Navigating the Net Zero Energy Transition

A Toolkit for Local Authorities

UK 100

in partnership with

DSO | UK Power Networks Delivering your electricity

Contents

Executive summary

Reaching Net Zero is both an urgent and crucial goal in the fight against climate change. The UK has set a legally binding target to reach Net Zero by 2050 and many local authorities have set Net Zero targets for their own areas which are more ambitious than the national target.

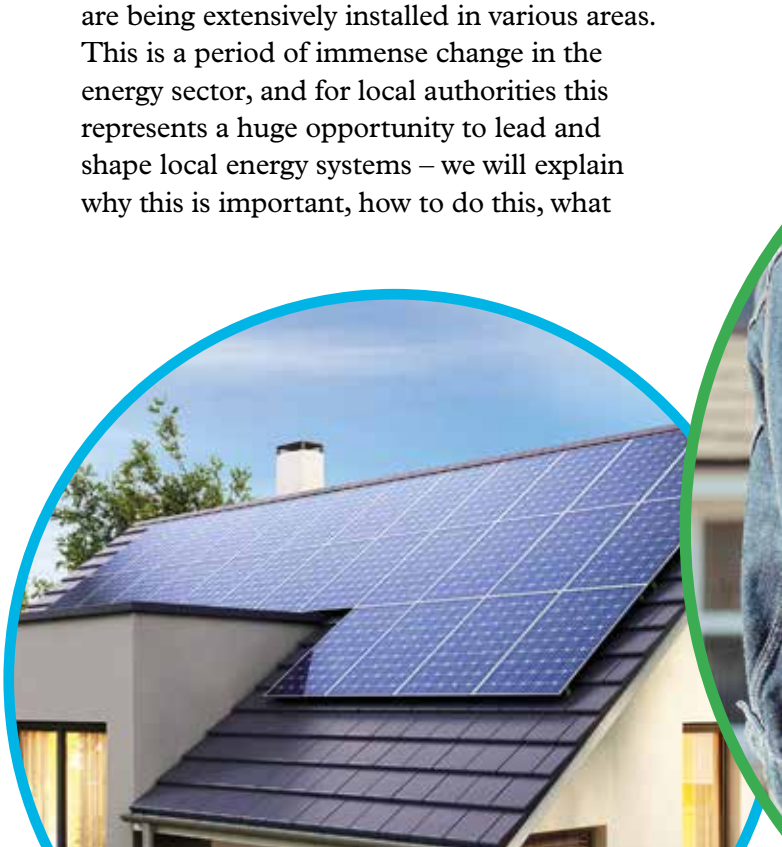
The new government has also set a clear target to decarbonise the energy grid by 2030, and has a mission to make the UK a "clean energy superpower". This guide will help you match this ambition, unlock your own priorities, and deliver for your community.

With these ambitious national targets set, local authorities play a crucial role in translating these goals into actionable plans within their communities, building local energy systems tailored to their communities, unlocking sustainable growth, and collaborating with energy network operators to meet Net Zero objectives.

Planning for electricity decarbonisation is critical towards reaching Net Zero, as the power sector is a major source of carbon emissions. Large, centralised fossil fuel power stations are being replaced by numerous smaller-scale renewable generators embedded in local areas. Petrol and diesel cars are being replaced by electric vehicles and heat pumps are being extensively installed in various areas. This is a period of immense change in the energy sector, and for local authorities this represents a huge opportunity to lead and shape local energy systems – we will explain why this is important, how to do this, what impact it can have and some of the partners that can help.

This guide has been designed to seize this moment and provide elected leaders, cabinet members, and officers actionable steps that you and your local authorities can take to shape your local energy system, unlock growth and investment, and achieve your Net Zero ambitions. It will help local authorities to leverage opportunities for the council itself, in terms of energy supply and new ways to generate income, support engagement with local businesses and residents to understand their needs, and deliver the new infrastructure they need to thrive.

Throughout the guide we will use case studies with examples of projects undertaken by other local authorities and partners on the same journey. It also includes a wider look at how the electricity system is changing, who the key stakeholders are, and what support from these key stakeholders is available to support your ambitions on energy and help you deliver local Net Zero. It will also provide an overview of the opportunities available to you and your local authority to finance this work, and how you might generate income and reduce costs as we transition to a decarbonised energy system and deliver Net Zero.



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About

UK100

UK100 is the only climate network of locally elected leaders that focuses on the delivery of Net Zero. We bring together local authorities across the country to share knowledge, collaborate, and advocate to the UK government with their collective power.

Our membership spans the UK, is cross-party, and represents all tiers of local government.

There are now 115 cross-party local leaders in our network committed to meeting Net Zero at least five years earlier than national targets.

We represent over 60% of the UK population covering both urban and rural environments. 80% of UK greenhouse gas emissions are within the influence scope of local government.

We produce practical guides like this and enable leaders to speak collectively on how to accelerate the transition to clean energy locally and nationally. You can read more about us here: http://www.uk100.org

UK Power Networks

UK Power Networks is a Distribution Network Operator (DNO) that owns and maintains the cables and substations which deliver electricity from the national grid to 8.5 million homes and businesses across London and the South East and East of England, serving approximately 20 million people and 133 local authorities.

In 2023, UK Power Networks launched the UK's first independent Distribution System Operator (DSO) to ensure the network is ready for the transition to Net Zero. The DSO works to incentivise customers to shift their energy consumption or generation to maximise use of its existing electricity grid infrastructure, and facilitate the lowest cost transition for customers adopting low carbon technologies. The objective is to ensure there is the right capacity in the right place, at the right time, and at the lowest cost for their customers, with local authorities as one of their key customer groups.

Find out more at ukpowernetworks.co.uk and dso.ukpowernetworks.co.uk

DSO | UK Power Networks Delivering your electricity

Why we are partnering to create this guide

There is a new national mission to decarbonise the energy system and local councils and their leaders need to be at the heart of it.

The energy system is already changing; generation is shifting from fossil fuels to renewables, and the earlier unidirectional flow of energy is transitioning to a more decentralised, two-way flow of energy.

Local authorities can not only shape the energy system so it's ready to cater to future needs, but also save money and generate income using new technologies that can reduce emissions and benefit local communities.

UK100 and UK Power Networks are partnering to create this guide for local leaders and officers to understand how to make use of and shape this changing energy system, by ensuring it delivers what their residents and businesses want in their local areas.

Understanding the energy system and how it is evolving

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2.1 How the energy system is evolving

The UK's energy system is changing, driven by four key objectives described in the previous government's "Powering up Britain" blueprint:

- **Energy security:** setting the UK on a path to greater energy independence.
- **Consumer security:** bringing bills down and keeping them affordable, making wholesale electricity prices among the cheapest in Europe.
- **Climate security:** supporting industry to move away from expensive and dirty fossil fuels.
- **Economic security:** playing our part in reducing inflation and boosting growth, delivering high-skilled jobs for the future.

Achieving all of these objectives depends on moving from expensive, imported, climate-damaging and increasingly scarce fossil fuels, to cheap, local, renewable sources.

The nature of renewable energy sources —distributed and variable— means that a substantial transition of the energy system is

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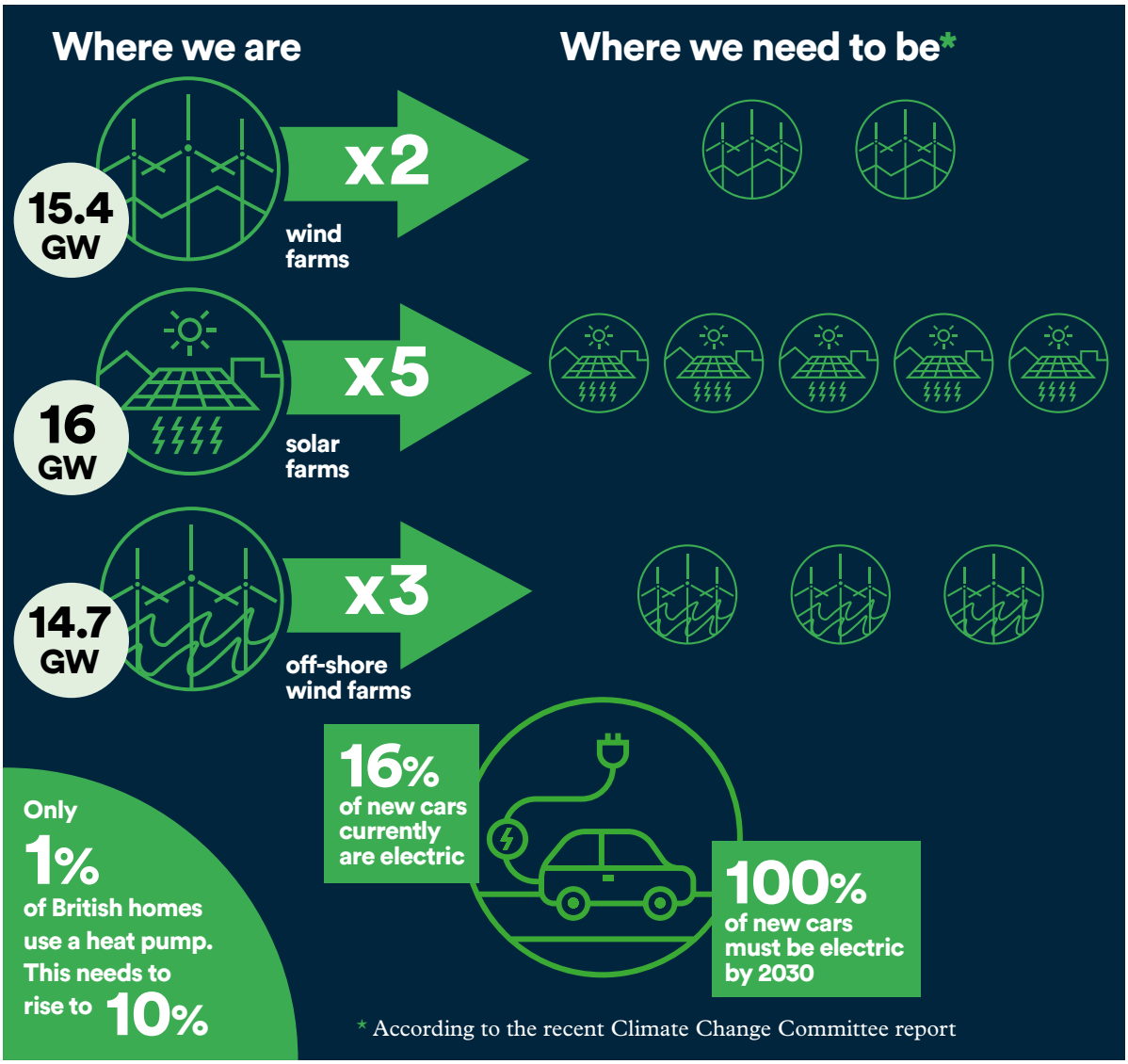
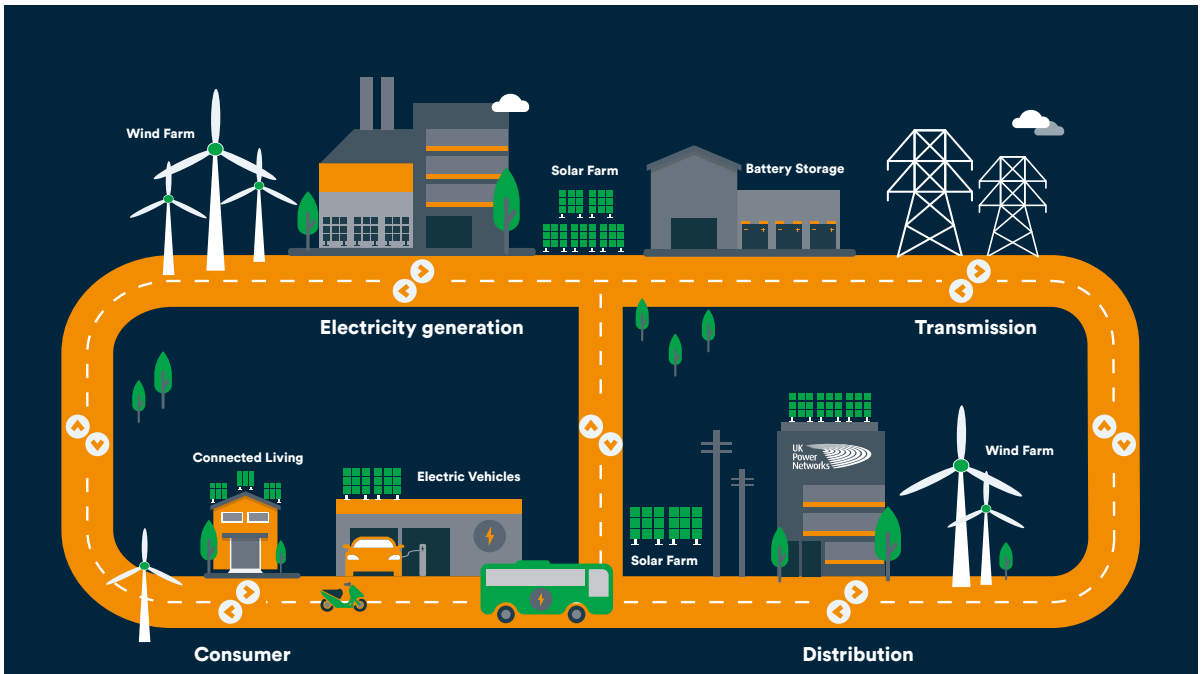


Energy system transition

Electricity Generation | Transmission | Distribution | Consumer

Old World



New World

- Fewer large generators, but many more smaller or micro-scale generators
- Bidirectional power and more information flow
- More storage solutions, at all levels
- More ‘prosumers’ - consumers that self-produce and consume
- Greater flexibility in demand, storage and generation of energy
- More electric vehicles and less reliance on gas for heating and cooking

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required. Rather than the "old world" model of centralised generation and one-way power distribution, the "new world" needs to cater for localised generation and two-way power flows.

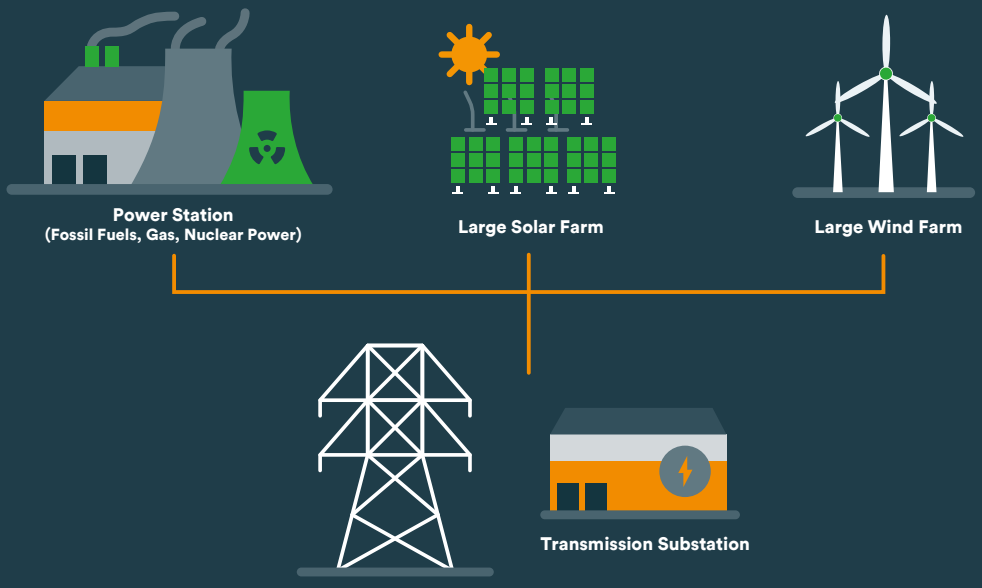
The Office of Gas and Electricity Markets (Ofgem), the market regulator, is making many changes to the energy system to support this transition, including:

- Asking DNOs to establish DSO capabilities to facilitate a smarter energy system.
- Enhancing support to local energy system planning, by creating a new Regional Energy Strategic Planners (RESPs) role to coordinate different local actors.
- Supporting increased system flexibility, by facilitating markets to provide financial support to providers of flexibility services (including storage and demand reduction).
- Changing electricity system 'codes' (rules) to speed up grid connection for new generators, storage providers, and consumers.
- Funding innovative pilot projects to help accelerate the transition to Net Zero at lowest cost through the Strategic Innovation Fund.

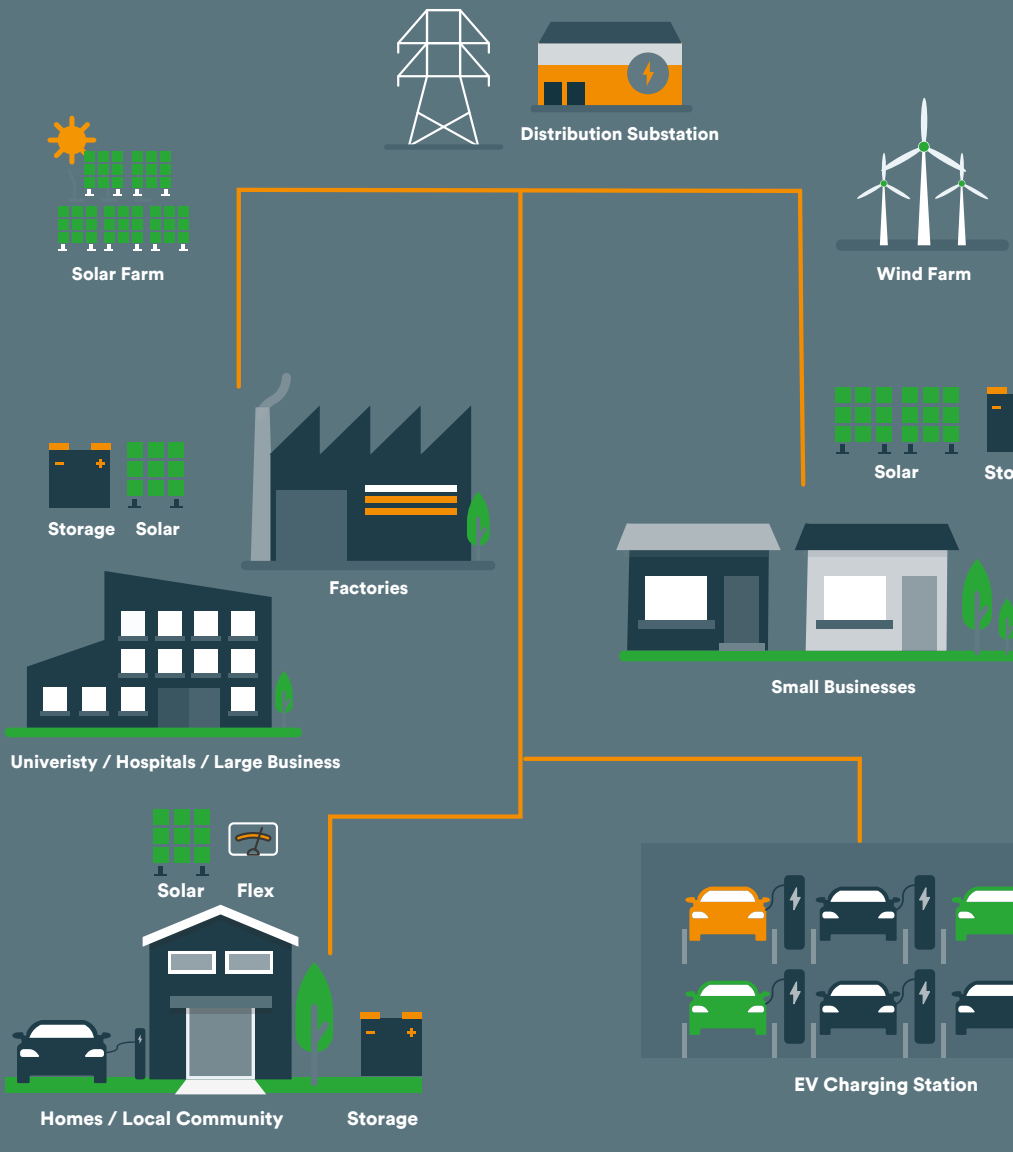
However, local authorities have a critical role in planning and driving this transition.

The electricity system

Transmission Network



Distribution Network



2.2 Understanding the electricity system and its stakeholders

GENERATORS

Electricity can be generated in a variety of ways using different fuel sources and different technologies – through fossil fuels such as coal, gas, and nuclear power, and renewable energy such as solar or wind.

Electricity generated by large generators flows through the transmission network.

In addition to large generators connecting to the transmission network, many smaller generators (such as solar farms) are being developed, typically connected directly to the distribution network.

TRANSMISSION NETWORK

The transmission network is the high voltage network that carries large volumes of electricity between regions from the large generators to the transmission substations.

Think of the transmission network as the national motorway network, while the distribution networks are like local A and B roads that deliver electricity to homes and businesses.

In England and Wales, the transmission network is called the National Grid and is owned and maintained by National Grid Electricity Transmission plc (NGET), a subsidiary of the National Grid Group.

In Scotland, the transmission network is owned by Scottish Power in central and southern Scotland, and SSE plc in northern Scotland. In Northern Ireland, it is the Northern Ireland Electricity Networks (NIE Networks).

The distribution network converts high-voltage electricity from the transmission network into lower voltage, suitable for consumer use.

DISTRIBUTION NETWORK

The distribution network is a lower voltage network that distributes electricity from the distribution substations to private, public, and industrial customers. It receives this electricity from both, the transmission network and increasingly from smaller, distributed generation sources.

It also carries electricity from smaller generators that are directly connected to the distribution network. The distribution network converts high-voltage electricity from the transmission network into lower voltage, suitable for consumer use.

There are 12 licensed distribution network areas in England and Wales and two in Scotland, based on the former area electricity board boundaries.

Including Northern Ireland, the 15 licensed distribution network areas are owned and operated by seven distribution network operators. Several Independent DNOs (IDNOs) connect to the local distribution

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networks managed by one of the main DNOs in their area, to establish their own networks for new housing and commercial developments. IDNOs are responsible for managing and operating the networks they create.

DNOs have established DSOs to facilitate a smarter energy system.

See further information on the distribution network operators/ distribution system operators in Section 4.

SUPPLIERS

Suppliers are companies that supply energy – they're the company that you pay your electricity bill to.

Some suppliers are introducing schemes like "time-of-use" tariffs that encourage consumers to use electricity at times when more or surplus electricity is available, charging them lower prices. Costs of these "time of use" tariffs are lower because they're helping match demand to supply.

CONSUMERS

Electricity consumers are residents, local businesses, industrial customers, and local authorities themselves that buy and use electricity.

Consumers can now have smart devices (such as washing machines or electric vehicle charge points) with off-peak time settings, or a "time-of-use" tariff offered by their supplier. They can tailor their usage to times when prices are lower, and potentially save money by contracting to reduce consumption at times of high demand.

Local authorities, as major electricity consumers, now have opportunities to save or even generate an income by actively managing their energy consumption.

OFGEM

Ofgem is Great Britain's independent energy regulator.

It regulates the companies which run the gas and electricity networks and protects the interests of energy consumers by ensuring they are treated fairly.

It also works with government, industry, and consumer groups to deliver a Net Zero economy. This includes determining the roles and responsibilities of other energy system participants and creating the industry rules and markets.

How can you achieve your Net Zero targets?

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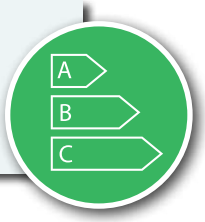
3.1 Develop a local energy plan / Local Area Energy Plan (LAEP)

3.2 Update your Local Plan

3.3 Facilitate the electric vehicle transition

3.4 Decarbonise heat and improve energy efficiency in buildings

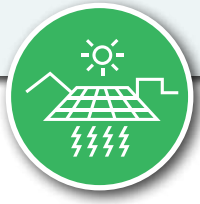


3.5 Decarbonise your own electricity usage

3.6 Participate in a flexibility tender

3.7 Develop storage capacity

3.8 Promote distributed generation



3.9 Support local businesses and residents in their own energy transition

3.10 Engage with key stakeholders in your region

Key actions

In this chapter we present some of the key actions that local authorities can take in order to achieve their Net Zero targets and drive the energy transition.

Depending on your local authority's size, type, or geography, planning and actions may cover a wider area. This can include multiple local authorities or operate on a subregional or regional basis.

3.1 Developing a local energy plan / Local Area Energy Plan (LAEP)

A local energy plan sets out how an area will transition its energy system to Net Zero in a given timeframe. The terminology "local energy plan" and "local Net Zero plan" can be used interchangeably to refer to the same output.

Although the level of detail in your plans may vary, the LAEP is a gold standard specification (see *What Is A LAEP?* overleaf).

A local energy plan should include:

- An assessment of what needs to be decarbonised (total energy consumption from homes, industry, transport, etc).
- A strategy for decarbonising each sector.
- An assessment of opportunities for generating local renewable electricity or heat, or both, to replace fossil fuel sources.
- A high-level timeline for the transition, with lower-level detail on the first phases.

In order to be comprehensive, a local energy plan should be developed in collaboration with:

- Local businesses and residents.
- Housing associations and providers.
- Community energy organisations and groups.
- Local Net Zero Hubs.
- Neighbouring local and regional authorities.
- Potential financiers and investors.
- Your electricity distribution network or system operator – see Section 4 for why it is crucial to engage and share your plans with them.
- Your Gas Distribution Network Operator (GDNO).

This approach allows you to engage with a wide range of energy consumers and build a local energy plan that meets their needs and aspirations, and ultimately a LAEP that will be anchored in your place leading to greater acceptance and a smoother implementation of your local energy plan.

In developing your local energy plan you can utilise your internal teams and data, or commission one of the energy consultancies who specialise in this type of work in the UK.

Usually, the consultancies will have standard tools and approaches which can be tailored to suit the specific local authority's needs.

In addition, some DSOs have already established functions that can support local authorities with the development of these plans.

In any case, it is critical to involve your relevant teams in the different stages as it will help ensure the recommendations are practical and suit your local needs.

What is a LAEP?

A LAEP is an evidence-based approach that explores potential decarbonisation pathways and sets out implementation plans to achieve Net Zero for the local area. Led by local authorities, a LAEP brings together local stakeholders, such as community energy organisations, residents, and businesses, collating local knowledge to propose a credible decarbonisation pathway for the area.

Energy Systems Catapult, an independent research and technology organisation, has developed a useful guide for local authorities on developing a LAEP.

Standardising the development process, content, and format of local energy plans will help other parties including energy networks, innovators, and developers inform their own plans too, so it's important that any recommendations from the LAEP can be easily adapted into local plans. It provides a consistent evidence base to coordinate decisions at local, regional, and national levels for the energy transition to Net Zero. The development process is heavily data led, using national and local datasets on geography, housing, transport, etc. These data sets are used to understand what is required to reach Net Zero, and also what local opportunities exist to achieve decarbonisation.

The primary stakeholder in the development of a LAEP is your local authority, which will own and have overall responsibility for leading creation.

Multiple local authorities can combine efforts to develop a regional LAEP as well. For example, while parish councils may not be able to develop a LAEP — being asset owners, convenors of place, and keen to generate income from renewable energy, they could be involved in the process in their region.

Local authorities should work closely with electricity and gas network operators in shaping the content and direction of the plan. Secondary stakeholders, expected to support the local authority in creating the LAEP, include residents and businesses, neighbouring local authorities, large local energy users, community energy organisations, local Net Zero Hubs and social housing providers.

A completed LAEP report should include:

- The chosen pathway with sequenced interventions that set out the area's proposed route to Net Zero.
- A "plan on a page" that offers a quick overview of the scale of key

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interventions across various geographical zones in the local area.

- Visual focus zones for all the prioritised activity associated with getting to Net Zero.
- Outline of priority projects, providing users of the LAEP with priority interventions to take forward.
- Breakdown of investment to decarbonise the local area aligned to the main components.
- Next steps: the key immediate and near-term activities including actions needed to progress the LAEP.
- Corresponding data sets that can be used for a future LAEP update, or by organisations to support project and implementation activity.

The technical scope of the LAEP should include:

- Energy efficiency in buildings, both domestic and non-domestic. For example, glazing and insulation.
- Low-carbon heating systems, both domestic and non-domestic. For example, heat networks, heat pumps, direct electric or renewable gas heating.
- Infrastructure for transport. For example, public and private EV charge point installations.
- Energy provision, the energy supplied to the built environment, their systems, and other energy demands in a local area.
- Existing heat networks, energy from waste facilities, and local combined heat and power plants.
- Local renewable generation. For example, solar PV and on and offshore wind.
- Networks, storage, and flexibility.

Case Study: Peterborough

Peterborough's LAEP, funded by Innovate UK, covered 70% of their total emissions. The plan divided the area into 10 zones, targeting Net Zero by 2040 with various immediate and long-term pathways.

There were various pathways that were developed with "low-regret" solutions that can be implemented immediately, and others that might need decision points and early enabling actions to remove any barriers.

This was done for buildings, heating, transport, local generation, networks, storage, and flexibility. In the next phase the different options will be assessed to explore investible delivery mechanisms.

More details on Peterborough's LAEP can be found on their website.

Case Study: Greater Manchester

Greater Manchester has committed to achieving carbon neutrality by 2038. Their LAEP development includes plans across its 10 boroughs and an overall plan for the city region.

This plan includes strategies for district-specific transformations and engages with local businesses and residents to assess technologies like heat pumps and renewable energy sources.

Collaboration across regions, though challenging, brings with it economies of scale.

More details on Greater Manchester's LAEP can be found on their website.

Case Study: London's sub-regional LAEPs

The Mayor of London has a Net Zero target of 2030 and in order to turn this ambition into reality, is developing a LAEP funded by the Greater London Authority (GLA). However, rather than creating separate plans for each of the boroughs, their approach is to develop sub-regional scale LAEPs covering all London boroughs by 2025 to promote coordination in their approach to energy planning. A sub-regional LAEP for West London was completed in 2023.

The GLA, London Boroughs, and London Councils are working together to complete additional stages of LAEP development going forward, leveraging sub-regional evidence gathered.

LAEPs look at the complete energy system, considering both the technical and non-technical barriers that may exist to create a more integrated decarbonisation strategy across sectors.

Creating a LAEP at a sub-regional level helps to:

- Achieve economies of scale, consistency, and data standardisation in planning the transition to decarbonised systems.
- Enable the sharing of learning and support across the sub-region.
- Develop cross-borough approaches to energy planning, which can lead to greater collaboration and efficiency in project development.
- Help get buy-in from key decision-makers and support local authorities in taking action based on an evidence-based integrated strategy that unlocks investment and supports local policy decisions.

THE PROCESS

The work is split into two phases, with Phase 1 activities being led and funded by the GLA to deliver sub-regional LAEPs. Phase 2 will be a collaborative effort between the GLA, London Boroughs, and London Councils to develop subsequent stages of LAEPs at the local level, including more detailed project development, and tailored decision making responsive to local context, such as differing Net Zero targets, building stock, and decarbonisation opportunities. The DNOs and DSOs are engaged throughout the process, and the outputs are shared with them for consideration during their network planning.

PHASE 1

After the scope was developed, one-to-one meetings with boroughs were held with support from the network operators for the areas, including UK Power Networks and Scottish and Southern Electricity Networks.

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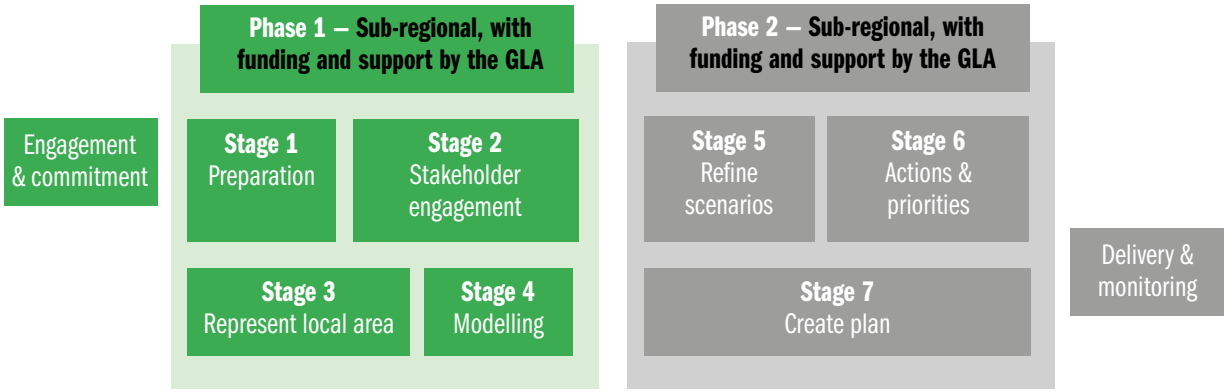

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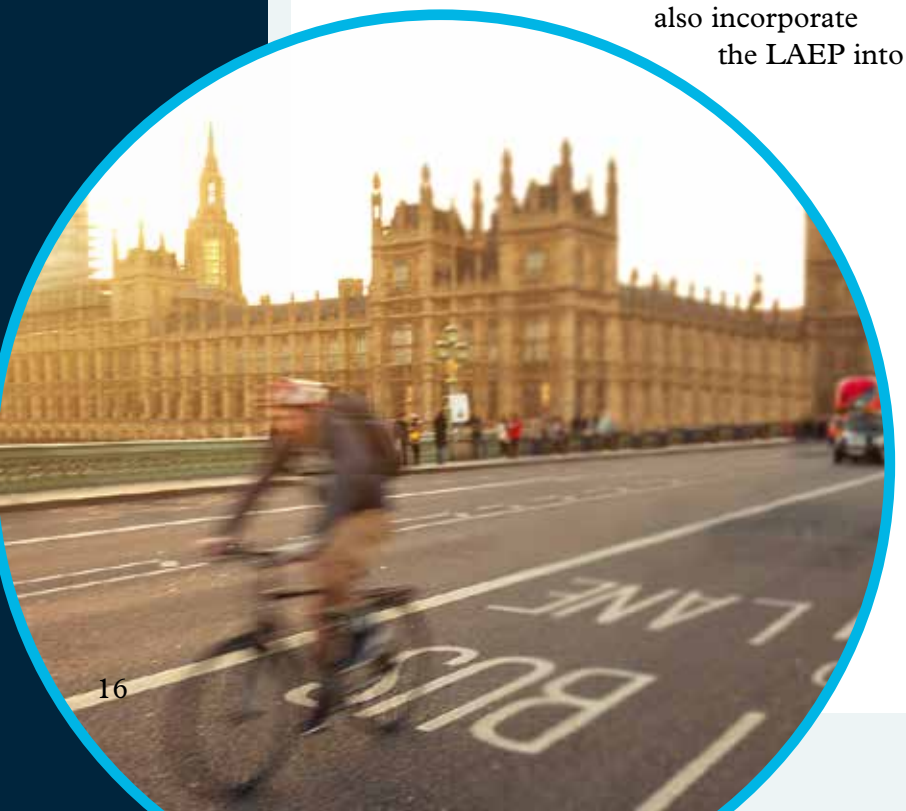
During the preparation phase, boroughs shared their plans and the DSO and DNO shared their data sets with the GLA, who then provided cross-sector data sets that had the baseline and future energy demand through the DataHub.

The GLA then produced the technical report which had the recommendations and priorities for the boroughs and sub-regions, this was shared with the boroughs for refining and testing the scenarios. UK Power Networks DSO Local Net Zero team and their tools supported boroughs with this testing phase.

The boroughs created their priorities based on this report and developed their plan for actioning the recommendations. UK Power Networks DSO will also incorporate the LAEP into their Distribution Future Energy Scenarios (DFES) for future planning. Learn more about DFES in Section 4.5



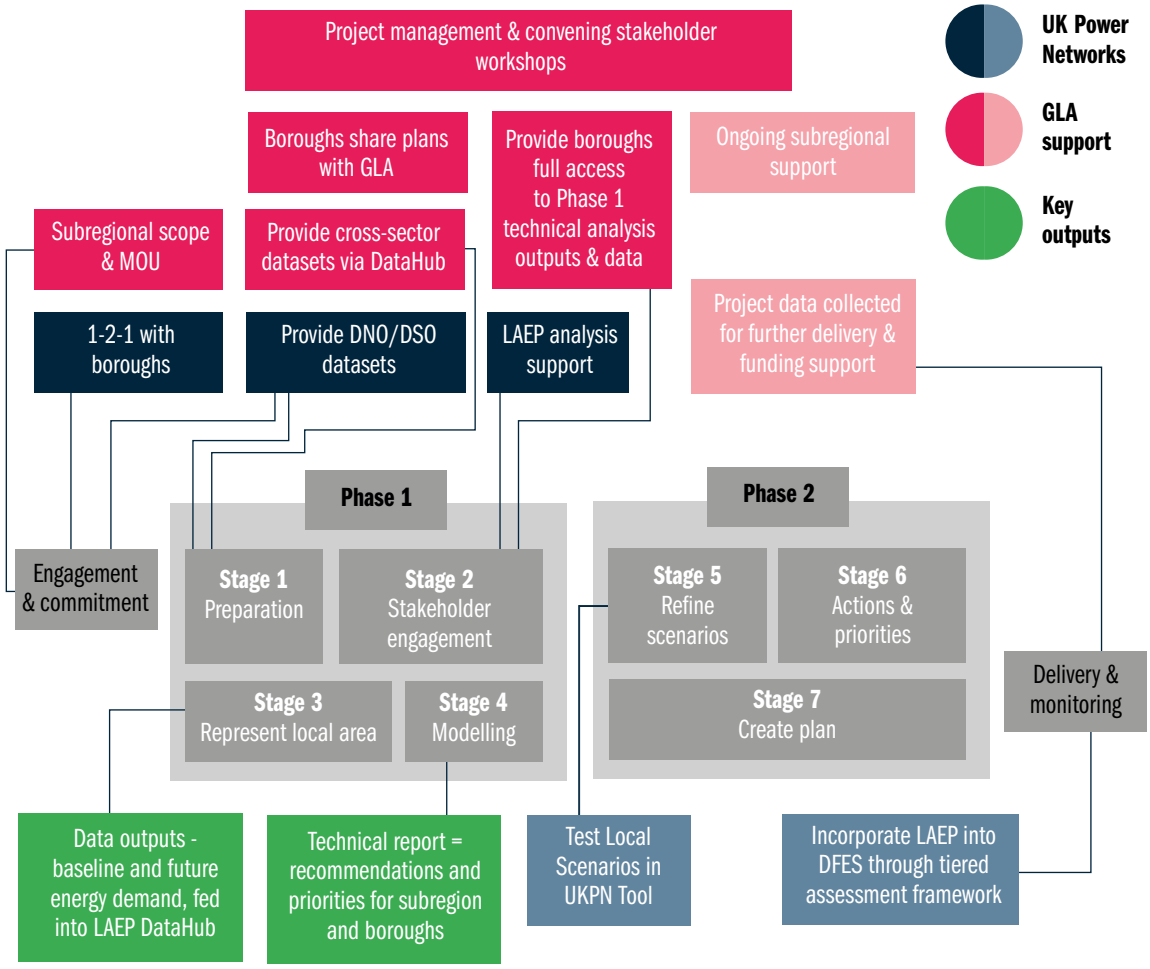
WEST LONDON SUBREGIONAL LAEP - PHASE 1

The first sub-regional LAEP in West London was completed in partnership with UK Power Networks, Scottish and Southern Electricity Networks (SSEN), and seven boroughs in the West London Alliance together with two neighbouring boroughs.

The region has a higher density of major energy users, including data centres. Consequently, the electricity distribution and transmission grid is under pressure, with demand expected to grow significantly over the coming decades. The sub-regional LAEP can help address the capacity issue by consolidating insights on future energy demand and capacity, and enabling informed decision-making on solutions that support both decarbonisation and growth.

The LAEP highlighted a potential opportunity to reduce the operational energy demand from major energy users, such as data centres, by engaging with stakeholders to understand business and decarbonisation plans.

The GLA undertook research and engagement with the trade body techUK, which represents data centres, to help understand industry infrastructure demands and identify anticipated future growth in the sector. The outputs from the



sub-regional LAEP will also inform the utilities' business planning process and influence future plans for investment to upgrade the networks.

This work has led to the development of several cross-borough work packages being taken forward by the GLA and West London boroughs. Many West London boroughs are now building on the sub-regional LAEP to finish the process for their own local area.

LONDON LAEP DATAHUB

To support the sub-regional LAEP development, a LAEP DataHub and data visualisation tool for boroughs is being developed.

The types of data included in the DataHub will include baseline energy data for buildings, energy networks, transport, retrofit scenarios, EVs, growth data, heat networks, and other relevant planning and infrastructure data layers to support decarbonisation and local planning activities.

The benefits of the DataHub include:

- Providing a platform to host, share, and visualise LAEP data inputs and outputs, promoting consistency and currency in data used.
- Promoting an energy planning hierarchy of data that differentiates between scales such as Pan-London, sub-regional, local, Opportunity Areas (OAs), Lower layer Super Output Areas (LSOAs), and site-specific.
- Acting as a mechanism to share projects and growth data between all relevant stakeholders, and providing the opportunity to drive innovation in approach with academia and industry.

3.2 Updating your Local Plan

A critically important step for any local authority with planning responsibility, is to ensure that its local plan (sometimes referred to as a local development plan), neighbourhood plans, and related planning documents fully support your ambition with respect to the energy transition.

Local Planning Authorities (LPAs) are required to review their local plans every five years, so considering the requirements and opportunities of the energy transition should be an early and crucial step in the review and update process.

If no review or refresh is imminent, then LPAs could make further provision for energy transition through Supplementary Planning Documents (SPDs). Although these cannot introduce new planning policies into the development plan, they can "build upon and provide more detailed advice or guidance on policies in an adopted local plan", and they are a material consideration in planning decision-making.

If a local energy plan or LAEP exists, then an important first step would be to review these and draw out all of the aspects that might require planning permission or relate to the local plan (see opposite: "How do LAEPs relate to local plans?"). Aspects that could be included in your local plan are:

- Allocating sites for renewable energy generation or storage, or both, and network infrastructure such as substations and other energy assets.
- Policies to guide applications for renewable generation installations, such as acceptable noise levels, Areas of Outstanding Natural Beauty (AONBs), visual amenity, shielding, agricultural land, biodiversity net gain, drainage requirements, local off-taker schemes, and community payment.
- Guidance for retrofit and generation measures in any conservation areas.
- Requirements and standards for new build properties. For example, setting insulation standards, requiring onsite photovoltaics (PV) or green roofs, or both, adhering to Net Zero standards, providing EV charge points or car clubs, or both, and connecting to heat networks.

How do LAEPs relate to local plans?

- LAEPs are not a mandated planning method for local government in England, Scotland, or Northern Ireland, however, there can be a relationship between LAEPs and local planning policy.

- LAEPs can incorporate inputs from other plans. For example, housing and employment numbers in local plans to account for demand from planned future developments when proposing energy system changes, helping to support their delivery and local ambitions for growth. Conversely, spatial planning can use outputs from LAEPs as a potential evidence base.

- Other local government strategic plans and strategies could also use LAEP outputs as appropriate. For example, where LAEPs set out proposed locations and provision for EV charging infrastructure, this information can inform local or regional transport strategies and direct delivery.

- In Scotland, Local Heat and Energy Efficiency Strategies (LHEES) are at the heart of a place based, locally-led and tailored approach to the heat transition.

- Recognising that the LAEP process is not mandated in England, Scotland, or Northern Ireland, it will be up to individual areas to determine how to use LAEPs, their scope, and whether they can be used as an evidence base. This may depend on the urgency and priority given to energy transition, Net Zero, and climate change within areas.

- The 2023 Town and Country Planning Association and Royal Town Planning Institute guide The Climate Crisis – A Guide for Local Authorities on Planning for Climate Change advises (in relation to renewable low-carbon energy and associated infrastructure) that it is good practice to "integrate local area energy plans and local development plans, including engaging in detail with the Distribution Network Operator at forward planning stage. This can help anticipate, plan for and overcome distribution grid constraints, by considering the implications of local development plan policy for grid capacity and the inter-relationships between spatial and grid planning".

LAEP embedded in Welsh Planning

Wales has made LAEP a part of "Planning Policy Wales Edition 12 February 2024" which outlines how LAEPs interact with planning policy, and how the government of Wales funds their development in every region. For example:

- Through setting out that "local and regional authorities must take an active, leadership approach at the local or regional level [or both] by setting out their vision for decarbonisation and energy for their areas".

- By stating: "Using LAEP or other development plan evidence, local authorities should identify challenging, but achievable targets for renewable energy in local or regional plans, [or both] and strategies or development plans".

- Further, by stating: "In order to facilitate local and regional energy planning, local authorities must develop an evidence base (which can include a LAEP) to inform the development of renewable and low-carbon energy policies".

- Using LAEP as an "evidence base to inform policies and proposals for local energy generation".

3.3 Facilitating the electric vehicle transition

The Department for Transport recognises that "local authorities have a crucial role to play in enabling the transition to electric vehicles in their areas, including: proactively supporting and delivering the rollout of electric vehicle charge points; helping to ensure the transition is integrated into wider local transport and community needs".

Local authorities in many parts of the country are helping to lead this transition, working with the EV industry and the Government's Office of Zero Emission Vehicles and Local EV Infrastructure (LEVI) Funding. The previous government set a legal target for 80% of new cars and 70% of new vans sold in Great Britain to be zero emission by 2030, increasing to 100% by 2035.

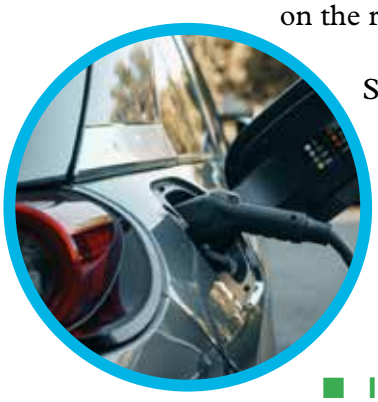
Steps that you can take to facilitate the transition to electric vehicles are:

- **Use the National EV Insights and Support (NEVIS) toolkit** that provides easily accessible data, maps, and modelling relating to electric vehicles and electric vehicle charging infrastructure.
- **Establish or expand charging point provision** on local authority's land and car parks as well as on the public highway. Helpful webinars, case studies, and best practice guidance can be found on the website of the Energy Saving Trust.
- **Create a long-term electric vehicle strategy** to meet the electric vehicles charging needs in your area, considering how best to align it with the wider Net Zero policies in transport and energy. Here is a useful guide.
- **Set policies in Local Plans** or transport strategies, or both, to support and encourage electric vehicles rollout.
- **Plan for decarbonising vehicle fleets** operating in your local area, including your own vehicle fleet and provide the infrastructure needed for businesses, car clubs, bus fleets, taxis and private hire vehicles to electrify.

An EV strategy should therefore only be one aspect in a more comprehensive future transport strategy, with much greater emphasis on the public transport and active travel measures, such as walking, wheeling and cycling, that are the least carbon-intensive ways to travel.

3.4 Decarbonising heat and improving energy efficiency in buildings

Heating buildings accounts for almost a quarter of total carbon emissions in the UK, meaning decarbonising heat is a crucial step on the road to Net Zero.



Steps you can take to decarbonise heat are outlined below. These can either be applied to local authority's owned buildings or be promoted by you to local businesses and residents:

- **Install and use heat pumps.** Heat pumps work like refrigerators in reverse. Operating on electricity, they take the heat from the air (air-source heat pump) or ground (ground-source heat pump) to heat water for radiators.
- **Support the adoption of heat networks or district heating, or both.** These systems supply heat from a central source to a group of consumers through a network of underground pipes carrying hot water, it can cover a large area or a local cluster of buildings. These systems remove the need for individual boilers or heaters for every consumer and building and can be effective in areas of high density. This solution can help utilise waste heat from sources such as industry, power stations, or even from rivers and canals. More information can be found on the Net Zero Go website and the Heat Networks Gov.uk website.

- **Apply energy efficiency measures on existing or new buildings,** which allow long-term energy savings, lower carbon emissions associated with heating, and improve comfort for residents. You can follow a fabric first approach that improves a building's energy performance primarily through modifications to its physical fabric, rather than solely relying on advanced technologies and renewable energy systems.

3.5 Decarbonising your own electricity usage

A significant part of most councils' carbon emissions is their own use of energy from traditional fossil fuel sources. Entirely decarbonising that is an important step, indeed it is one of the reasons that UK100 was originally founded, and is a good signal of intent to local residents

There are many ways to legally report that your electricity usage is zero carbon, but costs and benefits can vary significantly depending on which approach you take.

Steps you can take to decarbonise your own electricity usage are outlined below (from the least to most impactful benefits):

- **Sign a "zero carbon" contract, where the supplier demonstrates that electricity supplied has come from zero carbon sources, with your existing electricity supplier.** This will allow you to rightly state that your electricity is zero carbon, but it is unlikely to actually increase the total volume of renewable electricity generated locally or nationally. Over a third of all UK electricity is already renewable, so effectively the council will be purchasing that existing renewable electricity.

- **Sign a "zero carbon" contract with an electricity supplier who sources its electricity directly from UK based 100% renewable generators.** This is more likely to grow and support renewable generation.

- **Purchase your electricity via a Power Purchase Agreement (PPA) directly from a UK renewable generator.** This will allow you to lock in electricity prices over the long term and be sure where your power is coming from. Although PPAs can be implemented with any UK generator, the benefits are greater when they are implemented with generators located in the local area as community-owned generation.

What is a PPA?

A PPA is a contract between an energy generator and an energy supplier or consumer for the purchase of energy. Excess energy from any generator, including companies or individuals that generate more electricity than they require for their own needs, can be sold to the grid and purchased by a company.

There are two types of PPAs. A sleeved agreement, also known as a corporate PPA, and a virtual PPA (VPPA). The main differences with a sleeved PPA and VPPA is how the energy is managed at the grid and how the distribution is structured.

In a sleeved PPA, the generator will send energy to the grid, from where it will be supplied to the "off-taker" (the consumer of the energy). The relationship between buyer and seller is mediated through a contract with a single supplier-offtaker. This contract outlines the terms under which the supplier purchases energy from the generator and sells it to the consumer. Consequently, the buyer and seller of energy do not have a direct contractual relationship with each other.

In a VPPA, the energy is not physically delivered to the off-taker. It is effectively a financial contract between the buyer and seller of the energy. Both parties also have a relationship with a supplier-offtaker, which may vary.

- **Partner with a local or community energy company to construct additional, local renewable generation capacity, purchasing some or all of the electricity via a PPA.** This can increase the supply of renewable energy while keeping benefits in your local community, this can be combined with the use of your own buildings or land and return an income to the council.

3.6 Participating in a flexibility tender

"Flexibility" is the ability to change electricity generation or consumption patterns to reduce the pressure on the electricity network at certain times, such as during the evening when demand is typically high.

For example, this could be done through charging an electric vehicle overnight rather than during times of peak demand. Flexibility can come from a variety of sources, including electric vehicle charge points, electric heating and cooling, batteries, and distributed generation.

By participating in a flexibility scheme with your local DSO, you are not only contributing towards a more efficient and low-carbon operation of the electricity network but you are also financially compensated. You can also share this information with residents and local businesses to make them aware of these schemes.

For more details on flexibility tenders and how to participate, please refer to section 4.3.

3.7 Developing storage capacity

Electricity storage can be used to balance out supply and demand for electricity. For short-term peaks and troughs during the day, "load balancing" can be provided by a range of technologies including grid-connected battery storage, battery storage teamed with renewable generation such as solar panels or wind power, and home or electric vehicle batteries.

Long-term storage (over days and weeks) is an emerging technology which can be provided from a range of technologies including flow batteries, compressed air storage, and large-scale hydrogen production.

Network operators can offer payments to organisations and individuals who are able to shift their electricity demand outside of peak period on weekday evenings.

Sometimes there can even be cheaper electricity available for organisations that can increase their demand when supplies of green energy are abundant, for example, late at night when it's very windy. This is called the Flexibility Market. As a local authority, you can invest in storage directly or consider leasing land to storage developers with the capital, expertise, and risk appetite to invest in storage.

3.8 Promoting distributed generation

Distributed generation refers to the connection of a broad range of generation technologies to the distribution network. As a local authority, you can install rooftop solar panels on your own buildings or invest on installing solar panels on land, creating solar farms to generate income. Onshore

wind, biomass, hydrogen generation, and combined heat and power (CHPs) are some other technologies that you can adopt or promote to your residents and local businesses to support towards your Net Zero targets. Useful guides on distributed generation can be found here.

3.9 Supporting local businesses and residents in their own energy transition

Many of your local businesses and residents will need to make their own changes as we journey to Net Zero. This could range from insulating their homes and businesses, to switching to heat pumps, installing renewable energy generation, or switching to electric cars, vans, and buses.

Councils will not always be able to fund this directly, but as a trusted organisation with a direct relationship with all local stakeholders, you can greatly encourage and support them in making their own transitions.

Steps that you can take to support local businesses and residents in their own energy transition include:

- Educating people on the benefits and cost savings available from the transition, through local energy advice services, resident newsletters, and social media posts.
- Directing them to grants, schemes, and incentives available to support uptake.
- Identifying and signposting people to contractors offering these types of services in the local area.
- Offering a group-buying scheme in partnership with trusted local installers, where local businesses and residents can quickly and easily register for an assessment and sign up for an installation with a reputable contractor at a reduced price.
- Enforcing building and rental standards that drive improvements in energy efficiency and allow reduction on energy bills.

3.10 Engaging with key stakeholders in your region

In order to achieve your Net Zero targets, it is crucial to engage with key stakeholders in your region, such as:

- Your electricity distribution network or system operator, or both.
- Your gas distribution network operator.
- Regional energy strategic planners.
- Community energy organisations.
- Net Zero Hubs.

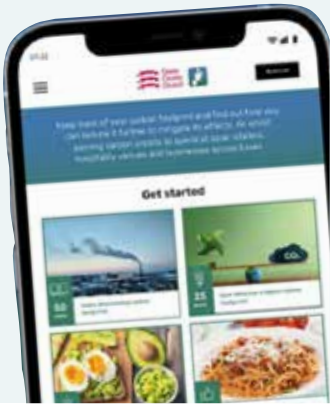
Further details on these stakeholders are included in the next sections.

Case Study: Norwich's Solar Together scheme

In 2015, Norwich City Council pioneered the first reverse solar auction in the UK, allowing businesses to bid for clean energy produced by rooftop solar installations on homes and commercial buildings. The Solar Together scheme has consistently delivered an average of 20% savings for customers in each round. This initiative provides residents the opportunity to evaluate the benefits of solar energy with no commitment required.

Case Study: The Carbon Cutting Essex app

Focused on helping Essex reach its Net Zero targets by 2050, the app encourages residents, businesses, and schools to learn more about their carbon footprint and what actions they can take to reduce it.



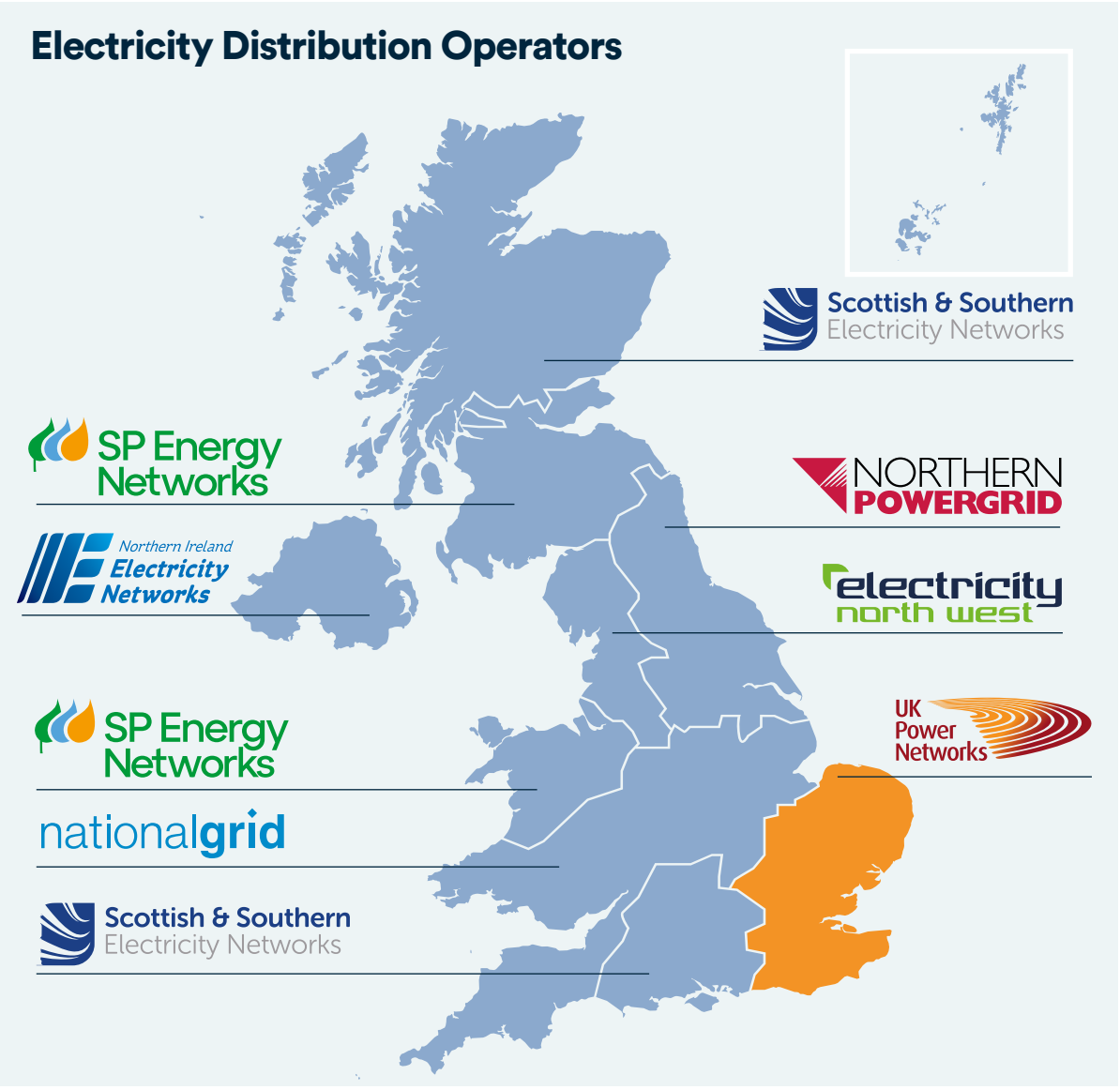
4 What are the Distribution Network Operator (DNO)/ Distribution System Operator (DSO) and why do they matter to a local authority?

4.1 What are DNOs and DSOs?

The DNO is responsible for helping local authorities connect EV charge points, new buildings and green energy to the network efficiently and on time.

The DSO provides strategic support for longer-term projects, advising on the most cost-efficient solutions to help local authorities make their local energy plans a reality.

Specifically, the DNO is the licensed operator of the electricity distribution network, with seven DNOs covering different areas in the UK, as shown in the diagram below.
To find the DNO operating in your area, check here: Who's my network operator? – Energy Networks Association (ENA).

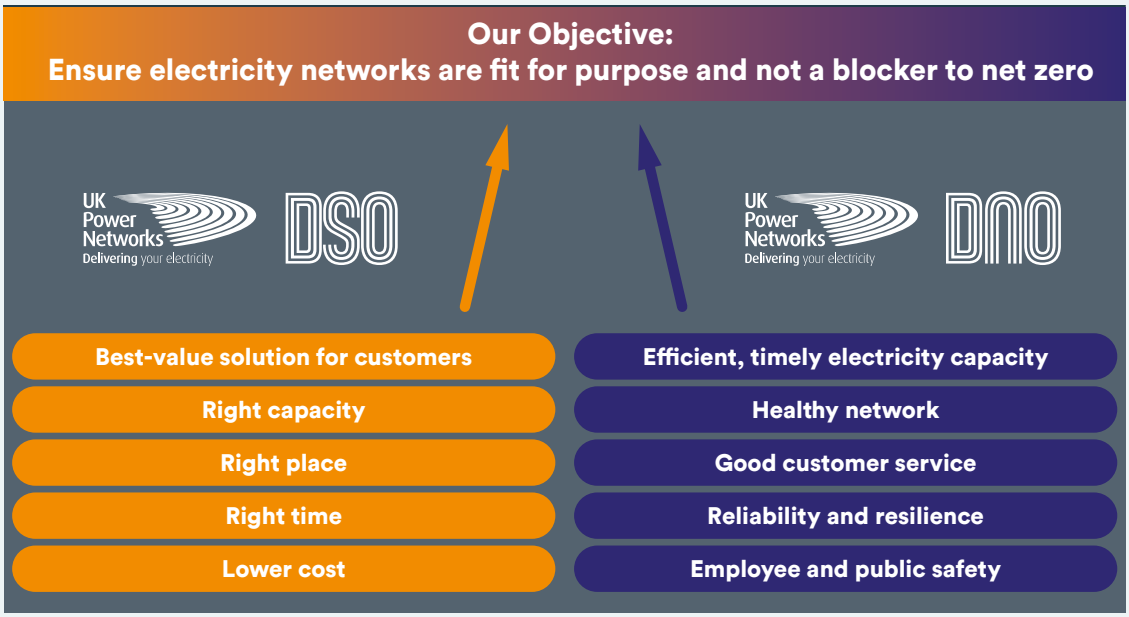


A local authority can liaise with the DNO covering their area in order to:

- Apply for a connection to the network for a new power supply.
- Apply to move or change an existing power supply.
- Apply to connect an electric vehicle charge point, solar farm, or electric heat pump to the network.
- Report a power cut.

The DNO handles physical works, unlike the DSO. Many electricity network operators have incorporated the role of the DSO within the DNO, seen as a single entity, while others have established their DSO as a separate entity to the DNO. The DSO's key focus is to deliver the right capacity, in the right place, at the right time, at the lowest cost for their customers. A local authority can liaise with the DSO covering their area in order to get dedicated support on their local energy plans or LAEP (see Section 4.2).

Case Study: UK Power Networks DNO and DSO



Case Study: Getting support from UK Power Networks DNO

If your local authority is under UK Power Networks coverage and you are ready to install a series of public electric vehicle charge points, want to decarbonise your own vehicle fleet, install heat pumps/ heat networks or solar panels, you can find more information here or contact the relevant UK Power Networks DNO Connections Team by emailing AskTheExpert@ukpowernetworks.co.uk

The above-mentioned physical works often require street activities where it's important to reduce emissions and minimise the overall impact on residents and the travelling public. This can only be achieved through early engagement between interested parties and exploring collaboration opportunities between local authorities and UK Power Networks DNO Streetwork team. Collaboration offers benefits such as a dig-once approach, shared road space, use of recycled materials, minimised vehicle journeys, and more efficient traffic management.

You can find more information on their website or contact UK Power Networks' relevant team here.

4.2 Getting support with your local energy plans or LAEP from your DSO

The sections below highlight some of the support functions provided by DSOs.

DEDICATED TEAMS

Some DSOs have established dedicated teams for local authorities that will be able to help you with your local energy plans or LAEP. Refer to the "Get in Touch" page at the end of this toolkit to find the key DSO contact for your area.

Case Study: UK Power Networks DSO Local Net Zero Team

The Local Net Zero team at UK Power Networks DSO supports local authorities with long-term energy planning. Their stakeholder-endorsed LAEP framework offers a three-tiered support service. This includes a personalised, bespoke service to capture and share with local authorities insights from annual reviews of publicly available climate change action plans, followed by 1-to-1 engagement sessions.

During these sessions, the team provides tailored support to facilitate planning and delivery of local Net Zero plans, including advice on opportunities to guide network investment planning. They also provide detailed materiality and confidence assessments for in-depth engagement and cost-benefit analysis of large-scale investment projects proposed by local authorities.

If your council is under coverage of UK Power Networks, you can book a dedicated 30-min session with the team or email them at LAEP@ukpowernetworks.co.uk. To get updates from the Local Net Zero team (or the Flexibility team – see section 4.3), you can sign up here.

DATA RELATED TO LOCAL ENERGY PLANS OR LAEPs

Some DSOs have made data available to local authorities to help with development of your local energy plans or LAEP.

Case Study: Access UK Power Networks DSO LAEP Open Data Page

UK Power Networks DSO has established a LAEP Open Data Page, with over 160 data sets to support your local energy planning. The page includes data from both, UK Power Networks and external sources organised into six themes: Electricity Generation, Land Use and Environment, Heat and Buildings, Social Benefit and Just Transition, and Transport and Mobility and Economic Benefits. You will also find case studies from local authorities, a podcast on using open data, and a guide and video tutorials to help you make the most of available resources.

PLANNING TOOLS

Some DSOs offer planning tools to support the development of your local energy plans or LAEP.

Case Study: Start Planning with UK Power Networks DSO Net Zero Hub

UK Power Networks DSO has created the Your Local Net Zero Hub, which has resources to help you get started with your local energy plans or LAEPs, understand the Net Zero basics, and review case studies.

You can also access a free online geospatial energy planning tool (sign up here) for visualising data, resources for project planning, and creating scenarios to evaluate long-term plans against budgets and targets, as well as for engaging with stakeholders.

4.3 Providing flexibility

As a local authority, you can collaborate with your DSO to explore how providing flexibility can create new revenue opportunities for you and your residents.

Case Study: UK Power Networks DSO Flexibility Markets team

UK Power Networks DSO established the Flexibility Markets team that can help you take part on the next flexibility tender. You can visit UK Power Networks DSO Tender Hub to find more or sign up to their mailing list at flexibility@ukpowernetworks.co.uk for the latest information. They have also published a useful guide on flexibility for local authorities.

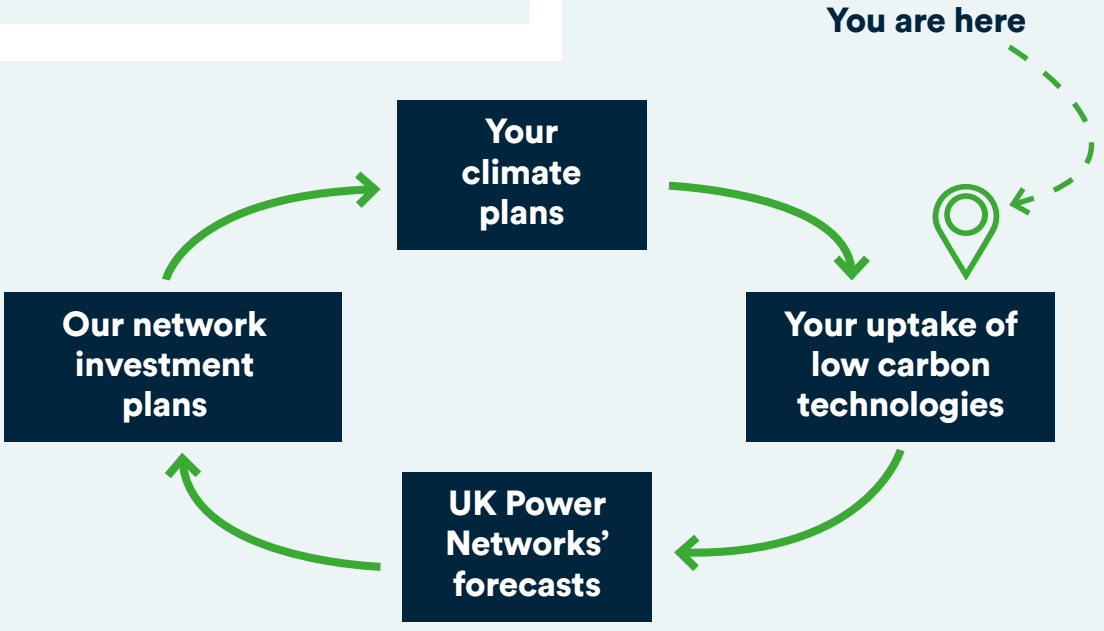
UK Power Networks partnered with Camden Council for trials to involve hard to reach customers in flexibility programmes. It involved installing energy efficiency measures in households through the Social Housing Decarbonisation Fund, to reduce demand and provide flexibility to the system. UK Power Networks provided bespoke energy efficiency advice to residents and used smart metering data to evaluate the impact of these interventions on electrical demand for potential use as a flexibility service.

4.4 Influencing DNO and DSO investment plans by sharing your local energy plans or LAEP

You can influence the development of the electricity network or the reinforcement strategy by sharing your local energy plan or LAEP with your DSO. This means that when your plans are ready to be delivered and start materialising, the electricity network will be ready to facilitate your developments.

Case Study: How to influence and share your local energy plans or LAEP with UK Power Networks

A collaborative approach to reviewing local energy plans and using them to inform UK Power Networks' capacity planning is the best way forward. This ensures they can support your local decarbonisation plans whilst investing in the network with confidence, as illustrated in the diagram below. UK Power Networks DSO has established six different ways that local authorities, under their coverage area, can easily share information about their decarbonisation plans. You can find them here.



4.5 Seeing in detail how the electricity network in your area is changing

As the energy landscape is changing, there is a need to understand and forecast the evolving requirements. The Distribution Future Energy Scenarios use granular forecasts of key drivers whose deployment is critical for achieving Net Zero. These include electric vehicles, renewable energy generation and storage, and decarbonised heating such as heat pumps and district heat networks, etc.

Forecasts for multiple scenarios are developed (Falling Short, Consumer Transformation, System Transformation, and Leading the Way) to account for varying degrees of consumer ambition, government and policy support, economic growth, and technological advancements.

Close collaboration between the local authority and their DSO will ensure the local intelligence coming from the local energy plans or LAEP of the local authority is going to be inputted into these forecasts, and ultimately help ensure you have the capacity you need in your area when you need it to enable your Net Zero ambitions.

Case Study: UK Power Networks DFES resources

UK Power Networks has created a dedicated page for the Distribution Future Energy Scenarios (DFES), with all relevant resources in one place. It features an interactive map to collect local insights and forecasts of how low carbon technologies are going to evolve in your area, which can be really useful while you are constructing your local energy plans.

Forecasts for multiple scenarios are developed to account for varying degrees of consumer ambition, government and policy support, economic growth, and technological advancements. You can also see how the forecasts were created through technical documents and summary reports, as well as have direct access to DFES data in Excel format.

Who else can help you on your journey to Net Zero?

5

5.1 Regional Energy Strategic Planners (RESPs)

The Regional Energy Strategic Planners (RESPs) will be regional divisions under the umbrella of the National Energy System Operator (NESO), responsible for the development of strategic energy plans at a regional level.

The proposed plan is to have one RESP covering Scotland, one covering Wales, and nine covering England. They will aggregate national planning information with local and regional insights, such as LAEPs that inform and direct local energy strategy.

Ofgem intended that the RESPs will undertake "whole system" optimisation across the networks to ensure decarbonisation is delivered in a coordinated manner. According to Ofgem's previous consultations on RESP, this will likely include:

- Cross-vector strategic planning.
- Technical coordination activities. For example, energy demand modelling, whole system "optioneering", and conflict resolution.
- Place-based engagement and coordination.
- Supporting local authorities in energy planning.

Local authorities are encouraged to review and feed back on RESPs proposals, in particular the RESP's proposed role and geographic boundary proposal and, if still possible, respond to the consultation that Ofgem has released, too.

5.2 National Energy System Operator (NESO)

The launch of NESO is planned for Autumn 2024, taking over the role of the current Electricity System Operator (ESO). This will be an independent, publicly owned corporation, responsible (as the ESO is now) for ensuring that supply meets demand in real time for all of Great Britain, balancing the grid.

In this role, it will be required to balance three objectives: achieving Net Zero, ensuring security of supply, and ensuring efficiency and economy.

5.3 Community energy organisations

Community energy organisations work towards the delivery of community-led renewable energy, energy demand reduction, and energy supply projects. These can either be wholly-owned and controlled by communities, or delivered through a partnership with a commercial or public sector partner.

The advantages of community energy projects over private-sector projects are that they allow local wealth-building, support local employment, improve engagement with local residents by being locally-owned

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and led, and as often are not-for-profit, with any excess being reinvested back into the communities which they power.

Steps that you can take to support a local community energy organisation are:

- Identify community energy organisations in your local authority area. Community Energy England and Community Energy South are coordinating bodies which you can contact to find out about projects and initiatives in your area. Community Energy England has useful how to guides to help you get started.
- Allocate sites to community energy organisations for renewable energy generation, storage, or both, including them in your Local Plan. You can use the network of local groups to identify potential locations through the "call for sites" process.
- Consider directly investing in new community energy projects to produce a future financial return. See the example of Hackney Light and Power, where an energy services arm of the Hackney council invested in the local community energy sector through their Hackney Community Energy Fund with new rounds each year.
- State a preference for community ownership or leadership of renewable energy, or both projects in your Local Plan renewable energy policies.
- Purchase power from community energy organisations' generation projects via PPAs (see Page 21).
- Commit to being an "off-taker of last resort" (purchasing any power you cannot sell elsewhere) for any future generation projects, to give project backers financial certainty.
- Offer seed-funding loans for new projects in the Local Plan to allow community energy groups to undertake feasibility studies.
- Run a "community energy summit" for your area to bring together community energy organisations, stakeholders such as DSOs, and other interested parties to discuss the challenges and opportunities for the sector locally.

Develop collaboration agreements with community energy organisations that help with more efficient delivery of Net Zero projects. See the examples of Bath and West Community Energy (BWCE) and Plymouth Energy Community (PEC).

Case Study: MaidEnergy

MaidEnergy is a renewable energy society that supports the growth of locally generated and locally owned renewable energy in Maidenhead, Windsor, Egham, Staines, and the surrounding area. The group identifies schools and community buildings interested in solar panel installations, raises community finance, handles legal and grid export arrangements, manages installations and maintenance, and ensures these sites achieve maximum financial, environmental, and community benefits.

Case Study: Energise Barnsley

Energise Barnsley is a community-owned energy company working across the Barnsley area. Working closely with Barnsley Council, it aims to achieve low-carbon solutions owned by the community. Barnsley is an area that was once heavily reliant on coal mining, it's now transitioning to a more modern, greener economy, and this project focuses on the installation of energy-saving gadgets and a community bond.

5.4 Net Zero Hubs

Regional Net Zero Hubs are funded by the Department for Energy Security and Net Zero (DESNZ) as part of the government's clean growth strategy.

Net Zero Hubs have objectives to help local authorities and communities in England to play a leading role in decarbonisation, supporting local authorities to develop Net Zero projects, and attract commercial investment. They can provide significant support in several areas, including tailored energy planning, project development, and implementation support. They can also provide expert guidance on developing LAEPs and facilitating stakeholder engagement.

There are five Net Zero Hubs in England: North East and Yorkshire; North West; Midlands; South West; and Greater South East. Their websites offer various tools, guides, and case studies that can help support your energy transition journey. For example, you can find helpful guides on energy themes under the Greater South East Net Zero Hub Guides or interesting case studies here. Net Zero Go has a number of guides and tools on various Net Zero topics, business case development, and funding that are free to use for local authority teams.

5.5 Gas Distribution Network Operator (GDNO)

Gas is distributed, like electricity, through pipelines or as liquified natural gas (LNG) through a high-pressure transmission system (owned by the National Grid) to the medium-to-low pressure gas distribution networks (GDNOs) towards the end consumers.

There are eight gas distribution networks owned by Cadent, Northern Gas Networks, SGN (formerly Scotia Gas Networks), and Wales & West Utilities. While gas is the largest energy source in the UK providing electricity and heating, its use must be reduced steadily to reach Net Zero by 2050.

Local authorities should consult with and inform their GDNOs of their local energy plans and strategies, similar to engaging with their DNO and DSO, to ensure a whole-systems approach is taken for their local energy planning or LAEP. In order to find out who your gas operator is, you can use the Energy Networks Association Who's My Network Operator? online tool.

Case Study: Suffolk Energy Opportunities Assessment

The Greater South East Net Zero Hub designed an analytical process, using a selection of publicly available mapping and data sets, that allowed Suffolk Council to be able to identify and compare farmland sites for large-scale solar PV, wind, and biomass production.

The data encompassed physical constraints, flood risk, statutory national and local ecological and historical designations, and the capacity of the local power network to connect distributed generation.

Having used the Net Zero Hub process to undertake this analysis, Suffolk Council has now progressed on carrying out detailed feasibility studies for the most suitable sites.

6 Financing your local energy plans

With local authorities' budgets being stretched, financing the transition in your local area can be quite challenging, but it doesn't need to be funded by the local authority's budgets alone, it can involve innovative funding approaches as described below.

Existing and traditional public debt-funding sources are:

- The council's balance sheet.
- Government Funding.
- Loans such as:
  - Public Works Loan Board loan.
  - UK Investment Bank loan.
  - Commercial and retail bank loans.
- Bonds (including municipal and green bonds).

However, these will probably only be able to provide a small fraction of the financial resources needed. This results in a large financial gap that will require the mobilisation of private capital (pension funds, commercial and retail banks, etc) alongside public finance.

There are innovative funding approaches, such as the Municipal Bonds or Public Private Partnerships, or innovative ways to use existing funds such as this report from the GLA on how carbon offset funds accumulated £145 million between 2016-2021 and were ring-fenced for carbon reduction projects. Such mechanisms can be used to build up community energy groups and projects that can become self-sustaining and serve the community. There are organisations like lendology that provide home improvement loans for homeowners that are funded by the local council and help them recycle their money to cater to more homes.

Local authorities will need to deploy public funding differently to what has happened to date. They will need to use public capital to support energy planning, project development, and de-risk investment opportunities rather than traditional debt financing. Actual project costs will need to be funded by private capital to a great extent. However, to access private capital local Net Zero projects and LAEPs will need to be turned into investable projects with well-developed and bankable business cases.

Developing and financing the work to structure investable projects is hampered by a project development gap. This is probably the most pressing obstacle to the successful deployment of capital towards Net Zero.

The Government already recognises the need for support with a range of programmes currently in place, but much more is needed.

Capital is increasingly available for green projects. Private capital, for example, pension funds — are actively looking to invest in local Net Zero projects. But private investors will only invest when they can see how they will be able to generate an

acceptable return. They can provide much of the development capital needed, but only if there is sufficient market clarity to provide confidence they can generate an appropriate return for the risks they are asked to take. As always, investors are looking for projects with clarity, certainty, and scale to make it worthwhile and sufficiently low-risk to invest.

Some top level financing approaches include:

- **Balance sheet funding:** Local authority's own assets, cash flows, and recognised gains and losses can be used to fund Net Zero projects. The scale of funds needed to implement these projects is far greater than the capacity of local authority's balance sheets and is exacerbated by reduced central government funding. So, unless the return on investment (ROI) of the projects is secure or highly certain, local authorities with significant debt exposure will have limited capacity and appetite to draw on their balance sheet.

- **PPPs:** Under these partnerships, the role of public and private sector organisations can be flexible, based on meeting the requirements of Net Zero projects and focused on best harnessing the skills, resources, and preferences of the respective parties. PPPs are usually successful for local authorities with large projects by providing needed investment, skills, and assets to develop land share development risks, and promote long-term sustainable income and community benefits.

- **Blended public-private finance intermediaries:** These most commonly take the form of special purpose vehicles (a subsidiary created by a parent company to isolate financial risk) or permanent institutions.

It is clear that local authorities looking for capital for their Net Zero projects need to build an investable portfolio that can include all sustainability projects (even those that don't generate a return) to make a full portfolio. The risk of breaking the portfolio into pieces is that investors can "cherry-pick" the revenue-generating projects, such as the renewable generation ones, and leave out the non-revenue generating projects, such as the rewilding ones. A full portfolio can include renewable generation, home and business retrofit, heat, transport, rewilding, and adaptation.

With investors actively seeking sustainable investments for their ethical funds, capital is available more cheaply for these projects

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than for others. It is therefore recommended to use a "Green taxonomy" to assess what types of investment or projects can be considered to be sustainable. There is some draft guidance already available in the UK Government Green Financing Framework document.

For local authorities who do not wish to or struggle to obtain debt financing, alternative approaches are available to finance their Net Zero projects, including:

- Selling or leasing assets (such as land) to a renewable energy company for development.
- Selling or leasing the right to install or operate generation on local authority's assets.
- Contracting with a private company to construct the required infrastructure (typically in return for the profits).
- Signing a long-term PPA (see Page 20) with a renewable generator.
- Creating a renewable energy company, owned in partnership with a private contractor.

Case Study: Bristol City Council

Bristol City Council entered a joint venture with Ameresco and Vattenfall Heat UK as an essential subcontractor, to transform the way the city generates, distributes, stores, and uses energy.

During the first five years of the 20-year partnership, the private sector expected to invest at least £424m in a range of large infrastructure projects to reduce Bristol's carbon footprint by 140,000 tonnes, including major expansion of Bristol's Heat Network, providing local businesses and residents with access to reliable, affordable low carbon heat from sustainable sources, installing solar panels and low carbon heating systems at local schools, and making the council's social housing more energy efficient with the aim of reducing energy bills.

While these will be of interest to cash-strapped authorities, they do have risks and downsides:

- Significant work and cost required to scope the project and draft the legal agreement.
- Risk of poor-value negotiation or penalty clauses, or both.
- Loss of ownership of public assets.
- Loss or reduction of future operating income.
- Limited project control.
- Potential reputational damage if risks are realised.

For more information on financing Net Zero projects, Innovate UK and the Green Finance Institute have co-written the helpful guide, "Mobilising local Net Zero investments: challenges and opportunities for local authority financing".

Conclusion and next steps

7

Local authorities are at the very heart of ensuring an affordable and fair clean energy transition with nobody left behind. Now is the time to make the most of this generational shift in how we produce and consume energy on behalf of our local communities.

The information in this toolkit aims to provide the springboard for you to help start developing your Local Area Energy Plans or other Net Zero energy projects.

Engage your local residents and businesses to help create local support for your plans. Other key stakeholders that can help you are your electricity network operator, your gas network operator, community energy organisations and Net Zero Hubs. Take advantage of the financial opportunities that are available to support your local Net Zero plans. Investing in community energy projects has the potential to deliver long-term returns, and participating in local flexibility markets can help your clean energy assets generate additional income.

You are not alone in your Net Zero journey. Your local distribution network/system operator will be able to offer you the tools and data that you need to make your energy plans a reality.

Now is the time to get in touch and begin your journey to Net Zero.

List of Abbreviations

AONB: Areas of Outstanding Natural Beauty

DFES: Distribution Future Energy Scenarios

DNO: Distribution Network Operator

DSO: Distribution System Operator

DSR: Demand-Side Response

ENA: Energy Networks Association

ESO: Electricity System Operator

EV: Electric Vehicle

FSO: Future System Operator

GDNO: Gas Distribution Network Operators

GLA: Greater London Authority

LAEP: Local Area Energy Plan

LEP: Local Enterprise Partnerships

LNG: Liquified Natural Gas

LPA: Local Planning Authorities

NESO: National Energy System Operator

NGET: National Grid Electricity Transmission

PPA: Power Purchase Agreements

PV: Photovoltaics

REGO: Renewable Electricity Guarantees of Origin

RESP: Regional Energy Strategic Planners

SPD: Supplementary Planning Documents

SSEN: Scottish and Southern Electricity Networks


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