



Midlands' Energy Strategies High Level Summary

Midlands Energy Hub



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Introduction

There are nine LEPS in the Midlands region, with six single-LEP energy strategies and one Tri-LEP energy strategy. These energy strategies for the Midlands are ambitious; their aim is to lay out how the decarbonisation of their respective LEP areas can be achieved while meeting future demand. If the ambitions of the LEPS, as laid out in their energy strategies, are met the regional economy could grow four times faster than the average growth for the UK's overall economy.

While the Midlands Energy Strategies vary in approach there are common themes throughout, including:

- Innovation
- Secure, affordable, low carbon & renewable energy
- Decarbonisation of heat
- Energy Storage
- Energy efficiency & renewable energy generation in existing & new build commercial and domestic properties
- Commercial and residential development in grid constrained areas
- Sustainable transport systems
- Smart energy systems
- A lean, resilient clean growth economy
 - Local economic growth and employment
- Fuel Poverty reduction
- Increasing grid capacity
- Developing the low carbon supply chain

Some of the Energy Strategies identify some very specific projects, while others have taken a broader approach outlining potential areas of work to enable greater flexibility in approach, which is often required around developing energy projects and the associated evolving technologies that are to be implemented.



LEP Energy Strategy Visions & Aims / Targets / Goals

Greater Lincolnshire

GLLEP Energy Strategy has an overarching vision, along with four key aims. The vision is:

“To support the creation of a sustainable system of energy, which meets Greater Lincolnshire’s ambitions for growth, and business sector development”

The vision is then broken down into four key ambitions. These are:

1. Secure, low cost, low carbon energy across Greater Lincolnshire
2. Commercial and residential development in capacity constrained areas
3. A sustainable transport system
4. A strengthened local energy industry within Greater Lincolnshire

These four ambitions create the outline of the Energy Strategy and it is what Greater Lincolnshire will be working towards

Stoke-on-Trent & Staffordshire

Stoke-on-Trent and Staffordshire have a vision for 2030 which is:

“Stoke-on-Trent and Staffordshire is a leader in smart energy and the development of smart cities. The county is a leader in community energy generation and has a secure, distributed energy generation and supply system based on low carbon and renewable participation backed by strong digital infrastructure, delivering reliable and low-cost energy to businesses and communities”

A number of goals have been developed in order to achieve the vision as outlined;

- **Smart:** Integrate the UK’s first fully integrated smart city network, building on expertise from SEND
- **Heat:** Build on the success of the Stoke-on-Trent city centre heat network and further district heat in Staffordshire
- **≤10%:** Fuel poverty reduced below 10% by 2030
- **Generate:** Increase low carbon and renewable energy generation proportion of Staffordshire energy consumption
- **57%:** Carbon emissions reduced in line with UK targets, a 57% reduction on 1990 levels



Worcestershire

Worcestershire have a vision for 2030 which is:

“By 2030, Worcestershire will have a thriving low carbon economy which supports the creation of high value jobs, and stimulates investment and clean growth across the county.

We will have high quality energy efficient housing stock and a robust, diverse energy infrastructure, underpinned by low carbon generation which utilises Worcestershire’s unique local resources.”

There are three key measures that Worcestershire will aim to deliver as part of this strategy:

- Reduction in carbon emissions of 50% on 2005 levels by 2030.
- Double the size of the low carbon sector by 2030
- Tripling energy production from renewable generation by 2030

The strategy is broken down into four priority theme areas that have been developed from the evidence base and in consultation with local stakeholders:

- **Access to affordable, clean energy**
 - The ability of Worcestershire to offer low cost, low carbon energy
 - To reduce instances of fuel poverty and reduce the overhead cost on small businesses that energy provision entails
- **Clean economic growth**
 - The ability of Worcestershire to achieve its ambitious growth targets whilst reducing carbon emissions
 - To promote and encourage the flourishing low carbon supply chain to expand further
- **Overcoming infrastructure and development barriers**
 - To remove barriers to development by encouraging alternative means to achieve secure energy supply through smart systems
- **Promoting low carbon transport and active travel**
 - To recognise that low carbon transport, particularly the rising use of electric vehicles, is an opportunity for rapid decarbonisation driven by both legislation and consumer trends
 - To facilitate integrated approaches to transport to increase rates of active travel including walking and cycling



Leicester and Leicestershire

Rather than carrying out an exercise to determine the vision and targets for such an energy strategy, the LLEP (steered by its strategic partners in Leicester City Council, Leicestershire County Council and De Montfort University) worked with consultants to determine a number of 'low regret' projects which would need to be brought forward over the coming years in order to deliver on the various local Climate Change commitments.

The two main commitments referenced being an 80% CO2 reduction by 2050 compared to 1990 levels, and 100% clean energy by 2050 committed by both Leicester City and Leicestershire County Councils.

Projects and associated actions

The Projects in the Energy Infrastructure Strategy are segmented into three targeted themes:

- Improving the energy efficiency of our homes and businesses, and supporting clean growth
- Accelerating the shift to low carbon transport
- Delivering clean, smart, flexible power

These themes are taken in turn detailing the associated projects and actions

Improving the energy efficiency of our homes and businesses, and supporting clean growth

Project 1 - Improvements to new house building standards

Project 2 - Demonstrate low carbon house building where possible

Project 3 - Energy Efficiency retrofit not-for-profit company

Accelerating the shift to low carbon transport

Project 4: Supporting electric cars and vans

Project 5 - HGV refuelling and rapid charging hub(s)

Delivering clean, smart, flexible power

Project 6 - Connection agreements

Project 7 - Flexibility connections – Demand Side Flexibility

Project 8 - Renewable Electricity generation



D2N2 (Derbyshire and Nottinghamshire)

D2N2 have a vision for 2030 which is:

“Within the birthplace of the Industrial Revolution, a clean growth revolution is now underway. One that harnesses the region’s world-renowned heritage and nature with effective and sustainable use of local resources. This revolution will be accelerated by the region’s ability to undertake cutting-edge research and development, a proactive public sector and a highly-skilled workforce. By 2030, D2N2 will be a national pioneer in clean growth and a test-bed for world class energy systems innovation.”

There are ten key 2030 targets:

1. 100% avoidance of recoverable materials going to landfill
2. At least a 60% reduction against 1990 carbon emissions per capita and a 15% reduction in per capita energy demand
3. 15% of buildings using low carbon heating and all current building stock be Energy Performance Certificate level C or above where possible
4. To comply with, and exceed where possible, applicable air quality standards in all locations
5. 100% low carbon energy supply with 60% renewable generation output and increase of 180MW in electricity storage
6. Increase the provision of smart transport infrastructure to support a target of 70% of vehicle miles to be Ultra Low Emissions
7. 100 new businesses in the Low Carbon and Renewable Energy sector and 1000 new jobs
8. Decouple carbon from growth through the reduction of carbon intensity ratio of growth by 50%
9. Secure at least £100m of investment in local energy projects with adequate funding for infrastructure development and resilience
10. 15MW of community energy installed and two industrial sites brought into low-carbon energy generation and innovation

The D2N2 strategy sets out a suite of linked targets and actions that align with the national Clean Growth objectives, local aspirations and stakeholder feedback. This approach outlines the local opportunities and priorities for D2N2 to pursue and explore, and through it the D2N2 can enact its vision and central aims by 2030. The long-term recommended actions detailed within the strategy are the premise to develop a more comprehensive action plan for the period 2019-2021 which will follow the publication of this strategy, in conjunction with the local capacity-building work of the Midlands Energy Hub.





Marches

Marches have a vision for 2030 which is:

“The Marches area has an energy generation and supply system which is flexible and reliable, delivering energy that is low carbon and low cost to businesses and communities, can accommodate planned growth and can support well developed low carbon supply chains.”

A number of goals have been developed in order to achieve the vision as outlined;

- **Pilot:** Developing a pilot grid constraints mitigation project as a national demonstrator
- **50%:** Locally generated renewable electricity meeting 50% of local demand
- 1000 - 1000 new jobs in the Low Carbon and Environmental Goods and Services sector
- **≤10%:** Fuel poverty reduced below 10%
- **Leader:** National leader in deployment of anaerobic digestion
- **Centre:** Centre for UK agriculture innovation and low carbon transition
- **57%:** Carbon emissions excluding agriculture reduced in line with UK targets, a 57% reduction on 1990 levels

West Midlands Tri-LEP: Birmingham & Solihull, Black Country, Coventry & Warwickshire

The three West Midlands LEPs have a vision for 2030 which is:

“This strategy is about influencing these financial flows to deliver a strategic vision for energy across the region by 2030 which includes:

- *Reducing energy costs for our strategic industrial sectors to at least match those of our international competitors by delivering a typical 20-25% reduction, depending on sector*
- *Reducing the incidence of fuel poverty across our region by hitting current government targets five years ahead of schedule*
- *Delivering the West Midlands’ share of national and global carbon by reducing 26% of regional carbon emissions between 2016 and 2030*
- *Creating a regional energy infrastructure that adds £1bn to GVA by 2025 by putting the region at the leading edge of the global energy and transport systems transition.”*



The aims of the Energy Strategy are to:

- Reduce energy costs for our strategic industries to enhance their competitiveness and productivity.
- Reduce the incidence of fuel poverty among households, particularly in Birmingham, Coventry and the Black Country
- Deliver the region's share of national and global carbon budgets
- Create a regional energy infrastructure which puts the West Midlands at the leading edge of the global energy and transport systems transition and make this region the most attractive market to commercialise new energy and transport system technologies in the UK.

Potential Projects

As previously mentioned, some of the Energy Strategies identify some very specific projects, while others have taken a broader approach outlining potential areas of work to enable greater flexibility in approach, which is often required around developing energy projects and the associated evolving technologies that are to be implemented.

Drawing on the Energy Strategies there is a huge range of potential projects across the Midlands include:

Innovation

- Develop Energy Innovation Zones (EIZs)
- Establishment of a legacy bank to cover sunk costs of stranded and legacy energy infrastructure assets and using this to reduce energy costs for innovative and competitive manufacturers
- New Financial and contractual arrangements for energy supply/demand side response.
- Energy storage schemes to help facilitate EV charging.
- Utilise outcomes from Smart Energy Network Demonstrator trial to feed into energy aspects of smart city development.

Hybrid approach

- Develop a scalable business model of whole building retrofit and integrated PV/storage systems for all tenures
- Implement Hydrogen pilots for scalable space heating, energy storage and transport solutions
- Use of 5G communications technology to pilot 'open' energy trading platforms and 'smart controls' for industry.
- Introduce clean technology into the agri-food sector.



- Develop or retrofit Combined Heat & Power (CHP) schemes
- Identify smart grid opportunities for the agri-food sector
- Support and development of Anaerobic Digestion

Transport

- Coordinate and support the rollout of smart (V2G) vehicle charging to create flexible energy systems and decarbonise transport in the region to build on the success of Go Ultra-Low and the D2N2 EV Charging Network in conjunction with neighbouring LEPs
- Support initial research into the viability of battery powered trains for non-electrified sections of the rail network and promote adoption of EV's for public transport in Worcestershire
- Implement plans for Electric Taxis in Bromsgrove and Worcester.
- Further embed plans for increasing sustainable transport in local transport plans.
- Build clean energy refuelling stations to provide EV charging, hydrogen and CNG for city vehicles.
- Undertake a Strategic Transport Study considering active travel options and opportunities for expansion of rail.

Planning & development

- Incorporate whole-system Local Area Energy Planning methods from the ESC/ETI, and develop Spatial Planning provisions to increase onsite low-carbon energy generation and reduce demand for energy through Passivhaus and other equivalent standards
- Demonstrate exemplar low carbon development where there is a willingness-to-pay on the part of consumers and/or the local authority through, for example, subsidising with lower land sale values.
- Simplifying access and improving the transparency of energy markets for business customers
- Explore the most suitable approaches to delivering exemplar low carbon developments on local authority-owned land and potentially suitable sites.
- Ensure 'Modern Building Techniques' are used for new development including off site construction and modular buildings optimised for energy efficiency and integration of renewables.
- More rigorous and targeted new build housing energy efficiency standards
- Liaise with ECO partners on flexible eligibility criteria.
- Expand link between the residential energy and health agendas.
- Review planning policy for renewable energy, district heat and electric vehicle charging.



Infrastructure

- Encourage key energy stakeholders and Distribution Network Operators to work more effectively together to support the changing and growing demands on energy infrastructure
- Strategic infrastructure support for accelerated new market development for locally sourced products such as electric vehicles and smart connected and low carbon housing
- District Heating Networks – at a range of scales
- Inclusion of deep geothermal resources in public sector heat network schemes.

Fuel Poverty

- Develop a one-stop shop for energy efficiency retrofit.
- Large scale retrofit programmes for fuel poor households and energy-inefficient housing
- Efficiency improvements for properties off the gas grid and incentive schemes for privately owned homes.

Other

- Invest and plan for energy systems resilience against threats from cyber-attacks, climate change and infrastructure failures
- Collective use of smart energy data in optimising energy efficiency, for example subsidising or mandating installation of smart sub-metering in industry
- Looking into the potential for locally owned energy companies.
- Undertake mapping and feasibility studies for:
 - Utilisation of underground and geological spaces for energy generation, conveyance and storage; Carbon Capture and Storage (CCS); and, sustainable agriculture
 - Heat networks integration with energy storage and renewable generation
 - Updated combined planning and physical assessments of renewable energy generation opportunities that can integrate with energy storage
 - Understanding and improving the potential for transport mode shifting to reduce the demand for energy and lower carbon emissions
 - How natural capital can contribute to energy generation, efficiency and storage in connection with the 25 Year Environment Plan.
- Support community generation schemes, building on past success and with local partners.



Challenges to low carbon energy projects

Resource

- There is a limited capacity and capability amongst Local Enterprise Partnerships (LEPs) and local authorities to deliver local energy investment.
- Lack of data sharing and adequate and comprehensive mapping.
- Smart meter delays and engagement

Infrastructure

- There is a clear challenge of grid capacity across the Midlands, in particular when set against the context of significant planned growth.
- To create a significant number of jobs and deliver sufficient new homes between 2014 and 2025 adds significant growth in energy demand requirements and a need to ensure that the increase in electrical demand can be facilitated by the local network.
- There are areas where existing low carbon generation installations have led to network constraints where there is no further capacity for generation connections in some areas (without significant, financially expensive upgrades).
- Decarbonisation of heat, and heat services

Financial barriers

- Some of the new technologies, such as electric vehicles or air source heat pumps, place a higher peak load demand on the national distribution network than their counterparts. To allow for the widespread roll-out of these technologies will require large-scale, co-ordinated investment in the network at large. This will require serious upfront investment.
- Funding sources for financing energy efficiency projects are scattered for different building segments; there is no single body bringing together consumers and investors.
- The cost of improving existing or installing new energy related infrastructure (i.e. installing a new sub-station) to specifically enable an energy project can financially restrict / prevent the viability where the cost is to be born entirely or in some cases partly by the energy project.
- Fuels available to off-gas grid properties including oil, LPG and electricity are typically more expensive than gas, which can lead to higher levels of fuel poverty in these properties. Many of the areas off the gas network are particularly remote from the network and prohibitively expensive to connect or have physical barriers that make connection impractical.
- The speed and nature of technological change and choice in energy systems.



- The economics of energy technologies in a given place are not independent of each other, for example a district energy system may make a lot of economic sense if local housing is poorly insulated and no sense at all if the same housing is retrofitted with the latest insulation (an economic choice which makes complete sense for the householder but not for the district heat operator).
- Securing finance and developing sustainable business models for retrofit works
- Concerns around future uncertainties, specifically around Brexit.
 - Will funds/grants remain available after we leave
 - Businesses are concerned that if import/export taxes raise dramatically, they may no longer have the ongoing capital to afford energy efficiency projects.

Regulatory barriers

- Many of the current regulations tend to favour and entrench the current energy system. They have been established to regulate a centralised sector with natural monopolies, and therefore the incentives they create often lean toward this (although there have been recent positive changes to stimulate competition).
- The complexity of the energy market regulatory system.
- A structural mismatch between energy market regulation and where the technical and economic opportunities lie.
- Complexity of political institutions and public sector capacity
- National standards for building energy performance could be more ambitious.
- The addition of solar panels to a business site cause a change in the properties business rates which can make the scheme no longer financially viable. This is an area councils should review.

Behavioural barriers

- Much of the new energy future will be enabled by new technologies. However, there may be a hesitancy among businesses and consumers to adopt this technology.
- Narrow definitions of innovation, avoid a tendency to define innovation solely as commercialising new technologies emerging from university-led research, coupled with an innovation agenda largely set by existing (and typically larger) industrial interests. These aspects are fundamentally important, but, it's very important also to recognise the value of investment which is innovative.
- Disconnect between bill payers and energy users
- Turning awareness into actions and behaviour change

End User

- Businesses and homeowners can have difficulty identifying where they can save energy and find certain energy efficiency measures too disruptive to install.
- Customer engagement in energy markets, it's important for any strategy to include some models for customer engagement and communication, particularly if benefits depend on customers making active and informed choices
- The payback periods for certain energy efficiency measures are too long for many consumers across all sectors i.e. solid wall insulation.
- 'Split incentives' in relation to energy efficiency measures in the private rented sector. This refers to the observation that tenants may be reluctant to pay the initial capital expenditure of such measures, because the payback period may be longer than they expect to stay in the home, and landlords can be reluctant to do the same because they do not directly incur the bill savings (unless included in the rent) or comfort benefits.
- Poor energy efficiency of domestic and commercial properties