

York, North Yorkshire and East Riding's Local Energy Strategy: Towards a Low Carbon Economy

Summary Document

Foreword

What a wonderful opportunity the writing of our Local Energy Strategy provides for the Local Enterprise Partnership to demonstrate our understanding of the role of our region, and the associated challenges and opportunities in the energy agenda.

The south of our area used to be dominated by totems of the fossil fuel era: giant chimneys and cooling towers of power-stations, alongside the pit head winding gear and slag heaps of coal mining. This history of energy generation leaves a significant legacy that frames our present and future, it places us at the heart of the national power grid, provides our workforce with core engineering competencies and leaves flooded mine shafts which could become new sources of renewable heat.

The old 'think global, act local' mantra has never been more appropriate than now, as we consider the contribution our area will make to the challenge of carbon reduction commitments and limiting global warming to just 1.5 degrees.

We are already leading the way. Drax Power have recently completed Europe's largest decarbonisation project, by modifying coal fired boilers to burn wood. Change is happening, and much of it is being driven by businesses responding to consumer demand and regulation. This strategy seeks to harness existing industrial ambition, whilst stimulating new business activity in clean growth. It purposefully sets out to understand and optimise the local economic benefits of the shift to a low carbon economy, as well as generating carbon reductions.

The public sector has an important role to play too. The strategy aims to amplify their contribution by providing a catalyst for action and a mechanism for coordinating efforts. In a largely rural area like York, North Yorkshire and the East Riding, this agglomeration role is vital to overcome the challenges of dispersed rural settlements and fragmented Local Government structures.

Our Local Energy Strategy is not merely a prioritised list of projects. It articulates how the energy agenda is constrained within the wider systems in which it operates. This strategic thinking will yield greater results in the long term as part of a broader systemic shift. As such, it needs to be seen as part of the suite of strategies which will comprise our new Local Industrial Strategy.

The publication of this Strategy heralds some of the most important work that has taken place in our region. As we look to the future, we are confident that it will allow us to tell our grandchildren that we made our best start in ensuring a sustainable future for everyone.

David A Kerfoot MBE DL

Chairman of York, North Yorkshire & East Riding Local Enterprise Partnership

EXECUTIVE SUMMARY

Our Ambition

Decoupling economic growth from carbon emissions will allow the UK meet its committed 80% reduction in greenhouse gases against 1990 levels by 2050, and this presents an immense economic opportunity for our region. With nationally significant energy assets, growing low carbon technology sectors and a strong scientific innovation base, the low carbon energy transition has the potential to deliver substantial economic growth, job creation and export opportunities across the area. Our vision is of a resilient low carbon economy, where solutions to address the climate crisis are implemented to make our area a better place to live and create a more competitive economy.

To achieve this, the strategy is designed to **guide decision making** and **stimulate action** in the LEP and our partners, to deliver the following strategic outcomes:

1. Attract and secure investment for the low carbon transition;
2. Enable organisations, communities and businesses to maximise their contribution to, and realise the benefits from, a low carbon economy;
3. Provide the strategic drive and economic rationale to shape the development of our Local Industrial Strategy, and;
4. Support collaboration and joint working at a Yorkshire & Northern Powerhouse level.

Our Strategic Framework

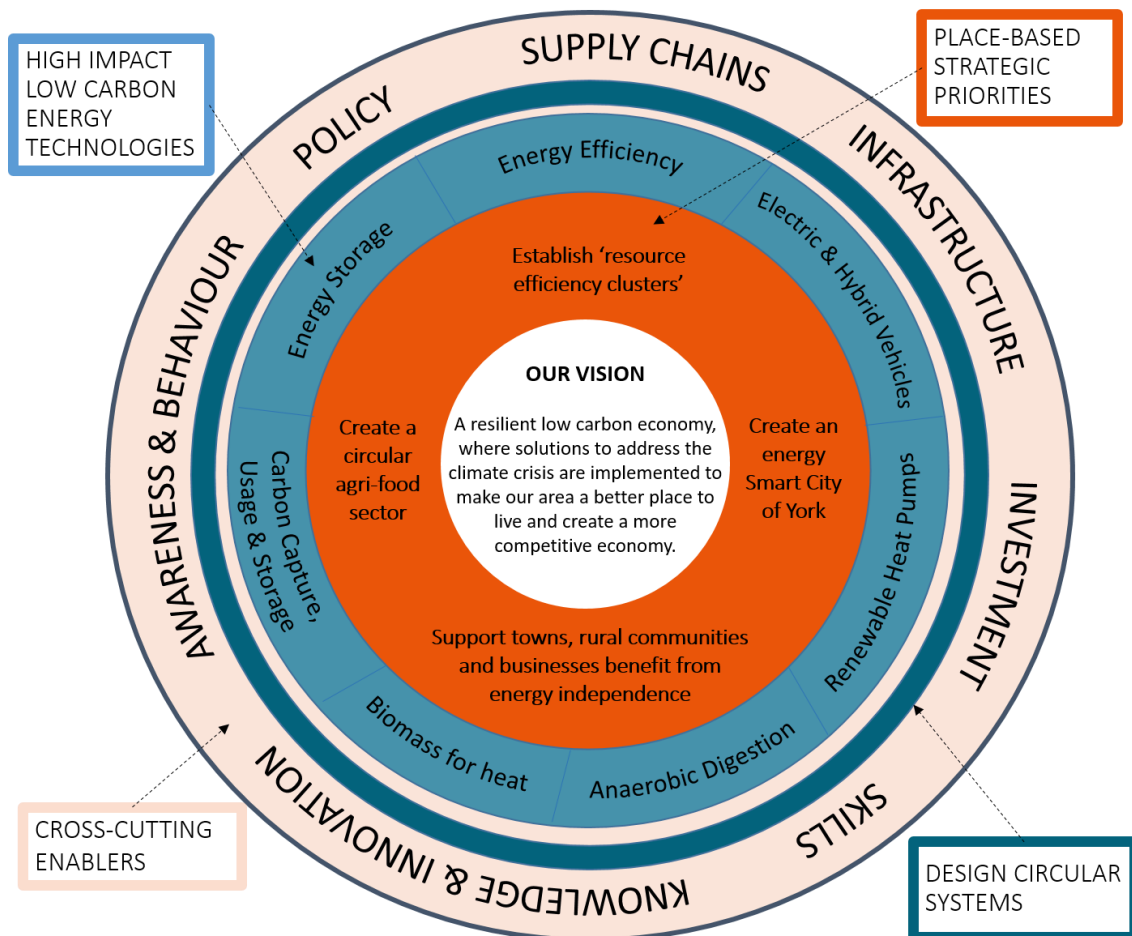


Figure 1: Strategic Framework for a resilient low carbon economy

Our Plan

Collaboration will take us *from ambition to action*: local authorities, communities, businesses and other organisations all have a role to play. Partners have helped us to identify a series of projects to achieve our strategic place-based priorities, from district heat networks to sustainably powering agricultural vehicles to community energy projects. We've identified actions to enable these projects and other low carbon opportunities to be realised. We need to strengthen local supply chains, develop infrastructure, secure investment, grow the skills base, develop knowledge and innovation, build awareness and change behaviour, and influence policy to achieve substantial carbon savings and economic benefits. Considering these elements ensures a truly systemic approach to moving towards a low carbon economy, taking into account the necessary requirements to both enable and catalyse systems change.

Summary of key projects to achieve our place-based strategic objectives

ESTABLISHING 'RESOURCE EFFICIENCY CLUSTERS'

Project	Description
Circular Economy & Resource Efficiency Support (CERES) Programme for SMEs	Consultancy and grants to support SMES become more resource efficient and adopt circular operating models
Resource efficient industrial site pilot	Overcoming energy capacity issues and exploring opportunities for industrial symbiosis at Dalton Industrial Site
Opportunities from Drax's BECCS activities	Use of captured carbon in surrounding industries
Heat capture from industrial processes, sewage, rivers	Exploring potential to capture heat from industrial processes, sewage and rivers

CREATING AN ENERGY SMART CITY OF YORK

Project	Description
York smart transport system	Smart transport system across the city, including EV charging points, traffic light sensors
Lowfield Green: community renewable energy	19 low cost, sustainable, community focused homes powered by shared renewable energy (incl. solar PV, EV charging points)
Retrofitting existing housing stock	Installing domestic energy efficiency measures to upgrade existing housing stock

SUPPORTING TOWNS, RURAL COMMUNITIES & BUSINESSES REALISE ENERGY INDEPENDENCE

Project	Description
Harrogate Borough Council's Garden Community: community circular energy system	Energy efficiency & other low carbon measures, using surplus heat from Allerton Waste Recovery Facility
Northallerton Heat District Network	District heat network and necessary domestic fabric efficiency upgrades
Retrofitting of housing in market towns and remote rural areas	Aggregating demand to install energy efficiency measures, renewable heat pumps & biomass boilers
EV charging infrastructure for rural areas	Coordinated roll-out of an extensive EV charging network
Community energy projects	Development of community-owned, community-led renewable energy generation in rural areas
Biomass Biodiversity project	Developing and growing AD facilities and feedstock pathways in town and rural communities

CREATING A CIRCULAR AGRI-FOOD SECTOR

Project	Description
Sustainably powered agricultural vehicles	Exploring opportunities to power agricultural vehicles using bio-fuels and hydrogen
Small scale AD on farms	Using agricultural wastes & developing additional feedstocks for small scale AD plants

INTRODUCTION

As the UK government seeks to decouple economic growth from carbon emissions, creating a thriving low carbon economy within York, North Yorkshire and East Riding presents an immense economic opportunity. By aligning our existing energy assets with our growing low carbon technology sectors and strong scientific innovation base, the low carbon energy transition can deliver substantial economic growth, job creation and export opportunities across the area.

Our Vision:

A resilient low carbon economy, where solutions to address the climate crisis are implemented to make our area a better place to live and create a more competitive economy.

In more practical terms, this means:

- Local authorities, communities, businesses and other organisations all working towards a low carbon future, co-creating solutions to reduce energy demand and carbon emissions
- A clean, competitive and resilient energy generation and distribution network
- Affordable and clean energy for all
- More competitive businesses through improvements in energy and resource efficiency
- Air quality, health and connectivity is improved through designing-out waste and pollution
- A low carbon innovation ecosystem that builds on our rich energy legacy
- A carbon neutral economy, where any carbon emissions are balanced by carbon sequestration.

Strategy Purpose

Our Local Energy Strategy provides a clear pathway towards a low carbon economy, ensuring that the area is well-positioned to realise the economic, environmental and social benefits from the transition.

To achieve this, the strategy is designed to guide the decision making and stimulate the actions of the LEP and our partners, delivering the following strategic outcomes:

1. Attract and secure investment for the low carbon transition
2. Enable organisations, communities and businesses to maximise their contribution to, and realise the benefits from, a low carbon economy
3. Provide the strategic drive and economic rationale to shape the development of our Local Industrial Strategy
4. Support increasing collaboration and joint working at Yorkshire/Northern Powerhouse levels

Using an evidence base captured via four commissioned studies and partner co-design, the strategy provides a locally-specific, systemic approach to achieve our low carbon ambitions. We have worked with partners to develop a number of place-based strategic priorities that reflect the unique opportunities and challenges in our area. This approach prioritises low carbon energy technologies that can provide **maximum impact in terms of delivering carbon savings and economic benefits**. To ensure the effective deployment of such energy technologies and other low carbon solutions, we have also identified a number of cross-cutting enablers, such as developing skills, strengthening supply chains and securing investment. This provides a robust framework to enable and accelerate the transition towards a resilient low carbon economy across York, North Yorkshire and East Riding.

STRATEGIC CONTEXT

How has the energy strategy been developed

To develop our Local Energy Strategy, we commissioned a series of studies to develop a robust evidence base to understand: (1) the strategic importance of energy to the local economy; (2) what it means locally to meet the UK's carbon budgets; and (3) the opportunities and challenges associated with the low carbon energy transition.

The strategic case for action in York, North Yorkshire and East Riding

Energy & the Economy: the strategic importance of energy to the local economy

York, North Yorkshire and East Riding has a population exceeding 1.1 million and is home to over 60,000 businesses, covering the largest geographic area of any LEP. The economy is worth £24.6 billion, with the energy sector contributing to 1.9 % of total GVA. This is above the national contribution of the energy sector (1.7 %) to the UK's economy. In terms of employment, the energy sector is a relatively small component of total employment within the local area and nationally, reflecting the highly productive nature of the sector.

Table 1: Estimated output (GVA) and employment of the energy sector at local and national levels

Geography	Estimated Output (GVA) of the energy sector in 2015 (£m)		Estimated employment in the energy sector in 2015 (jobs)	
	Energy sector	Energy as % of total economy	Energy sector	Energy as % of total employment
York, N. Yorkshire & East Riding	449	1.9	2,000	0.3
UK	28,300	1.7	150,000	0.4

Energy underpins economic growth. The research has found a strong economic and environmental rationale for local action, achieving substantial returns from investment, whilst reducing our energy bill and carbon emissions.

Compared to the rest of the UK, energy demand is disproportionately high in the North, estimated to be 31,150 GWh in York, North Yorkshire and East Riding in 2015. This is due to the presence of energy intensive commercial and industrial sectors. Since the productivity and success of energy intensive industries is inextricably linked to provision of energy, ensuring a low carbon energy supply is a strategic priority.

The local energy bill for consumers, businesses and other organisations in York, North Yorkshire and East Riding is currently estimated at £2.7 billion per year, which is equivalent to approximately 10% of the area's GVA. Further real increases are forecast under a 'business as usual' scenario, with the total energy bill predicted to reach £3 billion per year by 2035. It would therefore be prudent to take steps to reduce this energy bill, regardless of the carbon implications.

The majority (75 %) of energy bill saving potential, is found in the transport sector, where hybrid vehicles in the immediate future, and electric vehicles over the period from 2025 – 2035, present a massive opportunity for reduced energy expenditure. Significant savings are also found in the domestic sector where a range of retrofit options could provide paybacks of less than 10 years on investments with 30+ year lifetimes.

- **Cost effective scenario:** Energy bills could be reduced 30.8 %, equivalent to £949 million by 2035, with cost effective actions.
- **Cost neutral scenario:** With cost neutral actions £1.2 billion could be saved, equivalent to 39.8 %.
- **Realistic potential scenario:** Achieving the realistic potential of action, energy bills could be reduced £1.3 billion, equating to a reduction of 42.3 %.

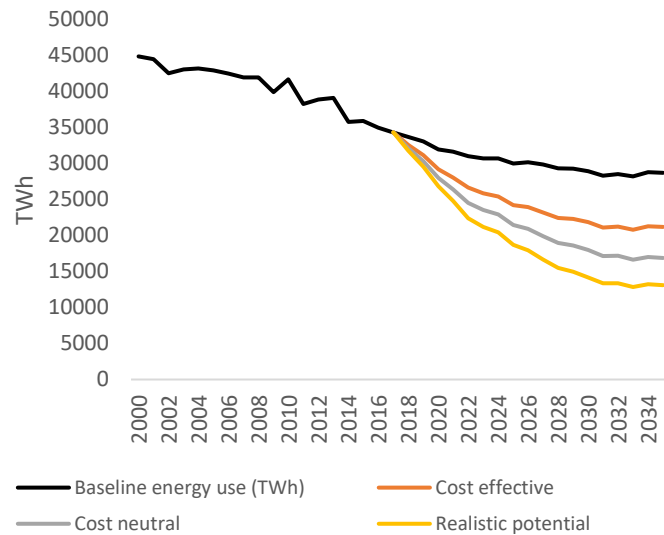
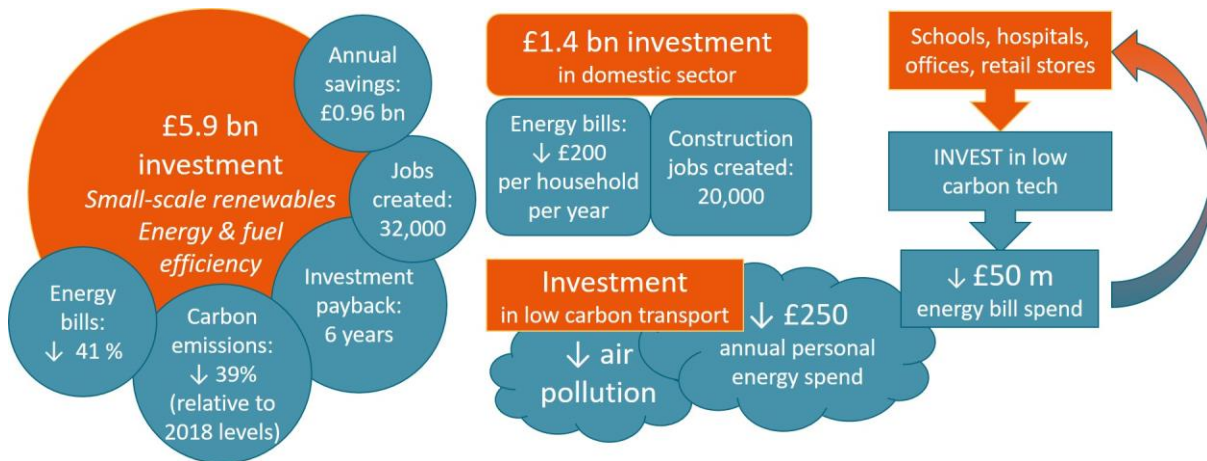


Figure 2: Forecast energy use under different scenarios 2000

Beyond energy & carbon: opportunities & challenges associated with low carbon energy transition

Developing the low carbon economy in York, North Yorkshire and East Riding is expected to have additional benefits beyond positive environmental impacts through reducing emissions and finite resource use. Prioritising investment and intervention in the low carbon economy will deliver substantial economic benefits to the area, particularly as low carbon sectors are forecast to grow at a faster pace than traditional economic sectors, and there is the potential for strong export opportunities. Research has shown a thriving low carbon economy will create jobs and generate economic growth in York, North Yorkshire and East Riding, and as such has the potential to close productivity gaps between the region and other parts of the UK.

The Investment Case



A number of challenges are associated with securing these additional benefits. Some of these challenges are barriers at a national level, such as skills shortages in engineering, whilst others are specific to our local area. For example, the rural nature of a large proportion of our geography means that developments, such as housing retrofits, heat networks and EV charging infrastructure are less commercially attractive than in urban areas. To ensure that we realise strategic benefits and successfully overcome challenges inherent in the energy transition, we have developed a framework to provide a clear pathway to achieving our low carbon ambitions (see Figure 1 and below).

Place based strategic priorities: Building on the regions unique assets to ensure an equitable and ambitious transition

We want to capitalise on our unique strengths, ensuring the strategy is the right fit for the area and reflects our distinctiveness. This includes building on our historic legacy in the energy sector and resource intensive industries, our strength in the bioeconomy and the rurality of the region. As a result, we've developed the following key strategic priorities:

- Support towns, rural communities and businesses benefit from energy independence;
- Create an energy smart City of York;
- Develop 'resource efficiency clusters'; and
- Create a circular agri-food sector.

High-impact low carbon energy technologies: Seeking economic, environmental & social benefits

To realise the full economic opportunities from the low carbon transition, we have commissioned research to identify low carbon energy technologies that can provide maximum impact in terms of deliverable carbon savings, economic benefits, and growth across their value chains. These include:

- energy efficiency;
- electric and hybrid vehicles;
- heat pumps;
- anaerobic digestion; and
- biomass for heat.

Local partners have an appetite for community energy solutions, which can create local jobs, improve access to cheaper forms of finance, tackle fuel poverty and create benefits for local communities from local tariffs. Community energy can ensure the transition delivers social, as well as economic, benefits.

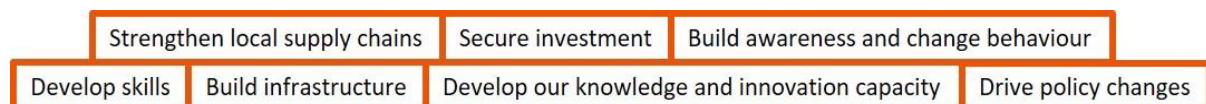
Circular solutions: using circular economy principles to deliver business and environmental benefits

We recognise that substantial reductions in carbon emissions to meet the UK's carbon targets will not be realised by 'technology fixes' alone. Research suggests that reducing resource consumption through applying circular economy principles could bridge the gap – optimising material and resource use in supply chains can reduce carbon emissions to 361 MtCO₂e by 2032, 55 % below 1990 levels. With regional strengths in resource- and energy-intensive sectors, such as agriculture, manufacturing and construction, implementing a decarbonisation approach underpinned by circular economy principles presents a powerful framework to reduce carbon emissions in our area.

In practical terms, this means reducing use of finite virgin materials, reducing waste, and designing products to last longer. We are developing a Circular Economy Strategy and Action Plan for York and North Yorkshire, aligned with our Energy Strategy to ensure we seize these opportunities.

Cross-cutting strategic enablers: Creating the enabling environment for a low carbon economy

The successful deployment of low carbon energy technologies and the implementation of other low carbon solutions requires systems change. To enable the transition we need to:



For example, the deployment of low carbon energy technologies will be dependent upon knowledge and innovation, and shaped by demand, which in turn will be determined by awareness and confidence. We need to build these enabling capabilities locally to develop a competitive low carbon economy.

PLACE-BASED STRATEGIC PRIORITIES (pg8-9)

The unique assets, industries and geography of our area provides a number of distinct opportunities and challenges. Working collaboratively with partners, we have identified four strategic priorities that are important in fully realising the economic, social and environmental benefits of the low carbon transition:

- Support towns, rural communities and businesses benefit from energy independence
- Develop 'resource efficiency clusters'
- Create an energy smart City of York
- Create a circular agri-food sector

These priorities build on our region's economic strengths, particularly agriculture and manufacturing. They capture our environmental strengths and the importance of protecting our natural capital assets. The approach also puts people at the heart of the energy transition, seeking to implement solutions that make our area a better place to live for rural and urban communities alike.

Taking such a targeted, spatial approach will allow us to focus interventions to achieve substantial impact. Working with partners we have already identified a pipeline of projects that support these place-based strategic priorities. We will continue to work with partners to support these through the strategic enablers identified, whilst also stimulating additional projects that realise specific opportunities.

Support towns, rural communities and businesses to benefit from energy independence

The rural nature of North Yorkshire and East Riding brings a number of challenges associated with moving towards a low carbon economy in rural communities, from converting off-gas grid homes to installing electric vehicle charging points in remote locations. Yet the natural capital within such areas, also provides us with the opportunity to develop 'energy landscapes' where renewable energy is sourced from the surrounding environment, creating value for rural businesses and communities. Supporting communities to produce and consume their own energy would enable rural communities to be energy self-sufficient or net-energy producing. Such an approach focused on the function of landscapes will also involve considering the valuable role of rural landscapes as carbon sinks, where emissions can be stored.

There are a number of growth opportunities within our towns and we want to make sure these contribute to and benefit from the low carbon transition. For example, we want to ensure that new housing developments are designed with low carbon and circular economy principles in mind, and that there is a coordinated network of EV charging infrastructure across the area to connect towns. Local planning systems need to support the building of such energy efficient homes and transport infrastructure.

We will work closely with local authorities, communities and businesses to ensure growth is decoupled from GHG emissions, improving quality of life and creating quality jobs.

Create an energy smart City of York

It is estimated that CO₂ levels will grow more strongly in York than any other area within our geography, and therefore reducing energy demand is critically important. Consequently, developing an efficient and people-centred energy system in York is a key priority to ensure we make our full contribution to the UK's carbon budgets. Developing a smart transport system, building on the substantial network of EV charging points, and retrofitting existing housing stock with energy

efficiency measures will be important parts of this. To deliver social benefits to residents, we will work with partners to explore the opportunity of community energy in an urban context. We will also explore the potential for energy savings through other innovations such as smart street lighting.

Develop 'resource efficiency clusters'

The high importance of producing sectors to the local economy, including manufacturing, construction, agriculture and energy sectors, means that increasing the resource efficiency of businesses can generate substantial cost savings in our area.

The UK government outline in their Resources and Waste Strategy for England a commitment to working with businesses to create 'resource efficiency clusters' 14 . Research suggests that UK businesses could save £3 billion annually through short-term investments to make their processes more resource efficient.15 This means cutting resource use and designing-out waste.

Creating resource efficiency clusters is particularly opportune for local industrial sites, where the close proximity of businesses creates the opportunity for the sharing of resources and waste between business through industrial symbiosis. We will also seek opportunities to develop sector-specific clusters where businesses can benefit from sharing knowledge and best practice.

Create a circular agri-food sector

Yorkshire and the Humber has the highest concentration of food and drink businesses in the UK. There are 8,916 farms in the area covering 841,404 hectares, which accounts for 12 % of the UK's farmland. The prevalence of agri-food businesses and their strategic importance to the local economy means that there is a substantial opportunity to design restorative, circular systems that provide costs savings, income generating opportunities and reduce emissions. From developing small scale AD on farms to sustainably powering vehicles using agri-waste, there are a number of economic opportunities that can be harnessed in the process of decarbonising the sector.

IMPLEMENTATION PLAN (pg10)

Key Next Steps

- 1. Co-creating work plans:** To ensure the effective delivery of our strategy, we will be working collaboratively with stakeholders to develop detailed work plans for the outlined pipeline of projects and actions associated with our strategic cross-cutting enablers. Whilst the implementation of the strategy will be led by the LEP, we intend to provide the necessary support to empower partners to lead on ambitious projects and scale their impact.
- 2. Co-designing a performance monitoring framework:** We will develop a series of environmental, economic and social metrics and indicators to measure the impact of projects and activities. This will form part of a performance monitoring framework to measure our overall progress in moving towards a low carbon economy, including strengthening of our enabling capabilities (e.g., skills, infrastructure and investment).
- 3. Ensuring low carbon is a cross-cutting priority:** We will ensure that the strategic priorities appropriately feed into our Local Industrial Strategy and other relevant policy documents to ensure that accelerating the shift towards a low carbon economy is a cross-cutting priority across LEP activities and our influence.

Governance & delivery

The York, North Yorkshire and East Riding LEP's Business Board will initially be responsible for providing strategic direction to the implementation of the Local Energy Strategy – to be reviewed under the proposed merger with Leeds City Region to ensure alignment of our respective strategies. The York, North Yorkshire and East Riding LEP will be responsible for the delivery of our Local Energy Strategy alongside key local partners, collaboratively developing detailed work plans for projects and activities. This will include clear roles and responsibilities to ensure effective delivery.

We recognise the existing limited resource we have and scale of the climate change challenge we face. To build capacity and achieve the scale of action required we will:

- ensure that a low carbon economy is a cross-cutting priority across everything the LEP does;
- develop a network of key stakeholders collaborating effectively to influence decision making and deliver change, including leading by example, sharing best practice and peer review; and
- drive collaboration and action across the wider geography of the North East, Yorkshire and Humber Energy Hub and at the Northern Powerhouse level.

Project Pipeline

We have been working with local stakeholders to establish a pipeline of low carbon energy projects to achieve our strategic priorities. These include projects which partners are already underway with, and projects that require significant further development. We will continue to work collaboratively with stakeholders to develop and implement these projects and identify additional projects that can help achieve our place-based strategic priorities.

Performance Monitoring

Our energy priorities and implementation plan will continue to be adapted as necessary, with a full review undertaken every 2 years. We will develop a series of environmental, economic and social metrics and indicators to measure the impact of projects and activities. We will also work with stakeholders to develop quantifiable targets to reflect our vision statement, including specific targets for reducing carbon emissions, increasing economic competitiveness and improving quality of life. This will form part of a performance monitoring framework to measure overall progress in moving towards a zero carbon economy, including strengthened enabling capabilities (e.g., skills, infrastructure and investment) and measurement approaches for landscapes as carbon sinks.

Beyond local action, national policy recommendations were proposed, as part of our commissioned research, to achieve the desired uptake of low carbon energy technologies in our region:

Ensure continuation of national energy efficiency support schemes (e.g. Green Deal and Warm Homes Fund) and that any new or replacement energy efficiency funds are open to as many households as possible.	Explore policy interventions that incentivise or regulate improvements in insulation and other energy efficiency measures for new and existing building stock.
	Develop more stringent carbon emissions standards on new builds or heating system replacements.
Deliver a large-scale national information campaigns to raise awareness and understanding of the benefits of heat pumps to both households and businesses.	Extend initiatives to support AD, such as RHI biomethane for the gas grid, Renewable Transport Fuel Obligation for biomethane for transport and Feed in Tariffs for electricity produced from AD, and further incentivise AD deployment.
Introduce heat pump technology performance and labelling standards to increase confidence in system choice & installation.	
Introduce better biomass boiler quality standards to raise efficiency & attractiveness of biomass for heat.	Develop installer certification standards for to heat pump systems to make choosing an installer more transparent.