Renewable and Low Carbon Energy Generation

Introduction

8.74 This policy supports our strategy for generating energy from renewable and low carbon (RLC) sources in Pendle. In particular it seeks to ensure that Pendle contributes its fair share towards meeting international, national and local targets, whilst protecting our most valuable rural landscapes and historic townscapes.

8.75 The policy also addresses the need to reduce the carbon footprint of new developments in Pendle, through community and district energy schemes that use renewable and low carbon energy or residual heat or the on-site generation of renewable energy.

Context

8.76 To generate heat and electricity in the UK we predominantly use finite fossil fuel resources, such as coal, or natural gas. An unavoidable consequence of burning any fossil fuel is that the process generates greenhouse gases, which contribute to global warming.

8.77 The generation of energy in this way is characterised by the significant generation of waste (residual) heat. There are also transmission losses associated with electrical power distribution, through its transportation over long distances.

8.78 In order to reduce the harm to the environment, help improve UK energy security, and increase the efficiency of delivery and production we need to find alternative ways of generating heat and electricity from renewable sources.

8.79 In response to this problem the UK has signed up to the EU Renewable Energy Directive, which includes a UK target of generating 15% of its energy from renewable sources by 2020. This is equivalent to a seven-fold increase in UK renewable energy consumption from 2008 levels.[98] The UK Renewable Energy Strategy (RES) indicates that this 15% target could be met by generating 30% of electricity and 12% of heat from renewable sources by 2020.

8.80 The UK RES is just one element in a much wider plan, which details how the Government intends to reduce UK CO_2 emissions to 34% below 1990 levels by 2020, with an ultimate commitment to reduce emissions to 80% below 1990 levels by 2050.[99]

8.81 The Framework (paragraph 93) sets out the key role planning plays in shaping places by:

- helping to secure radical reductions in greenhouse gas emissions,
- minimising vulnerability and providing resilience to the impacts of climate change,
- supporting the delivery of renewable and low carbon energy and its associated infrastructure.

8.82 To do so, local planning authorities should adopt positive and proactive strategies and policies for delivery.

8.83 The Government has prepared six National Policy Statements (NPS) for energy infrastructure against which proposals will be assessed and decided. Whilst these are intended to guide applications for major infrastructure proposals dealt with by the Major Infrastructure Planning Unit, they can be a material consideration in the determination of planning applications. NPS EN-3 Renewable Energy Infrastructure addresses off-shore and on-shore wind generation but sees an increasing role for generating energy from biomass and waste plants as part of the UK's energy mix, which will also help to reduce the amount of waste heading for landfill sites.

98 HM Government (2009) The UK Renewable Energy Strategy (RES) 2009. London, Department of Energy and Climate Change.
99 HM Government (2009) The Low Carbon Transition Plan. London, Department of Energy and Climate Change.

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The Government has introduced changes to the procedures for determining wind energy applications. These require the identification of suitable areas for wind turbine developments and evidence that they have the backing of the local community.

8.84 Pendle's Climate Change Action Plan sets out our commitment to reducing carbon emissions, including support to encourage and facilitate renewable energy development through planning policy.

8.85 In partnership with four other local authorities, Pendle Council commissioned a study to consider the potential for renewable and low carbon energy in the area. The South Pennines Renewable and Low Carbon Energy Study indicates that Pendle would need to generate 15.4MW of electricity and 11.8MW of heat from RLC sources to meet the aspirations of the UK RES.

8.86 ~~The study concludes that to achieve such levels will require a significant amount of commercial wind development. Maps plotting local wind speeds, but excluding areas where there are known constraints, identify broad areas in the north and east of the borough where commercial scale wind developments may be feasible. The study sees a smaller role for biomass, small scale wind, solar pv and hydropower to contribute towards the RLC mix for generating electricity. In terms of generating heat from RLC sources, it identifies that there is potential for solar hot water heating and for ground source heat pumps, particularly in new developments and rural areas without mains gas connections. The study also considers the role of on-site RLC energy generation, identifying this as an area which can be directly influenced by planning policy and the granting of planning permission, more so perhaps than stand alone energy developments.~~

Strategy

8.87 The South Pennines Renewable and Low Carbon Energy Study showed that Pendle generated only 0.1MW of its energy consumption from renewable sources. It is clear that to attain outputs of 15.4MW (electricity) and 11.8MW (heat) will require a large commitment to renewable energy, which has not been the case in the borough before.

Technologies

8.88 There is a wide-range of renewable and low carbon technologies available, which can be employed to help achieve these generation figures. However, it should be noted that over the plan period new technologies may emerge and technological advancements may increase the suitability of existing technologies.

8.89 The box below offers a general summary of the different technologies that are currently available to generate electricity and/or heat.

Renewable and Low Carbon Technologies

Wind (Electricity)

Wind can be harnessed to generate electricity at either a commercial or small scale.

Commercial schemes employ turbines with a power output of 100kW or above. The electricity generated is generally not used on-site, but is sold to the national grid.

The term small scale wind refers to turbines of up to 100kW. This includes domestic level technologies, which typically generate between 1kW and 6kW to provide power for an individual property. But, it also includes larger stand alone turbines, which can supply several buildings, and/or generate surplus electricity that is sold to the national grid.

The output rating for a turbine refers to the amount of electrical power it will generate at a given wind speed (e.g. 100kW at 20mph). As such only a proportion of this potential output will be achieved, due to fluctuations in wind speed.

Biomass (Electricity / Heat)

The term biomass describes biological materials from living, or recently living, organisms, whereas the output is referred to as bioenergy or biofuels. Biofuels can be derived from plants, animal waste or human activity and three main processes are employed to generate electricity or heat from these products:

1. Direct combustion of solid biomass.
2. Gasification of solid biomass.
3. Anaerobic digestion of solid, or liquid, biomass.

Biofuels are typically used to heat buildings by the use of a stand alone stove, to provide space heating for a room, or a boiler connected to the central heating and hot water systems. They are also suitable for use in combined heat and power (CHP) plants, but as yet have not been exploited to their full potential in the UK.

Solar (PV) (Electricity)

Solar photovoltaic cells capture energy from the sun and convert it into electricity. They do this by creating an electrical charge across the surface of the photovoltaic cell as the sun hits its surface. The benefits of these panels are that they only require daylight rather than direct sunlight to operate efficiently.

Solar thermal (Heat)

Solar heating systems employ solar panels, or collectors, that are usually fixed to the south facing roof of a property. They collect heat from the sun and use it to warm water used within the property.

Heat pumps (Heat)

Heat pumps are used to extract thermal energy from an outside source (i.e. from the ground, air or water) and transfer it into a distribution system to heat a confined space (e.g. a building).

Heat pumps are efficient because of the low grade energy required for their operation. Typically in an electrically powered heat pump, the heat released is two or three times greater than the electrical power consumed, making the system efficiency 200-300% rather than the 100% efficiency of a conventional electrical heater.

Hydropower (Electricity)

Hydropower harnesses the power of water flowing, or falling, through a turbine to generate electricity. Critical to the suitability of sites are the combination of flow (i.e. the volume of water passing through the turbine) and head (i.e. the vertical distance between the water source and the turbine). The greater the flow or head, the more electricity can be generated. Water can also be stored to help generate electricity when it is most needed.

Low Carbon Schemes (Electricity / Heat)

Combined heat and power (CHP) and district heating/cooling schemes are examples of decentralised energy. Whilst not directly fulfilling commitments under the UK Renewable Energy Strategy, are an important part of the mix of technologies that can be employed to reduce carbon emissions.

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CHP schemes typically capture the (residual) heat released when generating heat or electricity and redeploy this close by. In contrast district heating schemes use this residual heat to warm water to temperatures of between 80°C and 130°C and distribute this via a local network to residential and commercial properties for space and/or water heating.

District heating schemes can also be fuelled by a wide range of fuel sources (e.g. biomass, solar pv etc.) with the choice of fuels influencing the overall carbon savings.

8.90 No blanket restrictions will be placed on the use of specific RLC technologies in the borough, in order to encourage the use of the most appropriate technology following careful consideration of all known constraints including landscape sensitivity and residential amenity. For wind energy development it will be necessary to define suitable areas which have community support.

The use of less intrusive technologies such as ground and air source heat pumps can reduce visual impacts in areas of high sensitivity such as the Forest of Bowland AONB and conservation areas in comparison to other RLC technologies. Building mounted technologies such as solar panels should respect the architectural merits of a building, particularly on Listed Buildings or in areas designated for the value of their landscape or built heritage. Small-scale technologies can play an important role in serving isolated, 'off-grid' properties where mains gas or electricity is not readily available and occupants have previously been restricted to the use of expensive, and finite fossil fuels to power boilers. By providing a greener and cheaper source of energy they can also help to reduce fuel poverty, particularly in rural areas. Many small scale renewable technologies are now allowed under permitted development rights; the Design Principles SPD gives further guidance.

8.91 To achieve the levels of uptake necessary to meet the proposed targets for generating electricity and heat from RLC sources, some visual impact is inevitable. Of greatest importance will be the protection of the international and national habitat and landscape designations in the South Pennine Moors and Forest of Bowland AONB, together with those sites identified as locally important as wildlife habitats or for their built heritage. The scale and impact of developments in nationally recognised designations should be compatible with the purpose of the designation. In these areas the policy will not allow renewable energy developments, which would conflict with the aims of the designation, namely to protect and conserve the character of their landscape and townscape character, or important wildlife habitats. In the Green Belt renewable energy developments, which threaten to have a negative impact on the openness of the area, will not be appropriate.

Policy ENV 3

Renewable and Low Carbon Energy Generation

~~To help reduce our carbon footprint, increase energy security and reduce levels of fuel poverty the~~ The Council will encourage new developments that are appropriate to their setting and make a positive contribution towards increasing levels of renewable and low carbon energy (RLC) generation in Pendle.

By supporting a mix of appropriate schemes the Council will aim to achieve the following generation figures by 2020:[100]

- 15.4 MW of electricity
- 11.8 MW of heat

100 These are not fixed 'targets' but a positive generation aim. There are no minimum or ceiling figures set for individual or collective technologies.

Applications for the installation of wind turbines will be assessed against national planning policy. For all other Renewable and Low Carbon technologies, the ~~The~~ Council will support proposals ~~for all RLC technologies where the proposal is~~ that are of an appropriate scale for ~~its~~ their setting, and where the development will not result in an unacceptable impact on:

- ~~have an unacceptable level of impact on the landscape and visual character of an area, either on its own or cumulatively, or~~
- ~~result in an unacceptable impact on the value of any ecological or heritage assets, or to residential amenity.~~

- A recognised designation (Policy ENV1);
- The landscape and visual character of an area, either on its own or cumulatively;
- Ecological, biodiversity or geodiversity assets;
- Heritage assets and their settings (including archaeological remains);
- Residential amenity.

All proposals must be accompanied by appropriate supporting evidence which can include landscape, visual, noise and environmental assessments. Applicants must demonstrate that satisfactory mitigation measures can be employed to offset any potentially negative impacts that are identified, or that the positive benefits of the scheme outweigh these impacts.

Monitoring and Delivery

Strategic Objectives	2, 4, 10	
SCS Priority Goals	6	
Targets	• Increase renewable and low carbon (RLC) energy generation in the borough, towards the aspirational targets.	
Triggers	• Energy generation targets are not met by 2020.	
Indicators	EN01	Amount of energy generated (or potential to generate) by renewable sources for completed developments and those with planning permission, by: -Type (e.g. solar, wind etc).
Delivery Agencies	Pendle Borough Council, Energy Companies, private developers and Householders	
Delivery Mechanisms	• Determination of planning applications through the Development Management process. • Through private sector investment by energy developers, utility companies, local businesses and householders. • Potentially through new schemes such as the proposed Community Energy Fund.	
Risks (High (H), Medium (M), Low (L))	• Public opposition to wind turbines. (H) • Poor uptake of renewable technologies. (M) • Reduced level / termination of Feed in-Tarrifs (FiTs) / incentives to use renewable technologies. (M) • Change in national policy relating to the generation of energy from on-shore wind turbines. (M)	
Contingencies	• Consider the allocation of sites for wind energy development in the Local Plan Part 2: Site Allocations and Development Policies. • Encourage developers to include renewable energy technologies as part of their proposals. • Encourage developers to engage with the local community to increase their understanding of the benefits of implementing renewable energy schemes.	

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Key Linkages	• National Planning Policy Framework • National Planning Practice Guidance • Lancashire Climate Change Strategy (2009-2020) • Landscape Sensitivity to Wind Energy Development in Lancashire • South Pennine Renewable and Low Carbon Energy Study • Landscape Guidance for Wind Turbines up to 60m high in the South and West Pennines