

## COMMUNITY ENERGY KICKSTARTER

### Summary report

#### Net Zero Norfolk: NCCP CRF Programme Lot 2: Community Energy Kickstarter

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## Foreword

2022 is poised to be both the hottest and driest year on record. Climate threats are now the norm and are beginning to drive public sentiment. The increased risks to the region are well illustrated in a range of recent reports.<sup>1,2</sup>

The Government has already implemented the 2050 Net Zero target, which triggered a raft of climate emergency declarations, and it has since issued a *Net Zero Strategy* on the eve of last year's CoP26 conference. Ambitious top-down technology targets have been set, and central funding is beginning to flow to the regions. The baton is being passed over, and communities and councils are now expected to begin to push forward local climate action and plans to support delivery of progress against the target.

Against this background, the Norfolk Climate Change Partnership (NCCP) made a submission in 2021 into the Community Renewal Fund (CRF) for support for its Net Zero Norfolk (NZN) project. Following confirmation of funding, this has been split into two, with support allocated to a report of development of hydrogen sites for transport (Lot1, which is being delivered by Ricardo) and this report on the Community Energy Kickstarter programme (Lot2, which is being delivered by us, Net Zero East).

The challenge for the county on community energy can seem a daunting one, for four reasons:

- Norfolk is starting from the baseline of one of the smallest and weakest community energy sectors in the country. While the region has made good progress on supporting low-carbon growth, it has achieved this almost wholly through institutional investors and scale developments rather than through communities
- As a predominantly rural economy, Norfolk faces particular challenges because of its dispersed population and relatively high costs of emissions abatement. Added to this, it does not have many large industrial sources of carbon that in other regions provide an obvious focus for decarbonisation but instead has high transport emissions and a large and dispersed built environment with many old buildings
- There is increasing fragile natural capital in the region with growing signs of climate adaptation, and
- Despite supportive policy statements, the Westminster Government has no specific policies for supporting the community energy sector, especially after the removal of subsidies for renewable generation and heat schemes over recent years.

More positively, there are green shoots of activity in the community energy area across the country, which has been stimulated by the recent surge in energy prices. Based on our assessment of what's happening in places outside Norfolk, we have reached various conclusions:

- There is lots of activity but no textbook of measures and their design in the community energy space. In fact, one of the defining characteristics of the emerging sector is its diversity and plurality
- Progress depends on appetites and motivation of community actors in promoting change, "getting involved" and supporting it

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<sup>1</sup> <https://www.greensuffolk.org/app/uploads/2021/05/Summary-of-climate-change-risks-to-East-of-England.pdf>

<sup>2</sup> <https://www.wildlifetrusts.org/climate-risk-across-400-square-miles>

- The nature of local emissions, their causation and their relationship to place is very important
- Local authorities are potentially key facilitators, stimulating thinking and potentially supporting community-based action through their role as place-shapers and community sponsors as well as through neighbourhoods plans and local investment, but
- Community energy developers and local authorities are developing plans in a marketplace where energy supply is still heavily regulated and where scale suppliers are still seen as a key catalyst but where their focus remains almost wholly at the national level.

To better equip Norfolk's stakeholders to get to grips with the opportunities and the challenges, we have therefore focussed in this report on the following:

- Addressing the various barriers touched on in the ITT to community energy, but also highlighting the significant local economic, social and other benefits of community action
- Providing an in-depth set of resources that enable regional stakeholders to understand the challenges but also the options they face
- Building understanding of what's happening in other places and identifying what strike us as interesting case studies and precedents that might be readily adapted locally, and
- Combining these examples or ideas with our deep geospatial mapping, what might work in local conditions given the realities and challenges of specific locations (which is what we term our community energy "kickstarter ideas").

There is absolutely no reason, with the right level of engagement of community groups and targeted support from local authorities, why community energy cannot catch up in the region. Indeed, there are good reasons why local stakeholders should be looking to significantly lift the level of activity in the sector given the environmental and social risks in the region. This is especially so given the eye-watering energy prices we are presently seeing and which we are expecting to continue and which should incentivise communities - businesses and householders - to get involved.

Against this, there needs to be a sense of realism around how such initiatives will be funded and what the limits are of what's possible in a situation where actors outside of Westminster do not have clearly defined vires or a mandate. There are also important regional factors given the constrained nature of the existing energy system in the county. This takes two forms. First, there is relatively limited access to gas at the local level especially outside of the region's major towns, which brings a legacy of high heating emissions. Second, there are significant thermal constraints routinely experienced on the electricity system, which might limit the pace of heat decarbonisation and EV roll-out.

Both factors highlight the need for collaboration and shared thinking facilitated by the NCCP partners working with other key regional stakeholders such as parish and borough councils and utilities such as UKPN, Cadent and Anglian Water.

# 1 Introduction

The Norfolk Climate Change Partnership (NCCP) was formed in early 2020. Its purpose is:

“To help develop Norfolk into an exemplar in tackling climate change and protecting and enhancing its natural environment.

The NCCP aims to share knowledge and practices regarding how local authorities and other key regional stakeholders including the New Anglia LEP and the Broads Authority can respond to climate change, as well as how it can influence climate change in Norfolk as a whole.

The NCCP has a shared interest in supporting Norfolk's authorities, communities, public, voluntary and community organisations, businesses and residents to reduce their carbon emissions, realise economic benefits of reducing utilities consumption and adapt to and mitigate against the future impacts of climate change.”<sup>3</sup>

As part of its work, NCCP successfully applied for funding under the recent Community Renewal Fund (CRF) for its Net Zero Norfolk (NZN) project. This project was a single award but has been delivered in two parts:

- Lot1: the Sustainable Hydrogen for Transport Infrastructure project, which is being delivered separately by Ricardo, and
- Lot2: the Community Energy Kickstarter (CEK) project, which is being delivered jointly by Net Zero East and Arup, and which is the subject of this report.

Subsequently, an additional module, Lot2B, was added, addressing development of a NZN Decarbonisation Plan (or “Pathfinder”).

The summary report sets out Net Zero East's approach to the CEK sub-project and how it delivers and builds on our Terms of Reference (ToR). We have included Lot2B in this framework but only at this stage at a high level, and we will deliver a supplementary report with our analysis and recommendations ideally as an Appendix by end of the second full week in September.

This summary explains how our work has evolved to address the issues in the ToR and the wider NZN project to deliver a more holistic assessment of community-based action and options for tackling Net Zero by NCCP and its members based on examples of what seems to work in other places and on our extensive regional geospatial mapping analysis.

We have taken a deliberately broad definition of community and consider a range of options that some may regard as municipal and/or merchant energy, especially on the generation side. This is because local authorities are well-placed to stimulate activity through use of their services, and buildings as well as their important role in place-shaping and as the local planner. They have a key role to play as a project stimulator pulling through local climate action, Net Zero programmes, and environmental strategies in the wider community.

Our work draws on a wide-range of disparate materials and resources that local stakeholders can access to support their work and decision-taking. Many of these are duplicative. There is no formula or technique for addressing decarbonisation and community engagement, and a lot depends on the composition of existing territorial

emissions footprints and local attitudes. The Oversight Group agreed early in the project that it is important to plot these and assemble a tool-kit for use by NCCP partners.

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<sup>3</sup> <https://www.norfolkclimatechange.co.uk>

This summary report also provides a route-map to the rest of this report, including a synthesis of our main conclusions and recommendations. In it we:

- Introduce the purpose of this Lot2 Community Energy Kickstarter feasibility study
- Set out our terms of reference and make some comments on how – in liaison with the Oversight Group representing NCCP - we have interpreted these
- Describe the roles of the Oversight Group and the Expert Advisory Group to support the project
- Explain the importance of the *Net Zero Strategy* adopted by the Government in October 2021 as a reference document for local climate action and also identify other key policy documents
- Describe the structure of the full report and supporting appendices
- Summarise our approach and methodology, including that of our partners Arup, and explain the importance of geospatial mapping, the eight illustrative sites we have looked at, including the “kickstarter ideas” we have identified across Norfolk to illustrate community energy potential
- Summarise the main interactions with the work recently carried out by Energy Systems Catapult (ESC) on a regional low-carbon assessment (the so-called “Norfolk LEAR”) and other information sources, and the enhancements we believe we have made to their approaches
- Synthesise the main findings, conclusions and recommendations, and
- Explain the extension of the project to cover Lot2B, which focusses on options and advice on the development of the proposed NZN Decarbonisation Pathfinder for NCCP, which will be the focus of the next stage of the work, and our proposed approach to it.

## 1.1 Terms of reference

The initial ITT is concise and sets out some specific areas for examination as part of the CRF tender for Lot2. In interpreting the ToR, we believe we have covered all the points raised.

Norfolk has one of the smallest and weakest community energy sectors in GB.<sup>4</sup> We have therefore developed augmented ToR with the approval of the Oversight Group to set out how we have built on the basic project scope to provide a broader platform to support community energy and Net Zero activity in Norfolk.

To bring the choices to life, we have included a diverse range of exemplars and case studies of what we consider emerging “good practice” in the supporting main report. These examples are listed at Appendix A to this summary.

## 1.2 Starting point

The initial ToR are summarised in the main report. The overriding requirement is defined as:

“To aid Norfolk decarbonisation, the barriers to community energy schemes will need to be resolved via local leadership. Presently Norfolk is missing out on green jobs and the added social value in not supporting its own localised energy systems.

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<sup>4</sup> Community Energy England and EnergyREV websites reference four community and local energy schemes, fewer than any other county.

A ready-made community energy programme, developed by local experts, would enable community energy to finally become established in Norfolk.”

In this context, the initial project scope specifically mentioned opportunities for “behind the meter” solar assets, which are sometimes referred to as “private wires” schemes. On this point, we included the following in our tender response:

“We **believe the definition of community energy for this project needs to be much broader than solar schemes and other community generation schemes** – both in front of and behind the meter - and should embrace energy usage and other demand-side issues.”

“The study also needs to consider the various methodologies being developed and applied to support local climate action, including Local Area Energy planning techniques being deployed by the ESC, but also UK Power Networks (UKPN) and others.”

The Oversight Group agreed with this modified approach.

### 1.3 Revised ToR

The Oversight Group accordingly broadened the ToR in a revise issued March 2022.

In this report, we therefore:

- Address the specific points provided to us in the revised ToR
- Provide an in-depth resource of key emissions metrics, geospatial maps and conditions found within the seven Norfolk district local authorities, including the illustrative sites we have focussed on
- Give a range of examples or case studies within the community energy sector more generally, and
- Show how projects, ideas and options might be varied given the prevailing circumstances in Norfolk and challenges faced by regional local authorities, communities and stakeholders as a series of “kickstarter ideas”.

We met regularly with the Oversight throughout the process, updating them on progress and our emerging thinking.

There is a huge level of interest and activity presently around community energy, local supply, smart local energy systems, municipal energy and delivery of Net Zero. To ensure we could keep abreast of these developments, early on we proposed formation of an Expert Advisory Group, an idea that was accepted by the Oversight Group.

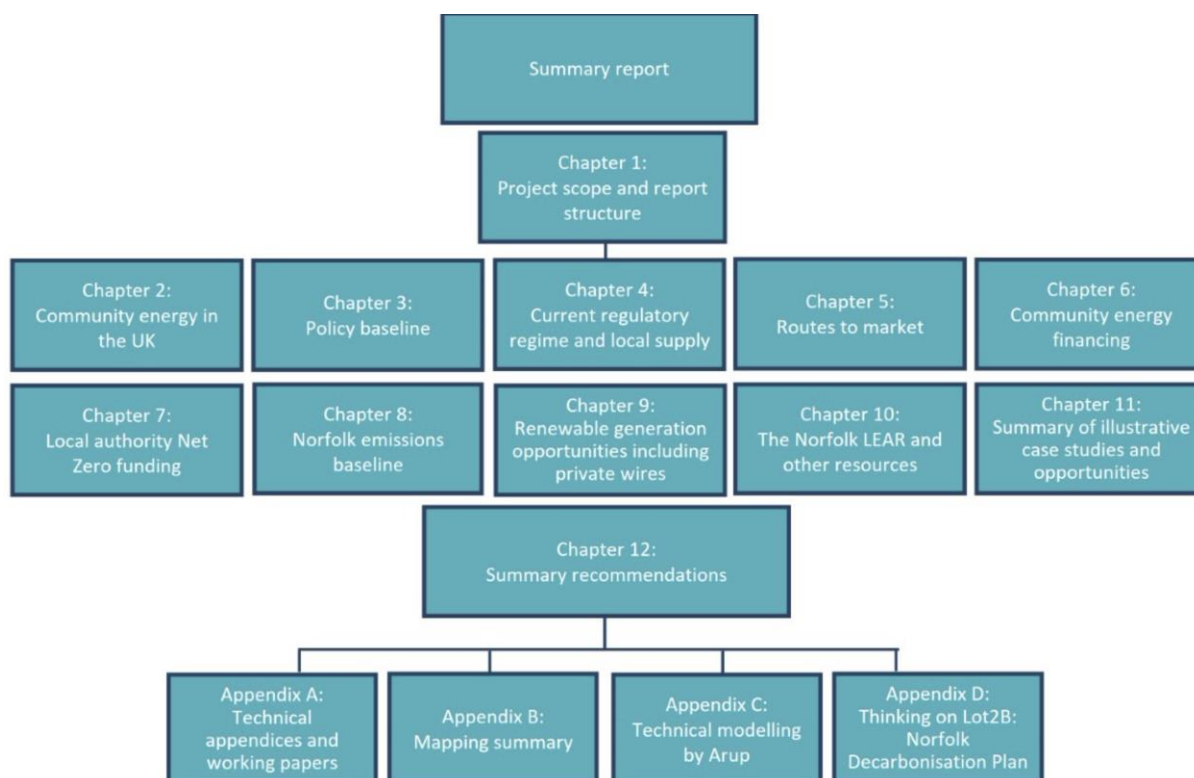
The advisory group met six times over the life of Lot2 and provided an important point of reference, advice and challenge.



## 1.4 Report coverage

The structure of this report is shown at Figure SR1 below.

**Figure SR1: structure**



This summary and the main report are structured into two main parts, as follows:

Part 1 specifically addresses points in the ToR, provides context and considers national or sectoral issues:

- Chapter 1 explains more fully our ToR and aspects of project governance
- Chapter 2 sets out what we mean by community energy, allied activity and its benefits and its importance to local climate action
- Chapter 3 considers the policy background, where we have come from and the position on community energy reached today
- Chapter 4 considers the regulatory context, the licensing regime and the current state of the energy supply market, which is in flux
- Chapter 5 considers the main options for selling power into the electricity market
- Chapter 6 looks at how community energy developers are setting up and financing their projects in a subsidy-free world, and
- Chapter 7 considers the wider issue of local authority action and funding to support community-based action and Net Zero.

Part 2 synthesises the regional analysis:

- Chapter 8 describes the current emissions baseline across the county
- Chapter 9 describes the current renewable generation baseline in Norfolk and estimates on how this might grow going forward. This does not distinguish between merchant and community opportunities



- Chapter 10 considers interactions with information and conclusions set out in the recent Norfolk LEAR prepared by the ESC, and
- Chapter 11 summarises selected place-specific opportunities based on the illustrative sites we took a closer look at informed by our geospatial mapping work. It also sets out an overview of Arup's technical analysis, conclusions and possible interventions at two selected sites.

Finally, Chapter 12 summarises our main conclusions and recommendations.

The main report is supported by the following technical Appendices:

- Appendix A, which is available on request to project sponsors, contains background papers and supporting material to the main report
- Appendix B, which is our main data appendix, setting out headline mapping and other information on the county, the seven local authorities and key LSOAs<sup>5</sup> we have examined, and
- Appendix C is Arup's technical modelling report.

Appendix D, which is not available yet, will sketch out our initial thinking on the proposed approach to Lot 2B and the NZN Decarbonisation Pathfinder.

## 2 Community energy and its benefits

Chapter 2 sets out general background on community energy and its benefits.

### **Box SR1: What is community energy?**

Community energy covers collective action to reduce, purchase, manage and generate energy. Projects have an emphasis on local engagement, local leadership and control and the local community benefiting collectively from the outcomes. Community-led action can often tackle challenging issues around energy, with community groups well-placed to understand their areas and to bring people together with common purpose.

Examples of community energy projects include but are not limited to:

- Community-owned renewable electricity installations such as solar photovoltaic (PV) panels, wind turbines or hydro generation
- Members of the community jointly switching to a renewable heat source such as a heat pump or biomass boiler
- A community group supporting energy saving measures such as the installation of cavity wall or solid wall insulation, which can be funded wholly or partly by government or industry support programmes
- Collective switching of electricity or gas suppliers
- Working in partnership with the local Distribution Network Operator (DNO) to pilot smart technologies and demand-response
- Collective purchasing of heating oil for off gas-grid communities

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<sup>5</sup> Lower-Layer Super Output Areas (LSOAs) are small areas designed to be of a similar population size, with an average of approximately 1,500 residents or 650 households. There are 32,844 Lower-layer LSOAs in England.

- Behavioural changes such as moving to a time of use tariff or switching to electric vehicles, and
- Action to support car clubs, vehicle sharing and active travel.

The second chapter also:

- Summarises the benefits of community energy relative to commercial energy
- Provides an overview of the development of the community energy sector in Britain nationally over the past decade
- Provides a snapshot of the size of the sector in 2021, and
- Explains how the sector has tended to broaden its definition of community energy over recent years away from purely community-based generation.

There is not a clear statement on the benefits of community energy<sup>6</sup> We have grouped these under four broad headings:

- **Economic value:** Community energy produces economic value through community benefit funds, external funding and project income. This value may be distributed directly – via grants and loans – or indirectly, through development or purchase of community assets, cost savings, job creation and ethical investment options for community members, ensuring that value from the energy transition – skills, jobs, reduced energy costs, options and opportunities, return on investment etc. – are captured locally.
- **Social value:** The social value of community energy is harder to measure but is real. It encompasses non-economic benefits such as education, awareness-raising, stimulating behaviour change, community cohesion, improvements to local environments and services, and both individual and collective health and well-being
- **Environmental value:** Community energy has an environmental impact on a global scale, reducing greenhouse gas emissions through low-carbon energy generation and demand reduction, contributing to delivery of carbon emissions targets. The work of community energy organisations also supports local environmental improvement and conservation, and<sup>7</sup>
- **Other sources of value:** The merits of community energy and local energy projects are not usually reflected in policy, but key opportunities include:
  - Developing plans and ambitions for decarbonisation that are locally responsive and take into account the vastly differing needs, capabilities and opportunities of different communities across a region
  - Empowering communities to lead, shape and own change within their areas, thus broadening participation in the energy system and building and strengthening community identities, assets and capabilities through cooperation, sharing knowledge, skills and collective ownership, and.

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<sup>6</sup> A short-lived *Community Energy Strategy* was adopted between 2014-15, by the Coalition Government but lapsed with the Conservative return to power on its own in 2015. We look at this in more detail in Chapter 2.

<sup>7</sup> The Centre for Sustainable Energy has estimated that, in 2019, community energy organisations prevented 65,200 tCO<sub>2</sub>e of greenhouse gas emissions across energy generation projects. Through energy efficiency and low-carbon transport projects, and behaviour change as a result of awareness raising and educational projects, this figure is likely to be much higher.

- Widening access to renewable energy through local innovation and supporting regional deployment of clean technologies, and
- Improving energy security through reducing energy delivery costs and enabling greater price certainty, which in turn can increase energy independence and local resilience.

Various benefits of community energy action are also often cited relating to efficiency of the energy system, from energy production and usage.

On the generation side, they are summarised at Box SR2.

#### **Box SR2: Benefits of embedded generation**

- Increased financial viability by working directly with known purchasers
- Avoids certain costs through embedded benefits
- Confidence in green credentials
- Enhanced security of supply and potentially increased local resilience
- An opportunity to ensure social value and local spend is maximised
- Actively supporting Net Zero goals
- A means to increase local renewables capacity in the current climate of no subsidies for small-scale generation
- An ability to ensure contribution to local area plans and clean growth, while retaining value in the community, and
- Greater governance over ownership and management of the renewable asset.

Demand-side programmes can also deliver real benefits and savings to consumers. They are summarised at Box SR3.

#### **Box SR3: Benefits of demand-focussed programmes**

- More efficient energy usage
- Reduced bills
- Confidence in green credentials
- Increased flexibility, which is becoming increasingly important in the constrained regional electricity distribution system
- Enhanced security of supply and potentially increased local resilience
- An ability to ensure contribution to local area plans and clean growth, and
- Cleaner transport and Improved air quality.

We are also seeing a diversification of activities by community energy groups and projects. Several recent trends are discernible by activity:

- With the end of fed-in Tariffs (FiTs) for new installations in April 2019, there was a cessation in renewable generation schemes but that is now changing as wholesale energy prices continue to increase and subsidy-free projects advance
- After a late upswing, renewable heating projects have also ceased with the announcement of the closure of the Renewable Heat Incentive (RHI)
- Energy efficiency and demand-side programmes now account for the greatest part of community energy activity, and

- Low-carbon transport schemes have begun to increase in the wake of publication of the Government's *Transport Decarbonisation Plan*<sup>8</sup> in July 2021 and increased policy focus on active transport.

The headlines from Chapter 2 are:

- The community energy sector has been late to develop in Britain and is still at a low base
- Until recently, there has been little community energy activity in Norfolk<sup>9</sup>
- The past decade has seen new interest but on a very uneven geographical basis stimulated in the generation sector largely by the FiTs regime
- The *Community Energy Strategy 2014-15* attempted to support a gear shift but a change in government led to a change in direction that many see as causing a significant slowdown in community energy investment
- Despite removal of renewable generation and heat subsidies, there has recently been renewed focus on demand-side and transport schemes as high and volatile energy prices are now leading to an upswing in interest in subsidy-free schemes, and
- Many local communities and stakeholders also believe community-backed schemes can play a significant role in helping address the climate emergency and help deliver Net Zero, and several groups are again calling for more proactive policies and more structured support to enable this.

We recommend that:

- The focus of this Lot2 feasibility study should be to provide an information baseline, clear examples of "good practice", possible priorities and a route-map to resources
- The NCCP should develop a policy position articulating its support for community energy and, ideally, adopt supporting regional targets
- The partners should consider offering business development support to get community groups up and running in the county, with a particular focus on feasibility assessments
- It should also consider development of an information portal that builds on the resources and sources referenced in this report and build up a library of case studies around community energy activities and consumer action sourced from other regions, and
- The partners should identify based on the assessments contained in this report possible scheme proposals that could be proposed for support under industry support schemes.

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<sup>8</sup> <https://www.gov.uk/government/publications/transport-decarbonisation-plan>

<sup>9</sup> In the report we do reference a consumer advisory service in Thetford and Diss, as well as two school-based projects in North Norfolk. Both have been promoted by community groups.

### 3 Policy baseline and regional context

Chapter 3 considers the current policy baseline.

Local authorities and major regional stakeholders have different views on the severity of the climate emergency, the pace at which it should be tackled and the role of community energy in bespoke climate action or decarbonisation plans. There is, however, an emerging consensus that focussed attention is required to meet the mandatory Net Zero target set for 2050. Many public and private sector organisations are setting their own targets based on accelerated action albeit with different levels of ambition, and these are intended to complement and work alongside centrally set technology targets.

The importance of the Net Zero challenge has been reinforced by two other increasingly important policy considerations.

- First, there is the Government's agenda to "build back better" following the pandemic (or "the green recovery"), and.
- Second, there is the more than expected tripling in average energy bills over the past two years or so, which is already pushing significantly more people into fuel poverty and aggravating vulnerability.

The Government does not have a strategy specifically targeted to community energy, and local climate action is seen as an important element of achieving this. It is widely recognised that a top-down strategy on its own will not deliver the target<sup>10,11</sup>

More than two years after the Net Zero target was enshrined in law, the Government in October 2021 published its plan for achieving this in the form of the *Net Zero Strategy*<sup>12</sup>, in which it also provided an overview of its view on community energy and its future plans. The strategy provides a key reference point for regional stakeholders. It has a 14-page chapter on Local Climate Action, which emphasises the role "local communities and indigenous knowledge systems can play a key role in solutions". It also notes "We are committed to supporting all local areas and communities, ensuring that none are left behind and [to] creating Net Zero solutions, which work for all of them."<sup>13</sup> The strategy draws a clear linkage between Net Zero and community action. Its section on Local Climate Action also summarises measures being taken specifically to support community energy, but this is more notable for what it doesn't say as what it does.

The main points from the strategy with regard to local climate action can be summarised as:

- Support to community energy projects through the *Rural Community Energy Fund* (RCEF), though this has since been withdrawn for new applications
- Support to Community Energy England and notably its peer mentoring work
- Ofgem funding through opening out the *Energy Industry Voluntary Redress Scheme* from February 2022 to community interest groups, co-operative societies and community benefit societies
- Reintroduction of the BEIS-led Community Energy Contact Group, which originally met between July 2012 and Sept 2015, and

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<sup>10</sup> <https://www.local.gov.uk/publications/delivering-local-net-zero>

<sup>11</sup> <https://www.ukri.org/publications/accelerating-net-zero-delivery/>

<sup>12</sup>

[https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/1033990/net-zero-strategy-beis.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1033990/net-zero-strategy-beis.pdf)

<sup>13</sup> Page 269.

- Reaffirmation of BEIS support to the Local Programme (previously known as the Local Energy Programme) structured around the rebranded Local Net Zero Hubs, including the Greater Southeast Net Zero Hub, "to support all local areas capability and capacity to meet Net Zero", and the Government has committed to continuing the Programme and increase its funding of the hubs.<sup>14</sup>

Another key factor is the removal of subsidy support for new renewable generation projects with the closure of the Feed-in-Tariff (FiT) regime to new applicants. Since then, the Renewable Heat Incentive (RHI) has also been closed, but BEIS is resisting calls to bolster the Smart Export Guarantee replacement mechanism introduced to provide a guaranteed market for export power. The *Net Zero Strategy* does not touch on any of these issues.

Many districts and communities have now declared climate emergencies, and some have adopted or are developing their own decarbonisation strategies and action plans. As a recent report by Friends of the Earth and Ashden noted, the quality and scale of ambition locally still varies greatly.<sup>15</sup> But while targets and dates differ, virtually all who have adopted plans contemplate:

- A rapid acceleration of decarbonisation activity and initiatives across electricity, heat and transport
- Much more extensive community engagement and participation in change programmes, and
- Programmes to help change business and householder behaviours.

However, regions and communities are developing widely divergent approaches, capabilities and resources to draw on in playing their part. There are also widely differing opportunities and levers at the local level reflecting a wide range of regional and location-specific factors. These include:

- Current emissions profiles in different districts, including the capability of existing energy and transport infrastructure
- The age, state and distribution of the built environment
- The urban/rural mix
- Prevailing social and economic conditions
- The population demographic
- The business landscapes
- Local opportunities and challenges associated with natural capital assets and resources, and
- The appetite and skills of different local actors and communities for change.

Headlines from Chapter 3 are:

- After an acceleration nationally in the growth of community energy schemes, including renewable generation projects under subsidy schemes, growth since 2019 when the FiT regime was closed to new applications has generally dried up

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<sup>6</sup> The strategy states: "the programme now takes a place-based approach to tackling Net Zero in the round, covering all Net Zero issues. The programme will continue to help places make faster progress, improve cost- effectiveness, and significantly increase the economic benefits of the green industrial revolution by attracting commercial investment and supporting green jobs."

<sup>15</sup> <https://takeclimateaction.uk/resources/councils-tackling-climate-chaos>



- The Government's framework for defining the role of community energy groups and local authorities is a work in progress and is generally considered to be not well-articulated and the role of local stakeholders is not clear
- Following a one-off EAC report on community energy in early 2021, there has been an upswing in interest around providing a more defined framework for renewable exports at the local level, which has triggered significant cross-party support around the Local Electricity Bill and related interventions, and
- As we demonstrate elsewhere in this report, there remain a range of barriers many of which flow from (i) the heavily centralised electricity market that places limited emphasis on the locational benefits of community, (ii) the dominance of national energy suppliers and (iii) minimal interventions that provide practical support.

In terms of recommendations:

- NCCP and its partners should write to BEIS ministers highlighting the benefits of community energy and the need to more clearly articulate support for community energy, clarify what is expected of the region, better target support on local authorities and other regional stakeholders and address the barriers to it
- At the same time, they could identify the need for support especially in grant aid so that communities can test the feasibility of propositions and ideas. One option might be to reinstate the sort of support administered until recently by the Net Zero hubs through the RCEF (and previously also the Urban Community Energy Fund), and
- The partnership should ask individual partners to nominate a single contact point to lead on community energy development within their organisations and who can be positioned as a local catalyst.

## 4 Regulation and local supply

In Chapter 4, we:

- Explain why energy supply can only be carried out by an entity specifically licensed by the energy regulator to do so
- Describe the nature of the energy supply market, which is heavily centralised, and dominated by scale national suppliers with minimal local supply offerings
- Outline some very limited carve outs in the regulatory arrangements (including class exemptions and "licence-lite supply") to support decentralised developments but highlights anomalies in their operation
- Provide an overview of recent wholesale market turbulence, which shows no sign of relenting over the short to medium term, and which has led to numerous recent supplier failures, including withdrawal of some newer suppliers who had been developing local offerings, and
- Explain why this has begun to trigger a reappraisal of the value produced by community-generated energy given its benefits in reducing exposure to increasing supplier prices.

Headline conclusions from Chapter 4 are set out below:

- There is a lot of confusion in the wider market about what is possible in terms of supply under the current regulatory baseline



- The GB supply market is a national market with high costs to enter and to serve customers. Arguably this discriminates against local offerings as they see national market costs but no benefits from reducing local delivery costs. There are also no incentives or rewards for reducing losses, and network use prices are as a rule flat and unavoidable. The Government has no present plans to change this
- All suppliers who move power across the public system (meter to meter) must obtain a supply licence, which is over 500-pages long and which in turn mandates compliance with other complex industry codes
- De minimis exemptions and innovations introduced to support regional schemes and reduce compliance burdens are out of date and not widely applied. In the case of licence-lite supply they have not been implemented at all. Local supply consequently is minimal
- Some innovation has occurred around white label and "sleeved" contract structures over the recent past, but these arrangements are non-standard, must be negotiated on a case-by-case basis and apply to only a very small fraction of customers. At the same time, suppliers are disinclined to offer terms because of the high transaction costs and the additional risks they take on under national market rules
- This already adverse situation has deteriorated further over the past two and half years as many suppliers have failed and wholesale power prices have increased dramatically and, with the Ukrainian conflict, show no sign of relenting over the short to medium term. Suppliers also now see diminished incentives to acquire new customers because of the operation of the default price cap, and
- One consequence of the state of the market is that the value of renewable production combined with behind the meter consumption is now increasing relative to the avoided cost of buying power from a supplier via the public system, even though supply chain costs are also increasing

In terms of recommendations:

- NCCP should develop a strategy to boost local onshore generation options as an alternative to high and volatile wholesale market costs (we return to this in Chapter 9)
- It should better familiarise itself with suppliers who offer white labels and sleeving services if they invest further in local renewables. Octopus Energy and EDF Energy are probably the market leaders here
- We believe one local authority should pilot an arrangement where it uses such a structure to move power from local solar assets to council buildings and/or local social housing schemes, then socialise its learnings among other local authorities and regional stakeholders, and
- They will also wish to keep a watching brief over developments on the corporate PPA market and also development of new routes to market in the form of local trading platforms.

## 5 Routes to market

The market options are also strongly influenced by the overarching regulatory structures.

In Chapter 5, we:

- Address the issues around “behind-the-meter” generation and private wires flagged in our ToR
- Consider current routes to realising value for export power and typical commercial relationships developing in the marketplace. and
- Look at the current state of the market for export power, which is very segmented,

There are two basic approaches to realising value for surplus or exported power (or “routes to market”). Both require some form of relationship with a licensed supplier. They are:

- Make use of the Smart Export Guarantee, and
- Negotiate terms with an offtaker, either bilaterally or indirectly through some form of intermediary or trading platform.

The headlines from Chapter 5 are:

- In most circumstances, production and consumption profiles of behind-the-meter projects will not be aligned so involvement of a licensed supplier will be required to deal with back-up, top-up and spills from/to the local electricity distribution system
- There is healthy and growing interest for renewable generation out-put to evidence “greenness” of supply. However, the market for green purchases is presently clearly tiered reflecting changes to subsidy arrangements over recent years, with price stabilisation offered to sites above 5MW but the export market below that threshold fully exposed to market prices with no price guarantee and still adjusting
- There are emerging opportunities through trading platforms and corporate PPAs for green exports, especially for larger schemes
- Markets also exist for embedded benefits and REGOs
- However, the Smart Export Guarantee currently in place for householders does not create any requirement on suppliers to offer market value for any exports they purchase – it is a buyer’s market, and
- A handful of suppliers and intermediaries are beginning to focus on community energy in some localities and are now providing routes to market, but this is a long way from being a universal offer or the market norm.

The recommendations from Chapter 5 are:

- NCCP should encourage partners to commit to local green procurement options and for energy supply aggregation opportunities
- The partners may wish to support calls for a reworking of the Smart Export Guarantee and establishment of a price floor
- Where there is spare generation headroom locally, it makes sense to consider further renewables development. This would allow it/them to decouple the cost of supply from volatile fossil fuel prices and support reduction of emissions locally, and
- This applies both behind the meter and for new export opportunities (see Chapter 9).

## 6 Community energy finance

In Chapter 6, we:

- Set the scene by considering legal and governance structures adopted by community energy developers, especially the rise of community benefit societies (“Bencomms”)
- Illustrate approaches to financing adopted by early-stage community energy projects
- Explain the changes in subsidy that have adversely impacted on community energy schemes and have invalidated many of these approaches, and
- Identify new service offerings and funding mechanisms that are emerging to fit the needs and appetites of community energy developers, including community bonds.

The community energy market has been very badly affected by the withdrawal of subsidy mechanisms for new investment such as the FiT and RHI regimes over the past three years. The decade up to that point had seen lenders and suppliers become very comfortable with the structure of subsidy arrangements but that changed overnight.

Consequently, since 2019 the market has not been interested in supporting offerings in generation because there are no guaranteed routes to market at reasonable terms for community developers (and by extension for local authorities). Though, especially given high electricity prices, some new forms of green finance are now beginning to emerge.

Unlocking the huge potential of place-based, local and regional climate solutions and securing funding is still not presently easy. Thus:

- Local authority budgets are stretched, energy bills are increasing rapidly but many councils are locked into medium-term procurement arrangements with national suppliers that don’t normally have a local supply dimension
- Skill sets and resources available at the regional level are generally limited, and
- Little policy effort is presently being directed at supporting community-based activity, which remains heavily reliant on volunteer-based initiatives.

The combined effect of these factors is that there are not yet mature pathways to finance community-based Net Zero projects. However, work is starting on defining and trialling new financial solutions that will help address at least some of these barriers.

The headlines from Chapter 6 are:

- Virtually all early community energy schemes were influenced by subsidy schemes as these provided revenue certainty in terms of payments and duration as well as predictable returns
- Legal and governance structures in the community energy sectors are mixed and can have an impact on the available funding options and their applicability
- Subsidies for new schemes have been removed. Grant support for feasibility and development has been withdrawn. These two factors mean community energy schemes have become much harder to evaluate and finance
- With adoption of the Net Zero target, there is growing interest in and availability of green finance at varying scales
- Third party financing is now emerging based around community shares and different types of green bonds at rates that are not unattractive and also preferential loans, although the landscape is hard to navigate, and many local authorities have yet to evaluate new options

- A range of intermediaries and platforms have also been developed to match funders and projects, and liquidity is increasing but remains at a low level, and
- Nevertheless, there are growing calls for interventions to provide a framework that more explicitly acknowledges community energy, its benefits and supports its development.

The recommendations from Chapter 6 are:

- NCCP should form a group, probably under its NZN Decarbonisation Pathfinder, that considers how partners might access new forms of green finance
- It should also examine establishment of a London Community Energy Fund-type structure to support annually start up grants and project funding to community schemes. This might replace district level schemes (such as the NNDC Sustainable Communities Grant Fund and its Community Transport Fund)
- The partners should develop plans and talk with potential intermediaries on how a local fund raise could be structured
- The proposed community energy portal should signpost new developments and open competitions for funding, and
- The partners should pilot a community bond initiative targeted on stimulating renewable energy forms and demand-side programmes.

## 7 Local authority funding

Local authorities are generally perceived as a critical agent for local change activity both through their place-shaping, convening and delivery roles. They also have existing channels of engagement with local stakeholders and householders. They have obvious potential to accelerate the shift to Net Zero and support development of community energy, and they are also being relied on by central government to support alleviation of bill increases.

At the same time, there are real challenges facing council finances. Surveys conducted by among others the Local Government Association (LGA) suggest that councils have managed over £8bn of additional cost pressure and £3bn of lost income, excluding business rates and council tax, since the pandemic began. They are also seeing additional pressures from the increasing costs of adult social care.

Overall, public sector groups in Norfolk have a low participation/ success rate in recent decarbonisation funding competitions, and community energy has not been a target of such schemes. Furthermore, competitions for government funding are often announced at short notice and many local authorities still do not have the capacity/capability to respond and certainly not quickly.

This chapter looks at how the funding framework is maturing and how some councils are taking initiatives of their own outside of the Public Works Loan Board (PWLB), including commercialisation of funding, third-party funding and diversifying borrowing streams.

In Chapter 7 we:

- Explain the significant increase in central government funding that occurred for local authorities and the public sector in 2020-21 to support local climate action and how this changed in 2021-22
- Identify other sources of central funding available to local government, notably the PWLB

- Flag recent literature and reports that call for a more structured and targeted approach to funding of decarbonisation schemes by the public sector
- Look at the recent emergence of crowdfunding by local authorities, and
- Take a closer look at the growing use of Community Municipal Bonds.

The Government has given a degree of assurance that it intends to rationalise Net Zero spend directed at the regions and local authorities, but there is no clarity yet on the direction of travel. Consequently, community energy actors and local authorities have begun to explore other sources of funding. These include Community Municipal Investments (CMIs). These are being pioneered by Abundance Investment, and the first Local Climate Bonds have now been issued. They have shown that citizens can play a meaningful role in financing local authority climate action plans. Activity to date, though, has been very limited, but other platforms and intermediaries are also beginning to offer such services.

The headlines from Chapter 7 are:

- Some local authorities across GB have been an important catalyst for low-carbon action in their territories being early movers under centrally directed programmes but with mixed successes
- Norfolk's local authorities are following suit, and most have participated in domestic demand-side retrofit projects with mixed success but have shown little interest in actively supporting renewable generation schemes
- As we will explain in our Appendix on the approach to the Pathfinder, four of the Norfolk district councils have so far set specific targets, with others adopting soft targets, and all of them to varying degrees have participated under the PSDS, the SHDF and other support programmes, but
- We are not aware of any developed local thinking or plans being developed to engage in climate or community finance.

The recommendations from Chapter 7 are:

- NCCP should form a group, under Pathfinder governance, that considers how partners might access new forms of green finance, including access to the new Net Zero Infrastructure Fund
- The same group should act to coordinate responses to funding calls by central government, and
- The partners should also consider piloting a community bond initiative to assess local appetite.

## 8 Norfolk emissions baseline

Part 2 of the main report sets out our assessment and main findings based on the prevailing county emissions landscape and summarises the results of our more detailed drill down into individual local authorities and some illustrative areas. It also summarises the sources of information available to help formulate and update plans and the Pathfinder.

In Chapter 8 we summarise the Norfolk emissions baseline for 2019 based on BEIS' annual data.<sup>16</sup> It provides:

- An assessment of the current emissions baseline across the county
- A summary of recent emissions trends from a range of sources, including the Norfolk LEAR but also other data sources, and
- An overview of the emissions profiles in each of the seven district local authorities.

In it, we also:

- Set out a high-level commentary on stand-out points and differentiating factors in the county, including wide-ranging differences between the emissions profiles in the areas served by the seven district councils
- Consider recent developments and emerging trends in terms of emissions at the local level, and
- In so doing, set the scene for the more detailed commentary in Chapter 8, which summarises the learnings we have derived from our assessment of the current renewable generation baseline.
- A summary of the more detailed county, local authority and town assessments is included alongside this report as Appendix B, which summarises our mapping work and main findings.

The intention is that this work will provide a comprehensive resource for use by the NCCP partners that should enable them to supplement our analysis and help set their own district and organisational priorities.

The headline conclusions we would highlight from Chapter 9 are:

- There are some general emissions trends and a general amelioration in the overall position, but it is more important to look at the underlying district footprints and their emissions components
- Any remedial plan needs to take into account the rurality of the county and the fact that abatement costs are typical higher than urban areas
- Transport emissions are a real issue for the county and requires urgent consideration through a county-based plan, including EV charging roll-out, rail decarbonisation and possibly early-stage green hydrogen development, and
- Differences are even more pronounced at ward level with some notable hotspots that require targeted action.
- Within districts, it is important to focus on wards with particular emissions issues.

We recommend:

- NCCP should routinely conduct a review of the annual BEIS statistics for the county that are usually published in July each year along and publish its own annual regional progress report
- It should consider getting individual districts to consider leading on areas based on areas where they have high emissions positions relative to other districts (KLWN)

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<sup>16</sup> 2020 data was published in July 2020, but it is impacted by the pandemic. Rather than use that as a baseline, we have baselined 2019 data but also look at the main differences between 2019 and 2020 in this chapter. This approach also enables us to compare and contrast our commentary with the ESC's, which was likewise based on 2019.



industrial and LULUFC emissions, Breckland and Broadland transport emissions, Norwich and Great Yarmouth domestic emissions etc.), and

- It should consider establishing regional emissions targets by emissions category for 2030 and 2035
- The NCCP and its partners should consider options for offering business development support to get community groups up and running and to coordinate this activity across the county, and
- It should also consider development of an information portal that builds on the resources and sources referenced in this report and assemble a library of "good practice" case studies around community energy activities on both the supply and demand sides.

## 9 Norfolk's renewables baseline and growth potential

Over 600MW of solar renewable generation above 150kW has already been built in Norfolk at mid 2022<sup>17</sup> with further schemes in planning. In all there are over 21,000 solar installations in the county, which is the sixth highest concentration in England, after five counties in the south and southwest.<sup>18</sup> However, virtually all of the above 150kW schemes have been and will continue to be developed by institutional or merchant investors under traditional commercial arrangements selling to national suppliers.

Consequently, community energy in the form of decentralised generation of any technology is poorly represented in Norfolk with minimal solar build out to date by communities and local authorities, and that is unlikely to change quickly unless proactive support policies are implemented regionally.

In Chapter 9, we:

- Describe the current onshore renewables baseline (wind, biomass, as well as solar) for Norfolk
- Also describe the state of the existing electricity system. This has already proved to be an important limitation on regional growth of renewable production and supply in both electricity production and supply and is likely to remain so for the foreseeable future
- Summarise current network development plans and pinch-points, and
- Summarise available literature and our views on renewables development opportunities in Norfolk drawing on some of the analysis and observations in the Norfolk LEAR, the so-called "RES-SOTA" study by UEA and the UKPN DFES study for 2022.

Chapter 9 also addresses steps taken by UK Power Networks, the local electricity distribution network operator (DNO), to apply an Active Network Management (ANM) approach to Norfolk. In large parts of the network, connected renewable assets are subject to routine curtailment annually of greater than 20%.

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<sup>17</sup> In addition, there are some xMW of FiT registered capacity.

<sup>18</sup> <https://www.edp24.co.uk/news/planning/norfolk-solar-farms-panels-capacity-100000-2035-strategy-8920236>



The headlines from this chapter are:

- The Norfolk Grid is different to many other areas of the country in that it typically exports large volumes of power from a combination of Sizewell and the large offshore wind installations
- At the distribution level there are prevailing constraint issues for existing schemes, which are subject to ANM and access issues for new capacity. While access to natural resources is generally good, community energy developers will face locational barriers to realisation of projects in Norfolk
- Private wires projects can make sense where there is an opportunity to locate generation close to larger electricity consumers under current rules, but there are risks that further industry code rule changes that allocate costs and regulatory arrangements over time will have a detrimental impact on such schemes
- There are also legacy issues associated with relatively limited low pressure gas access but high fossil fuel dependency, which compounds pressure on the electricity distribution system
- Development of flexibility arrangements is likely to support regional development in targeted areas and could help better incentivise local flexibility particularly if new renewables development can be combined with battery storage and load adjustments (up as well as down), and
- UKPN's *DFES* for the region shows the potential for significant growth in LCTs but this based predominantly on national algorithms rather than any place-based assessment.

NCCP and its partners should:

- Seek to engage with UKPN to understand address operational constraints at existing solar sites and potential new sites across the county and its thinking on LCTs from the annual *DFES* study with a view to building its understanding of its Decarbonisation Pathfinder for 2035
- Initiate a more technical assessment of siting and sizing opportunities for new solar facilities across the county with a view to developing a renewables plan to better inform institutional and community investors and adopt a policy on using council sites and offices for solar deployment
- Address among the partners how communities and local authorities might be prioritised for offtake at renewal of purchase agreements and for new supplies built in the county and identify potential sleeving partners
- Adopt a target of at least a five-fold increase in current solar installations to a minimum of 3GW of ground-mounted and rooftop solar by 2035, possibly more given access to good natural resources in the county, and
- Follow up with UEA and other regional stakeholders the findings of the RES-Sota study currently underway.

## 10 The Norfolk LEAR and other local resources

The ToR make reference to the Norfolk Local Energy Assets Representation (LEAR) report<sup>19</sup> and invites us to “incorporate as required.”

We have fully assimilated the 110-page Norfolk LEAR dated September 2021 and compared the data sets and findings against our own assessment. Our commentary is set out in Chapter 10.

We also consider other local energy planning initiatives being applied nationally:

- UKPN's three-tier approach submitted to the regulator as part of its recent RIIO-ED2 submission to support local authorities and other regional stakeholders in considering decarbonisation options, which is likely to be implemented from April 2023, and
- Work being undertaken by the Scottish Government to stimulate communities in development of energy efficiency and local heating plans and also place-based community energy strategies.

There is a lot of activity regarding Local Area Energy planning, with other tools being available or developed to support low-carbon schemes. Much of this material focuses on formulaic solutions, which will be difficult for local authorities to implement. We also signpost a range of other publicly available tools and resources that can be used by local stakeholders to understand and set decarbonisation priorities and action plans.

Our conclusions are:

- There is widespread recognition that engagement between network operators and regional stakeholders needs to be improved
- There are a variety of competing methodologies and services available to support engagement and consultation. Most of these, including the ESC's AI -based solution, are intended to support development of Net Zero plans and support local climate action on decarbonisation and the development of action plans but they are top-heavy with data rather than interpreting the information
- UKPN is also scoping its own process to support the increased pace of electrification and to enable strategic investment and better targeted Net Zero support. It is too early to say how the regulator will respond to UKPN's proposals but we should have better visibility when determinations on RIIO-ED2 are released in November, but we would expect some endorsement of its plans and some form of enhanced service to be in place by April 2023
- Whereas ESC offers a one-size fits all solution, UKPN envisage a more tiered approach to supporting local authorities and community groups that will take into account different appetites, capabilities and resources at the local level
- There are no perfect off-the-shelf solutions. We would encourage stakeholders to adopt a learning by doing approach. A portfolio approach seems to be the best way forward, based on “pick and mix” from different tools depending on the local authorities or community's assessment of its own emissions priorities
- We have already consolidated a wide range of data and information resources on Norfolk and its seven district councils on our website and these are used extensively in **Appendix B** to this report, and

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<sup>19</sup> This is a 110-page study, which was prepared by Energy System Catapult in September 2021 for Norfolk County Council, and it was made available to us on appointment.

- We intend to develop a portal over the coming months to provide better access to this data and to enable timely updating.
- Our recommendations are:
- Regional stakeholders, especially the districts, need to prioritise development and updating of Climate Action Plans and agree the basic elements of a multi-party approach
- They then need to review the available data sources against their own priorities and emissions baseline
- It would be premature to commit to one planning service or offering at least before UKPN has fully set out its offering on the different levels of tiered support, and
- NCCP should consider how it supports the various parish and borough councils as they develop their own plans.

We will consider these issues further as we move into Phase 2B, considering the governance structures and approach to development of the county-wide NZN Decarbonisation Pathfinder.

## 11 Illustrative sites and example opportunities

This chapter includes illustrative potential decarbonisation actions and local interventions drawing on our mapping work. These are based around eight locations, which we agreed with the Oversight Group and discussed with the Expert Advisory Group. The intention is to show exemplars of activity elsewhere that could be imported and adapted to meet Net Zero objectives of NCCP members and community energy developers in Norfolk.

In Chapter 11, we:

- Set out our approach to identifying high-level community energy opportunities and associated Net Zero options at the local level based around the eight illustrative sites
- Describe how we have used geospatial mapping and data sources combined with emissions and associated data to produce a place-based focussed narrative on options, opportunities, and possible priorities, and
- Summarise possible actions from the illustrative sites and put forward for consideration some possible decarbonisation ideas (or 'kickstarter ideas") based on these assessments.

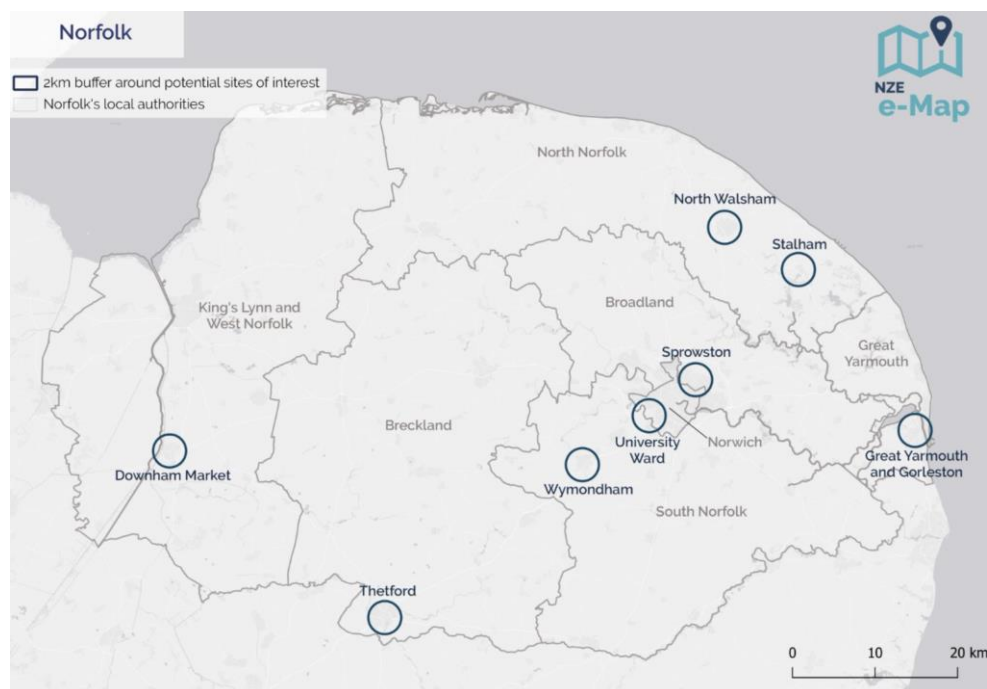
As part of this work, based on desk-top assessment, we identified seven market towns, boroughs and/or wards/parishes that strike us as providing interesting options and opportunities for different types of intervention. We have tried to identify one town per district but slicing the data by LSOA<sup>20</sup> to increase granularity so we can examine the influence of the built environment and the relationship with transport links and local land use. We have also included an eighth site, Stalham, following discussion with the Broads Authority, which is also a member of NCCP. The detailed results on this drill down is also set out in Appendix B.

The illustrative sites are shown at Figure SR3.

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<sup>20</sup> <https://data.gov.uk/dataset/c481f2d3-91fc-4767-ae10-2efdf6d58996/lower-layer-super-output-areas-lsoas>

**Figure SR3: Norfolk's districts and selected illustrative sites**



There are no “right” or best locations. We selected a range of market towns and some interesting parts of larger conurbations based on a desk-top review. This sought to define different locations with different interventions.

Several points struck us about these locations, and which influenced the focus (or kickstarter ideas we selected):

- Sprowston (Broadland) – part of the Greater Norwich Growth Plan area and highlighted by the ESC as one of nine priorities for domestic PV development. But it is also an important access point to the city from the areas to the north and east with high transport emissions
- North Walsham (North Norfolk) – a strong growth area close to several strategic development sites. Here we look at a community development based on supplying local public buildings with council-owned solar PV
- Stalham (North Norfolk) – as well as its significance to the Broads Authority, it is an off-gas grid area with an old tourist infrastructure but with limited scope for additional electrification at present. Here we consider a local heat network at Sutton to permit replacement of old legacy oil and solid fuel heating
- Thetford (Breckland) – a large and growing market town that is bifurcated by a major transport artery, in a district with high and growing transport emissions. Here we look at options for development of low-carbon facilities at an aggregation of business premises and potentially using this to supply to council and social housing properties.
- Great Yarmouth (GYBC) – a large, historic town with high levels of social housing, fuel poverty and deprivation. Here, we look at consumer support and current available funding, with further significant price rises forecast for the winter
- Wymondham (South Norfolk) – the town has very high/household consumption emissions reflective of high levels of transport emissions. It is also close to Thickthorn and Hethel for a range of transport and “smart” initiatives, respectively. We focus on development of an EV forecourt close to the A11 and other transport decarbonisation ideas based on examples from other regions

- University region (Norwich) – this faces a different set of challenges for the community to achieve decarbonisation but a possible exemplar for other higher education, research and hospital establishments. Here, because of significant electricity access constraints which have frustrated development options on each of the affected sites, we flag the possible development of a smart local energy system/ microgrid, and
- Downham Market (KLWN) – a relatively remote location, which is often described as a dormer town but very light on existing low-carbon technologies. It has relatively little headroom for new electricity developments (demand or generation).

Save for Sprowston and North Walsham, which formed the basis of Arup's deeper-dive assessment that is included in Appendix C, the analysis supporting the illustrative sites studies is at a high-level but along with case studies from other regions this is presented as LSOA-level data where data allows.

Even by applying high-level indicators, there are widely divergent emissions regionally and locally. Figure SR4 below is derived from data provided by the Impact Community Carbon Calculator and looks at these illustrative sites in the context of wider district emissions on a per household basis (both territorial and consumption based<sup>21</sup>).

**Figure SR4: Territorial and consumption emissions/household (2019)**

Site	Territorial emissions (tCO <sub>2</sub> e)		Consumption emissions (tCO <sub>2</sub> e)	
	Total	Per household	Total	Per household
<b>Breckland</b>	1,304,435	21.9	989,606	<b>16.6</b>
Thetford	209,901	19.5	136,083	12.7
<b>KLWN</b>	1,740,341	26.4	996,255	<b>15.1</b>
Downham Market	45,119	8.7	59,788	11.6
<b>Norwich CC</b>	647,743	9.7	839,601	<b>12.6</b>
Norwich Uni	63,009	10.2	54,750	8.9
<b>NNDC</b>	941,903	19.4	888,586	<b>18.3</b>
Stalham	15,460	9.4	25,422	15.4
North Walsham	91,071	15.8	79,914	13.9
<b>Broadland</b>	1,059,020	18.9	964,776	<b>17.2</b>
Sprowston	66,307	9.7	105,904	15.5
<b>South Norfolk</b>	1,312,819	22	1,109,894	<b>18.6</b>
Wymondham	110,629	23.3	113,642	23.9

<sup>21</sup> This tool includes two approaches to estimating a carbon footprint. Territorial and consumption-based footprints are complementary, rather than being directly comparable to each other, and both provide useful information to help target local action to reduce carbon emissions. A territorial carbon footprint includes all emissions that are generated within a defined geographical area, including those from industry, agriculture and transport activities. A consumption-based footprint includes upstream and downstream emissions from residents' consumption of manufactured goods, food and their own transport activity, regardless of where the emissions occur.

<b>Great Yarmouth</b>	533,850	12.3	625,563	<b>14.4</b>
Bradwell	67,870	14.3	72,130	15.2
<b>GB average</b>				<b>15.7</b>
<b>Great Yarmouth</b>	<b>533,850</b>	<b>12.3</b>	<b>625,563</b>	<b>14.4</b>

**GB average**

**Source: Impact Carbon Calculator**

This comparison also allows us to orientate ourselves on some of the place-based differences of regional emissions and hone-in on potential key focuses by looking at areas that have high per household emissions. It also demonstrates the higher district averages relative to the towns/wards considered (save for South Norfolk and Great Yarmouth).

A further reason for this focus on illustrative sites was to avoid duplication with work already carried out by the ESC in its LEAR for Norfolk (as this recent work provides a solid platform to understand sub-regional trends and opportunities but generally with a much broader resolution) and to provide a more focussed lens on potential kickstarter actions that have a strong place-based dimension.

Our kickstarter ideas for these locations are summarised below.

### 11.1 Sprowston (Broadland)

Sprowston Park & Ride is a major link for more rural areas of to the north and the east Norfolk directly into Norwich and is therefore considered to be an important asset to the local community. This area offers a large open space for canopy PV installation over the Park & Ride car park.

Given the anticipated increase in demand for EVs across Norfolk, this also presents an opportunity to install EV charging units on a first mover basis, perhaps combining the generation and supply of clean energy with use of batteries. This could have additional benefits of supporting EV uptake and the resulting decarbonisation impact and air quality improvements in the local area. A good first mover of this type of scheme can be found at Stourton in Leeds.

The Park & Ride carpark covers 24,150 m2 with 792 car parking spaces. Based on standard solar carport PV infrastructure, this could offer a peak of 1.58MW of PV installation, producing 1,425MWh/year. Based on the number of car parking spaces, assumed occupancy and use duration, it was anticipated that the area would benefit from five EV chargers, at 11kW capacity. This reflects the anticipated duration of charging or duration of occupancy for drivers where cars are likely to be left throughout the working day and therefore do not have need for rapid chargers.

Based on Arup's modelling, the total capex for canopy solar PV across 792 car parking spaces and five EV chargers at 11kW combined is expected to be £1,927,050, with OPEX £41,400 per year and revenue £200,450 per year. It was assumed that the electricity generated by the canopy PV could be sold locally under a PPA. The pricing model used for this assessment was based on a 10% discount from standard industrial electricity prices at rates prevalent earlier this year. Electricity for the EV chargers were assumed to be purchased at standard industrial rates and sold to EV users with a 4p/kWh profit margin. With the modelled export revenue and underlying assumptions around infrastructure and technical capacity, the canopy PV scheme is projected to see payback in 10-15 years.

Broadland's transport emissions have been increasing since 2013, and it is the region's largest emitting sector. Due to the largely rural nature of the county, there is a heavy



reliance on cars that goes to explain the increasing trend of transport emissions. Broadland has also the lowest level of renewables generation of the Norwich districts, save for Norwich, and the lowest ratio of EV charging points to cars.

The Sprowston Park & Ride concept design offers numerous potential benefits to the local area. It proposes additional renewable energy infrastructure in a strategic location. The scheme also addresses transport emissions through proposed development of EV charging infrastructure and encouraging uptake of EVs, which will contribute towards Norfolk's goals for transitioning all private vehicles to EVs.

According to BEIS Sub-Regional Fuel Poverty data (2021), Broadland has the lowest levels of fuel poverty in Norfolk and Indices of deprivation data (2019) show Broadland as having the best IMD score in Norfolk. Given the relatively high price of EVs compared to diesel cars, Broadland has got capacity to support early adopter EV uptake, especially with the sale of new diesel cars set to be banned in 2030.

## 11.2 North Walsham (NNDC)

Four buildings were identified by Arup in North Walsham that show a good potential to create a community energy scheme based on low-carbon generation and demand. The buildings include Cedar House, North Walsham Post office, the fire station and the community centre. Cedar House and the fire station are understood to be owned by the district council and therefore are treated as a combined entity regarding investment and potential future carbon savings. A similar approach has been deployed by the local council for Energise Barnsley.

The proposed scheme includes fabric improvement retrofit of the four buildings, decarbonisation of the associated heat sources using ASHPs, electrifying the Post Office van fleet and installing solar PV on available roof and ground space.

The solar PV potential analysed across the identified areas results in an estimated annual generation of 42MW; this has been identified to offset approximately 15% of the combined sites (and EV fleet) total power consumption. A cost allowance has also been included for a battery storage solution to ensure maximum benefit is achieved from the solar PV generation. The implementation of PVs across the areas identified (car park: c. 500m<sup>2</sup>, combined rooftops: c. 650m<sup>2</sup>) highlights the opportunity for offsetting grid electricity consumption of the collection of buildings studied.<sup>22</sup>

Based on the output from techno-economic modelling and using the BEIS Green Book 2021 electricity prices, the 30-year NPV, for the solar PV with capacity of 40kW, is £16k. This results in a c.15-year payback for the PV system.

In 2019, 16.3% of households within North Norfolk were considered fuel poor, which was greater than the percentage of households in fuel poverty across the whole of Norfolk. In terms of energy infrastructure, there is a reasonable percentage of homes (70%) within the district that are connected to the gas grid, but levels are well below the England average (85%). The main areas of gas consumption are predominantly the urban areas (where most homes are located).

Given North Norfolk's relatively high fuel poverty and deprivation levels, combined with relatively low ratings of EPCs for domestic premises, the North Walsham community energy scheme could potentially offer several benefits to the local area. A community

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<sup>22</sup> North Walsham was one of four areas in NNDC identified by consultancy Egnida in 2019 as suffering from significant potential constraints and potential growth bottlenecks: <https://www.north-norfolk.gov.uk/media/5583/north-norfolk-power-study-report-march-2019.pdf>. The others were Fakenham, Cromer and Stody. Local supply from nearby PV is likely to be particularly beneficial for this reason.



fund could enable local support and resident involvement via funding PV opportunity and providing an investment route for renewable energy development at a local scale.

The North Norfolk District Council (NNDC) would set an example and business case for similar schemes in the region, reducing the potential risks for community energy and encouraging community organising. Over time, this might develop into a "Energise Barnsley" type arrangement with extended supply to local social housing groups.

### 11.3 Wymondham (SNDC)

Wymondham is the largest market town in the South Norfolk District Council (SNDC) area with some 17,000 people living in the town. It is located on the busy A11 corridor near Norwich and has good bus and rail links but very high traffic densities. Network Rail is already considering options to decarbonise its services in the area.<sup>23</sup>

Transport emissions are the biggest challenge in South Norfolk accounting for just over a third of emissions in Wymondham, followed by industrial and commercial emissions. This contributes to very high per household emissions of over 23 tonnes / household /year, 7.68 tonnes of which is attributable to road use. Particularly high emissions concentrations above the county average were found in LSOAs SN5B, 5C and 7E.

Most of these vehicles are from out of town and the congestion emissions are also hard to estimate. The Local Plan for the town includes transport improvements such as enhanced bus and rail services, improved cycle and pedestrian routes and EV high-power charging networks. Another particular issue is the Breckland rail line, which runs through the town connecting it with Norwich and Cambridge, and which is still diesel fuelled.

High energy demand users are Wymondham Leisure Centre, the Coppersmith Way industrial estate, Wymondham Medical Centre and Morrisons.

We recommend further work on transport emissions for Wymondham involving a series of possible interventions based around deployment of EV charging facilities, including development of a Gridserve type Electric Forecourt similar to that found already at Postwick, especially given the strategic significance of the Thickthorn Park & Ride on the A11 to Norwich that could form the basis of an EV charging hub if combined with solar canopies. Norfolk County Council already has plans to expand the site, including almost 30 EV charging bays. The site also provides the opportunity for further expansion of the town.

Given the location of the town and its commercial importance, it is a challenge to control or curb emissions from traffic on the A11/A47 junction. It is possibly ideally situated to be a focus of early-stage, accelerated transport decarbonisation, perhaps with a Gridserve-type electric forecourt similar to that at Postwick.

This development could also be combined with clean fuel deployment close to the A11/Browick Road, which also situates Goff Heating Oil and Petroleum. Related to this Goff are already behind the Norwich Innovation Park proposal approved by SNDC in

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<sup>23</sup> A local development that illustrates this direction of thinking is Norfolk's Bloy's Grove solar farm between Swainsthorpe and Mulbarton. At 49.9MW, it is one of the UK's biggest solar farms and is being developed by EDF Renewables. It received planning permission from SNDC in June 2022. It is set to power Network Rail's operations, covering 15% of its energy needs<sup>23</sup> (excluding trains). The scheme is due to be commissioned in [2026].

September 2021<sup>24</sup>, which is also on the outskirts of Wymondham. Another option might be to consider the deployment of hydrogen refuellers close to the A11 if other hydrogen opportunities are kickstarted in South Norfolk or nearby.

Such developments might be combined with other kickstarter interventions to trigger coordinated roll-out of EV infrastructure and clean transport. The EV charging points can be used by visitors and commuters using the A11 along with encouraging local residents to switch to EVs, perhaps in combination with a "Charge my Street" approach applied being deployed in the Northwest and Cumbria). In this context, it is important to note that there are few EV public charge points in the immediate area with presently only two installations either side of the A11

We also recommend that a community car club should be explored, perhaps targeted on outlying villages such as Hingham and Deopham, Hethel, Hethersett and/ or Mulbarton). Such a trial might also be targeted on LSOAs 5A and 5D given their relatively high concentrations of deprivation and fuel poverty. Such an approach could be coordinated by SNDC or the Greater Norwich Development Partnership as part of the transport improvements set out in the Local Plan for Wymondham.

New housing allocations at Wymondham and Hethersett might also offer scope for first mover roll-out of coordinated domestic EV charging points given the Partnership's commitment to aggressive new housing targets and including renewable energy at developments greater than 10 houses.

#### 11.4 Great Yarmouth (GYBC)

The district compares well to other Norfolk districts in terms of its emissions profile given its relatively small coverage and small population. After transport, domestic emissions (30%) are the largest contributor to territorial emissions, followed by road transport. This contributes to high per household emissions. Its industrial emissions are very low.

We recommend a focus for the district on domestic emissions and home retrofitting to improve energy efficiency (which is presently generally low) and help address fuel poverty levels, which exceed 17% and is nearly 4pp greater than the England average. There are major issues in some central LSOAs.

Existing support and advice on demand-side issues (level of bills, energy efficiency) are very disjointed and not well promoted. With average household prices currently forecast to touch at least £3,500 from October and the looming 2025 deadline for rental properties to be above EPC rating D, a review is required of existing advisory services. More could also be done to improve success rates in applying for central funding on demand-side decarbonisation projects, especially within the public sector, which we also examine.

We therefore looked at a range of actions that could support wider community-based advice and support on the demand-side.. These include: Norfolk Warm Homes, Norfolk Warm and Wise Partnership, the C.H.E.E.S.E. thermo-imaging project from Bristol and RetrofitWorks.

Other kickstart ideas that we believe could be explored further include an integrated advisory service on bill alleviation, energy usage and domestic retrofit should be piloted in one of the Norfolk districts, and we recommend should be Great Yarmouth the given

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<sup>24</sup> <https://www.edp24.co.uk/news/local-council/wymondham-green-energy-business-park-approved-8357544>

extent of the fuel poverty faced by some of the LSOAs.<sup>25</sup> This should look across support offered by central government, funding agencies and utilities to ensure Norfolk optimises opportunities and bring these together as a tailored package of options, supported by dedicated resource. Gwent Energy might provide a model.

PV development on council buildings and social housing is another option requiring development. Again, sale and export rates for aggregated power at anything like today's prevailing rates would well exceed revenue requirements in the absence of FITs.

### 11.5 Stalham (NNDC/Broads Authority)

One of the reasons we selected Stalham is that it is a relatively isolated established community off the gas network with high levels of oil central heating. It gets an influx of seasonal visitors utilizing river craft and holiday chalets with low overall EPC rating (mostly D and E). It is at the northern edge of the Broads and is situated on the River Ant., and it is an important site for the Broads Authority but presently has minimal distributed generation other than small-scale PV and a couple of small onshore wind installations to the north and southwest of the town.

The town is connected to the distribution system by Stalham Primary (33kV), and significant electricity users include Sydney House care home, Tesco Superstore, Stalham Academy, CT Baker Builders Merchants, Richardsons Boating Holidays and Nicholsons Engineering.

Stalham also has a relatively high per household consumption footprint at 18.1 tonnes/household, which is higher than the national average, and has a large contribution from housing. It is a Small Growth Town under the NNDC Local Plan 2016-2036. It has a high deprivation rating concentrated on North Norfolk 0113B. More generally, fuel poverty levels surrounding the town are high for both Norfolk and NNDC more generally.

The A149 also bisects the town, although the town presently has just one public EV chargepoint. It is remote from the region's diesel railway lines, so car dependency is high.

We explore one kickstarter idea for Stalham: a heating decarbonisation project at Sutton, 2km to the east of Stalham where there is a community of old houses dependent on solid fossil fuel heating systems clustered around an old landfill gas site. This could be powered by a combination of heat pumps, a new PV installation and/or batteries.

Although at much smaller scale, the first project could be structured similarly to the Swaffham Prior project in East Cambridgeshire, although that project received feasibility funding under the Rural Community Energy Project, which has since been closed to new applications, and also is the recipient of significant BEIS grant aid. We understand Norwich County Council has been considering ideas for repurposing of old landfill sites, and a demonstrator here could make a lot of sense given the pressing need to electrifying local heating systems in remote areas.

### 11.6 Thetford (Breckland DC)

Thetford is Norfolk's fourth largest settlement and, with a growing population, it has been identified as an important area for future housing and business growth, especially around the proposed Kingsfleet development to the north of the town. It is well connected to the

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<sup>25</sup> We have not addressed the Community Energy Switch idea, which was launched last year and for which Norfolk had over 25,000 registrations as this and other collective switch programmes are not attracting suppliers and/or competitive quotes from suppliers in the current market.

national rail network through the strategically important Breckland Line that connects Norwich with Cambridge via Ely. Most of the line is presently diesel fuelled. It is also relevant that, if the Kingsfleet development proceeds, this could result in a further new station being added to the line.

The largest share of the town's territorial emissions come from industrial and commercial practices (40%), at a number of existing business developments, which could be developed as a clean growth hub. These include the Breckland Leisure Centre and Waterworld, Thetford Recycling Centre, Keystone Innovation Centre and Brunel Business Park and public sector landholdings in the area that could provide opportunities to set up solar panels and smart energy usage systems.

We explore two kickstarter ideas for Thetford:

- The first is adoption and adaptation of the Riding Sunbeams concept adopted in Aldershot, and
- The second is solar PV development tied to public buildings and its supply to local social housing estates.

The first of these could see existing sites close to the station developed for PV to support electrification of the existing railway line. The local electricity system has seen reinforcement in the recent past. Given the length of the Breckland Line, it is doubtful if it will be considered a priority for early electrification so use of batteries is included in the Network Rail *Transport Decarbonisation Network Strategy*.

The second involves social housing. Thetford has one of the most fuel poor communities in Norfolk, with low-income families being affected by increasing energy bills. It has almost 2,500 social housing units.

Retrofitting existing housing and installing energy efficient upgrades. We recommend that conversations could be held with suppliers to look for local renewable investment at these industrial sites in collaboration with Breckland District Council and social housing groups such as Hanover Court, Pedders Way, Orbit and Housing 21 with a view to sleeving surplus export power from these business premises to social housing groups locally.

## 11.7 Downham Market (KLWN)

A traditional market town, Downham Market has an exponential housing growth as well as increasing housing prices due to the railway and A10 connectivity of the town. The central LSOAs have a population of 11,000, having grown 10% since the 2011 census. Four of these six fall under the jurisdiction of Downham Market Town Council. It is located on the Fen Line connecting Kings Lynn with Cambridge (and onwards to London). It is sandwiched between the A10 and A122. It is mostly used as a dormitory town.

The town has very limited renewable generation assets, with only one 4.8MW solar generation asset in the southwest of the town at Ryston Estate, operated by Lightsource. It has only one EV charging point. FiT penetration is low with three LSOAs having less than 150kW between them (about 40 properties). There is good dual fuel access, so the town might make an interesting case study for examining heat decarbonisation and LCT development.

The district generally has relatively high levels of fuel poverty and deprivation, but these are most pronounced in Kings Lynn 017G and to a lesser extent in 017H (which together comprise the Old Town). Consumption emissions are 11.6 tonnes/ household/ year.

There is potential to install solar PV at the Heygates and Bexwell Industrial Estates, agricultural storage at Boxwell Lane, and the schools across the region. The town has a

Wastewater Treatment Site at Farfield Road, which also looks suitable for development, especially given limited local demand headroom on the UKPN system.

Our kickstarter ideas for Downham Market are:

- Public EV charging points at the railway station
- Targeted, facilitated *Solar Together* programme for the Old Town wards, with or additionally exploring solar development options at the Heygates and Bexwell Industrial Estates with a sleeved supplier deal to local social housing groups
- Early applications into SHDF and PSDS based on the needs of local borough council properties and social housing, and
- Fuel poverty advice focussed on LSOAs 017G and 017H.

Norfolk County Council is already supporting a *Solar Together* initiative involving iChoosr, but the district council and social housing groups could look to support this as part of a facilitated community energy framework, like the work being undertaken by Greater Brighton under the City Region project.

## 11.8 Norwich (University)

The Campus is the largest carbon point source of emissions across the Norwich Boundary. The nearby Norfolk and Norwich Hospital is another big source of emissions within the boundary along with the many research buildings that are part of the Norwich Research Park. There are already CHP units within the footprint. These areas also provide good opportunities to set up solar PV with large car parks and roof space available to them.

The area generally is subject to significant export constraints. Coordinated planning and joint developments across the sites could be planned to save all participants money.

A solar technology company, Solivus<sup>26</sup>, has worked with the English Premiership rugby union club Northampton Saints and helped install ultra-thin layer solar panels on their roof, space previously unusable. The club is projected to save £250,000 over two decades with the reduction in energy bills and carbon footprints. Similar technologies could be implemented in areas on and around campus at UEA, for instance at the Sports Park, where either roof space is too fragile for solar PVs or where buildings cannot be renovated.

ACE research's guide to decarbonizing heat networks in University Estates<sup>27</sup> suggests universities' commitment to Net Zero must involve a reduction in natural gas consumption and investments in low-carbon sources such as heat pumps and solar PV.

The university also built an onsite biomass plant with the £1mn government grant with the intent to burn woodchip to power much of the University. However, it has been abandoned for some time. Given the growing on-site demand, potential measures to revive it could reduce the campus' carbon emissions greatly, especially as the site already exists.

UEA is also home to one of the most sustainable building projects: the Enterprise Centre, one of the greenest buildings in the UK. It has been built using low carbon materials (such as pine, thatch, reed, hemp fabric, reprocess fabric, paper insulation and a concrete mix of recycled sand and aggregate), and it requires very little heating due to its insulation. Such building infrastructural designs could be incorporated across the campus in newer developments to help reduce emissions, energy bills and spread awareness.

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<sup>26</sup> [Saints engage with Solivus for solar technology venture - The Stadium Business](#)

<sup>27</sup> [decarbonising\\_heat\\_networks\\_in\\_university\\_final\\_report\\_june\\_2021.pdf \(sustainabilityexchange.ac.uk\)](#)

There is a range of research that could be drawn on support development of a local Net Zero plan based around pathways for models based on the energy system of the Queen Elizabeth Hospital (QEH) and the University of Warwick (UW) campus site. This research analysed different pathways to decarbonise energy provision to the hospital and university campus by 2050, including technical, economic and emissions factors and their interaction.

The briefing paper shows that, from the Net Zero perspective, decarbonising heat through heat pumps deployment in the short/medium term and decarbonising electricity with on-site distributed energy resources in the long-term are more expensive than other solutions but achieve the most significant GHG emissions reductions for both sites. This combined solution enables 98% GHG reductions by 2050 but increase costs and pressure on the electricity grid. To achieve reasonably priced low-carbon intensity electricity, the demand solutions, such as shifting demand to times when energy is cheaper, are therefore essential.

Our kickstarter ideas for the Campus and environs are:

- Examine a smart local energy solution with cross-corporate governance across the three sites
- As part of this, consider how energy usage can be adjusted given different consumption profiles to deliver benefits across the three sites, and
- Also, as part of this, address how existing and possible new renewable technology can be deployed to increase local resilience and deliver benefits to the tenants.

The REMeDY project in Southend provides an interesting exemplar as it looks to build generation and batteries behind the meter for sharing between approximate sites that are subject to grid limitations. However, a SLES project is very different to most citizen-based community energy schemes and requires deep engineering capabilities. It also requires:

Other kickstarter ideas are:

- Development off a Western microgrid embracing the University, the hospital and the research park
- Considering interactions with local smart development potential at sites such as Hethel and the Food Enterprise zone, and
- Exploring the scope for heat networks in the Greater Norwich area as sign-posted by BEIS in a recent study.<sup>28</sup>

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[https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/1015585/opps\\_for\\_dhnnca\\_hc.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1015585/opps_for_dhnnca_hc.pdf)



## 12 Main conclusions

All recommendations are for NCCP and the participating partners:

### **Community energy**

1. The NCCP should publish a statement of support for community energy, its benefits and its role in supporting local climate action
2. Each of the partners should nominate a community energy lead
3. NCCP should consider whether and how its partners might support on-going development of an open access portal to support local climate action, including community energy
4. It should discuss and adopt a policy position that the Smart Export Guarantee reinforcement, especially to support deployment in the household market and schemes below 5MW
5. It should also examine establishment of a London Community Energy Fund-type structure to consolidate and coordinate support annually across the county start-up grants and project feasibility funding to community schemes
6. The group should also seek to build awareness and provide support to community groups wishing to participate in UKPN's Power Partners programme and the Ofgem administered *Energy Industry Voluntary Redress Scheme*
7. The NCCP with the LEP, the Southeastern Net Zero Hub and NWES should consider options for offering development support to get community groups up and running and on-going business support

### **NZN Decarbonisation Pathfinder and governance**

8. NCCP should aim to finalise its own and Pathfinder governance by end 2022. This should include appropriate, dedicated supporting resource
9. It should commit to publication of the draft NZN Pathfinder by end 2022-23
10. NCCP should look to develop an engagement plan so it can gain feedback with local stakeholders on the draft Pathfinder and build support from April 2023
11. It should identify district level leads that take responsibility for work in the different areas of territorial emissions based on areas where their own performance could and should focus probably based around the emissions sub-sets reported by BEIS
12. It should establish a periodic forum for engagement with utilities (UKPN, Cadent, Anglian Water)
13. It should also establish a Net Zero business forum
14. It should also form a group that interfaces with parish and borough councils
15. NCCP should conduct an annual review of the annual BEIS emissions statistics for the county and report to the councils and other regional stakeholders by end September each year

### **Renewables development**

16. NCCP should also commission an assessment of prime sites for solar deployment and develop a policy on using council sites and offices for development
17. Alongside development of the Pathfinder, we recommend adoption of a target of more than a five-fold increase in current solar capacity to a minimum 3GW of ground-mounted and rooftop solar by 2035.



18. NCCP should also develop policy on support for onshore wind and biomass/miscanthus, with indicative targets
19. This assessment should also consider battery storage potential
20. Partners should consider how their own supply arrangements on renewal can be aggregated and linked with local generation through a corporate PPA
21. NCCP should actively promote the county-wide *Solar Together* programme highlighting this to regional community groups and stakeholders, while prioritizing priority areas and supporting incentives

### **Demand-side action**

22. NCCP should also consider options for other targets such as those based on) energy efficiency targets for social housing, fuel poverty and retrofits
23. It should form a bespoke group the focuses on the problems faced in the county from transport decarbonization, focusing on strategy for EV and chargepoint role out but also green hydrogen refuelers
24. Likewise for other transport decarbonisation projects it wishes to see to tackle noise and congestion

### **Funding**

25. NCCP should form a group, under Pathfinder governance, that considers how partners might access new forms of green finance and sector funding, including access to both central government funding and the new Net Zero Infrastructure Fund.
26. The partners should also consider piloting a community bond initiative to assess local appetite
27. These initial recommendations may be updated and reiterated once the scoping work on the Pathfinder is concluded.

## 13 NZN Pathfinder/Lot2B

After initiation of the project, we were asked to deliver an additional module by NCCP after project commencement. This focuses on how the NCCP and local stakeholders might set about production of a NZN Decarbonisation Pathfinder. The oversight group provided a high-level view of what such a document might cover in the form of a sub-project brief.

The core objectives of the Pathfinder as specified in the project brief are:

- To develop a greater understanding of the steps that will help Norfolk to decarbonise - building on the SHIFT (Lot 1) and CEK (Lot 2) reports - and identifying an additional range of actions that can be carried out in combination with these projects to support delivery of Net Zero
- To direct and focus the ongoing work of the NCCP and provide an evidence-based action plan
- To broaden understanding of the status of all the NCCP partners and their Net Zero aspirations with the Partnership and among regional stakeholders
- To identify a science-based and practical target date/s in which to achieve Net Zero carbon emissions across the whole of Norfolk and an implied trajectory/ies, explaining any differences
- To refine a list of key stakeholders in Norfolk with whom the NCCP will wish to engage with and develop fuller dialogue to support delivery of Net Zero
- To identify key sectors which the Partnership will need to engage with, and
- To disseminate and share information about the route to Net Zero by providing a localised focus to the report, identifying specific place-based priorities, opportunities, and challenges.

**Net Zero  East**

[www.netzeroeast.uk](http://www.netzeroeast.uk)