



**A Strategic Framework  
for Council action for progress to net zero energy in Derbyshire**



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CONTROLLED

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## 1) Introduction

The past year has sparked recognition of the importance of a faster UK transition to net zero, to support energy security and reduce exposure to volatile international fossil fuel prices, by harnessing abundant renewable and low carbon resources. The Council is committed to enabling Derbyshire to be a net zero county by 2050.

A cost competitive, low carbon, and resilient energy system is critical to achieving this goal. This energy system must meet the cost of living needs of Derbyshire's communities and businesses whilst creating new economic, social, and environmental opportunities that will enhance the county's prosperity and its contribution to the new East Midlands Devolution Deal.

However, given the complex nature of the globally significant social, economic, and environmental issues driving this agenda, and the wide range of energy related projects the Council could champion, it is essential that the Council defines where it best focuses its attention in the near, medium, and longer term.

Therefore, the purpose of this document is to provide a Strategic Framework by which the Council can ascertain the elements of the net zero energy agenda it is best placed to contribute to progressing and what role it should take in so doing. It should be acknowledged that such Council direction may be limited in scope and outcome given the complexity and scale of this agenda and the much more prominent roles of the Government and the private sector in driving change.

The Framework reflects the good practice policy and projects of many local authorities in England.

## 2) The Strategic Framework's purpose

The Strategic Framework:

- Defines what the net zero energy agenda means for the Council.
- Proposes six Policy Objectives for Council action and the reasons why these have been selected.
- Describes the opportunities and barriers relevant to each Policy Objective.
- Offers interventions / actions required to deliver each Policy Objective.
- Proposes the Council's role(s) in such delivery.
- Identifies Priority Workstreams to deliver each Policy Objective up to April 2025.

These proposals are made based on the following information and analysis also contained in the Framework.

- Review of the national context and relevant drivers for change.
- The shortfalls of the UK's current energy generation and distribution systems.
- Promoting the advantageous features of a potential future decarbonised energy system.
- Assessing Derbyshire's status to respond to the net zero energy agenda.
- Identifying the Primary Themes against which action must be taken to secure net zero energy.
- Describing the potential roles the Council could undertake in contributing to delivering these Primary Themes and proposing criteria that should be fulfilled to trigger such Council involvement.
- Appraising the Primary Themes status in Derbyshire, and their opportunities and barriers to progress.

The Council is already progressing successful projects, services, and partnerships that accord with the Framework's six Policy Objectives. An overview of these activities has been conducted to signpost which of the Policy Objectives they are contributing to. This information is provided in Appendix A.

### 3) Defining the Council's net zero energy agenda

The net zero energy agenda for the Council encompasses:

- a) Supporting the UK's transition to net zero energy generation and use by 2050.
- b) Enabling the resilient generation and supply of cost competitive energy to Derbyshire's residents and businesses.
- c) Ensuring that all of Derbyshire's communities can equitably access the social and economic benefits that arise from the decarbonisation of energy and are not adversely affected by such development.
- d) Delivering Net zero energy projects that offer a viable financial return on investment that can be used to support public services in Derbyshire<sup>1</sup>.

<sup>1</sup> It is not proposed that such projects would take the form of the Council establishing an Energy Services Company. Instead it could be founded on joint venture arrangements with commercial entities to provide new income generation to the Council from energy infrastructure projects such as solar PV, wind-turbines, heat networks, private wire electricity supply, home retrofit, homeowner energy loans. There are current examples of local authorities being successful in such ventures, some of these are identified in Appendix B.

#### 4) The Strategic Framework's Policy Objectives for the Council

This Strategic Framework identifies six Policy Objectives for the Council to prioritise:

##### **Policy Objective A**

Develop a better understanding of energy grid capacity and opportunities in Derbyshire.

##### **Policy Objective B**

Enabling behaviour change by the county's residents and businesses, so they make positive, well informed and prompt net zero energy generation and consumption decisions.

##### **Policy Objective C**

Supporting the progress of sustainable transport solutions for Derbyshire's communities and businesses, including electric and hydrogen solutions.

##### **Policy Objective D**

Appropriately using the Council's property portfolio and assets to generate and store energy.

##### **Policy Objective E**

Collaborating with Derbyshire's industrial and agricultural sectors to support their transition to net zero and in so doing enhancing Derbyshire's economic prosperity.

##### **Policy Objective F**

Facilitating a modern and smarter digitalised energy system, that brings confidence from consumers, suppliers, and regulators in Derbyshire's net zero energy transition credentials and financial transactions.

## 5) National context

### **The National Infrastructure Commission (NIC) and the Climate Change Committee (CCC)**

Their representations to the Government (7 September 2022):

- High energy prices, extreme summer temperatures, a historic drought and surging inflation could see up to three-quarters of UK households threatened by fuel poverty.
- The Office for Budget Responsibility expects natural gas prices to remain at or around their current high until 2027.
- The UK cannot address this crisis solely by increasing its production of natural gas. UK gas reserves – offshore or from shale – are too small to impact meaningfully the prices faced by UK consumers.
- At least 15 million homes require some form of energy efficiency improvement.
- NHS England alone could see gas and electricity bills rise from £600m in 2021 to over £2bn in 2022. Businesses face similar challenges and need policy support.

Their recommendations to the Government (7 September 2022):

- Develop credible policies for energy efficiency in buildings. Investing in efficiency now will provide meaningful reductions in the amount of energy wasted over the long-term and support the necessary transition to low-carbon heat.
- Provide and promote a comprehensive energy advice service. (Following through on the commitment made in the British Energy Security Strategy.)
- Deliver a working market-based mechanism for low-carbon heat. (This is the main policy the Government has put in train to deliver on its goal to grow the market for heat pumps.)
- Make full use of new auctions for onshore wind and solar, emphasising that renewables are the cheapest form of electricity generation.
- Deliver updated National Policy Statements for energy and act quickly to resolve barriers to deployment of strategic energy infrastructure.

## 6) Drivers for change

### **Energy costs and security (driven by a global and national context)**

- Wholesale gas prices have increased sharply and remain extremely high and volatile.
- Contributing to UK inflation rates being at an almost 40-year high of 10.7% in the 12 months to November 2022.
- Legatum Institute estimates that more than 1 million more people in the UK will be forced into poverty this winter, pushing UK deprivation levels to their highest for two decades – even with the Government’s freeze on energy prices. Potentially leading to greater health inequality.
- Self-sufficient, cost competitive, low carbon energy generation and supply for Derbyshire.

### **Net zero Strategy: Build Back Greener (2021)**

- Levelling up the country, ending our domestic contribution to climate change, and leading the world to a greener, more sustainable future.

### **Midlands Engine Ten Point Plan for Green Growth (2021)**

- By 2041 - committing to deliver a 36% reduction in CO2 emissions from current regional levels, while also creating 196,000 high-value, high-skill jobs to boost productivity and generate a further £24.2 billion GVA for the region’s economy.

### **D2N2 Energy Strategy 2019-2030 (2019)**

- By 2030, D2N2 will be a national pioneer in clean growth and a test-bed for world class energy systems innovation.
- Accelerated by the region’s ability to undertake cutting-edge research and development, a proactive public sector and a highly-skilled workforce.

### **East Midlands Devolution Deal - Net Zero, Energy and Environment**

- A need to increase the East Midland’s electricity network capacity to meet future electricity demand
- A place-based approach to delivering retrofit measures
- Heat network zones - where heat networks are going to be the most cost-effective way to decarbonise heating and hot water
- New investment into net zero infrastructure and innovative local projects
- Opportunities for green skills interventions at a local level

### **Derbyshire County Council Climate Change Strategy: Achieving Net Zero (2021)**

- Establishes the Council’s target to be an organisation that has net zero carbon emissions by 2032 or sooner.
- Identifies the Council’s plans to facilitate the county being net zero by 2050 through collaboration across Derbyshire’s public, private, and community sectors.



- Objectives will be delivered through: new and retrofitted low carbon buildings and infrastructure; expanding local renewable and low carbon energy generation; facilitating the growth in Electric Vehicle use; promoting and facilitating active travel; developing low carbon industry, skills and employment; preventing waste being sent to landfill; and supporting Nature Recovery.

#### **Vision Derbyshire Climate Strategy and Action Plan (2022)**

- Shared commitment across Derbyshire's county, district and borough councils, to strategically collaborate to improve outcomes for people and places, speak with one voice as a county, and coordinate our resources better and more sustainably.
- Sets out a strategic vision for net zero, including common priorities, across five key themes: Local Authority Estate, Operations and Services; Strengthening the Low Carbon Economy; Decarbonising Derbyshire's Housing; Sustainable Transport, Travel and Infrastructure; and Waste and Resources.

#### **Derbyshire County Council Corporate Property Asset Management Strategy (2022)**

- A robust and forward-thinking strategy for the management of the Council's land and assets.
- To ensure that the right decisions are made regarding their future use, management, development, or disposal.
- A reduction in the Council's land and asset footprint is expected, but the scale of this is to be determined. Disposal of assets at pace is a priority.

#### **Derbyshire Spatial Renewable Energy Study (2022)**

- A spatial assessment of energy opportunities to support emerging local development planning and planning guidance across Derbyshire
- Provides an evidence base which will ensure better integration of energy system planning with the growing need to address and mitigate climate change at local and regional levels in Derbyshire.

#### **National Planning Policy Framework - Locally prepared plans that:**

- Provide a positive strategy for energy from these sources, that maximises the potential for suitable development, while ensuring that adverse impacts are addressed satisfactorily.
- Consider identifying suitable areas for renewable and low carbon energy sources, and supporting infrastructure, where this would help secure their development.
- Identify opportunities for development to draw its energy supply from decentralised, renewable, or low carbon energy supply systems and for co-locating potential heat customers and suppliers.
- Local planning authorities should support community-led initiatives for renewable and low carbon energy, including developments outside areas identified in local plans or other strategic policies that are being taken forward through neighbourhood planning.

## 7) The UK's traditional centralised energy system

Centralised energy supply involves large-scale generation of electricity at a central power plant that burns fossil fuel (coal or natural gas). The generated electricity is then transported from the power plant to consumers through a power grid (a network of cables and wires).

The grid plays a key role in the electricity system as keeping the balance between supply and demand is a vital task as, unlike gas, it is very difficult to store electricity.

National Grid runs the grid system across Great Britain, managing the flow of electricity across the entire network. They are the Transmission System Operator (TSO).

Electricity direct from the grid is too powerful to use in homes and businesses. This is why high voltage wires carry electricity to supply substations. There, it is changed to a lower voltage and enters local distribution networks which carry it into homes and businesses.

The local distribution networks are owned and operated by Distribution Network Operators (DNO), in the case of Derbyshire they are National Grid and Electricity North West.

## 8) The challenges of expanding the grid's capacity

Access to electricity is expanded by extending the existing electricity supply infrastructure to unserved areas. This involves adding generation capacity, installing new transmission and distribution lines, as well as building and installing associated infrastructure, such as feeders and transformers. Such work is undertaken by the TSO and DNOs.

There are significant challenges with these arrangements:

- High cost of grid extension
- Inadequate generation capacity to meet current and future electricity demand.
- Transmission infrastructure capacity and resilience.
- Significant cost to consumers; businesses, and residents (rural areas) – especially to those instigating new grid expansion.

The 'big six' is a term often used to describe the six largest UK energy companies operating. Traditionally, they are made up of:

- British Gas
- EDF Energy
- E.ON,
- npower
- ScottishPower
- SSE.

## 9) A future net zero energy system

The vision is for a country made up of a diverse range of power and heating sources, within a more decentralised energy system, where households and businesses play a greater role in managing and producing their own energy.

There will not be one solution within the future energy system, but many. This will make flexibility – in system design, system operation and the regulatory framework – essential.

### Electricity

- Will be low carbon and local, with many people no longer relying on the grid. New nuclear plants will become operational and offshore wind will grow rapidly.
- Will play a far greater role in the energy system, accompanied by the expansion of electricity transmission capacity. For instance, electric vehicle (EV) charging will place increasing demand on the local distribution system, which in turn will benefit from local renewable energy generation, storage, and demand-side-management solutions.
- Smart technology and data management will be required to unlock these interdependencies.

### Decentralised energy and microgrids

- Demand-side response (where customers are incentivised to lower or shift their electricity use) and batteries will become widespread in commercial and residential properties, industrial parks, universities, and airports.
- New towns and large developments will develop microgrids to reduce the load on the national grid.

### Heat

- The heat sector will become fragmented, especially in inner cities.

- It will no longer rely on natural gas – but will become a multi-sourced system varying by location and type of building. For example, hydrogen will replace natural gas in the suburbs and cities.

### **Smart homes**

- New properties will be energy neutral.
- At times homes will export energy back to the grid (for example from solar generation) and at other times they will import energy from the grid.
- Some properties will be built with energy storage which will allow them to be self-sufficient all year round.

### **Transport**

- Personal ownership of vehicles will be progressively phased out, with all new vehicles either electric, plug-in hybrid or hydrogen powered.
- The rail network, including trams, will be fully electrified other than a few hydrogen trains.
- Decarbonisation of heavy transport via a new hydrogen energy sector.

### **More energy retailers in the market**

- Including local energy co-operatives and municipal suppliers - consumers will have a wider variety of products available to them including time-of-use and peer-to-peer tariffs.

### **Community engagement with the energy system will be imperative**

- Whether it is installing their own generation (e.g. PV) and storage or permitting technologies to control powering their appliances (e.g. fridges) and charging their cars.

**Through such measures the 2050 Net zero target will be secured.**

## **10) Assessing Derbyshire's Net zero energy credentials**

A strengths, weaknesses, threats, and opportunities (SWOT) analysis of the county's potential to:

- Contribute to the UK's transition to Net zero energy generation and use.
- Provide resilient generation and supply of cost competitive energy to Derbyshire's residents and businesses.

- For all of Derbyshire's communities to equitably access the social and economic benefits that arise from the decarbonisation of energy and not be adversely affected by such development.

### **Strengths**

- East Midlands Devolution Deal - Net zero, Energy and Environment.
- Central UK location, access to transport links and energy pipelines.
- Derbyshire's vast natural assets, ex-industrial land, open space, and buildings provide opportunities for renewable energy generation and distribution, and carbon sequestration.
- Strong partnerships e.g. Vision Derbyshire, the University of Derby and the D2N2 LEP.
- Leading innovative large businesses, including Toyota and Rolls Royce, offering a skilled workforce and supply chains, and appetite for innovation.
- Derbyshire County Council Climate Change Strategy: Achieving Net Zero (2021-2025).
- Derbyshire Natural Capital Strategy
- Derbyshire Renewable Energy Spatial Study.
- Programmes and ambitions in place for electric vehicle charging infrastructure, mobility hubs, and walking and cycling infrastructure.
- Active and successful community energy groups.
- Strong track record of energy efficiency and low carbon funding support being provided to SMEs in the county e.g. Green Entrepreneurs Fund and DE-Carbonise.
- New funding streams from national government, such as Bus Service Improvement Plan (BSIP) funding and Public Sector Decarbonisation Scheme (PSDS) funding.

### **Weaknesses**

- The development and implementation of low carbon solutions and technologies are complex projects with a long-time lead into delivery and outputs.
- Lack of awareness of and trust in energy saving information available amongst residents.
- Derbyshire's complex and old housing stock can make energy efficiency retrofitting and large-scale projects difficult.
- Skills shortage, for example around domestic retrofitting.
- Difficulty engaging with some communities and navigating other community and resident priorities.
- Lack of a central Derbyshire community energy hub or resource.
- Grid capacity and connectivity uncertainties. Surplus capacity is not always visible.
- Data gaps can make decision making difficult.
- Rural nature of much of the county means that funding is lacking and is typically directed to areas where housing and business density is higher.

- Internal Council capacity and competing priorities.

### **Opportunities**

- The cost-of-living crisis means that interest from residents and businesses in energy use reduction is now at an all-time high.
- Appetite for a growth of EV use and charging infrastructure.
- Access to new funding and strengthened partnership working through the new East Midlands County Combined Authority.
- Reducing energy demand through behaviour change and the introduction of new technologies and industry.
- Tackling deep rooted deprivation in rural areas through the transition to net zero.
- Income generation opportunities for the Council and the county from energy generation and growth of the low carbon industry.
- Decarbonising the county's minerals industry. Opportunity for solutions to be replicated and exported elsewhere.
- Promoting and enabling active travel and its wider co-benefits through infrastructure and behaviour change.

### **Threats**

- Climate change and severe weather impacts intensifying and becoming more frequent, posing risks to energy generation and transmission resilience.
- Length of transition period and delays in the development and implementation of low carbon solutions and technologies.
- High project costs, lack of funding and impacts of high inflation.
- Delayed decision making resulting in missed opportunities.
- Planning restrictions and opposition by residents to proposed developments in their local area.
- Risk appetite and averseness.
- Risk of being behind other local authorities and wider partners.
- Resilience of the energy networks, with low voltage cables particularly susceptible to power cuts (rural areas).

## 11) Creating a net zero Energy System - Primary Themes for Action

### **Electricity: Generation and Efficiency**

- e.g. renewable energy generation in Derbyshire more than doubling by 2030 and then doubling again by 2050

### **Electricity: Distribution, Infrastructure and Balancing**

- e.g. expansion of electricity generation / transmission capacity

### **Heat: Generation and Efficiency**

- e.g. a significant role for electrical heating via heat pumps

### **Heat: Distribution, Infrastructure and Balancing**

- e.g. natural gas grid being redundant or converted to hydrogen

### **Transport: Fuel consumption and efficiency**

- e.g. a rapid increase in electric vehicles (domestic)

### **Transport: Infrastructure**

- e.g. for hydrogen fuelled HGV vehicles

### **Digitalisation of the Energy System**

- e.g. more interactive behaviours, networked actions, collaborative solutions

## 12) Potential roles for the Council

### Leadership and influence

- County and regional leadership required to deliver national strategies.
- Highlight the size of the prize, economic, social and environmental, as well as creating a sense of urgency.
- Connecting stakeholder groups across business, government, academia, and finance.
- Influencing the drivers of change: policy, business models, investment, and skills.
- Capitalise upon innovation capabilities to improve productivity and economic growth.
- Promoting Derbyshire for low carbon energy government and private sector investment.
- Complementing regional actors e.g. D2N2 and Midlands Net zero Hub.

### Strategic Planning Authority

- Applying the Council's planning policy alongside national planning policy guidance to balance the interests of Derbyshire's communities, businesses, and environmental protection. E.g. the Mineral and Waste Development Framework.
- Working with the county's district and borough councils, and the Peak District National Park Authority.

### Statutory consultee

- Unless connected to a minerals or waste use, or the County Council's own development, planning approval for energy projects are determined by district or borough councils under the Town Country Planning Act 1990.
- The Council is, however, a key statutory consultee, and its view carries significant weight with the Examining Authority, and by extension, the Secretary of State. It has responsibility for a wide range of interlocking issues across the whole county, which affect decision making, having a key role in representing, developing, and supporting, its local communities and protecting their environment.
- Planning principles for renewable energy development e.g. solar farm applications.

### Landowner and manager

- The Council is a significant landowner and is committed to delivering strategies, policies, projects and working practices that will contribute to the Council achieving the ambition of net zero emissions for its own operations by 2032, or sooner, and from the county by 2050.
- The Council's Corporate Property Asset Management Strategy must be used to define where such net zero energy projects are progressed.

### Aggregation

- The Council could act as an impartial aggregator for Derbyshire energy projects – to achieve economies of scale and maximise bargaining power.



- This role is particularly valuable in a future energy system, with more distributed / local generation and smarter demand in buildings, neighbourhoods, and industrial facilities.
- Local communities and businesses will have the opportunity to play a more active role in the energy system – the Council acting as an aggregator will help them unlock the associated economic and social value within the county.

### **Funding agent**

- Levelling Up and the East Midlands Devolution Deal.
- Access to government grants for feasibility study and capital investment e.g. Heat Network Development Unit.
- Public Works Loan Board (PWLB) – access to low-cost borrowing that makes public sector energy projects IRR greater than private borrowed finance, and investment thresholds are lower the private sector return requirements.

### **Knowledge sharing and advice**

- Applying the Midlands Net Zero Hub expertise into Derbyshire energy projects.
- Engaging with Derbyshire’s homeowners to co-produce energy efficiency and generation solutions to non-social housing premises.
- Derbyshire Renewable Spatial Energy Study helping local authorities to strategically assess sites and applications as part of the Local Plan process.
- Signposting to Government funding.

### **Brokerage**

- As an impartial public body, the Council can play the “honest broker” role in facilitating and brokering relationships e.g. investors, landowners, and project developers to avoid missed opportunities and arbitrate solutions to blockages.
- This brokerage could include general networking among relevant stakeholders to encourage information sharing and the generation of new projects and business models, as well as specific, targeted matchmaking for particular projects, or technologies.

### **Employment and skills**

- Adopt the recommendations of the ‘Key skills and training needs of the D2N2 Low Carbon and Environmental Goods & Services Sector’ report, working with Sector Skills groups and other partners to identify immediate skills and recruitment shortages, and support low-carbon leadership development.

### **Investment pipeline management**

- Preparing and co-ordinating an investment pipeline of Derbyshire energy projects linked to the D2N2 Energy Strategy and future East Midlands Devolution Deal arrangements.
- This would involve bringing together many of the roles above and applying them along the stages of the pipeline.

- For example, promoting regional investment opportunities; identifying those looking for investment; tracking their progress; understanding barriers to progress and unblocking these; and providing support.

### **13) Prioritising where the Council should act**

It is proposed that the Council's actions are focused on opportunities and actions that:

- Present a significant net zero challenge or opportunity at a Derbyshire, D2N2 or East Midlands scale.
- Have important whole system and infrastructure implications in Derbyshire for the net zero transition.
- Present the most immediate opportunities for Derbyshire in terms of investment or jobs.
- Are subject to challenges which are delaying progress in Derbyshire and where the private sector, acting alone, cannot unlock a solution (a market failure).
- Stimulate conditions for Thriving Communities – the Council supporting greater collaboration with and across Derbyshire's communities to bring about change, ensuring people and places thrive.
- Offer the Council opportunity to secure a viable financial return on investment that can be used to support public services in Derbyshire.

## 14) Electricity: Efficiency and Generation

### Current status in Derbyshire

- Electricity consumption: 3,631 GWh of which 1,353 GWh domestic and 2,278 GWh non-domestic.
- Renewable electricity generation: 404 GWh with approximately 185 GWh in planning.
- Significant need for additional renewable generation.
- Domestic electricity use averages 3,668 kWh per property (just under the UK average).
- Non-domestic use averages 71,716 kWh per property, 22% above the UK average due to the high concentration of manufacturing.
- The community energy generation sector is growing in ambition with Derbyshire Dales Community Energy currently recruiting an energy officer to support local organisations and projects (part-funded by Derbyshire County Council). Other highlights include Torrs Hydro (High Peak), Cromford Mill (hydro and water-source heat pump, in progress) and Hope Valley Renewables.
- The Derbyshire Spatial Energy Study (2022) provides evidence on the potential for renewable energy generation at different scales and is designed to inform planning guidance, including the refresh of local plans.
- The Midlands Net Zero Hub is aiming to coordinate a D2N2 Local Area Energy Plan (LAEP), which would provide impetus and direction for future developments (proposed 2023).
- A small-scale LAEP is planned in the Clay Cross area as part of the Town Deal process.

### The opportunities

- Greater efficiency in the use of electricity.
- Higher demand for electricity due to its increased use for transport.
- Higher demand for electricity due to its increased use for heating.
- Generation of new renewable energy (electricity) e.g. solar photovoltaic (PV), onshore wind, hydro, and geothermal.
- Electricity generation from small modular nuclear power stations.

### The barriers

- Global supply chain delays and high cost of commodities.
- Grid constraints. Increased distributed generation is resulting in congestion and insufficient capacity to facilitate new electricity connections, leading to long wait times and high connection costs (for industrial, commercial, and domestic consumers).
- Limited Government subsidies. The slowing of new solar PV and onshore wind installations has been partly attributed to the loss of the Feed in Tariff and Renewables Obligation Certificates (ROCs).
- Lack of knowledge, time, and expertise to explore and implement energy efficiency opportunities at a domestic and SME level.
- Lack of knowledge, time, and expertise to explore and implement energy efficiency opportunities at an industrial level.

- Planning policy. Current policies are too focussed on a top-down centralised energy system. This is inhibiting the delivery of local renewable electricity generation.

## 15) Electricity: Distribution, Infrastructure and Balancing

### Current status in Derbyshire

- Electricity Distribution Network Operator (DNO) functions are shared between National Grid (majority), Electricity North West and Northern Powergrid.
- DNOs publish network capacity maps showing areas where the grid is constrained to extra demand or supply due to voltage, thermal or fault limitations. Grid constraints are a significant limitation on the development of large-scale renewable energy generation.
- 129 MW of distributed storage has been granted planning permission, with 160 MW in the pipeline. More storage is needed to balance variations in power supply and demand.
- DNOs liaise with local stakeholders to understand local grid capacity and constraints for future energy generation opportunities through annual Distribution Future Energy Scenarios consultations. Derbyshire is included in Western Power Distribution's East Midlands region and data is sought from borough and district planning pipelines to understand key growth points.
- There is potential to liaise with National Grid and other DNOs more formally through a LAEP process via the D2N2 LEP.

### The opportunities

- Energy aggregation offers opportunities for new ways to balance the grid more effectively and avoid additional peak time generation capacity. Constraints can be alleviated, avoiding significant investment, if it is managed efficiently and used smartly.
- Increasing the capacity and flexibility of the electricity grid is an economic opportunity, opening new markets, creating new revenue streams for generators and consumers. A range of products and services including Active Network Management (ANM), Demand Side Response (DSR) and Flexible connections are on offer from the DNOs.
- Energy storage enables intermittent renewable energy generation to be produced, stored, and then used at times of demand.
- For rural areas across Derbyshire, private wires between generators and/or storage providers and consumers can be more efficient than expanding the distribution network.

### The barriers

- The UK energy system's DNOs are approaching the energy transition by looking to both mitigate risks to their business, create new opportunities, and generate new profit. Therefore, there is a question as to whether the cost and timescale for securing a new customer connection to the electricity distribution network is optimal.

- Risk of stranded assets. Traditional upgrades of the distribution network are not efficient, and they may result in stranded assets if the increased capacity is surplus to future demand.
- Policy risk. Future revenues of power storage are linked to policy decisions which drive the need for flexibility in electricity generation and supply.
- Different regulatory frameworks being applied to the energy market limiting opportunities for electricity storage assets to provide multiple services and so reducing the viability of storage deployment.

## 16) Heat: Generation and Efficiency

### Current status in Derbyshire

- Heat demand (principally gas) is 2.1 times higher than electricity demand: 7,805 GWh total: 4,783 GWh domestic and 3,023 GWh non-domestic.
- Domestic consumption averages 14,073 kWh per property, slightly above the national average.
- Non-domestic consumption is nearly 100,000 kWh per property
- The median domestic EPC rating in Derbyshire is 65 (band D), marginally better than the national average. Around 60% of Derbyshire's 350,000 homes are EPC rated D.
- Non-domestic EPCs average C. 59% of public buildings have Display Energy Certificates of D or worse.
- A high proportion of homes in Derbyshire that low energy (heat) efficiency and are hard to retrofit improvement to e.g. with solid walls, or highly variable types (making mass insulation programmes difficult).
- In 2021 nearly 357,000 households were in fuel poverty, although this figure will certainly rise. Rates are particularly high in Bolsover, but low in South Derbyshire.
- Heat demand is predominantly met by in situ gas boilers.
- There are 312 RHI-accredited low carbon heat installations in Derbyshire with 69 kWth capacity and annual generation of 680 GWth.

### The opportunities

- Low carbon heat and renewable energy opportunities within the county's domestic property sector.
- Reduce heat demand, utilise waste heat and transition to low carbon heating.
- The rural nature of Derbyshire is an opportunity for biomass and biogas production.
- Geothermal energy from abandoned coal mines.
- Drive for new build developments provides an opportunity to test and deploy low carbon heating solutions and efficient designs, such as Passivhaus, and district heating.
- Demonstrating the application of air, water and ground source heat pumps in new builds and in retrofits.

- Retrofitting existing domestic and non-domestic building stock is an important measure to reduce heat demand and be better equipped for the adoption of alternative heating technologies, smarter heating controls and energy efficient appliances and technologies.
- As climate change and extreme events become more evident there may be a growing need for cooling in the summer as well as heating in the winter.
- Educate homeowners and renters on how to improve the energy efficiency of their property.
- New supply chain opportunities.
- Development of a Green Skills and Employment Strategy that pinpoints priority areas for upskilling of the domestic construction and retrofit sector and creates investor-ready programmes to receive support from the proposed National Skills Fund.

### **The barriers**

- The identification of buildings and land for the installation of renewable energy generation technologies.
- Suitability and cost of retrofit measures to the existing building stock in Derbyshire given its hard-to-treat nature.
- Gap in heating technology choices for hard-to-treat homes.
- Grid constraints and availability of sufficient power supply e.g. to run heat pumps.
- Awareness and availability of funding and finance for households and businesses to invest in energy efficiency.
- Planning policy currently restricts the ability of developers to use low carbon heating generation.
- Lack of financial incentive for developers to lead the way in low carbon building design.
- Availability of skilled supply chain and the need to upskill and increase expertise and knowledge on newer technologies, particularly heat pumps.

## **17) Heat: Distribution, Infrastructure and Balancing**

### **Current status in Derbyshire**

- Derbyshire in the gas network area covered by Cadent.
- Almost a fifth of homes in Derbyshire are not on the gas grid and are often heated using less efficient oil or LPG. There is work in the county exploring the use of hydrogen in the gas network (for example at HSE Buxton) although the general expert opinion is that the use of hydrogen for domestic heating is highly unlikely to be economically affordable.
- Heat generation is predominantly on-site mains gas boilers connected to the gas network.
- A Heat Network study identified three areas where heat networks could be viable (Clay Cross, Matlock and Chesterfield), although this has not been progressed.
- A community project is exploring a heat network in Brassington.

**The opportunities**

- Adopt a whole-system Local Area Energy Planning approach to increase onsite low-carbon energy generation and reduce the demand for energy.
- The significant number of homes not connected to the grid provides the opportunity for low or zero carbon heating infrastructure as a solution.
- The gas utilities have access to innovation funding which encourages the exploration of using the existing gas network for seasonal storage, to deliver green gases, and/or switch over to a hydrogen network.
- Excess renewable electricity generation, which might ordinarily be curtailed or switched off could be used to produce hydrogen for injection into the gas network.
- Funding exists with the Heat Network Delivery Unit of BEIS for exploration of the opportunity to develop heat networks within new and existing developments, including the use of waste heat sources. Grant funding is also now available through the Heat Network Investment Programme (HNIP) to support investment in heat networks.

**The barriers**

- Uncertainty over the future use of natural gas as a heating fuel.
- Uncertainty over plans by the utilities for any expansion or future use of the gas network.
- Complexities of heat network development, including the risks and uncertainties associated with the economic viability of heat networks and the complex stakeholder engagement required throughout projects.
- High capital costs required to utilise waste heat can negatively impact the economic viability of projects, as do the capital costs of heat networks in rural locations with low density housing.
- The Renewable Heat Incentive (RHI) will continue to be paid for installations completed and commissioned before 31 March 2021. After 31 March 2021 new commercial installations do not receive any form of subsidy, unless covered by "tariff guarantees". Hence, lack of subsidies for the production of green gases for injection into the gas grid for use in heating and transport.
- Unregulated market makes the supply of heat a challenge for many players including housing developers.
- Supply chain and skill set required to develop heat networks is niche.
- A lack of technically viable solutions for seasonal storage of heat.

## 18) Transport: Fuel consumption and efficiency

### Current status in Derbyshire

- There were 5,850 ultra-low emissions vehicles in Derbyshire in 2021 and this is forecast to increase quickly, although there are supply chain issues.
- Charging infrastructure varies from 10.8 devices per 100,000 people (North East Derbyshire) to 56.2 in Chesterfield.
- Energy demand from fossil fuel transport in Derbyshire totals 7,098 GWh, 96% from road and 3% from rail. This includes significant travel through Derbyshire from vehicles not owned in the County, so may not be representative of the total energy demand. Electricity used for transport is included in the demand figures above.
- Increased use of electric vehicles will lead to a significant increase in electricity demand, despite increases in energy efficiency.
- Collaborative working on electric vehicle infrastructure with D2N2.
- Derbyshire's Bus Service Improvement Plan.

### The opportunities

- A substantial increase in the proportion of ultra-low emissions vehicles.
- The development of electric vehicle infrastructure.
- There is an opportunity to therefore grow the "local generation" of low carbon transport fuel, whether this be renewable/ low carbon electricity generation, biogas, biodiesel, and hydrogen.
- Local businesses and households are able to benefit from the multiple tax benefits of transitioning to ULEVs<sup>11</sup>, including: not having to pay for fuel duty; vehicles less than £40K exempt from vehicle and excise duty and VAT payments of 5% on electricity used to recharge plug in vehicles at home.

### The barriers

- Capital cost. There is a large capital cost associated with replacing existing vehicles and fleets.
- Current infrastructure. At present the current approach to installing EV infrastructure lacks coordination and leadership for Derbyshire.
- Local network impacts e.g. electric vehicle charging increases the demand for electricity. This variable load compounds the demands on the grid, increasing the importance of moving to a more flexible grid, able to cope with peaks and troughs in generation and demand.
- Rate of decarbonisation of the electricity grid. Shifting to electric vehicles will only decarbonise transport if the electricity is generated from renewable resources, highlighting the importance of addressing the barriers to the development of local renewable electricity generation.



## 19) Transport: Infrastructure

### Current status in Derbyshire

- Existence of sustainable transport initiatives but poor rural and urban connectivity.
- Rail electrification programme.
- Positive attitude towards electric vehicles and a keenness for charging infrastructure to be deployed.

### The opportunities

- The preparation of a new Local Transport Plan for Derbyshire.
- Addressing Derbyshire's connectivity issues and transport infrastructure energy decarbonisation together.
- Development of a low carbon, sustainable transport system where active travel is prioritised and provides an economic opportunity for Derbyshire.
- Establish public-private investment partnerships to develop a network of mixed speed public charging and hydrogen infrastructure, which is affordable, consistent, accessible and user friendly for residents and visitors.
- An opportunity to tackle the connectivity issues which will make the county a more desirable location for businesses and people to locate to, resulting in further economic benefit.
- There is an opportunity to maximise the proportion of available government funding for EV infrastructure being channelled into Derbyshire.
- The operation and maintenance of local EV infrastructure such as charge points and car parks are an economic opportunity.
- There is an opportunity for smart charging to assist with the balancing of the electricity grid, unlocking investment opportunity in renewables electricity generation.
- Exploration of the gas network for the delivery of alternative fuels for transportation such as biogas and hydrogen could open new local market opportunities.
- Use of smart technologies and alternative fuels to reduce the emissions associated with commercial and freight transports e.g. consolidation hubs, hydrogen sub-stations, transport mobility hubs, mobility as a service etc.

### The barriers

- Coordination - at present, the current approach to EV infrastructure installation in Derbyshire lacks coordination and leadership.
- Securing wholesale public demand for EV through communications, assurance, and education.
- High cost and lack of demand for hydrogen and biogas refuelling infrastructure is high cost and coupled reduces the viability of investment.
- Local Transport Plan for Derbyshire - a commitment has been made to support the electrification of road transport and to support the changes needed in infrastructure to enable electrification. However, there is not an investment strategy for electric vehicle charge points.
- Society's reliance on cars - the rural nature of Derbyshire means that there will naturally be a high reliance on private vehicles. The way forward is to reduce the need to travel, facilitate a modal shift to public transport and support a low carbon transport infrastructure system.

## 20) Digitalisation of the Energy System

### Current energy status

- Lack of common data standards, no openly shared data repository and a culture of data hoarding rather than sharing all impede competition, innovation and ultimately a truly flexible and optimised system.

### Opportunities

- A more productive, efficient, and cost reflective Energy System.
- A fundamental shift from centralised command and control-based structures to more interactive behaviours, networked actions, collaborative solutions and layering of interventions.
- The management of this new system, by multiple actors at different levels, will require the exchange and interoperability of data.
- From a consumer's perspective, the transformation of the Energy System will almost certainly cost less and offer better products.
- Data Visibility: Understanding the data that exists, the data that is missing, which datasets are important, and making it easier to access and understand data.
- Infrastructure and Asset Visibility: Revealing system assets and infrastructure, where they are located and their capabilities, to inform system planning and management.
- Operational Optimisation: Enabling operational data to be layered across the assets to support system optimisation and facilitating multiple actors to participate at all levels across the system.
- Open Markets: Achieving much better price discovery, through unlocking new markets, informed by time, location and service value data.
- Agile Regulation: Enabling regulators to adopt a much more agile and risk reflective approach to regulation of the sector, by giving them access to more and better data.

### The barriers

- The opportunity to deliver decarbonisation at the best cost, promoting the best technologies and interventions, is currently uncertain due to the lack of visibility of the system, the assets and how assets interact with each other.
- The energy sector faces a unique set of challenges that hinder progress towards a more digitalised, data rich system:
  - Fragmentation: It is hard to build a business case for collecting data when costs and benefits are distributed unevenly across many organisations.
  - Power Imbalance: An inequality of influence exists between incumbents and challengers.
  - Regulated monopoly cooperation is often 'make or break' for innovative technologies and business models.
  - Culture: Risk aversion tends to create a preference for command and control rather than collaborative, data driven solutions.
  - Skills: It is hard to get the right combination of data, energy, and engineering talent.

- Lack of a sector wide data strategy: Has resulted in a complex data landscape with many data silos, a plethora of bespoke data agreements and overly complex data processes which underpin the energy sector's functions.

## **21) A Strategic Framework for Council action to deliver net zero energy for Derbyshire**

The results of this Strategic Framework's assessment of where and how the Council should act in delivering net zero energy for Derbyshire identify six Policy Objectives for the Council's prioritisation and, as shown in the information below, the role it should take in progressing these Policy Objectives to delivery.

Furthermore, against each Policy Objective a Priority Workstream for Council action up to April 2025 has been identified. These workstreams have been determined through the Council's appraisal of the key issues identified in this document

Policy objective (A)	Opportunities and Barriers	Intervention / Actions	The Council's role
<p><b><i>Develop a better understanding of energy grid capacity and opportunities in Derbyshire.</i></b></p> <p>Reason for selection:</p> <p>a) A significant net zero challenge at a Derbyshire or East Midlands scale.</p> <p>b) An important whole system and infrastructure implications in Derbyshire for the net zero transition.</p> <p>c) Is subject to challenges which are delaying progress in Derbyshire and where the private sector, acting alone, cannot unlock a solution (a market failure).</p>	<ul style="list-style-type: none"> <li>• <i>Opportunity:</i> Increasing the capacity and flexibility of the electricity grid is an economic opportunity, opening new markets, creating new revenue streams for generators and consumers.</li> <li>• <i>Opportunity:</i> Energy storage enables intermittent renewable energy generation to be produced, stored, and then used at times of demand.</li> <li>• <i>Barrier:</i> The UK energy system's Distribution Network Operators (DNOs) are approaching the energy transition by looking to both mitigate risks to their business, create new opportunities, and generate new profit. Therefore, there is a question as to whether the cost and timescale for securing a new customer connection to the electricity distribution network is optimal.</li> </ul>	<ol style="list-style-type: none"> <li>1. Adopt a whole-system Local Area Energy Planning approach to create a new and effective energy grid.</li> <li>2. Evaluate the readiness of the local distribution network to meet the net zero challenge i.e. what is the current / future consumer demand and what is the current / future capacity of the grid?</li> <li>3. Constraints can be alleviated, avoiding significant investment, if the current grid is designed and managed efficiently and used smartly.</li> <li>4. Build capacity. A range of products and services including Active Network Management (ANM), Demand Side Response (DSR) and Flexible connections are on offer from the DNOs.</li> </ol>	<p>Leadership and Influence Landowner and manager Investment pipeline manager Strategic Planning Authority</p> <p>Leadership and influence Aggregation Strategic Planning Authority</p> <p>Leadership and influence Brokerage</p> <p>Leadership and influence</p>

- *Barrier:* Lack of network capacity to allow new connections for supply or generation. Very high connections costs and lengthy delays make energy projects non-viable from a financial perspective.

- *Barrier:* There needs to be an initial investor to fund the expansion of the grid, subsequent investors in energy generation / supply projects do not have to fund the previously extended grid capacity. Therefore, no one wants to go first.

- *Barrier:* The DNO market is failing to deliver; current capacity < demand.

5. For rural areas across Derbyshire, private wires between generators and / or battery storage providers and consumers can be more efficient than expanding the distribution network. (i.e. bypass the DNO grid.)



Leadership and Influence  
Statutory consultee  
Landowner and manager  
Strategic Planning Authority  
Brokerage

6. Different regulatory frameworks could be applied to the energy market increasing opportunities for a smarter grid including electricity storage.



Leadership and Influence

**Priority Workstream for Policy Objective A:  
Joint working with Derbyshire's Mineral Products Industry**

Derbyshire's Minerals Products Industry brings substantial benefits to both the local and national economy. However, the extraction of minerals, and their processing and transport to market, all generate significant levels of carbon emissions.




The industry would like to invest in becoming a net zero sector in Derbyshire and be able to generate significant levels of renewable energy on-site for use in their processes and operations, and to sell any excess back to the grid. However, such decarbonisation is dependent on improvements to energy infrastructure (e.g., electricity and hydrogen grid networks) as, currently, grid capacity does not allow any significant levels of renewable energy generated to be fed back into the grid. The sector cannot do this alone and needs support from the Council to engage with and lobby the Distribution Network Operators (DNO) and the Government on this key issue.

Therefore, leading figures from the quarrying and mineral products industry met with the Council in October 2022 to discuss opportunities for working together to ensure the industry and the County are net zero by 2050. This meeting, and subsequent discussions held (with the Institute for Quarrying), are helping to identify what the Council can do to support the sector to become more sustainable locally, which will also help to bring about change nationally.

Linked to this, a priority action in the Council's Climate Change Strategy is to liaise with DNOs and D2N2 LEP to understand grid capacity and constraints for generation opportunities across the county.

As such, the Council is currently supporting the sector in the development of a joint working Memorandum of Understanding and planning for a meeting with Derbyshire's main DNO (National Grid) in Q1 2023/24. Furthermore, opportunities for the development of a Local Area Energy Plan (LAEP) for the industry is being explored through engagement during 2023/24 with Energy Systems Catapult and Midlands Net Zero Hub.

Policy objective (B)	Opportunities and Barriers	Intervention / Actions	The Council's role
<p><b>Enabling behaviour change by the county's residents and businesses, so they make positive, well informed and prompt Net zero energy generation and consumption decisions.</b></p>	<ul style="list-style-type: none"> <li><i>Opportunity:</i> Behaviour change across society is critical to securing the economic and social benefits of net zero.</li> <li><i>Opportunity:</i> An example of the Council's Thriving Communities priority.</li> </ul>	<ol style="list-style-type: none"> <li>Preparation of a "behaviour change enabling plan" for Derbyshire with short / medium / long-term perspectives.</li> <li>Providing public information to stimulate interest, debate, and momentum to act.</li> </ol>	<p>Leadership and influence Landowner and manager</p> <p>Knowledge sharing and advice</p>
<p>Reason for selection:</p> <p>d) A significant net zero challenge at a Derbyshire or East Midlands scale.</p>	<ul style="list-style-type: none"> <li><i>Barrier:</i> A significant change in public and business behaviour is required, solutions are needed that enable capability, motivation, and opportunity.</li> </ul>	<ol style="list-style-type: none"> <li>Identifying solutions - provision of impartial information, guidance and signposting to experts / service providers.</li> </ol>	<p>Knowledge sharing and advice Brokerage Aggregation</p>
<p>e) Is subject to challenges which are delaying progress in Derbyshire and where the private sector, acting alone, cannot unlock a solution (a market failure).</p>	<ul style="list-style-type: none"> <li><i>Barrier:</i> Lack of understanding / trusted information making it difficult to plan or make appropriate consumer decisions e.g. time of use electricity pricing.</li> </ul>	<ol style="list-style-type: none"> <li>Development of products, services, and skills to provide net zero energy solutions that are easy to access, reliable, and affordable. (Tailored to Derbyshire's historic building stock.)</li> </ol>	<p>Employment and skills promoter Brokerage Funding agent Investment pipeline manager Knowledge sharing and advice</p>
<p>f) Presents immediate opportunities for Derbyshire in terms of investment or jobs.</p>	<ul style="list-style-type: none"> <li><i>Barrier:</i> Housing types do not lend themselves to cost effective retrofit.</li> </ul>	<ol style="list-style-type: none"> <li>Changing physical and economic environments – re-defining structures in society so net zero behaviours are incentivised and unsustainable activity made more difficult.</li> </ol>	<p>Leadership and influence Landowner and manager</p>
<p>g) Stimulates conditions for Thriving Communities.</p>	<ul style="list-style-type: none"> <li><i>Barrier:</i> Limited Government subsidies and grants, and</li> </ul>		

<p>knowledge and understanding of how to access / not available to most people.</p> <ul style="list-style-type: none"> <li>• <i>Barrier:</i> Community values, beliefs, and aspirations aren't aligned to prioritising net zero action.</li> <li>• <i>Barrier:</i> Limited business capacity (SMEs) to plan and act. There are many competing issues that take a more immediate priority.</li> <li>• <i>Barrier:</i> Uncertainty about risks and the scale of change required and when this needs to happen, leading to lack of action now.</li> <li>• <i>Barrier:</i> A lack of locally relevant and practical information to enable effective decision making.</li> </ul>	<p>6. Co-production of community net zero energy services with the Voluntary, Community, Faith and Social Enterprise Sector.</p> <p>7. Local ownership of the energy transition will be enhanced through the development of community energy groups and local energy communities.</p> <p>8. Review of Derbyshire Planning Authorities planning policy to encourage local renewable electricity generation.</p>	    	<p>Brokerage Aggregation Funding agent Employment and skills</p> <p>Brokerage Aggregation Funding agent Employment and skills</p> <p>Strategic Planning Authority Statutory consultee</p>
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**Priority Workstream for Policy Objective B:****Supporting owner occupier householders to retrofit through advice and stimulating the home energy efficiency design, installation, and maintenance market.**

Derbyshire's district and borough councils have effectively used Government grants to retrofit the homes of fuel poor owner-occupiers and social housing. This has given confidence to a limited number of larger retrofit companies, though there are issues in the supply chain of materials.






However, greater focus is needed to support the many other homeowners, some of whom are 'willing and able' to undertake, and fund retrofit activities. The Council is leading a programme of work with Derbyshire's districts and borough councils, to understand the needs of this 'able and willing to pay' group. Consultation activities, including on-line and face-to-face meetings with community groups; pop-up interviews at markets and similar events and on-line surveys, are currently being carried and will conclude in Q4 2022/23. Preliminary analysis indicates that the major barrier to the 'willing and able' to begin retrofit activity is confidence.

This lack of confidence is about a lack of trust in technologies and the installation market, and a lack of knowledge on how to design retrofit technologies to suit homes not built to modern standards. There is also a lack of awareness and understanding about quality assurance of installed technology. Findings suggest that homeowners would like detailed, local, and specific advice and one-to-one support to begin their retrofit journey.

Using the consultation findings the Council will explore a range of options for providing homeowners with information, advice, and support to undertake energy efficiency measures on their own homes during 2023/24. Once a preferred option is agreed, a detailed Business Case will be developed which will then, subject to formal Council approval, inform a draft programme of activities which will be co-delivered with local communities.

It is also essential to support the development of a strong retrofit market and supply chain in Derbyshire. This is an important part of the Council's economic regeneration priority, and in particular the skills, training and jobs that are necessary to meet this expected householder demand.

Further work is also necessary to ensure homeowners are aware of, and understand, the various quality assurance and accreditation schemes which already exist. Work in this area is being carried out by Midlands Net zero Hub and nationwide companies such as the 'Retrofit Academy', which the Council is engaged with. Initial discussions have also taken place with the Council's Trading Standards team to highlight the latent demand for all energy efficiency trades and to encourage traders to update their Trusted Trader pages accordingly.

Policy objective (C)	Opportunities and Barriers	Intervention / Actions	The Council's role
<p><b>Supporting the progress of sustainable transport solutions for Derbyshire's communities and businesses, including electric and hydrogen solutions.</b></p>	<ul style="list-style-type: none"> <li><i>Opportunity:</i> Electric vehicles and other sustainable transport solution are fast become the norm – regarded by many as being a necessity rather than a choice.</li> </ul>	<ol style="list-style-type: none"> <li>1. A new Local Transport Plan covering Derbyshire.</li> </ol>	 <p>Leadership and influence Funding agent Investment pipeline manager</p>
<p>Reason for selection:</p>	<ul style="list-style-type: none"> <li><i>Opportunity:</i> Everyone in society can access the transport solutions that they want and need in a safe and consistent manner, operating in a carbon neutral or carbon negative way.</li> </ul>	<ol style="list-style-type: none"> <li>2. Development of a low carbon, sustainable transport system where active travel and public transport is prioritised and provides an economic opportunity for Derbyshire.</li> </ol>	 <p>Leadership and influence Statutory consultee Landowner and manager Funding agent Investment pipeline manager</p>
<p>a) A significant net zero challenge at a Derbyshire or East Midlands scale.</p>	<ul style="list-style-type: none"> <li><i>Opportunity:</i> Everyone in society can access the transport solutions that they want and need in a safe and consistent manner, operating in a carbon neutral or carbon negative way.</li> </ul>	<ol style="list-style-type: none"> <li>3. Establish public-private investment partnerships to develop a network of public charging and hydrogen / biofuel infrastructure, which is affordable, consistent, accessible and user friendly for residents, businesses, and visitors.</li> </ol>	 <p>Leadership and influence Aggregation Brokerage Investment pipeline manager Employment and skills promoter</p>
<p>b) Has important whole system and infrastructure implications in Derbyshire for the net zero transition.</p>	<ul style="list-style-type: none"> <li><i>Opportunity:</i> The operation and maintenance of local EV infrastructure is an economic opportunity.</li> </ul>	<ol style="list-style-type: none"> <li>4. Securing wholesale public demand for EV through communications, assurance, and education.</li> </ol>	 <p>Knowledge sharing and advice Landowner and manager Aggregation</p>
<p>c) Presents immediate opportunities for Derbyshire in terms of investment or jobs.</p>	<ul style="list-style-type: none"> <li><i>Barrier:</i> The current approach to EV infrastructure in Derbyshire requires coordination and leadership.</li> </ul>	<ol style="list-style-type: none"> <li>5. Maximise the proportion of available government funding for sustainable transport</li> </ol>	 <p>Leadership and influence Landowner and manager Investment pipeline manager</p>
<p>d) Is subject to challenges which are delaying progress in Derbyshire and where the private sector, acting alone, cannot unlock a solution (a market failure).</p>	<ul style="list-style-type: none"> <li><i>Barrier:</i> Sufficient publicly available EV charging points to ensure that vehicles can be</li> </ul>		

<p>recharged easily and conveniently.</p>			
<ul style="list-style-type: none"> <li>• <i>Barrier:</i> As well as EV charging points, biofuel and hydrogen-powered vehicles also need a high density of refuelling stations.</li> </ul>		<p>6. Use of smart technologies and alternative fuels to reduce the emissions associated with commercial and freight transports.</p>	<p>Leadership and influence Brokerage Aggregation</p>
<ul style="list-style-type: none"> <li>• <i>Barrier:</i> Relatively high price for EVs compared to petrol and diesel cars.</li> </ul>		<p>7. EV and other sustainable transport planned preventative maintenance services.</p>	<p>Employment and skills promoter</p>
<ul style="list-style-type: none"> <li>• <i>Barrier:</i> Lack of knowledge as to the tax benefits of businesses and residents moving to EVs</li> </ul>			
<ul style="list-style-type: none"> <li>• <i>Barrier:</i> Poor rural and urban public transport connectivity which prevents access to jobs, public services, and social activities.</li> </ul>			
<ul style="list-style-type: none"> <li>• <i>Barrier:</i> COVID-19 concerns deter people from using public transport.</li> </ul>			

**Priority Workstream for Policy Objective C:  
Enabling the installation of electric vehicle (EV) charging points for public use**





The Council has a target of delivering 1,000 EV charging points for public use by the end of 2025 in collaboration with partners. Its longer-term target is to support the installation of electric vehicle chargers at 144,000 properties across Derbyshire by 2035.

A study has been recently completed that identifies potential demand for EV charge points across the county and assesses the preferred locations, and types of charge points needed, to meet this demand. The study's findings are being progressed through three workstreams:

- Workstream 1 – Public Access 'destination' charging.
- Workstream 2 – Residential 'on-street' provision.
- Workstream 3 – Council estate charging provision.

The next stage is to complete soft market testing with Charging Point Operators (CPOs) to consider their interest in delivering each workstream. This will be used to inform a formal procurement exercise to appoint a CPO (or multiple CPOs) to work towards the delivery of the targets referenced above.

Supplementary project aims include identifying practical charging solutions for those householders without off-street parking. This is needed to remove a key barrier to EV uptake amongst many residents and encouraging the greater use of EVs amongst Council staff (to contribute towards the Council's net zero target by 2032, or sooner).

Policy objective (D)	Opportunities and Barriers	Intervention / Actions	The Council's role
<p><b><i>Appropriately using the Council's property portfolio and assets to generate and store energy.</i></b></p>	<ul style="list-style-type: none"> <li><i>Opportunity:</i> Actively supporting Derbyshire's transition to a more resilient, cost competitive and net zero energy system.</li> </ul>	<ol style="list-style-type: none"> <li>An energy generation and storage asset plan for the Council's property portfolio, targeted to address grid capacity constraints.</li> </ol>	 Leadership and influence Landowner and manager
<p>Reason for selection:</p> <p>a) Has important whole system and infrastructure implications in Derbyshire for the net zero transition.</p>	<ul style="list-style-type: none"> <li><i>Opportunity:</i> Delivery of energy projects which enable economic development and contributed to the needs of the county's communities.</li> </ul>	<ol style="list-style-type: none"> <li>Use the Council's procurement of energy to drive the development of nuclear / renewable energy generation in Derbyshire.</li> </ol>	 Aggregation Brokerage Investment pipeline manager
<p>b) Offers the Council the opportunity to generate new income.</p>	<ul style="list-style-type: none"> <li><i>Opportunity:</i> Leading by example to demonstrate the Council's credentials against its commitment to drive Derbyshire to net zero by 2050.</li> </ul>	<ol style="list-style-type: none"> <li>Energy projects will seek to identify the most viable technologies for the property portfolio and suitable funding to enable delivery.</li> </ol>	 Landowner and manager
<p>c) Thriving Communities.</p>	<ul style="list-style-type: none"> <li><i>Opportunity:</i> Promoting the development of the Council's preference for the following technologies on its property portfolio:             <ul style="list-style-type: none"> <li>Nuclear energy generation</li> <li>Renewable energy generation (solar PV on roofs not landscapes +</li> </ul> </li> </ul>	<ol style="list-style-type: none"> <li>Collaborative projects with partners that provide businesses and residents with affordable options to procure technologies, such as rooftop solar panels and battery storage options.</li> </ol>	 Landowner and manager Knowledge sharing and advice Aggregation Funding agent Investment pipeline manager

onshore wind + agricultural biogas).

- *Opportunity:* Explaining the Council’s preference against Fracking on its property portfolio.
- *Opportunity:* Generation of new income to support Council public services.
- *Barrier:* Current transition in the Government’s energy policy causing uncertainty.
- *Barrier:* Lack of capacity and specialist technical expertise to explore and implement energy generation opportunities.
- *Barrier:* Funding for business case development.
- *Barrier:* High capital costs in projects and long-return on investment.

5. Energy assets (e.g. battery storage and smart devices) located within the property portfolio, and those of partners, will be supported to provide flexibility to local distribution networks.



Aggregator  
Brokerage  
Landowner and manager

6. Financial support from energy projects will support organisations working to alleviate the incidence of fuel poverty in Derbyshire.



Landowner and manager

7. Identify opportunities to generate sustainable income for the Council through savings on corporate utilities costs, sale of energy, provision of energy and flexibility services and identification of avoided future costs.



Leadership and influence  
Landowner and manager  
Funding agent

**Priority Workstream for Policy Objective D:  
Renewable energy generation on the Council's estate e.g. solar, energy from waste, and water resources.**

The draft Carbon Reduction Strategy for Corporate Property identifies the microgeneration of renewable energy on the Council's estate as a priority measure to reduce Council emissions, primarily from solar PV. The strategy also identifies the need for major projects to generate energy from renewable sources as an appropriate measure to offset the residual carbon from its energy use after other measures have been implemented. The Council can claim a carbon offset for any renewable energy produced on its buildings or land if it owns or controls the development. This includes if the energy produced is used directly by the Council or is supplied to the national grid or another user.

Offsetting does not imply that additional measures to reduce energy use are not also given appropriate priority. Reducing energy use will remain the top priority for the Council's Corporate Property Services.



Furthermore, the Council's Climate Change Strategy has a target of quadrupling existing microgeneration of renewable energy on the Council's estate to 200 MWh by 2032. Corporate Property have increased the target to 1,000 MWh of solar energy (from roof mounted PVs) and the proposed capital programme for 2023 includes projects to deliver over 400 MWh. This energy generation will reduce the Council's demand on grid electricity and lead to a subsequent reduction in carbon emissions.

Following a series of feasibility studies on solar park potential on Council-owned land by the Association of Public Service Excellence (APSE) Energy in Q3 2022/23, there is now a proposal to deliver the Council's first major solar park project at Williamthorpe to generate energy for export to the grid. If approved this will generate over 3,000 MWh of energy per annum and evidence Derbyshire's commitment to lead, and contribute towards, the greening of the national electricity grid, whilst offsetting carbon emissions and generating a financial return.

The study undertaken by APSE Energy also includes a review of other potential Council-owned sites with three more sites identified for similar future development subject to the availability of grid connection.

Policy objective (E)	Opportunities and Barriers	Intervention / Actions	The Council's role
<p><b><i>Collaborating with Derbyshire's industrial and agricultural sectors to support their transition to net zero and in so doing enhancing Derbyshire's economic prosperity.</i></b></p>	<ul style="list-style-type: none"> <li><i>Opportunity:</i> The nationally significant Minerals Product Industry in Derbyshire is being proactive in its delivery of solutions for achieving net zero energy consumption.</li> </ul>	<ol style="list-style-type: none"> <li>Mineral products industry                             <ul style="list-style-type: none"> <li>Alternative fuels</li> <li>Network capacity and constraints issues</li> <li>Carbon capture, storage, and utilisation</li> <li>Distribution logistics</li> <li>Education and skills</li> <li>Innovation and significant investment of global scalability and interest</li> </ul> </li> </ol>	<p>Leadership and influence Statutory consultee Employment and skills promoter Strategic Planning Authority Aggregation Brokerage</p>
<p>Reason for selection:</p> <p>a) A significant net zero challenge at a Derbyshire or East Midlands scale.</p> <p>b) Has important whole system and infrastructure implications in Derbyshire for the net zero transition.</p> <p>c) Presents immediate opportunities for Derbyshire in terms of investment or jobs.</p> <p>d) Is subject to challenges which are delaying progress in Derbyshire and where the private sector, acting alone,</p>	<ul style="list-style-type: none"> <li><i>Opportunity:</i> Agriculture is uniquely placed to be part of the solution to climate change, as it is both an emissions source and a sink. (Also an important contributor to Local Nature Recovery.)</li> <li><i>Opportunity:</i> The National Farmers Union's (NFU) policy statement to make farms net zero by 2040.</li> <li><i>Opportunity:</i> A willingness from the Minerals Product Industry and the NFU to work with the Council on net zero projects.</li> <li><i>Barrier:</i> Negative perceptions of the minerals and agricultural</li> </ul>	<ol style="list-style-type: none"> <li>Agriculture and farming                             <ul style="list-style-type: none"> <li>Renewable energy generation (solar and wind power)</li> <li>Energy products – biogas fuel</li> <li>Carbon capture and storage</li> <li>Smart farming techniques – boosting productivity and reducing carbon emissions</li> <li>Soil health</li> <li>Local production of food</li> <li>Electric farm vehicles</li> </ul> </li> </ol>	<p>Leadership and influence Statutory consultee Employment and skills promoter Aggregation Knowledge sharing and advice</p>



cannot unlock a solution (a market failure).	sector climate change / net zero credentials and aspirations.	3. Partnership working – with government, with industry, with academics.		Leadership and influence Knowledge sharing and advice Brokerage
	<ul style="list-style-type: none"> <li>• <i>Barrier:</i> Lack of information / understanding of the economic, social, and environmental benefits these sectors provide to Derbyshire and the UK.</li> </ul>	4. Promotion and assurance to the public and the government.		Leadership and influence Knowledge sharing and advice

**Priority Workstream for Policy Objective E:****Re-establishing the Council's formal engagement with Derbyshire's rural and farming networks to identify options for joint working on net zero**

The agricultural sector is uniquely placed to be part of the solution to the UK's commitment to achieving net zero emissions by 2050. The sector can help achieve this through the generation of renewable energy, and the implementation of low carbon technologies and best practice in both carbon reduction and environmental land management.

The Council has engaged with and supported the agricultural sector on the climate change and sustainability agenda through forums such as the (no longer active) Derbyshire Economic Partnership Rural and Farming Network, and through informal networks such as Derby Climate Coalition. However, there is a renewed need for more formal engagement and the exploration of collaborative working opportunities to support the sector to become net zero whilst also facilitating economic benefits and long-term sustainability.

Linked to this, the Vision Derbyshire Climate Action Plan includes a priority to "promote the adoption of sustainable farming practices which increase carbon sequestration by plants and soil and lead to fewer negative environmental impacts".

Therefore, this is a new formal workstream for the Council and proposed next steps are to:

- Engage with Midlands Net Zero Hub, who are leading [research](#) into innovative ways to help farmers and horticulturalists reach net zero.
- Engage with the National Farmers Union (NFU), potentially through the East Midlands Group, to understand opportunities for joint working and areas of innovation and change within the sector locally and nationally.
- Review the findings and recommendations in the Derbyshire Natural Capital Strategy (February 2023) that establishes the contribution of agriculture to the landscape character and ecosystem services of the county.
- Use the Council's leadership in Local Nature Recovery and Biodiversity Net Gain, in implementing the Environment Act 2021, to establish areas of focus and the Council's role and areas of influence.

Policy objective (F)	Opportunities and Barriers	Intervention / Actions	The Council's role
<p><b><i>Facilitating a modern and smarter digitalised energy system, that brings confidence from consumers, suppliers, and regulators in Derbyshire's Net zero energy transition credentials and financial transactions.</i></b></p>	<ul style="list-style-type: none"> <li><i>Opportunity:</i> The transformation of the Energy System will almost certainly cost less and offer better products if society embraces data driven technologies that enable a cost competitive market, drive efficiency, and create productivity gains.</li> </ul>	<ol style="list-style-type: none"> <li>1. A Modern Digitalised Energy System for Derbyshire.</li> </ol>	<p>Leadership and influence</p>
<p>Reason for selection:</p>	<ul style="list-style-type: none"> <li><i>Opportunity:</i> A fundamental shift from centralised command and control-based structures to more interactive behaviours, networked actions, collaborative solutions and layering of interventions.</li> </ul>	<ol style="list-style-type: none"> <li>2. Digitalisation of the Energy System in the consumers' interest through legislation and regulation.</li> </ol>	<p>Leadership and influence</p>
<p>a) A significant net zero challenge at a Derbyshire or East Midlands scale.</p>	<ul style="list-style-type: none"> <li><i>Opportunity:</i> Quicker, more efficient, and less expensive transition to net zero.</li> </ul>	<ol style="list-style-type: none"> <li>3. Data from the energy generation and supply sector should be available, standardised, and understandable.</li> </ol>	<p>Knowledge sharing and advice Employment and skills promoter</p>
<p>b) Has important whole system and infrastructure implications in Derbyshire for the net zero transition.</p>	<ul style="list-style-type: none"> <li><i>Opportunity:</i> All infrastructure and assets are described by data, where monitoring and analytics work together to provide a detailed view of system state over time and</li> </ul>	<ol style="list-style-type: none"> <li>4. Registration and increasing the 'visibility' of energy infrastructure to enable optimal new investment and inform the creation of new markets / providers.</li> </ol>	<p>Leadership and influence Knowledge sharing and advice</p>
<p>c) Presents immediate opportunities for Derbyshire in terms of investment or jobs.</p>			
<p>d) Is subject to challenges which are delaying progress in Derbyshire and where the private sector, acting alone,</p>			

cannot unlock a solution (a market failure).	where data is used to optimise operation and drive markets.
e) Stimulates conditions for Thriving Communities.	<ul style="list-style-type: none"> <li>• <i>Barrier:</i> The opportunity to deliver decarbonisation at the best cost, promoting the best technologies and interventions, is currently uncertain due to the lack of visibility of the system, the assets and how assets interact with each other.</li> <li>• <i>Barrier:</i> Lack of common data standards, no openly shared data repository and a culture of data hoarding rather than sharing all impede competition, innovation and ultimately a truly flexible and optimised system.</li> <li>• <i>Barrier:</i> Fragmentation - it is hard to build a business case for collecting data when costs and benefits are distributed unevenly across many organisations.</li> <li>• <i>Barrier:</i> Power Imbalance - an inequality of influence exists between incumbents and challengers. Regulated</li> </ul>

monopoly cooperation is often 'make or break' for innovative technologies and business models.

- *Barrier:* Culture - risk aversion tends to create a preference for command and control rather than collaborative, data driven solutions.
- *Barrier:* Skills - it is hard to get the right combination of data, energy, and engineering talent.

**Priority Workstream for Policy Objective E:**

**Working with expert advisors (e.g. Midlands Net Zero Hub) to identify and promote smart energy developments within Derbyshire**

Smart energy systems (sometimes referred to as Smart Local Energy Systems) are ones that use real time data to make decisions that balance energy supply and demand to reduce the carbon intensity of the energy. This is founded on an effective digitalised communication system.

The scale of project can vary significantly but all require sources of energy (electricity and heat), demand for this energy within a reasonable proximity, connections between supply and demand (which may be physical or virtual) and decision-making algorithms. Energy storage is often included, to reduce the impact of peak supply or demand and to decouple the need for energy to be consumed while it is generated.

The Council will keep a watching brief (in conjunction with subject experts such as the Midlands Net zero Hub and Energy Research Accelerator) to identify and promote smart energy developments within Derbyshire. Local demonstrators of this approach will encourage uptake and further development.

Furthermore, this workstream will inform, and be shaped by, the Council's Digital Strategy which is currently in development.

## Appendix A: Policy Objectives and existing contributing activities

Policy Objective	Contributing Projects, Strategies, and Initiatives – see key below
<b>Policy Objective A:</b> Making better use of existing, and creating new and smarter, energy grid capacity in Derbyshire	1, 2, 4, 8, 9, 10, 13, 14, 15, 20, 21, 23, 26, 27, 28, 31
<b>Policy Objective B:</b> Enabling behaviour change by the county's residents and businesses, so they make positive and prompt net zero energy generation and consumption decisions.	1, 2, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 26, 28,31
<b>Policy Objective C:</b> Supporting the progress of sustainable transport solutions for Derbyshire's communities and businesses.	1, 2, 6, 7, 8, 9, 10, 13, 14, 15, 16, 20, 21, 23, 24, 26, 28, 29, 30,31
<b>Policy Objective D:</b> Appropriately using the Council's property portfolio to generate and store energy.	1, 2, 3, 4, 8, 13, 14, 20, 28, 31
<b>Policy Objective E:</b> Collaborating with Derbyshire's industrial and agricultural sectors to support their transition to net zero and in so doing enhancing Derbyshire's economic prosperity.	1, 2, 5, 6, 7, 8, 11, 12, 13, 14, 20, 21, 24, 25, 26, 27, 29, 31
<b>Policy Objective F:</b> Facilitating a modern digitalised energy system, that brings confidence from consumers, suppliers, and regulators in Derbyshire's net zero energy transition credentials.	8, 13, 14, 15, 20, 21, 23, 24, 26, 27, 28, 31

## Existing Projects, Strategies and Initiatives - Key

### 1. **Derbyshire County Council Climate Change Strategy (2021-2025):**

There are targets and actions within the strategy related to sustainable transport, behaviour change, decarbonising buildings, decarbonising industry and businesses, as well as low carbon skills, training and employment.

### 2. **Vision Derbyshire Climate Change Strategy (2022-2025):**

The strategy includes a vision that there will be an acceleration in the transition to a zero carbon economy through low carbon recovery and good growth, the creation of more and better jobs in the low carbon and clean technology sectors, increased skill levels and the fostering of innovation within the county, and a reduction in energy consumption from all industrial and commercial sectors.

### 3. **Carbon Reduction Strategy (Corporate Property):**

Work is underway to develop a strategy for decarbonising the Council's Corporate Estate. Four planned approaches are: property rationalisation; energy management; building mounted photovoltaic electricity generation; and retrofitting to reduce energy consumption. An external specialist consultant is to be appointed to support this work.

### 4. **Solar Farm Feasibility:**

Corporate Property commissioned APSE Energy to undertake feasibility assessments of a number of Council-owned sites for ground-mounted solar farm development.

### 5. **Derbyshire Natural Capital Strategy:**

The study considers all the natural capital assets that are key to the county's future prosperity, health, and wellbeing. The strategy identifies the priority areas for the protection, restoration, and enhancement of natural capital assets and takes climate change implications into account to maximise the economic, social, and environmental benefits that result.

### 6. **Derbyshire and Derby Mineral Local Plan:**

The draft Plan sets out a Strategic Policy that proposals for mineral development and mineral related development will be supported where, taking into account the lifetime of the development (including restoration and aftercare), they incorporate measures to minimise and offset greenhouse gas emissions (mitigation) and effectively assist in the reduction of vulnerability from and increase resilience to, the future impacts of climate change (adaptation).

### 7. **Decarbonising the Minerals Industry:** The Council is collaborating with the Derbyshire Minerals Industry to explore how the industry can be decarbonised whilst maximising the industry's economic / social benefit to Derbyshire and the UK.



**8. Local Authority Energy Plan (LAEP):**

The development of a LAEP for the D2N2 region is being explored as part of the planning for the Combined Authority. This would provide a whole-system approach to create a new and effective energy grid. A socio-economic study has now been completed, which provides baseline information for a full LAEP. The estimated cost of this work is £1.2m.

**9. Electric Vehicle (EV) Charging Infrastructure:**

The Council commissioned an external consultant to undertake a study into potential demand across the county and to assess the preferred locations and types of charge points needed to meet this demand. The study was completed in June 2022 and involved working closely with the district and borough councils, with a series of workshops undertaken. A soft market testing exercise is now underway.

**10. EV and charging infrastructure sharing:**

The Council is currently working with a consortium, led by CENEX but also including Karshare and Co-Charger, looking at shared EV and EV Chargepoint ownership in a rural setting, concentrating on Buxton and Hope communities.

**11. Green Entrepreneurs Fund:**

A £2m grant fund for businesses, communities and individuals interested in developing skills in the green economy and investing in green energy and carbon reduction schemes.

**12. DE-Carbonise:**

The DE-Carbonise programme provides grants to support business in de-carbonising their buildings and processes. Potential extension to this programme is being explored through Shared Prosperity Funding – subject to on-going proposals.

**13. Climate Change Planning Guidance and Metric:**

Led by the Council, planning guidance has been developed to provide the background information necessary to develop and implement local plan policies to address the causes of climate change. To support the planning guidance a climate change metric has been produced which quantifies the degree to which a proposed development contributes to climate change mitigation.

**14. Derbyshire Renewable Energy Spatial Study:**

External specialist consultants have been commissioned to deliver a spatial renewable energy study to support the delivery of the Council's net zero ambitions and direct the development of informed and comprehensive local plan policy.

15. **Local Transport Plan:** The new LTP for Derbyshire will promote the development of a low carbon, sustainable transport system where active travel and public transport is prioritised and provides an economic opportunity for Derbyshire.
16. **Mobility Hubs:**  
Activity includes a feasibility study for two transport hubs in the county, exploring opportunities around Mobility as a Service, and opportunities for developing a portal for all transport information in the county.
17. **Local Authority Energy Partnership:**  
The Council continues to work with the district and borough councils through the partnership to identify and develop projects to tackle fuel poverty across the county.
18. **Climate Change Communications Service:**  
The Council pays an annual membership fee to the LAEP's Communications Service which helps to keep the Everybody's Talking About Climate Change website up-to-date, provides one Carbon Literacy/Climate Fresk training session per year, and gives provides access to the Fantastic Home van for use at events.
19. **Local Climate Engagement Programme:**  
The Council, along with the district and borough councils, are engaging with residents in Derbyshire to co-produce a 'decarbonising housing' plan which will then be co-delivered.
20. **D2N2 Energy Strategy (2019-2030):** The strategy sets out a suite of linked targets and actions that align with the national Clean Growth objectives, local aspirations, and stakeholder feedback.
21. **Establishing a Regional Hydrogen Roadmap in Derby and the Wider Region:**  
Commissioned by Derby City Council, the report sets out a 5-year road map to support the development of a regional hydrogen economy and consider the potential further impact a hydrogen economy could have over the next 15-20 years.
22. **Staveley Town Deal:**  
A Construction Skills Hub is planned as part of the Town Deal. This will act as a catalyst for construction related training and employment in the area.

**23. Clay Cross Town Deal:**

North East Derbyshire District Council are commencing work on a the development and delivery of a Low Carbon Energy Network Strategy within the Town Investment Plan for Clay Cross.

**24. East Midlands Freeport:**

A Hydrogen Skills Academy is proposed at the East Midlands Freeport, which will help consolidate approach to building specific skills in hydrogen technologies over the medium term (2+ years).

**25. Low Carbon Farming:**

Midlands Net zero Hub is leading research into innovative ways to help farmers and horticulturalists reach net zero.

**26. Rural Community Energy Fund (RCEF):**

A £2million RCEF for the Midlands Region is administered by Midlands Net zero Hub. Derbyshire has had great success, with eight community groups successful at Stage 1 (feasibility) and four applications continuing onto Stage 2 (business development and planning) funding. Funded projects to-date are:

- a. Cromford Mill - to reinstate hydropower at the mill.
- b. Belper Cluster - development phase project to bring a community electric vehicle-charging scheme to investment readiness.
- c. Matlock Town Council - roof mounted solar PV on buildings within the town.
- d. Birchvale CIC - to develop an efficient new local energy system that will harness the potential of local resources to help meet local energy demand profiles, providing clean and affordable heat and power.
- e. Tideswell Parish Council - solar energy generation to provide village car charging facilities.
- f. Brassington Community Heating - whole village sharing heat network.
- g. Hope Valley Renewables Community Benefit Society - solar generation on local authority land.

**27. Mine energy:**

The Midlands and North East, Yorkshire, and Humber Hubs, BEIS, and the MCS Charitable Foundation funded a white paper to understand the potential of energy from mine water.

**28. Electrification of depots:**

Midlands Net Zero Hub have developed guidance on future-proofing depots by making them electric fleet ready, and will soon be supporting a number of councils on this agenda.

**29. Low Carbon Goods and Services:**

Midlands Net zero Hub funded the development of an evidence base of the Low Carbon Environmental Goods and Services (LCEGS) Sector in the region.

**30. Midlands Connect:**

Midlands Connect are developing a Quantified Carbon Reduction Requirements tool for use on infrastructure projects. The use of this tool is expected to from a requirement set out within the (in-development) Local Transport Plan.

**31. Midlands Engine:**

The Ten Point Plan for Green Growth sets out how the region can and will deliver levelling up and economic prosperity. Focus on green buildings, net zero transport, clean and smart energy, and crucial enablers including green innovation, the energy workforce and green finance.

## Appendix B: Current good practice net zero energy local authority projects

Organisation	Founded, etc	Services provided	Notes
<p>Aberdeen Heat and Power Ltd</p> <p><a href="http://www.aberdeenheatandpower.co.uk">www.aberdeenheatandpower.co.uk</a></p>	<p>Established by Aberdeen City Council, 2002.</p> <p>Independent not-for-profit company.</p>	<p>Providing affordable heat / hot water via heat networks to:</p> <ul style="list-style-type: none"> <li>• Residential flats / houses</li> <li>• Schools / higher education (including student accommodation)</li> <li>• Health &amp; sports centres</li> <li>• Offices</li> </ul>	<p>Mainly gas generation including CHP, but some heat recovery from Ice Arena. Large hot water balancing tanks.</p> <p>Several separate heat networks.</p> <p>District Energy Aberdeen Ltd is a for-profit, wholly-owned subsidiary for non-residential transactions.</p>
<p>Southampton City Council working with ENGIE – Southampton Geothermal Heat Company</p> <p><a href="http://Heat%20networks%20(southampton.gov.uk)">Heat networks (southampton.gov.uk)</a></p>	<p>Established by City Council in 1986 and now run in partnership with Equans</p>	<p>Heat, chilled water and electricity to commercial and residential customers within 2km of city centre.</p>	<p>Core heat provided by geothermal plant but now includes at least 5 energy centres including CHP and cooling plant.</p>
<p>Thameswey Energy (Woking and Milton Keynes)</p> <p><a href="http://Energy%20-%20ThamesWey%20(thamesweygroup.co.uk)">Energy - ThamesWey (thamesweygroup.co.uk)</a></p>	<p>Public-private joint venture set up by Woking Borough Council in 1999</p>	<p>District heating, private wire electricity supply, solar PV, housing and commercial development. 100 public/private customers and 1,200 domestic.</p>	<p>Own and operate heat networks, CHP and solar installations. Now also provide commercial services based on extensive experience.</p>
<p>Energy Service Bristol</p> <p><a href="http://www.energyservicebristol.co.uk">www.energyservicebristol.co.uk</a></p>	<p>An umbrella for Bristol City Council's energy initiatives.</p>	<p>Solar PV investment programme (installation, operation and maintenance), large-scale wind turbine ownership, home retrofit programme, homeowner energy</p>	<p>Separate from the failed Bristol Energy, also owned by the City Council.</p>

Organisation	Founded, etc	Services provided	Notes
	Internal team generating income from its activities.  Heat networks and City Leap now run under partnership with Ameresco and Vattenfall.	loans, new and expanding heat network, City Leap initiative to deliver more investment.	Supported Community Energy through Bristol Energy Fund. (Bristol Energy Cooperative now run a similar programme.)
Enviroenergy – Nottingham <u>Enviroenergy</u>	Wholly owned subsidiary company since 1995, although the scheme has operated since the 1960s.	Heat and hot water via heat networks to 100 commercial and 5,000 domestic properties. Private wire electricity from CHP.	
Midlothian Council and Vattenfall set up <u>green energy services company</u>	Setting up ESCo with Vattenfall Heat UK. 50/50 venture	Provision of heat network to Shawfair new town using heat from energy from waste site.	Other projects / initiatives are in the pipeline.

Several cities have heat networks run in collaboration with EQUANS (previously Engie):

<u>Birmingham District Energy Company</u>	Birmingham City Council and Equans (formerly Engie), since 2006
<u>Leicester District Energy Company</u>	25-year contract to link and extend four existing district heat networks – from 2011
<u>Newcastle Helix</u>	40-year joint venture contract with Newcastle City Council signed in 2018
<u>Southampton District Energy Scheme</u>	See main table above
<u>Battersea Power Station</u>	25-year agreement to serve new neighbourhood.

<u>Coventry District Energy</u>	25-year agreement with Coventry City Council starting in 2013
<u>Queen Elizabeth Olympic Park / Stratford City District Energy Scheme</u>	40-year concession for Olympic Delivery Authority and Stratford City Developments Ltd.

#### Insights

- Schemes are built on provision of heat / hot water, so not dependent on energy supply regulation and competition with energy utility companies.
- Electricity is often provided, but mainly as a co-product, not as the project driver.
- Mix of commercial / public sector 'anchor' loads and domestic supply.
- Commercial partnerships are significant – with private sector responsible for capital and risk and Councils committing to long-term