available data.
2. Assessment and understanding of non-technical factors to enable the needed change.
3. Engagement with stakeholders needs to be effective including the management of vested interests and ensure that the plan is representative of local views.
4. Governance and delivery that is credible and enduring.

The LAEP methodology further states that these 4 elements need to be treated with equal importance, particularly for a LAEP "done well". Sufficient and meaningful engagement can be subject to interpretation. It is challenging to obtain views from across the different stakeholders and can be particularly challenging to appropriately represent the views of all citizens.

In more recent ESC guidance there is discussion about "primary" stakeholders who are responsible for creating the LAEP, and "secondary" stakeholders who are responsible for supporting the creation of the LAEP and their involvement in each of the 7 steps of the LAEP process [20]. Primary stakeholders are typically the local authority and the energy network operators who determine key parameters of the LAEP. They share data and make sure their plans for their respective responsibilities are aligned.

The guidance advises setting up an independent Steering Group for the creation of the LAEP, and that an engagement plan with secondary stakeholders is needed. However, there

is no advice on what forms of engagement should take place. They provide a basic caution on the timeliness of engagement and how frequently to engage with stakeholders: too early can result in a lack of engagement with future pathways (developed towards the end of the LAEP process steps), too often can lead to fatigue and loss of interest, whereas too late can make for difficulties in addressing critical issues raised [20]. It should be noted that responsibility for this engagement remains with the local authority leading the planning process.

We next outline another energy planning approach adopted on local and regional scales - the Energy Masterplan.



Energy Masterplanning (EMP) initially emerged to determine the potential for district heating systems. For example the Greater London Authority produced EMPs for each of its districts 2015-2016 [24]. Recently, the EMP has been adopted for developing an economically feasible and sustainable roadmap for delivering low carbon energy systems within a local spatial area. This involves identifying energy resources, potential technological deployment and matching with demand in the most efficient and effective way. An EMP on a regional scale would include the energy strategy for the region and signal opportunities to investors and businesses.

The Scottish Enterprise guide produced for the Scottish Government is for EMPs on a community scale. In this EMP guide there are four main aspects of the planning process; leadership, spatial mapping, evidence base and raising awareness [25]. Leadership is needed to take responsibility for coordinating with stakeholders, to develop the EMP, and to assist with implementing it. Spatial mapping is needed so that early energy opportunities can be identified by planners and investors. The EMP provides an evidence base for the low carbon transition in an area and raises awareness of the opportunities more widely. Scottish Enterprise place the EMP within a broader 5 stage process (A to E summarised in Table 2).

**Table 2. Energy Masterplanning and Business Case Development [25, Fig. 2]**

Stage	Name	Description
A	Local/Regional Strategic Vision	High level appraisal on the local/region scale, intended realised benefits of the plan
B	Strategic Framework	Characterisation of the area and identification of opportunity areas with KPIs taken to stage C
C	Energy Masterplanning	Taking opportunity areas from stage B and determining the scope of individual projects including appraisal technology options and whole life cost assessment
D	Feasibility Study	In depth appraisal of project proposals from stage C including stakeholder engagement
E	Business Case	Finalising the financial and governance aspects including business models

The development of the main EMP itself - Stage C - comprises 6 stages:

1. Data collection - collect all the relevant data on energy supply and demand including characterisation of buildings, ownership, possible new developments and Geographical Information System data, grid and network constraints
2. Strategy - consulting with key stakeholders on scope and potential infrastructure considerations and benefits and interests of different stakeholders
3. Technology options appraisal - detailed analysis using a model that simulates the local energy system behaviour on a suitable time frequency (to identify peak demand)
4. Economic assessment - appraisal of the costs associated with the technological options including capital, operation and maintenance and other economic factors such as feed in tariffs and potential energy sales
5. Comparative assessment of the scenarios - exploring under different scenarios
6. Project reporting - in consultation with the stakeholders, report policy recommendations and planning measures for preferred scenario

The Scottish Enterprise guide outlines how different UK governing authorities and project owners may be involved in different energy planning activities[25, Fig. 1]. In practice there can be a blurring of the divide in activities particularly between regional and local governing

authorities. There can be regional differences too depending on the extent of devolved responsibilities (and associated funding) that have been agreed by central government and this could influence the scope of energy planning.

This EMP guidance was further developed in 2021 by Wood plc who used the more general term "Local Energy Plans" [26]. In this more recent guidance for Scottish communities there is a focus on Scotland's devolved powers i.e. heat and energy efficiency, but with scope for the local energy plan to consider the whole energy system.

Communities need to work closely with local authorities, distribution network operators and local generators in developing their EMP. There is a statutory requirement for Scottish local authorities to develop Local Heat and Energy Efficiency Strategies that currently does not apply to local authorities in England. The Scottish government introduced this in 2022 to help realise the net zero homes and buildings 2045 target [19].

EMPs are used on a wide variety of scales and for different entities such as local authorities, local communities, other public sectors such as the NHS and universities, property developers, landowners and building operators, energy companies and decentralised energy developers (Scottish Enterprise, 2015). Depending on the lead organisation and the scale being applied, there may be different activities associated with the EMP.

The process steps for an EMP and LAEP are similar. Where the two approaches differ are as follows:

- LAEP is a whole energy system approach for a spatial area, EMP may be part (heat and energy efficiency) or whole energy system for a particular entity (community, organisation, city, region etc.)
- EMP appears to be more strategic/vision led, whereas the LAEP is more data and model led with economic feasibility of technological options for achieving the net zero emissions target.

Both EMPs and LAEPs share much common ground in supporting decisions on the energy system changes needed but from different perspectives. EMPs take a vision and strategic led and entity-based approach to a plan to decarbonise part or whole local or regional energy system. LAEPs are data and techno-economic led focused on a specified spatial area.

It should be noted that LAEPs are suited to certain spatial scales – ones that are neither too large nor too small. On a regional scale, as has been found with GMCA, smaller spatial scale LAEPs are technically more feasible. These would take direction from regional scale vision and strategies. Note further that the geographies differ between combined authorities and energy network operators in England making the alignment of strategic planning activities challenging.

Local and regional energy planning is viewed as providing a range of benefits that support delivery of local and regional authority objectives. Motivations include attracting investments that harness opportunities for local and regional economic growth, meeting the needs of citizens, realising climate ambitions and generating revenue [17]. There is the potential to realise many other benefits ("co-benefits") relating to health, energy security, unemployment and drivers of wider poverty (not just fuel related) and inequality [16].

By considering energy demand as well as energy supply side technologies, plans can help identify opportunities for cross energy vector efficiencies and reduced energy demand. Energy demand reduction measures provide several benefits that contribute to local and regional authority objectives. Reducing levels of energy demand means that a smaller energy supply system will be needed. This in turn means that the transition to a low carbon energy system will be more feasible both economically (less cost), technically (due to, say, land constraints), and potentially enabling the shift to net zero emissions to be realised more swiftly. It is argued [8], that achieving net zero emissions targets in the UK is not possible without energy demand reduction measures that go beyond efficiency improvements e.g. changes in energy consumption behaviours. Energy demand reduction measures are strongly correlated too with improvements in human wellbeing [27].

It is claimed that the processes in energy planning such as data collection, appraisal, and identification of barriers can stimulate creativity and innovation. The energy plan can promote efficiencies in resource use too, such as in identifying where there may be opportunities to link projects together [25], thereby lowering costs and improve success potentially in implementation. In the LAEP method different scenarios can be explored through quantitative modelling to identify what may be the most cost effective pathway to realising net zero emissions targets in a particular spatial area [20].

Engagement with stakeholders, identified as necessary processes for both an EMP and a LAEP, in turn provides opportunities and benefits. While there is little in the guidance on the kinds of engagement activity that might be most effective for energy planning activity, having input from stakeholders brings the local context into the planning process i.e., making the plan more "place-based". Stakeholders can provide through their lived experience or local business or organisational reasons why the implementation of a certain technology might or might not be practical in a certain location. Engagement can determine why certain energy system changes may not work for certain stakeholder groups or individuals, and whether the plans are perceived as fair.

The engagement process can be used as a social learning exercise, for stakeholders to explore the potential benefits to a local net zero emissions life that they may not otherwise have thought about. It is assumed that when implementing the energy system changes, good engagement processes might make resistance to plans less likely, although this is not guaranteed.

A small group of energy system stakeholders from the North East region was invited to explore what motivations and benefits there might be in conducting focused energy planning exercises. The stakeholders in the focus group were regional decision makers, energy companies, researchers, businesses, and consumer group representation.

The stakeholders were asked to provide their thoughts on the purpose and benefits for conducting local energy planning. The participants identified many of the benefits already discussed in the previous section. The responses were organised into four themes: realising the net zero emissions transition, efficiencies (of planning activity), economic benefits, and collaboration or inclusivity. A list of the points raised by the participants under each of these themes is given in Table 3.

**Table 3. Purpose and benefits of local energy planning**

<p>1. Net Zero:</p> <ul style="list-style-type: none"> <li>• Supports a rapid transition to net zero emissions</li> <li>• Speeds up the process of getting clean energy to where it is needed most: domestic, transport, industry, and the public sector</li> <li>• Accelerates the journey</li> <li>• Move away from historic networks based on fossil fuel generation</li> <li>• Do not have to wait on the plans of others</li> <li>• Greater levels of trust in local plans compared with central government</li> <li>• Ensure that the net zero transition is tailored to the needs and assets of the region underlined by a consistent approach</li> <li>• Enables progress on emissions reduction to be measured and associated benefits and identify what needs to happen where and by when</li> </ul>
<p>2. Efficiency:</p> <ul style="list-style-type: none"> <li>• Avoids duplication</li> <li>• Cluster expertise from region to region</li> <li>• To have one picture to track the progress of the region, so can maximise the scale and depth of the results</li> <li>• To combine the work and efforts from stakeholders across different areas of work and geographical areas and maximise outcomes</li> <li>• Synchronisation/coordination of time, resources, funds</li> <li>• Planning helps clearer roles, scope, objectives, and resources</li> <li>• Stimulates innovation</li> </ul>
<p>3. Economy:</p> <ul style="list-style-type: none"> <li>• Investment certainty</li> <li>• Supply chain confidence - greater consistency and certainty</li> <li>• Costed and evidence led list of investments prioritised by need - yield potential investments (private/public) supports development/decarbonisation of: <ul style="list-style-type: none"> <li>○ transport</li> <li>○ housing</li> <li>○ inward investment</li> </ul> </li> <li>• Avoid energy black outs and should avoid chaos</li> </ul>
<p>4. Collaboration/inclusion:</p> <ul style="list-style-type: none"> <li>• Partnership - you cannot do this alone</li> <li>• Draws on local expertise</li> <li>• Towards an agreed scenario - consensus on aims and outcomes</li> <li>• Foster engagement and raise awareness with a mix of stakeholders - it gets people talking and communicating</li> <li>• To ensure that the net zero economy will benefit all communities and will be underpinned by an inclusive approach</li> </ul>

Many of the purpose and benefits listed could also apply more generally to existing local planning activities. For example, in providing the certainty in future direction for investments and citizens, drawing on local expertise and opinions of local stakeholders, and ensuring benefits for citizens particularly vulnerable groups. We also note that many of these benefits are aspirational and are based on conjecture rather than experience or evidence.

The group identified several net zero emissions benefits, notably the general sense that local energy planning helps speed up the decarbonisation process. As already noted, local energy planning for the purpose of realising local climate ambitions is in its infancy relative to other forms of planning. It is therefore too early to tell therefore whether such benefits will be realised in practice.

In pursuing efforts to realise climate ambitions local and regional authorities are adopting new planning approaches that focus on decarbonising the local or regional energy system. It is claimed that energy planning on this scale can provide many benefits in realising statutory responsibilities and strategic objectives. These include providing greater investment confidence and certainty in the locale or region, facilitate decarbonisation at pace, and facilitate greater coordination of efforts.

Two main approaches are currently being adopted, EMPs and LAEPs, and while there are some key differences, there is a great deal of overlap. In both approaches there is the need to collect data, engage with stakeholders, and conduct technological and economic appraisals. EMPs can apply to part or the whole energy system and relate to a specific entity such as a community, institution or can relate to a spatial area. LAEPs are detailed whole energy system plans for a particular spatial area with technology deployment options for locations across the area assessed on a cost-optimisation basis using a quantitative modelling tool.

In the next section we consider whether these are the most effective way to realising climate ambition and possible alternative approaches that may realise net zero emissions targets more effectively.

3. Best approach?



### Complexity and uncertainty

The complexity and uncertainty in realising the low carbon transition has led to it being described as a “wicked” policy problem [28], [29]. Reasons given for the “wickedness” labelling include timescale mismatches (for the action required and arrival of the threat mitigating against, costs being upfront but benefits future generations), lack of clear definitions and solutions, and slipperiness in that taking action alters the problem.

It is not yet possible to determine whether local energy planning leads to realising net zero emissions targets since these are in the future, and it will be difficult to determine whether local energy planning leads to a faster (or slower) rate of transition. Part of the difficulty here being the interdependencies with other sectors, the interconnectedness on different scales (nationally and even internationally), and whether the opinions of citizens change over time. These challenges are common to all forms of planning, not just energy planning.

While there is guidance on EMP and LAEP, there is no clear definition of “local area energy” [30]. Compounding this are the complex overlapping geographies and associated responsibilities with subnational government and energy network operators [31]. Both are identified as primary stakeholders and are assumed to be the most appropriate for having the responsibility for developing a LAEP [20]. These challenges make it very difficult to develop coherent and consistent plans to decarbonise the energy system.

For the North East region, the devolution deal with central government that will result in a new North East Mayoral Combined Authority (NEMCA) means there is greater potential for a coordinated planning approach. NEMCA will have more powers and associated funding than NTCA had previously including for transport and health. There are remaining spatial complexities however, with the energy network operators having different geographies. Northern Powergrid for example is responsible for the electricity network across the North East, Yorkshire and north Lincolnshire regions<sup>3</sup>. Northern Gas Networks are responsible for the gas distribution network across the North East, Northern Cumbria and part of Yorkshire<sup>4</sup>. There are also other bodies and initiatives that overlap or contain the North East that it will be important to ensure coordination of approach and identifying opportunities to collaborate. These include the Transport for the North<sup>5</sup> (the transport body covering the North of England), Northern Powerhouse<sup>6</sup> (a central government initiative covering the North of England and Wales), and the Borderlands Initiative<sup>7</sup> (a growth deal with central government, Scottish government, and local authorities either side of the England-Scotland border).

### Inconsistent approach

A common criticism of energy planning is the lack of consistency of approach in local energy planning [30], [32]. There have been several calls for central government to put in place a local delivery framework and for a consistent planning approach to be adopted [13], [33]–[36]. There are inconsistencies too as to net zero emissions commitments on local and regional scales. Over 75% of local authorities and all the combined authorities have made a climate emergency declaration [37]. The target dates set for net zero emissions vary among authorities, and the scope of the target i.e. whether refers to their own buildings and

<sup>3</sup> <https://cms.npproductionadmin.net/about-us>

<sup>4</sup> <https://www.northerngasnetworks.co.uk/>

<sup>5</sup> <https://transportforthenorth.com/>

<sup>6</sup> <https://northernpowerhouse.gov.uk/>

<sup>7</sup> <https://www.borderlandsgrowth.com/>



activities or the geographical area they govern. Table 4 provides a summary of the status of net zero emissions ambition among combined authorities in England.

**Table 4. Combined Authority Net Zero Ambition<sup>8</sup>**

Combined Authority	Target Net Zero	Scope
Cambridgeshire & Peterborough	2050	Whole area
Greater London*	2030	Whole area
Greater Manchester	2038	Whole area
Liverpool City Region	2040	Council only
North East	tbc	tbc
North of Tyne	tbc	tbc
South Yorkshire	2040	Whole area
Tees Valley	2050	Whole area
West Midlands	2041	Whole area
West of England	2030	Whole area
West Yorkshire	2038	Whole area

This inconsistency of approach and commitments is creating unevenness in decarbonisation progress across the nation with some authorities being categorised as "laggards" or "leaders" [38]. Reasons given for this unevenness include central government austerity measures and national policy changes that have resulted in a focus on one-off opportunistic projects rather than delivering enduring decarbonisation progress across an area [38]. While they are acknowledged to play an important role, it is questionable whether local authorities should lead given the lack of resources and their need for coordination and support through regional and central government [39].

In the North East region NEMCA has the opportunity to support all local authorities across the region to become "leaders". The extended devolved powers and fundings have been described as a "trailblazer" devolution deal [40]. It is anticipated that with this deal NEMCA will build on progress made by NTCA, North East Local Enterprise Partnership, Transport North East and the Borderlands Initiative with some notable projects in the pipeline in addition to those already mentioned including expansion of railway lines in partnership with the Northern Powerhouse Rail<sup>9</sup> project, and the Green Superport a new investment zone including the ports of Tyne, Blyth, and Sunderland.

### Place-based approach

While consistency of approach is desirable, there is strong evidence for adopting place-based approaches in delivering improved outcomes. In a review of 6 English city-regions it was found that taking a place-based approach meant that around a quarter the level of investment (£58bn compared with a place-agnostic approach £195bn) resulted in almost double the energy savings (£108bn vs. £57bn) and costed wider social benefits (£825bn vs. £444bn) [41].

But what is a place-based approach? In the analysis, place-agnostic investments were those that reduced emissions but applied uniformly over an area, whereas place-based reduced emissions by the same amount but took into account the specific characteristics, needs, and opportunities of the investment locations [41]. Hence it is important to understand the societal factors as well as other more physical place-based attributes in decarbonisation

<sup>8</sup> Information taken from the CAPE website a database of UK council climate action plans <https://cape.mysociety.org/>

<sup>9</sup> <https://transportforthenorth.com/northern-powerhouse-rail/>

delivery. The guidance on LAEPs discusses the need for stakeholder engagement but little further guidance is provided. Given the "data driven" basis for the LAEP, this creates the impression of more techno-economic led decision making (rather than societal). Engagement appears to be more about opinions on quantitative model determined deployment than working truly collaboratively with stakeholders.

This is a criticism made in an appraisal of the LAEP pilot study conducted over the period 2013-2017 with three selected applicant local authorities from England and Wales; Bridgend, Bury, and Newcastle to test local energy planning with ESC's EnergyPath Networks model. In the appraisal there were concerns about the ability of the LAEP, with its techno-economic perspective, to provide effective local decision making and in its ability to scale up and sustain the level of change needed, since "*knowledge, plans and low-carbon futures are all continually in the making*" [39, p. 21]. There are criticisms too of relying on models for decision making since they can be viewed as a "black box" that embodies certain values and assumptions and political choices, reinforcing a "*predict and provide*" planning approach [39, p. 26].

## Engagement

A more exploratory and reflexive planning approach is needed, where technological options and their economic feasibility are only one part of the delivery solution, and that public engagement and social learning must be given greater priority [30], [39]. Involving citizens within policy and decision making is believed to lead to lower costs, less delay, and lower levels of resistance in implementation [42]. There is the opportunity for the "trailblazing" NEMCA to develop a more collaborative and participatory approach to regional decarbonisation strategy and planning.

Given the benefits expected of participatory planning, it is concerning that there is no consensus about what engagement processes might be most appropriate. There is a sizeable literature on the use of participatory practices in planning, little of which seems to have been considered in the development of energy planning. Planning theorists have identified contradictions between, say, democratic engagement and bureaucratic 'efficiency' [43]; the difficulties of managing participatory processes over time [44] and the challenges of consensus building, where interests may conflict [45], [46].

In discussions of energy planning there are strong arguments for democratic approaches in deciding on climate action. This is where deliberation takes place between politicians and citizens to develop what is referred to as a "social contract" [47]. Where citizen engagement takes more of a partnership or collaborative quality rather than e.g. an opinion gathering exercise, this can create a redistribution of power [48], that can be unsettling for existing power structures [47].

Examples of public deliberation exercises are citizens assemblies or juries, and these are a popular emerging form of deliberative democracy. This is where invited citizens participate in learning and discussion on a key concern then agree on policy and decision making recommendations [49]. The rationale is that the recommendations are seen as representative of what the public wants if there was the time and resources for all to participate, and such exercises can stimulate wider public debate and discussion [49]. They have been criticised however for being tokenistic as they tend to be one-off exercises with no requirement to act on the recommendations [50].

The North of Tyne held a Climate Assembly in 2021 for 50 selected citizens. The recommendations arising from the assembly that have been adopted by NTCA include; expansion of renewable energy, retrofitting homes to at least EPC grade "B" by 2030 and a subsidised and joined up public transport system [73].

We explore engagement and argue the case for taking a more collaborative approach in section 3.2.

### **Cost burden**

There are financial costs incurred with all initiatives to support local decision making including using the Energy Systems Catapult model EnergyPath Networks to develop a LAEP. The extensive data gathering exercise required to run the modelling places a further cost burden on austerity-hit authorities. Public participatory exercises are costly and time consuming with citizens assemblies typically taking 20 hours over several weeks [51]. These costs are not affordable for all local authorities without funding support. It should be noted too that there is the need to revisit, review and update plans over time incurring yet more costs. While a government (now ex) minister (Rt Hon Chris Skidmore) made recommendations to central government that suggested LAEPs are low cost [36, p. 6], the cost of conducting LAEPs is a barrier for LAs [39], highlighting the thorny problem of who benefits and who pays.

In local development planning there is already a requirement to conduct public consultations, but no such requirements exist for regional strategies and innovation projects [30]. Development proposals will only obtain approval from planning departments if they are consistent with approved Local Plans that are reviewable every 5 years. Furthermore if proposals are consistent with the Local Plan and not with the NPPF, the government's Planning Inspectorate can alter them and water down climate commitments as was the case with the "Garden Village" proposal in West Oxfordshire despite having local public approval mentioned above [12].

We now turn to the topic of engagement.

There is generally a lack of local authority understanding about how public participation can make local planning decisions more effective [52]. It should be noted that citizens possess considerable place-based knowledge and if included more actively in local decision making, could lead to realising substantially greater energy savings and social benefits.

In exploring possible future scenarios, LAEPs have tended to focus on a limited range of in the main technologically driven scenarios, such as choosing between hydrogen or heat pump technologies for heating. Since the primary stakeholders are energy network operators as well as local or regional authorities, scenarios can be adopted from Distribution Future Energy Scenarios (DFES) (developed by Distribution Network Operators) - and then scaled to the spatial area of the LAEP. DFES in turn are usually derived from National Grid's Future Energy Scenarios (FES). There is a risk therefore, that the future scenarios explored in the LAEP do not appropriately characterise the spatial area, and a lot of extra work may be required to do so. In future scenarios developed for local and regional spatial scales through a participatory process, it was found that the more important drivers for change can be societal rather than technological, this cannot be captured through computer techno-economic modelling alone [53], [54].

Local energy planning, as indeed with any other form of planning, provides opportunities to explore active collaboration rather than more passive forms of engagement for effective local decision making. Such opportunities can include not only designing potential future scenarios for a spatial area, but also in developing a vision for the region or locale. To quote a preeminent systems thinker *"Vision is the most vital step in the policy process. If we don't know where we want to go, it makes little difference that we make great progress..."* [56]. A vision can serve as an effective guide for energy planning and decision making and should capture the imagination of stakeholders. It goes beyond an aspirational slogan to outlining what future life aiming to create in the region or locale.

In the focus group held with a small group of stakeholders (comprising of regional decision makers, energy companies, researchers, businesses, and consumer group representation) the participants were invited to discuss the collaboration model developed by Collaborate CIC<sup>10</sup>. Collaborate CIC are developing a movement seeking to create more collaborative and place-based partnerships in the public and voluntary sectors [57]. Before beginning an engagement process, they argue that sustainable social change requires six foundational elements, including a shared vision and purpose. The elements are [58]:

1. Collaborative mindset ("*believing in us*") - working with each other enables us to more effectively achieve shared goals
2. Healthy, trusting relationships ("*finding critical friends*") - inclusivity and trust enables conflicts, tensions and different perspectives to be navigated for improved outcomes
3. Shared vision and purpose ("*charting a path*") - co-creation of the direction of travel for motivation
4. Collaborative behaviours ("*walking the walk*") - including open active communication, share in power and encourage leadership in everyone
5. Shared learning ("*putting our heads together*") - review learnings and revise continuously
6. Collaborative (or system) infrastructure ("*making it happen*") - adopting a governance styles that is collaborative with shared data, information, accountability and performance management.

Stakeholders in the Collaborate Model are described as performing one of three roles in the system change needed. These are System Leaders, System Activists or System Stewards [58]. Systems Leaders mobilise collective action towards shared goals, Systems Activists seek to understand different perspectives and causes for effective interventions, and System Stewards nurture of the collaboration system.

In the focus group we introduced above, stakeholders were asked to reflect on what system change role they considered themselves to be and then asked to discuss the following questions in relation to local energy planning:

- What kinds of engagement activity when, with whom and why?
- How to ensure good principles of collaboration during planning, into implementation and beyond?

A common theme in the discussions was that the role someone adopts depends on the context and that one person can move between all three types of roles in different situations. Further the role is not necessarily self-determined. To one person you are a System Activist whereas might consider yourself to be more of a System Leader. There was some discussion that the system roles do not translate to current (formal) positions in project delivery. One participant commented on the hierarchy, and that in cases of conflict the opinions of a System Leader may take precedence over those of a System Activist. This raises questions of role assignment - who should assign roles while ensuring all voices are heard?

For the discussion on activities and principles for collaboration the common themes raised were issues around the timeliness, suitability of engagement activities for different types of stakeholders, making stakeholders feel planning decisions have been considered, and the challenge of ensuring diversity of opinions and perspectives are heard.

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<sup>10</sup> <https://collaboratecic.com/>

Stakeholders discussed the tendency for certain organisations to assume they have the knowledge of the area and then engagement is a means for public persuasion rather than collaboration. This echoes the discussion in this report on energy planning in Section 2 being more model-led. Another stakeholder argued that engagement processes too should not be seen as an opportunity to shift responsibility to other stakeholders.

On the timeliness of engagement, it was felt that for this to be effective all involved need to be at the same readiness point. One suggestion to resolve this is to hold a pre-planning engagement activity to explore levels of interest and readiness to implement any required changes (i.e. resources and capacity). The range of capabilities and capacity to engage can vary across and within different stakeholder groups too. This creates an enormous challenge in not leaving anyone behind or feeling deprioritised (and therefore demotivated) due to the different capabilities and capacities.

A further challenge is obtaining diversity of opinions. In engagement activities National Grid are for example invited to everything but are constrained resource wise so this can result in this engagement not being effective. Another observation is that the same persons and stakeholders tend to attend engagement activities, and the ones who are loudest and speak for the longest time tend to be the ones who have most influence on outcomes. There may be personal commitments as to why this may be so but also whether the style of event is attractive to attend. Not all stakeholders suit the same style of engagement activities and this needs to be addressed in planning engagement activities. There is a significant effort required in designing and running participation activities and this can result in not reaching the voices might want involved.

Finally for successful and enduring collaboration there needs to be appraisal and review throughout participation processes to learn what works and what does not. The review process will have its own challenges as there can be external factors influencing effectiveness e.g. diary clashes with many relevant activities being run at the same time.

Focused energy planning can provide the rationale for energy policy decisions and investments for realising climate ambitions. However, there are planning activities that already take place by local government and in the interest of efficiencies and expediency careful consideration is needed about the benefits and drawbacks of additional planning. There have been consultations on proposals to progress local and regional energy decarbonisation by Ofgem and many have argued for greater support from central government and the need for coordination across different governance scales.

There is an argument to embed energy policies and investment plans in any pre-existing regional strategies and Local Plans. In addition, having detailed data driven analysis of the local energy system enables efficiencies to be identified across energy vectors i.e. electricity, heating, transport, and storage. Detailed analysis such as this also develops understanding about the capacity constraints on networks and peak energy demand implications. In practice there is a need for both the data driven techno-economic analysis and more collaborative style engagement with stakeholders. At the regional scale, such as the North East of England, there is potential to provide a key strategic governing layer that is under researched [59].

Ofgem, the independent energy regulator of Great Britain, has held a consultation on the future of local and regional energy governance and have recently published their decision [60]. A new Future System Operator (FSO) role that will be independent (of government) and publicly accountable is now in the process of being created. Ofgem outline three critical further energy governance roles to facilitate the net zero emissions transition; a regional system planner, a market facilitator, and real time energy system operations responsibility.

Led by the FSO, Regional Energy Strategic Planners (RESPs) will be assigned the regional system planner role and provide support to local authorities. RESPs will provide strategic coordination between national, regional, and local policy, and have responsibility for effective participation. Ofgem anticipate there will be 10-13 RESPs across GB with 1 in Wales and 1-2 in Scotland and make arguments for this role to be given to sub-national transport bodies. Figure 3 provides a map of the Ofgem RESPs proposal. However, due to the size of Transport for the North this may require 2 RESPs.

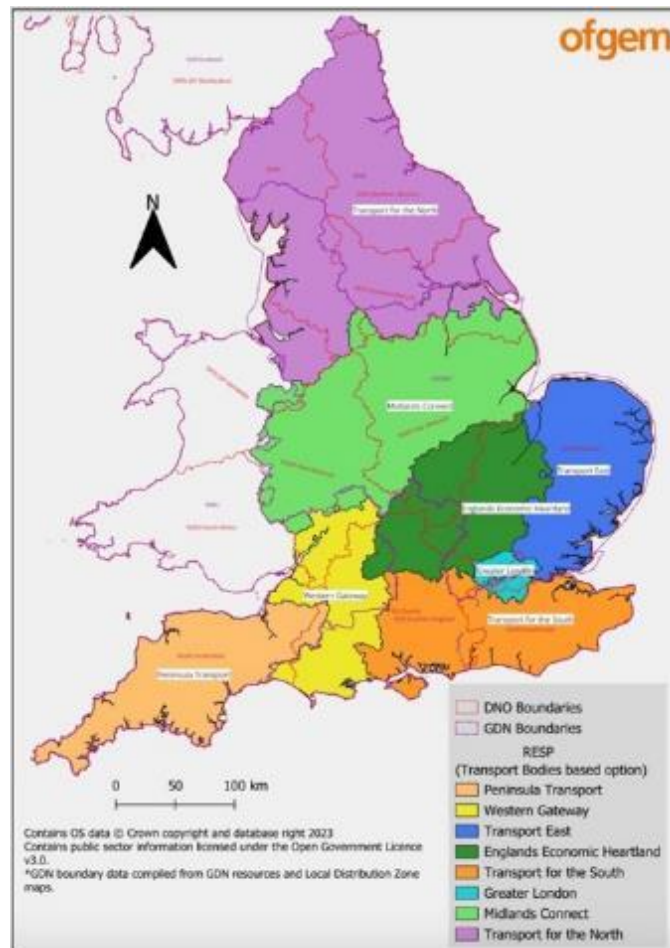
The market facilitator role will ensure flexible resources and have system responsibility for market coordination, monitoring implementation and strategic leadership. Ofgem are considering whether this role should be held by the FSO or Elexon who implement the Balancing and Settlement Code (BSC). The BSC is the set of rules and governance arrangements for trading electricity in Great Britain<sup>11</sup>. Real time energy system operations responsibility will remain with the Distribution Network Operators.

Detailed plans on these roles will be developed by Ofgem and implemented in time for the setting of the RIIO-ED3 price control towards end 2025/early 2026.

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<sup>11</sup> <https://www.nationalgrideso.com/industry-information/codes/balancing-settlement-code-bsc>





**Figure 3.** Ofgem RESP Boundary Proposal [60, p. 42]

In Scotland, new roles are being developed at the regional scale to deliver the net zero transition through land use management. A pilot of 5 Regional Land Use Partnerships (RLUPs) for engagement between local and national government, communities, land owners and others are producing a Regional Land Use Framework by 2023 [61]. The way RLUPs are established and function varies but they have potential to address complex problems that cannot be solved by a sole institution [62], [63]. Findings from such partnerships are an improved understanding of the local system about the benefits and potential unintended consequences of actions, managing conflicts of interest, and provides a stimulus for local investment [61]. These partnerships have elements in common with the collaboration model discussed in section 3.2.

Outlining the development of these new regional roles is to highlight how governance of parts or all the local and regional energy system has potential to evolve. There is an opportunity for NEMCA to design a governance model that evolves with these new changes and in placing a more collaborative approach to be at the heart of net zero emissions planning that is not just top down but bottom up. A proposed collaboration model is described in section 5.2. Planning for the changes to the energy system do not solely need to be through focused energy planning activities such as an LAEP. Due to the level of urgency local and regional governments need to explore incorporating decarbonisation policies and plans in all planning activities.

We now focus on the North East region of England and prospects for regional decarbonisation.



## 4. North East England



The North East of England having once been at the forefront of the industrial era, has suffered from subsequent deindustrialisation resulting in high levels of social and spatial inequality [64] that still persist today [65]. North East is characterised by a geographically diverse area containing some of the most isolated areas in England and the large cities Newcastle, Sunderland and Durham. By land area, Northumberland is by far the largest within the region (almost two-thirds of the North East<sup>12</sup>), the largest unitary authority by land area in England and the least densely populated. It has the largest area of green belt of any planning authority, along with several other protected geographical and designated special interest areas.

Operating between central government and local authority level there are a few governing bodies and initiatives in the region. These include the North of Tyne Combined Authority, North East Combined Authority, Tees Valley Combined Authority, Transport North East<sup>13</sup> combined authority and the North East Local Enterprise Partnership. A collaborative initiative - Net Zero North East England<sup>14</sup> - has also been established to accelerate the region's transition to net zero through partnership between local government, business and institutions to support realising climate ambitions for a "greener, cleaner and fairer" North East region<sup>15</sup>. Recently an economic growth deal has been made between the UK government, Scottish government, and local authorities either side of the Scotland-England border called the Borderlands Partnership.

With a new devolution deal between central government and local authorities in the region having been agreed at the end of 2022, the North East Mayoral Combined Authority (NEMCA) will be established. This will cover the area of the North East excluding that authority areas represented by the North of Tyne Combined Authority and the North East (non-mayoral) Combined Authority (and not the Tees Valley Combined Authority). Campaigns are underway for the election of a North East mayor that is taking place in May 2024. A family of five regional organisations, North of Tyne Combined authority, North East Local Enterprise Partnership, Transport North East, Invest North East England and the North East Combined Authority will transition to become the new North East Mayoral combined authority.<sup>16</sup> Net Zero North East England has been established as a collaborative partnership between local government, business and institutions to support realising climate ambitions for a "greener, cleaner and fairer" North East region<sup>17</sup>.

North East Local Enterprise Partnership has established a "Evidence Hub" to provide data and information across the region on transport, businesses, education and net zero<sup>18</sup>. This information shows that regional (territorial) greenhouse gas emissions have reduced by over half over the period 2005 to 2021. When emissions per head are compared with other regions it is third highest largely due to emissions from the agricultural sector<sup>19,20</sup>.

There is substantial potential for renewable energy technologies with the Port of Blyth having been the home of the UK's first offshore wind turbines and rural areas having potential for onshore wind especially in Northumberland. There is significant potential for geothermal heat using disused coal mines in the region (NELEP, 2019).

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<sup>12</sup> <https://evidencehub.northeastlep.co.uk/report/land-use>

<sup>13</sup> <https://www.transportnortheast.gov.uk/>

<sup>14</sup> <https://www.netzeronortheastengland.co.uk/>

<sup>15</sup> <https://www.netzeronortheastengland.co.uk/statement-of-intent>

<sup>16</sup> <https://www.instituteforgovernment.org.uk/explainer/devolution-north-east>

<sup>17</sup> <https://www.netzeronortheastengland.co.uk/statement-of-intent>

<sup>18</sup> <https://evidencehub.northeastlep.co.uk/evidence-by-theme>

<sup>19</sup> <https://evidencehub.northeastlep.co.uk/report/greenhouse-gas-emissions>

<sup>20</sup> Note that the figures include Tees Valley that has its own combined authority and not part of NEMCA

In 2021 the Department for Business, Energy and Industrial Strategy published an appraisal of the impact of the national net zero emissions target on jobs and the economy (by the measure Gross Value Added (GVA)) in the North East region [66]. It was found that the North East could potentially benefit to a greater extent than the national average. This is due to energy investments in hydrogen, offshore wind, and biomass, and in the transport sector (EVs). The GVA for the region would be expected to grow by £1.9 billion compared with £0.7 billion without net zero policies [66].

The North of Tyne Combined Authority and North East Local Enterprise Partnership have implemented a number of strategies and programmes in relation to energy. The energy sector is identified an area of strategic importance in the 2014 North East strategic economic plan<sup>21</sup>. There have been initiatives to support the development of e.g. Port of Blyth becoming an offshore renewables hub, and the establishment of an Energy Central Partnership is underway. Due to be completed later in 2024, Energy Central will serve as a regional energy knowledge and learning hub including renewable energy, offshore wind, subsea engineering, and energy storage<sup>22</sup>. In addition, there are complementary initiatives such as a bespoke Wellbeing Framework and Dashboard<sup>23</sup>, and a regional Green New Deal Fund (GNDF). The GNDF invited business proposals for funding that result in greenhouse gas emissions reductions, and/or energy efficiency improvements and the creation of jobs.

To date there have been two energy planning activities within the North East region: Newcastle City Council took part in the ESC LAEP pilot study under Phase 1 of the Smart Systems and Heat programme over the period 2015-2017 focussing on heat decarbonisation (ESC, 2018). More recently the Borderlands Initiative has undertaken an EMP exercise that related to a region that included the Northumberland County Council (as well as the other bordering local authority areas).

Findings from the Newcastle pilot study were that the peak demand from electrification of heat is likely to be less than other published studies, and that the bottom-up approach leads to greater confidence in estimated peak demand [67]. The case study highlighted the need to incorporate other energy supply vectors and use a whole energy system approach as types of activities, in particular transport, could place a much higher demand on infrastructure. A further finding was that emissions reduction would be higher if deployed district heating schemes using water source heat pumps (River Tyne in Newcastle) compared with individual heat pumps in homes [67].

The Borderlands Energy Masterplan process developed by Buro Happold included 3 stages [68]: Data analysis, stakeholder engagement, and socio-economic analysis. The energy system analysis draws on the Future Energy Scenarios produced each year by National Grid and applies these to the Borderlands region. Two alternative future scenarios are used, "Balanced" where heat is largely electrified, and "Hydrogen" where there is a larger proportion of hydrogen technology used for heating.

The analysis identified 41 potential interventions that were grouped into 6 thematic investment areas; commercial and industrial, domestic heat, energy efficiency, transport, electricity generation, flexibility and networks. Most of the interventions are for buildings. In determining a shortlist of interventions, each were assessed for their contribution to decarbonisation and the regional economy. As discussed in Section 2.2 EMPs indicate potential investments, further investigation is needed called here "Local Area Energy Investment Plans (LAEIPs)". This is to understand more thoroughly potential for interventions in specific locations.

In the engagement with stakeholder organisations the activities for the Borderlands Energy Masterplan included interviews, surveys and 5 themed workshops structured around stakeholder groupings were also held. The themed workshops were on renewable generation (and flexibility/networks), domestic, commercial/industrial and finally overarching

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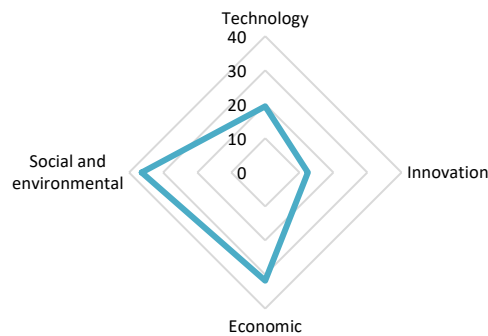
<sup>21</sup> <https://evidencehub.northeastlep.co.uk/strategic-economic-plan>

<sup>22</sup> <https://www.northoftyne-ca.gov.uk/what-we-do/projects/clean-energy-and-connectivity/energy-central/>

<sup>23</sup> <https://www.northoftyne-ca.gov.uk/what-we-do/projects/education-inclusion-and-skills/wellbeing-framework-data-dashboard/>

strategy. A multi-criteria modelling approach was used across all the workshops to rank interventions across a range of socio economic factors based on the growth deal objectives and potential benefits arising. These were grouped under 4 themes; technology, innovation, economic and social/environmental.

Stakeholders were asked to compare and weight different interventions in pairs using a multicriteria analysis approach called an Analytical Hierarchy Process (AHP). There was strong consensus on the weighting to be applied as shown in Figure 4. Social and environmental factors to be applied the greatest weight followed by economic, then technology and smallest weighting applied to innovation factors.



**Figure 4.** Borderlands Energy Masterplan weightings for interventions [69, Figs 8–4].

The weightings can then be used to incorporate stakeholder preferences in appraising investment projects. The next steps for are dissemination exercises and publication of a development prospectus to attract investment plans. One the recommendations in the EMP for the low carbon transition supporting policies on other governing scales (national and local) is needed.

In the next section we outline prospects for the new North East Mayoral Combined Authority.

The background is a solid teal color. Overlaid on this are several white geometric shapes: a large square in the upper right, a smaller square below it, a semi-circle on the left side, and a large semi-circle on the right side. The text '5. Prospects for NEMCA' is positioned to the left of the upper square.

## 5. Prospects for NEMCA

The new devolution deal with the North East region represents a greater level of devolved powers and associated funding than was awarded to NTCA with greater spatial scope. In addition to education and skills, there are devolved powers and funding for transport and housing. There will be a need to develop strategies and plans for the region to deliver on these new responsibilities along with a regional vision and direction depending on that of the new elected mayor. The extension of powers and funding to include transport and housing provide an opportunity to accelerate the low carbon transition progress within the region with net zero forming a key cross cutting theme in the devolution deal. Further provisions are expected drawing on the extensive devolution deals for Greater Manchester and West Midlands [40].

In research on local green new deals and a wellbeing survey and focus group with citizens in the North of Tyne region, it was found that there was strong support for investment in affordable public transport and home energy efficiency measures i.e. retrofit, and additionally for active travel to contribute to wellbeing [70]. In applying green new deal principles [71] and the "transform" scenario from positive low energy futures [8] it was found, that by 2040, there was potential to lift 45,000 people out of fuel poverty and create 5,000 new jobs from retrofit activities, and opportunities to increase bus journeys by 33% and triple active travel (walking and cycling) in the North of Tyne [70, p. 30]. The realisation of these benefits from such investments could be even greater when applied to the new NEMCA geography.

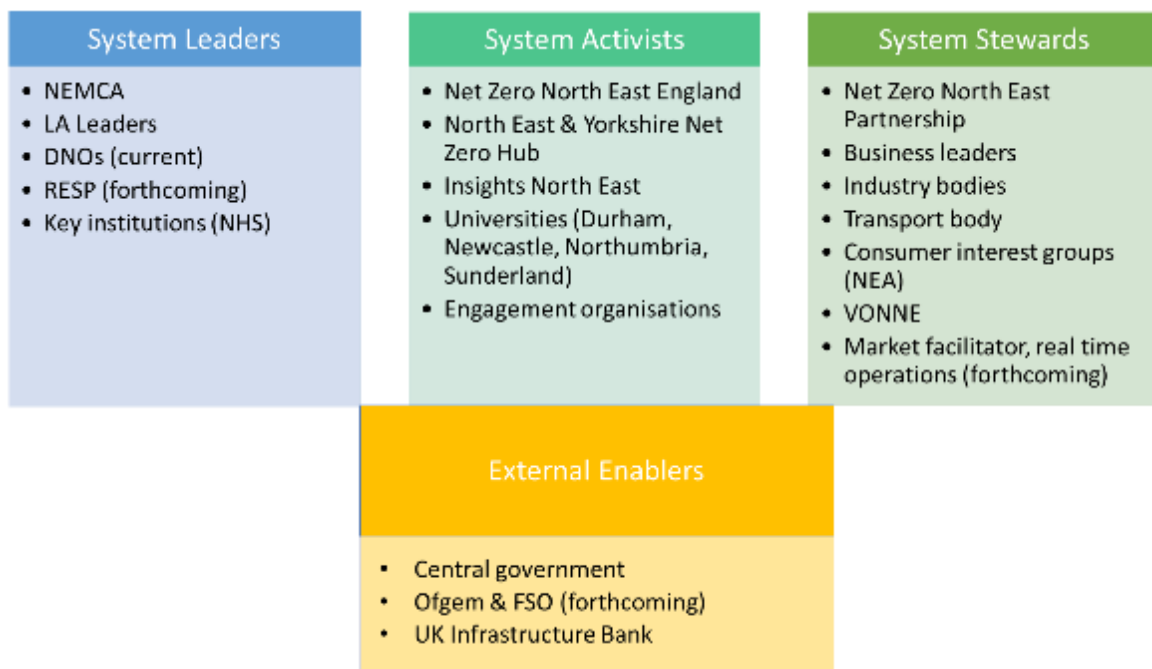
The elected mayor will be bringing their own vision and manifesto to the role that will shape regional strategy, in partnership with the NEMCA cabinet formed by the local authority leaders. In this section we summarise some of the key prospects for regional decarbonisation planning under three themes; governance and leadership, planning approaches and engagement.

A common theme arising from the discussion around planning approaches is that leadership and a collaborative vision are critical. It is crucial that a collaborative approach is taken in charting a path to a net zero emissions future vision for the region. There is need for widespread "buy-in" to the radical changes needed.

While NEMCA will have greater autonomy in regional strategy and decision making, national policy can still have an impact on local and regional planning through the NPPF. Attempts are being made to implement emissions reductions measures that go beyond national policy. For example, Oxford City Council are proposing to implement bold proposals including a ban on gas boilers in new homes from 2025 [72], yet, the central government Planning Inspectorate watered down plans for a zero carbon village in West Oxfordshire [12]. This should not deter NEMCA making bold trailblazing decarbonisation plans of its own, NPPF is under pressure to become more adequate for supporting the net zero transition from central government's independent advisory body the Climate Change Committee [13] among others.

There is some uncertainty on the horizon as Ofgem develop plans for new Regional Energy Strategic Planners (RESPs) in England and how that role will interact with local and regional governing authorities in energy planning and decision making. In the outline of the decision to introduce RESPs, Ofgem say they will be required to support local authorities in energy planning (but make clear they are not endorsing the ESC's LAEP methodology as that is a decision for central government) [60]. The RESPs and the addition of a new market facilitator role and existing real time operations management add complexity to energy governance in England. Active and effective engagement is needed with stakeholders and a coherence across all planning activities.

In the spirit of the Collaboration Model described in section 3.2 we suggest a framework of system leaders, activists and stewards as shown in figure 5. This figure also identifying key external enablers.



**Figure 5.** Collaborative Governance Model for North East England



The System Leaders comprise what are referred to as the primary stakeholders in the LAEP guidance – the local and regional authorities and energy network operators (DNOs), and key institutions such as regional NHS trusts. System Leaders will be responsible for leadership and motivating investment and behaviours for the system change needed. Included here is the new role outlined by Ofgem – the Regional Energy Strategic Planner (RESP). The other new role proposed by Ofgem, the national Future System Operator (FSO), is seen as an external enabler.

The System Activists role is more about understanding different perspectives and facilitating action and therefore includes the collaborative initiative Net Zero North East England, the central government established North East and Yorkshire Net Zero Hub, Insights North East<sup>24</sup>, the Universities in the region, and engagement organisations.

System Stewards will be responsible for managing relationships between organisations and across the region and include the Net Zero North East Partnership, representative organisations such as industry bodies, transport body, consumer interest groups such as National Energy Action (NEA) and the region's Voluntary Network North East (VONNE). The new roles announced by Ofgem – market facilitator and real time operations – are considered to be System Stewards in this collaboration model.

We have developed the model further to include "External Enablers" with the key ones being central government, Ofgem and the UK Infrastructure.

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<sup>24</sup> <https://insightsnortheast.co.uk/>

In this report we discussed two main subnational scale energy planning approaches; energy masterplans (EMPs) and local area energy planning (LAEPs). There is a great deal of overlap between the two planning approaches but with some key differences. EMPs have been found to be flexible in terms of spatial scale, can be more strategic or spatially detailed, and consider part or whole energy system. LAEPs on the other hand are spatially defined, detailed and data driven with quantitative modelling, providing cost optimised low carbon technological solutions to achieving net zero emissions targets by a required date.

For the North East, it is unlikely that a region-wide single LAEP is going to be possible due to the complexity at this scale, as has been found with GMCA. The most feasible route would be a regional strategic framework identifying particular needs in places across the region with support for more detailed smaller spatial scale local energy plans. This is the route that has been adopted by GMCA where LAEPs were developed for each of the 10 districts consistent with the GMCA strategic framework. In the Borderlands Partnership, an EMP has been developed at a regional cross-border scale and the next step is to use this to develop an Investment Programme<sup>25</sup>.

Local Plans can adopt low carbon energy policies and measures within them too as is currently emerging at the local authority scale. There can be a mismatch in timings in developing different plans and their associated timeframe whether these are regional strategic frameworks and plans, local plans and at the national scale. While the ideal would be coherence and consistency of planning across all governing scales at the same time, in practice this is not achievable. With a public mandate, and the findings from climate assemblies and public consultations suggesting that the public want more, not less, action from politicians on climate change [47], it is possible to progress delivery on net zero emissions without waiting for changes on other governing scales.

In the need for increasing expediency, there is a strong argument for taking action today rather than the promise of a more ideal planning environment tomorrow. If there is a delay in capitalising on public will and pressure for addressing the climate emergency this can lead to demotivation and despondency [74].

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<sup>25</sup> <https://www.borderlandsgrowth.com/energy-masterplan>

In Section 3.2 we outlined the Collaboration Model. We argue that these principles need to be built into engagement planning alongside energy planning activity. Many of these already happen in local planning and local and regional energy planning should be no different.

It is important therefore that a plan for engagement activities is given the same level of importance as the need for quantitative data modelling and analysis and made within a more collaborative ethos and framing.

There is a concern that the LAEP can result in techno-economic modelling led decision making. While public engagement is encouraged in the LAEP methodology the form it takes is left open. Engagement exercises are challenging to organise and ensure there is sufficient participation, with the right groups or stakeholders, time consuming, and costly. While there is a focus on the costs for LAEP modelling exercises, there is little consideration and discussion as to the costs for effective engagement plans. Austerity-hit local authorities are likely to cut corners here in the pursuit of obtaining the LAEP modelling outputs, yet for any plan to be successfully implemented there needs to be considerable public engagement as well as with other stakeholders.

There is scope to explore the implications of potential future scenarios with regional stakeholders (including citizens). There is the potential to draw on a great wealth of local knowledge in including citizens in a more collaborative way, and scope for greater social learning and understanding, all critically important for realising the net zero emissions transition. It is notable too that not all participatory activity needs to be as comprehensive as that for a citizen assembly (for example for the North of Tyne citizens assembly met for 30 hours learning and deliberation); participatory exploratory futures (with appropriate facilitation) can be undertaken in 0.5-1 day [75].

It will be important to establish what are the critical societal factors and benefits from implementing changes for the net zero emissions transition. As followed by the Borderlands EMP - thematic workshops would be a good way to explore these in a collaborative way. The multi criteria decision making framework adopted by Borderlands is one way to understand what weighting should be applied in investment decisions.

## 6. Recommendations



Currently there are a series of planning activities undertaken on sub-national scales e.g. Local Plans, Transport Plans, Climate Plans and emerging local energy planning activities in so-called energy masterplans and local area energy planning. This report explored these emerging energy planning activities in the context of the UK planning system and prospects for the new devolved authority the North East Mayoral Combined Authority (NEMCA).

There are several attractions of undertaking energy planning including:

- Determining a strategy and vision for a low carbon future for the region
- Provide a rationale and attract investment
- Can appraise the whole local/regional energy system and identify strategic opportunities for cross energy vector efficiencies, and different projects
- Identify co-benefits for realising local authority and combined authority statutory obligations such as local/regional economic growth and improvements in wellbeing for citizens

Some of the drawbacks include:

- Lack of recognition either by the Local Plan or NPPF and this can hinder progressing the energy plan, or may not comply with policies in the Local Plan or NPPF
- There may not be sufficient engagement and public consent to the changes implied by the energy plan and this can hinder implementation, noting that public opinion can shift over time
- Taking a cost optimised approach makes assumptions about the future that may not be realised e.g. technologies ruled out today as too expensive may prove to be cheaper to deploy in the longer term
- Decisions made in relation to the energy system by governing authorities may be undermined by the decisions made by gas and electricity network operators and forthcoming authorities such as Ofgem's Regional Energy Strategic Planners, or changes in central government
- Energy planning on subnational scales is in its infancy and it is not yet known how effective local energy plans will be.

In Section 5.2 we offer a potential Collaborative Model for the North East with different organisations in Figure 5 operating as System Leaders, System Activists and System Stewards.

The North East is a region with potential to make a substantial contribution to national net zero emissions targets while delivering regional prosperity and improvements in wellbeing for its citizens. It is a region rich in renewable resources; both offshore and onshore wind, and geothermal potential from disused coal mines. The success of planning activities whether focused on the regional energy system or where net zero emissions initiatives are included in other planning activities, depend on collaboration and coordination not only with stakeholders in the region but with central government and neighbouring regional stakeholders.

Energy demand reduction measures that go beyond energy efficiency improvements have been shown to improve wellbeing while contributing to net zero emissions targets. Examples include insulating buildings and a shift to more active travel. We recommend that energy demand reduction is a priority in regional energy planning.

We recommend therefore that if NEMCA is to engage in regional energy planning it would be good to place stakeholder engagement on a more collaborative footing, and with a wide range of stakeholder groups, from the outset. An example collaborative model was given in Figure 5.

Rather than focusing on techno-economics of renewable energy technology deployment to meet expected energy demand, we recommend a shift to placing energy demand reduction at the heart of planning activities and investment decisions. Not only will this ease pressures on land development it could provide potential for energy exports for the economic benefit of the region due to the enormous renewable energy potential within the region for offshore and onshore wind, and geothermal technologies. The North East (and Tees Valley) is identified as being the UK's first "heat network cluster" with the nation's fastest growing pipeline of heat network projects<sup>26</sup>. Table 5 gives a summary of our recommendations.

**Table 5. Regional Decarbonisation Planning Recommendations**

<b>1</b>	Collaboration at the heart of decarbonisation planning - bottom up as well as top down and sideways (across boundaries)
<b>2</b>	Vision and strategic framework at the regional scale and guidance for local energy planning at the local authority scale
<b>3</b>	Techno-economic modelling to be considered alongside rather than leading other knowledge and information i.e. societal and environmental
<b>4</b>	Local Plans - incorporate energy decarbonisation where possible
<b>5</b>	Energy demand reduction beyond efficiency measures make a priority for improved wellbeing and feasibility of achieving net zero emissions ambition

In addition, we recommend that the new North East mayoral combined authority cabinet, including the regional mayor and local authority leaders establishes a collaborative net zero vision and strategy for the region drawing on its many strengths as outlined above, and that has the buy-in of its citizens, businesses and institutions. This will shape energy planning activities at the local authority level in the region. Local Plans should seek ways to include net zero measures where possible, and these can be supplemented or informed by energy planning activities. We recommend that these should be led more from a participatory foundation than a techno-economic basis with opportunities for energy demand reduction prioritised.

<sup>26</sup> <https://www.great.gov.uk/international/content/investment/opportunities/heat-networks-in-the-north-east-and-tees-valley/>

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