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# 1 Energy

## 1.1 Summary

The provision of energy and the implications of energy use in terms of pollution and the impact on climate is a key issue for planning. The Core Strategy should explore strategic policies for the generation of renewable energy, including possible preferred locations together with key criteria for the use of renewables in major development.

Taking into account key messages from the evidence available, the following spatial planning issues have been identified:

**Issue E1** - Reducing the demand for energy in Cornwall

**Issue E2** - Maximising the energy supply from renewable and low carbon sources

## 1.2 Purpose

This is one in a series of papers dealing with a specific theme. Each can be read in isolation or together with other papers to gain a wider understanding of issues facing Cornwall. This paper sets out the evidence base and the policy context for Energy planning, including the generation of Energy at all levels and the use of energy in buildings and describes how the issues that need to be addressed could be taken forward in the Core Strategy. It does not include issues related to the use of energy in transportation and issues related to reducing the need to travel. Other issues papers available in this series include:

- *Housing*
- *Economy*
- *Tourism*
- *Retail & town centres*
- *Education & skills*
- *Social inclusion*
- *Crime & anti-social behaviour*
- *Sport recreation & open space*
- *Health*
- *Transport & accessibility*
- *Climate change*
- *Soil, air & water quality*
- *Flooding, drought & water consumption*
- *Biodiversity & geodiversity*
- *Landscape & seascape*
- *Historic environment*
- *Design & efficient use of resources*
- *Agriculture & food*

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- *Coast & maritime*
- *Minerals*
- *Waste*

### 1.3 What is Energy?

This topic paper covers energy generation and the use of energy in buildings. There is a general consensus that the greenhouse gas emissions from human activities are having an influence on the world's climate and that the growth in the production of such gases must be reduced. The planning system has a key role to play in addressing energy issues, in particular the consideration of renewable energy sources such as wind and also in the conservation of energy. This paper does not deal with nuclear energy production, which currently would be dealt with by the new Infrastructure Planning Commission (IPC), However, legislation is expected later this year or next to replace the IPC and reorganise the arrangements for deciding key infrastructure projects like new power lines, motorways and reservoirs.

### 1.4 An Energy 'portrait' of Cornwall

Cornwall has significant opportunities to generate renewable energy as it is surrounded by the sea, is subject to prevailing south westerly winds from the Atlantic, is underlain with heat producing granites which are a resource for geothermal energy and also has the best solar resource in the UK.

The first wind farm in the UK was built at Delabole and since then a number of other wind farms have been constructed (see Appendix 1). The current total installed capacity is 43.15 MW, however the actual delivery of energy has not been estimated.

In 2010 the South West had an installed renewable electricity capacity of 171.59 megawatts (MW) enough electricity to power 179,500 homes and 68.06 MW renewable heat capacity.

Cornwall is the leading County in the region in terms of installed capacity, with 33.9% of the region's total renewable electricity and 22.3% of the region's total renewable heat. In 2010 Cornwall and the Isles of Scilly had the capacity to produce 58.13 MW of renewable electricity and 15.19MW of renewable heat.<sup>(1)</sup> Cornwall's capacity has increased with the commissioning of the 1.8 MW Roskrow Barton windcluster in 2007, and the continued interest in the re-engineering of existing windfarms (CSEP review update, 2008). However, it is likely that the County will remain reliant on the national grid for its energy supply for the foreseeable future.

Between 2003 and 2004 absolute energy consumption in Cornwall rose by 4% compared to a rise of 1.6% across Britain (Economic Forum evidence review). Calculations of CO<sub>2</sub> emissions prepared by Defra indicate that total emissions in Cornwall rose by 1.7% between 2005 and 2006, and that in the same period per capita emissions had risen by nearly 1% (CSEP Review).

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There is great potential for further renewable development using a variety of technologies both onshore and offshore; however decisions on such developments will need to be balanced against the need to protect the County's environment and heritage. Policy for off-shore energy development is largely outside the scope of the Core Strategy with the exception of the land use implications of servicing offshore facilities and ensuring their connection to the national grid.

### 1.5 What is the role of the Core Strategy?

The Core Strategy is a strategic document that indicates the broad direction of growth/development – and does not, as a rule, include site specific allocations. For Energy issues it could be expected to include:

- policy criteria and related targets for considering renewable energy proposals;
- broad indication of where renewable energy will be delivered;
- policy criteria and related targets for the incorporation of renewables in other development proposals.

### 1.6 Relevant policy context

The Core Strategy needs to be prepared within the framework set by national and European legislation and national planning guidance although policies in these documents should not be duplicated. This section focuses on the most relevant published legislation, plans & strategies and draws out their key messages for renewable and low carbon energy in Cornwall. The key directives, acts, plans and strategies identified and used are:

#### International / European

- 20 by 2020 - Europe's climate change opportunity (June 2009)
- Renewed EU Sustainable Development Strategy (2006)
- The Kyoto Protocol to the UN convention on Climate Change (United Nations, 1999)

#### National

- Draft PPS; 'Planning for a Low Carbon Future in a Changing climate' (2010)
- Draft National Policy Statement for Renewable energy infrastructure (EN-3), November 2009
- The UK Renewable Energy Strategy (2009)
- The Low Carbon Industrial Strategy (LCIS) (2009)
- UK Carbon Transition Plan (2009)
- The Climate Change Act (2008)
- Planning Policy Statement 1: Delivering Sustainable Development
- Planning for Climate Change; supplement to PPS1 (2008)
- UK Climate Change Programme 2006 (Defra, 2006)
- Planning Policy Statement 22: Renewable Energy (August 2004)
- Land-use Planning and Renewable Energy in Cornwall (March 1996)

**Emerging national policy: "Planning for a Low Carbon Future in a Changing Climate**

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Emerging national policy includes the revised “Planning for a Low Carbon Future in a Changing Climate – Consultation Draft” PPS1, issued in March 2010. This includes a strong emphasis on the need for an evidence base, including mapping of heat demand and renewable and low carbon energy resource mapping. This is to enable allocation of broad areas for renewable and low carbon energy and to encourage the development of decentralised energy infrastructure, particularly decentralised heat networks, when planning for existing and new communities. To encourage the development of decentralised energy, suppliers and users should be co-located. There will also need to be a requirement for connection to decentralised energy systems where projects or firm proposals are in place. The document suggests that local requirements for decentralised energy are expressed as either; a % reduction in CO<sub>2</sub>, or total amount of expected energy generation expressed in kWh i.e. not as % of renewable energy as in ‘the Merton Rule’.

The Council is required to help meet wider local priorities, such as reducing fuel poverty, increasing energy security and using waste to produce community energy. The Council should also assist community-led renewable and low carbon energy developments. In Cornwall this role is currently carried out by Community Energy Plus. The development of more sustainable buildings in the short term could be encouraged by area specific sustainable building targets. Developers need to be supported to meet the levels imposed by building regulations (CFH or BREEAM) where justified and viable. Planning for the development of infrastructure to encourage the take up of electric and plug in hybrid vehicles is also required.

### Regional

- South West Climate Change Action (SW Regional Assembly, 2008)
- The road to 2020- An analysis of renewable energy options in the South West of England (Regen SW, in association with the South West RDA, 2008)
- Warming to the Idea (South West Climate Change Impacts Programme, 2003)

### Local

- 'Future Cornwall' Cornwall Sustainable Community Strategy (2010)
- Climate Change Strategic Framework (Cornwall County Council, 2008)
- Sea level rise implications for Cornwall (Cornwall County Council, 2008)
- Sustainable Development Plan (Cornwall County Council, 2007)
- Strategy and Action - Achieving prosperity in Cornwall and the Isles of Scilly (Cornwall and Isles of Scilly Economic Forum, 2007)
- Action Today for a Sustainable Tomorrow – the energy strategy for Cornwall (Cornwall Sustainable Energy Partnership, 2004)

## 1.7 Relevant evidence and research

Much of the context for energy issues is set out or referenced in the documents listed above. The South West Renewable Energy Atlas produced by WardellArmstrong provides a useful indication of potential. *The Road to 2020 An analysis of renewable energy options in the South West of England* concludes:

- Generating 15% and 20% of all energy consumed in the South West from renewables is possible by 2020

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- Achieving 15% is critically dependent on the development of offshore wind in the region. Achieving 20% additionally requires very extensive installation of renewable heat systems in existing buildings
- After taking into account landscape constraints, there remains scope for a large increase in the deployment of onshore wind turbines

In 2002, Cornwall's estimated energy bill was £579 million, of which 98% left the local economy. This highlights the area's reliance on external sources of energy supply and also demonstrates the potential contribution that local energy generation could make to the economy.

In 2003, Cornwall County Council developed a pioneering "Local Public Service Agreement" (LPSA) to tackle fuel poverty (in conjunction with Cornwall Sustainable Energy Partnership [CSEP]). In only 3 years a total of 13,000 "fuel poor" homes had insulation measures installed to cut CO<sub>2</sub> emissions, and improve health. In 2006, 17.7% of all households in Cornwall were living in fuel poverty which means that more than 10% of the household income is spent on heating (Cornwall Council)

Mains gas is currently the cheapest conventional domestic fuel but 44% of homes in Cornwall have no access to it. In Cornwall's rural areas 79% of properties in Cornwall do not have access to mains gas; this figure rises to 84% for properties in hamlets and isolated dwellings (Cornwall Fuel Poverty and Energy Action Plan). The average costs for electrically heated homes are 40% higher than mains gas.

In July 2007 the Government's *'Building A Greener Future: Policy Statement'* announced that all new homes will be zero carbon from 2016. with an incremental 44% CO<sub>2</sub> reduction in 2013. There is an acknowledgement that targets for renewable and low carbon energy in a local authority area for new development will be unnecessary when the proposed 2013 revisions to Part L of the Building Regulations are implemented. Local requirements should be consistent with national policy on allowable solutions set out in support of the zero carbon homes and buildings policy. Allowable solutions are a range of options for dealing with the residual CO<sub>2</sub> emissions not tackled by on-site renewable energy generation and/or direct connection to low/zero-carbon heat

It is estimated that the South West region's renewable energy sector directly supports 1,140 FTEs (full time equivalent jobs) and in 2004 contributed approximately £34 million to the regional economy. The energy efficiency sector is estimated to support nearly 400 FTEs and generate GVA of approximately £11.5 million per year. Both sectors are projected to grow significantly over the current and forthcoming decades, with the renewable energy sector alone potentially supporting between 14,000 and 17,000 FTEs by 2020. In particular the Wave Hub Project, which will be located off Hayle, has the potential to attract substantial investment into Cornwall. The wave hub is a renewable energy project to create the UK's first offshore facility to demonstrate the operation of arrays of wave energy generation devices.

More information can be found from Cornwall Council's Low Carbon Unit (formerly the Cornwall Sustainable Energy Partnership).

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### 1.8 Emerging Evidence and Policy

The gathering of evidence is an iterative process and must be continued throughout the preparation of the Core Strategy. Additional evidence should be considered right up to the 'submission' stage in the process. Listed below are the known emerging relevant guidance & studies, which will be taken into account if available before the submission of the Core Strategy:

- **A draft report entitled "Renewable Energy Resource Assessment of Cornwall"** assesses the constraints and opportunities for renewable energy technologies in Cornwall. The potential net electrical capacity from each resource considered in this assessment has been estimated.
- The draft report "**Space heat demand map of Cornwall**", **March 2010** presents maps of space heating for the whole of Cornwall and explains the accompanying methodology used for the maps production. The maps represent both domestic and non-domestic heat energy demand.
- **Camborne, Pool, Illogan and Redruth Sustainable Energy Strategy** includes a detailed technical analysis of the current and future energy demands of the CPIR area, the testing of the financial viability of opportunities and the production of guidance with respect to suitable policy to support their implementation. The report sets out the approach, procedure and findings of the CPIR Energy Strategy Study carried out by AECOM.
- **Cornwall Climate Change Action Plan:** The Cornwall Sustainable Energy Partnership has been commissioned by the Cornwall Strategic Partnership to facilitate the development of a Cornwall Climate Change Action Plan to 2020. The following countywide targets will be included in the action plan:
  - *30-35% reduction in greenhouse gas emissions by 2020 (1990 baseline) UK Carbon Transition Plan (2009)*
  - *20% renewable energy generation by 2020 (20 by 2020 - Europe's climate change opportunity, June 2009)*
  - *20% increase in energy efficiency by 2020*

### 1.9 Gaps in evidence

Whilst evidence to underpin an energy strategy for the Camborne-Pool-Illogan-Redruth (CPIR) area is in preparation, similar studies may be required for other key towns where significant growth is likely. For example, a heat mapping study for Penzance and Newlyn is currently being carried out.

Electric vehicles should deliver a 30-40% reduction in CO<sub>2</sub> emissions. Cornwall Council will be submitting a bid for the 'Plugged in Places' Government car grant scheme and the Government has expressed its enthusiasm for supporting a pilot scheme in a rural area such as Cornwall. Planning for electric vehicle infrastructure will require further study into optimal siting of charging points, the effects of peak demands on electricity and preparation of GIS maps.

An energy assessment for Cornwall will be required for the plan period to assess the balance between the renewable electricity inputs to the national grid and the overall likely effects (including electric vehicles and off-peak charging) of the demand upon the grid.

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Further work needs to be done to plan for infrastructure requirements for off-shore renewable technologies.

A landscape study is required to assess the visual impacts of different scales of renewable energy developments with respect to the landscape character areas.

### 1.10 Key Messages from the Evidence Review

Table 1.1

Message	Relevant Document(s)
Great emphasis on developing a robust evidence base, renewable resource mapping and heat mapping requirements. Sets out the lead scenarios to ensure that 15% of the UK's energy is from renewable sources by 2020, promote the security of our energy supply, reducing our overall fossil fuel demand by around 10% and gas imports by 20–30% against what they would have been in 2020.	Planning for a Low Carbon Future in a Changing Climate
Decision-making guidance for the Infrastructure Planning C on nationally significant onshore renewable energy infrastructure projects in England and Wales and nationally significant offshore projects in waters in or adjacent to England or Wales up to the seaward limits of the territorial sea or in the UK Renewable Energy Zone (REZ)[d1]	Draft National Policy Statement for Renewable Energy Infrastructure (EN-3)
European Council targets; <ul style="list-style-type: none"> <li>• Reduction of at least 20% in greenhouse gases by 2020 (rising to 30% if there is an international agreement)</li> </ul> A 20% share of renewable energies in EU energy consumption by 2020.	20 by 2020 - Europe's climate change opportunity June 2009
How UK will meet the cut in emissions set out in the budget of 34% on 1990 levels by 2020.	UK Carbon Transition Plan (2009)
Location of first Low Carbon Economic Area in the South West of England focusing on the development of marine energy demonstration, servicing and manufacture.	The Low Carbon Industrial Strategy (2009)
Target for the year 2050 to reduce greenhouse gases in the UK to at least 80% against a 1990 baseline (excluding aviation).	The Climate Change Act (2008)

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Establish Cornwall as a global centre of excellence for sustainable energy by; prioritising sustainable energy in planning and development, increasing competitiveness and sustainability of local energy generation and use, eliminating fuel poverty by 2016 creating sustainable energy jobs and industry, and improving the means of energy distribution.	'Strategy and Action' (Cornwall and Isles of Scilly Economic Forum, 2007)
Secure a healthy natural environment and resilient, low-carbon economy and communities -  Tackling energy depletion and climate change .  LAAECON 2 - Grow Cornwall's sustainable energy economy, reduce greenhouse gas emissions and reduce fuel poverty	Cornwall Sustainable Community Strategy and associated Local Area Agreements (LAA's)
A target for renewable energy on major developments is appropriate and this can be determined locally if evidence to support decisions exists	PPS22
To have between 93MW and 108MW of electricity from renewable sources by 2010 - currently about 57MW is being generated about 7% of Cornwall's electricity demand (October 2008 figures provided by CSEP) This target is part of a cumulative target of 509-611MW by 2010 for the whole South West Region, rising to a minimum of 850MW by 2020.	Action today for a Sustainable Tomorrow July 2004
The EU-15 and most EU-25 countries set targets for reducing greenhouse gas emission by 2008 – 2012. The UK has agreed to reduce emissions of the basket of six greenhouse gases by 12.5% below 1990 levels by the period 2008-2012	The Kyoto Protocol to the UN Convention on climate change (United Nations,1999)

### 1.11 SWOT Analysis

Table 1.2

Strengths	Weaknesses
<ul style="list-style-type: none"> <li>● Wind resource</li> <li>● Water /wave potential</li> <li>● Countryside – some potential for energy crops</li> <li>● Green lobby</li> </ul>	<ul style="list-style-type: none"> <li>● Lack of indigenous 'renewables' industry.</li> <li>● Need to protect important landscape and heritage assets.</li> <li>● Number of older properties</li> </ul>

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<ul style="list-style-type: none"> <li>• High level of local expertise on renewable energy</li> <li>• Training in renewable energy at further and higher education levels</li> </ul>	
<b>Opportunities</b>	<b>Threats</b>
<ul style="list-style-type: none"> <li>• Wind Farms</li> <li>• Wave Power</li> <li>• Geothermal</li> <li>• Biomass –energy crops</li> <li>• Anaerobic digestion</li> <li>• Renewable Sector employment</li> <li>• Potential for retro-fitting of energy conservation</li> <li>• Low Carbon Economic Area</li> <li>• Liaison with historic and landscape partners</li> <li>• Eco-communities</li> <li>• Large off-gas area provides an opportunity for the installation of renewable energy</li> </ul>	<ul style="list-style-type: none"> <li>• Local community concerns</li> <li>• Development that is not best practice</li> <li>• Energy efficiency and practicality of retro-fitting existing/old buildings</li> <li>• Renewable technology not achieving expected capacity</li> </ul>

### 1.12 Climate Change Considerations

The development of appropriate energy policies is critical to addressing climate change.

### 1.13 Main Spatial Planning Issues

Taking into account the key messages from the current evidence available, the main spatial planning issues are listed below.

#### Issue E 1

Reducing the demand for energy in Cornwall

#### Issue E 2

Maximising the energy supply from renewable and low carbon sources

These issues will work towards achieving the following long term objective for Cornwall as set out in the Sustainable Community Strategy - 'Future Cornwall':

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- To make the most of our environment, reduce greenhouse gas emissions and invest in and promote sustainable use of natural resources

This paper summarises the evidence on energy brought together to inform the Cornwall Core Strategy. However, it will be added to and kept up-to-date as other relevant evidence becomes available. In updating these papers all previous versions will be archived to ensure it is clear what evidence was available at each stage.

### 1.14 Appendix 1: Cornish Renewable Capacity

#### Windfarms in Cornwall

**Bears Down**, St. Eval, Turbines: 16. Installed capacity: 9.6 MW Homes equivalent: 5368  
Developer: National Wind Power Ltd Submission date: Nov-99 Decision date: Nov-00 Planning status: Operational

**Carland Cross**, nr Newquay, 1.5 km south of St Newlyn East, TR8 5AY: Turbines: 15 Power.  
Developer: RES Submission date: 1991 Decision date: Jun-92 Planning status: Operational

**See repowering of Carland Cross below.**

**Cold Northcott**, St Clether near Launceston: Turbines: 22 Installed Capacity 6.8 MW: 6.8 Homes equivalent: 4255 Developer: National Wind Power Decision date: Jun-92  
Planning status: Operational

**Delabole Farm** Repowering: East Area 1: Developer: Good Energy Generation Ltd: Turbines: 4:  
Installed capacity: 9.2MW. Current Planning Status: Approved Nov-09. Planning status: Operational.

**Four Burrows**, nr Truro: Turbines: 15. Installed Capacity 4.5 MW capacity. Homes equivalent: 2516  
Developer: Ecogen Ltd Submission date: 1993 Decision date: Sep-93 Planning status: Operational

**Goonhilly Downs** (repowering): Turbines 6 to replace 14. Capacity 12MW. Developer: Cornwall Light & Power. Planning status: Operational.

**St Breock**: Turbines: 11. Installed capacity. 4.95 MW: Homes equivalent: 3,100 Developer: Powergen  
Developer contact: 01654 700194 Submission date: 1992 Decision date: Aug-93  
Planning status: Operational

**Roskrow Barton, Penryn** Turbines: 2 Installed capacity: 1.7 MW Homes equivalent: 951 Developer: Npower Renewables  
Submission date: Dec-02 Decision date: Feb-04 Planning status: Approved on Appeal

**Current Total Installed Capacity: 43.15 MW**

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### Pipeline Sites

**Otterham** Near Camelford; East Area 1; Developer: E.ON Renewables; Turbines: 5; Developer: E.ON Renewables; Capacity capacity: 4MW; Current Planning status: Approved. Planning permission awaited pending completion of legal agreement.

**Crimp, Morwenstow** Turbines: 1 Installed Capacity 3.9 MW: Developer Crimp Wind Power Ltd. Under construction.

**Truthan Barton** Turbines: 3 Installed Capacity 9 MW Developer: Coronation Power Ltd. In Planning - pending result of planning appeal.

**Repowering of Carland Cross** Turbines 10: Installed Capacity 20 MW Developer: Scottish Power. Planning permission granted.

### Other Renewable Capacity

#### Landfill Gas

**2 United Mines** 4.8MW

**Connon Bridge** 1.95MW

Total Landfill Gas 6.75MW, 12,656 homes equivalent

#### Hydro

**Coverack Bridges** 0.18MW

**Small & microSt Blazey** 0.20MW

**Kennal Vale** 0.24MW

**De Lank Quarry** 0.30MW

**Various micro** 0.11MW

**Trecarrell** 0.03MW

Total Hydro 1.06MW, 171 homes equivalent

## 1.15 Appendix A

### Appendix A

Consultation to date:

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The Issues papers were first published for stakeholder consultation in September 2009. The papers were amended to take into account consultee responses and were then circulated to Planning Policy Advisory Panel members in November 2009. They were also given to all members at a series of three area based consultation events in March 2010.

### Revisions to Issues Papers:

In writing the draft Issues and Options report in March 2010 it was clear that it was necessary to revise the issues identified in some of the topic based issues papers. Some issues were requirements under other legislation or procedural matters, and therefore options could not be set against them (e.g. *The Core Strategy should work with other plans and programmes...*) Others were in fact options and needed to be set as options under an overarching issue (e.g. *The Core Strategy has a role in supporting the growth and sustainability of the micro and small business economy*). There was also some repetition between different topics and these issues could be amalgamated.

### Criteria for Changes:

The issues have been rationalised against the following criteria:

- Is this a Spatial Planning Issue?
- Is the issue covered by other legislation?
- Can options be generated against each issue?
- Is this an issue and not an option?
- Is the issue rooted in evidence?
- Is there potential to amalgamate issues?

### Issues in Consultation Version:

**Issue E1** – Develop a positive context to promote renewable energy sources to meet agreed target –possible identification of broad areas for renewable generation e.g. wind farms.

**Issue E2** – Develop local targets for renewable energy where appropriate, in line with the sub regional target for 2020.

**Issue E3** – Support energy efficiency and address fuel poverty.

**Issue E4** – Support the development of a Cornish low carbon economy.

### Revised Issues:

**Issue E1** – Reducing the demand for energy in Cornwall.

**Issue E2** – Maximising the energy supply from renewable and low carbon sources.