REVISION 2020

PROPOSED REGIONAL SPATIAL STRATEGY SUPPLEMENTARY PLANNING DOCUMENT – RENEWABLE ENERGY

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On Behalf of Government Office for the South West and the South West Regional Assembly

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SOUTH WEST OF ENGLAND REGIONAL SPATIAL STRATEGY
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1 BACKGROUND

1.1 Introduction

The availability of energy is central to maintaining and enhancing the South West's way of life. It is widely taken for granted and expected to continue to underpin the region's economic, domestic and transport future. However during the period covered by RSS two major challenges will affect the way in which energy is perceived and planned for. The first challenge is Climate Change which has a global reach but requires locally and regionally based action to put into effect national and international commitments. The second challenge concerns the UK's shift from being virtually energy self sufficient to becoming ever more dependant upon external supplies of oil, coal and gas.

Both of these challenges are recognised by the Government, the 2003 Energy White Paper "Our Energy Future – Creating a Low Carbon Economy" sets out a strategy to minimise energy use and pollution and move towards an increasing proportion of energy generated from indigenous renewable sources. The White Paper's four goals are to: cut the UK's CO_2 emissions by 60% by 2050, with real progress by 2020; maintain the reliability of energy supplies; promote competitive markets in the UK and beyond, helping to raise the rate of sustainable economic growth and improve our productivity; and ensure that every home is adequately and affordably heated. These goals will contribute to and go beyond the United Nations Framework Convention on Climate Change and its Kyoto Protocol to reduce greenhouse gas emissions, which contribute to global climate change.

1.2 The Difference Between Electricity and Heat

Energy essentially comes in two forms – electricity, or heat, and they are qualitatively different. The former produces a flow of electrons that can be used to power electronic and electrical devices. The latter is generally produced by combusting a fuel (e.g. gas or oil) to release heat energy. Electricity is a higher grade form of energy, and this is reflected in the difference in the price paid for it by end users.

Because of the qualitative difference between these two types of energy, they are produced using different types of technology and are used to meet different end uses. The graphs below (taken from the Energy White Paper) show a typical split for final energy consumption in the UK by sector and by end use. These splits would be similar for the South West.

Fig 1: Final Energy Consumption – Breakdown by Sector

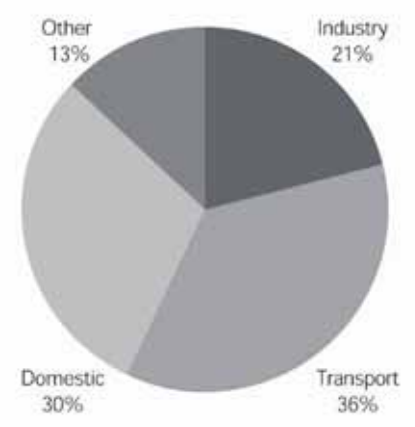
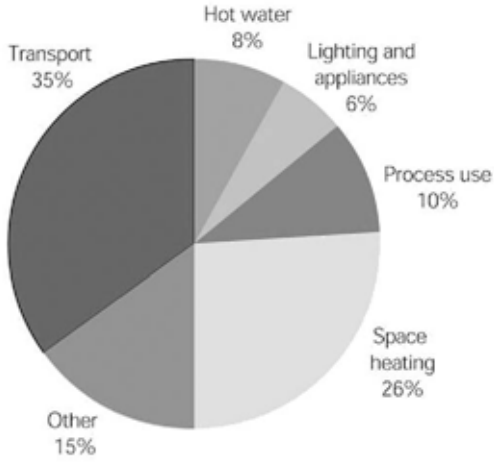


Fig 2: Final Energy Consumption – Breakdown by End-Use



Source: DTI, provisional, data for 2000. End use data for 2000.

End uses require energy either in the form of heat or electricity. Of the end uses shown in the figure, after excluding transport, the majority of energy required is in the form of heat, for providing hot water, and space heating for buildings. As heat energy forms such a large part of energy demand, it is important that the RSS policies should support the development of renewable forms of heat as well as electricity.

For this reason, this document sets out separate targets and policies for renewable electricity and renewable heat. The use of renewable energy for transport is not covered as part of these policies, and is dealt with in the transport section of the RSS.

1.2.1 Defining Renewable Heat

The term “renewable heat” refers to heat produced from the following (not an exhaustive list):

- Solar water heating
- Biomass heat only, using wood fuel.
    - Wood fuel can be sourced from forestry residues, clean recycled wood waste, arboricultural residues, or energy crops (short rotation coppice). The fuel can take the form of logs, wood chips, and pellets.
- Heat from renewable Combined Heat and Power (CHP)
    - This would include heat from energy from waste, anaerobic digestion, and biomass CHP
- Ground source heat pumps

2 REGIONAL AND SUB-REGIONAL RENEWABLE ENERGY TARGETS

2.1 Renewable Electricity Targets

2.1.1 Electricity from Onshore Renewables

Achieving the commitments set nationally within the 2003 Energy White Paper will require at least 40% of electricity to be generated from renewable sources by 2050. In the shorter term the Government is committed to the achievement of 10% renewable electricity by 2010 and is aiming for 20% by 2020.

The South West, a region that imports far more electricity than it produces, has made a good start and has a range of renewable energy installations.. However, in 2005 only about 3% of the region's electricity demand is currently met by these indigenous renewables. Regional Planning Guidance (RPG 10) set a 2010 target for renewable electricity based on a percentage of generation within the region. This target formed the basis for the work done to establish the 2010 target outlined within policy E1. The detailed relationship between these figures is outlined within *[RSS associated document title].*

Policy E1 Renewable Electricity Targets

Local Development Documents will include policies and development proposals which contribute to the achievement of the following targets:

a) By 2010 a minimum target of 509-611 MWe installed generating capacity, from a range of onshore renewable electricity technologies;

b) By 2020 a minimum target of 847 MWe[1] installed generating capacity from a range of onshore renewable electricity technologies. This onshore target, together with offshore renewable electricity capacity, will help to provide at least 20% of the Region's electricity demand by 2020.

The RSS policy framework, complemented by Local Development Documents, will facilitate the achievement of the minimum sub-regional targets by 2010 outlined in table 1:

Table 1: 2010 Onshore Renewable Electricity Targets

Sub-region	Installed Electricity Generating Capacity (MWe)
Former Avon	35-52
Gloucestershire	40-50
Wiltshire	65-85
Somerset	61-81
Devon	151
Dorset	64-84
Cornwall	93-108[2]
Total	509-611

[1] The renewable electricity capacity approved through the planning process will be monitored through the local planning authorities' annual monitoring review. Capacity installed will be monitored by the Regen SW annual survey

[2] Cornwall County Council adopted the bottom end of the range within their structure plan

The targets outlined within table 1 have been consulted upon and agreed by the counties and/or sub regions as part of the REvision 2010 Project.

Map 1 in section 4 suggests one way in which these 2010 targets may be met, though **the actual technology mix itself is not part of the targets and is provided for indicative purposes only.**

The 2020 target was developed and consulted on as part of the process of developing the RSS. Discussions have been held with key regional and sub regional stakeholders identified by the Regional Assembly and the renewable energy industry.

Table 2 outlines one way by which the 2020 target could be met in terms of potential technology mix. **The technology mix is not part of the target and is provided for indicative purposes only.** The assumptions that form the basis of this analysis can be found in the full report at *[insert website address when established]* and are summarised in *[RSS associated document title]*.

Table 2: 2020 Onshore Renewable Electricity Targets

Onshore technologies	MWe	GWh
Onshore wind	550	1,445
Energy crops/FR	100	788
Building Integrated Renewables	50	131
Hydro	15	66
Energy from waste (eligible for RO)	100	832
Anaerobic Digestion	2	17
Landfill Gas	30	250
Total	**847**	**3,529**

Further work on establishing appropriate sub regional targets for 2020 (as opposed to the 2010 sub regional targets already outlined within this document) will be taken forward as an early review of this RSS.

Planning has a key role to play in facilitating the development of renewable energy and the achievement of the Policy E1 targets. PPS22 states that planning policies at regional and local level should promote and encourage rather than restrict the development of renewable energy resources. Local authorities should collaborate and engage with communities, the renewable energy industry and other stakeholders to assist in the achievement of targets through measures such as:

- detailed assessments of local potential, including within local authorities own estate
- promoting district heating CHP schemes
- supporting the development of the renewable energy industry within the South West
- encouraging the development of local supply chains, especially for biomass
- raising awareness and understanding of renewable energy amongst local authority officers, members and the wider community
- encouraging community involvement with and where appropriate ownership of renewable energy schemes

2.1.2 Electricity from Offshore Renewables

The South West has one of the best wave and tidal resources within the UK. As a result, offshore renewables are likely to be increasingly developed off the South West coast after 2010, and could play a significant part in achieving the 20% renewable electricity target by 2020. However in order for the 2020 target to be met it seems likely that there will need to

be some strengthening of the grid to accommodate the offshore capacity from marine technologies such as wave and tidal stream.

Within the 2010 targets it was anticipated that there may be relatively small wave and tidal demonstration devices amounting to some 6 MWe in place by 2010. Offshore wind was also expected to make a contribution of 50 MWe towards meeting the 2010 regional target. Both these assumptions now seem unlikely. With regards wave, it is expected that the Wave Hub will be operating by 2010 with some 20 MWe capacity installed. However, it is likely that other parts of the country that are more favourable for offshore wind will be exploited first and given the timescales to 2010 any offshore wind seems unlikely.

The role of the planning system in encouraging offshore renewables is limited to associated developments on the landward side of the low water mark. Relatively modest onshore connections will facilitate the capture of very significant offshore resources. It is vital that local planning authorities approach the planning and control of these associated developments in a positive manner.

Policy E2 Offshore Renewable Energy Projects

Local Planning Authorities should encourage the development of offshore renewable energy resources by facilitating connections to the electricity grid[3]

The relatively modest contribution from offshore technologies by 2010 will have grown considerably by 2020 to 400 MWe as indicated within table 3:

Table 3: Offshore Renewables Target by 2020

Offshore technologies	MWe	GWh
Offshore wind	50	153
Wave	250	723
Tidal stream	100	289
Total	**400**	**1,165**

This assumes the commercial proving of wave and tidal technologies early within the next decade together with government support to ensure commercial viability. The total offshore capacity assumes a relatively small contribution from offshore wind. If this is to occur it is likely to be within the Bristol Channel where depth of water will not make development too expensive, as is the case in most other parts of the region.

A significant shift in technology mix is anticipated between the 2010 and 2020 renewable electricity targets. For 2010 it is assumed that less than 10% of the target will be met by offshore technologies. By 2020 it is expected that just over 30% of the target will be met by offshore technologies. The rate of growth of onshore wind will fall from a 600% increase in capacity between now and 2010, to a less than 60% increase in capacity between 2010 and 2020. The justification for these assumptions, together with a summary of all other assumptions is outlined within *[RSS associated document title]*.

2.1.3 Meeting 20% of Electricity Demand by 2020

When taken together, the capacity from onshore and offshore technologies will generate approximately 20% of the region's electricity demand. However this estimate is totally

[3] The level of offshore capacity installed within the region will be monitored through the RDA Wavehub project and DTI consents

dependent on the assumptions made for how electricity demand will change between now and 2020.

The estimate of 2020 electricity demand in the South West used in table 4 assumes a high level of energy efficiency in line with the assumptions within the Energy White Paper alongside increased demand for electricity from growth in housing and GVA in the South West. The detail behind these estimates is set out in *[RSS associated document title]*

Table 4: Total Renewable Electricity Target by 2020

	MWe	**GWh**
Onshore technologies	847	3,529
Offshore technologies	400	1,165
Total	1,247	4,694
% Regional Electricity Demand		20%

2.2 Renewable Heat Targets

While there are currently no Government targets for heat production from renewable sources this situation is expected to change during the RSS period. The Government commissioned a Biomass Task Force in October 2004 to look at measures to support biomass energy in the UK, including biomass heat.

PPS 22 talks about increasing the deployment of "renewable energy" in general, which is taken to cover both renewable electricity and renewable heat. It is worth noting that the European Commission (EC) White Paper on Renewable Energy Sources sets out a comprehensive strategy and action plan to achieve the ambitious goal of doubling the renewables' share of the European Union's total energy supply, from 6 per cent to 12 per cent, by 2010. This includes renewable heat as well as electricity.

There is considerable potential in South West for the production of heat from renewable sources, and the South West has a lot to gain from harnessing its renewable heat resources. Some of the factors that mean that the SW has more to gain than perhaps other regions are:

- the SW has the best solar resource in the UK;
- 9.8% of the SW land area is covered by forests and woodland, providing a significant resource of forest residues that can be used for biomass heating;
- the SW has a small but established installer base for renewable heating technologies, as well as a manufacturer of ground source heat pumps;
- the SW has a high proportion of off-gas areas – for example, 18% of households are off-gas. This increases the economic potential for renewable heating;
- there is existing support for renewable heat within the South West Renewable Energy Strategy, the Woodland Rennaissance programme and the AONB management plans;
- there are a number of exemplar projects that can be built on, including the RDA and Countryside Agency funded Bioscope project, to support biomass heating.

Some of the benefits that the region can gain from increasing the use of heat from renewable sources are:

- enhanced woodland management, leading to increased biodiversity
- converting wood wastes into a resource
- using renewable heating systems as a measure to reduce fuel poverty in "hard to treat homes" in off-gas areas

- local income from wood fuel supply
- improving the economics of renewable Combined Heat and Power (CHP), and assisting in delivery of renewable electricity targets
- reduced heating running costs for tenants, social landlords, and owner occupiers
- helping to reduce carbon dioxide emissions from new buildings, particularly as part of major urban regeneration
- helping to reduce carbon dioxide emissions from existing buildings by retro-fitting renewable heat systems, particularly through the installation of biomass boilers.

In order to encourage the use of these resources, particularly in strategic and other major developments a renewable heat target has been introduced into RSS.

Policy E3 Regional Renewable Heat Targets to 2010 and 2020
The minimum targets for the generation of heat from renewable sources outlined within table 6 should be achieved by the use of appropriate resources and technologies:

Table 5: Regional Targets for Renewable Heat by 2010 and 2020

Timescale	Installed Thermal Capacity (MWth)
2010	**105**
2020	**503**

There is a key role for local planning authorities within the region in ensuring a synergy between sites for major new developments, and the location of renewable CHP generators, to ensure that the heat from the latter can be effectively used, for example as part of community heating systems.

These targets were developed and consulted on as part of the process of developing the RSS. Discussions have been held with key regional and sub regional stakeholders identified by the Regional Assembly and the renewable energy industry.

The assumptions that form the basis of this analysis can be found in the full report at xxxxx and are summarised within *[RSS associated document title].* The table below shows how these targets could be achieved, based on a preferred scenario as outlined within *[RSS associated document title].* **However, the actual technology mix itself is not part of the targets and is provided for indicative purposes only.**

Table 6: Indicative breakdown of how targets could be met

Technologies	2005 (MW)	2010 (MW)	2020 (MW)
Woodfuel heating	3	47	247
Heat pumps	2	21	107
Solar water heating	4	35	138
CHP (where heat is usefully used) from AD, EfW or biomass	0	8	42
Total MW	**9**	**111**	**534**
Total MW after de-rating for heat pumps	**8**	**105**	**503**

For the purposes of target setting, the figure for heat pumps was de-rated (using a factor of 0.71) to allow for the use of non-renewable electricity to drive heat pump systems.

These targets are challenging, but achievable, on the basis that:

- A policy for on-site renewable energy generation in new build is put in place, as set out in policy E6. This will directly stimulate installation of new renewable heat systems

- The UK government puts in place measures to support the economic value of renewable heat (e.g. a renewable heat obligation), OR fossil fuel prices (for oil and mains gas, in particular) rise at the high end of forecasts

The targets equate to roughly 0.2% of SW heat demand (excluding transport) by 2010 and 1.4% by 2020 assuming that the full range of energy efficiency measures set out in the Energy White Paper are put into place.

3 DEVELOPMENT CRITERIA FOR RENEWABLE ENERGY

Renewable energy proposals should be positively encouraged by planning authorities and assessed using the criteria set out in Policy E4. Local Planning Authorities may prepare Local Development Document criteria policies, which focus on key local issues, within the framework provided by national guidelines and RSS. Regional SPD on Renewable Energy *[RSS associated document title]* also contains detailed guidance relevant to Local Development Document preparation.

The integration of wind and biomass production proposals into the region's varied landscapes will require careful consideration. The location and design of proposals should be informed by landscape character assessments. In areas where a number of proposals come forward during the same timescale, or a development is proposed near to existing developments, cumulative effects must be assessed following the steps set out in the PPS22 Companion Guide, (paragraph 5.24).

Within nationally designated areas, small scale renewable energy proposals will be considered favourably subject to Policy E4. In the case of wind developments, large scale wind farms are considered inappropriate and even modest scale proposals could result in a disproportionate degree of landscape impact. Proposals for more than one wind turbine, or a turbine with a hub height of 25 metres or more, are unlikely to be acceptable within the region's designated areas. The settings of designated areas are important and need to be protected from inappropriate development. In assessing renewable energy proposals close to a designated area their potential impact will be a material consideration. National Park Authorities may develop their own policies for the types of renewable energy technologies that they see as suitable for their area.

Internationally designated sites and areas of nature conservation significance are protected by specific legislation. The purposes of designation will vary considerably between sites and may not be in conflict with particular forms or scales of renewable energy development. The key test in assessing a proposal is the extent to which it might affect the integrity of the designation.

Minimising any impacts caused by noise, odour, traffic, discharges to the air and watercourses, and waste disposal will be important particularly in relation to nearby residential areas and individual dwellings. Local Development Documents may wish to include more detail on compliance with these requirements.

PPS22 makes it clear that the wider benefits of renewable energy projects must be given significant weight as material considerations regardless of scale. These benefits could include: CO_2 reduction, the diversification of local rural economies, the creation of new jobs, particularly in biomass production and processing, and support for the regeneration of urban areas, including industrial and brownfield sites.

E4 Development Criteria for Renewable Energy

Local Planning Authorities should consider the following regional criteria alongside the full range of issues outlined within PPS22 and local criteria contained within Local Development Documents:

a) Within the region's nationally and internationally recognised designations, schemes should be of an appropriate scale and not compromise the objectives of the designation;

b) Renewable energy schemes should not have a significant adverse cumulative impact in conjunction with other similar developments;

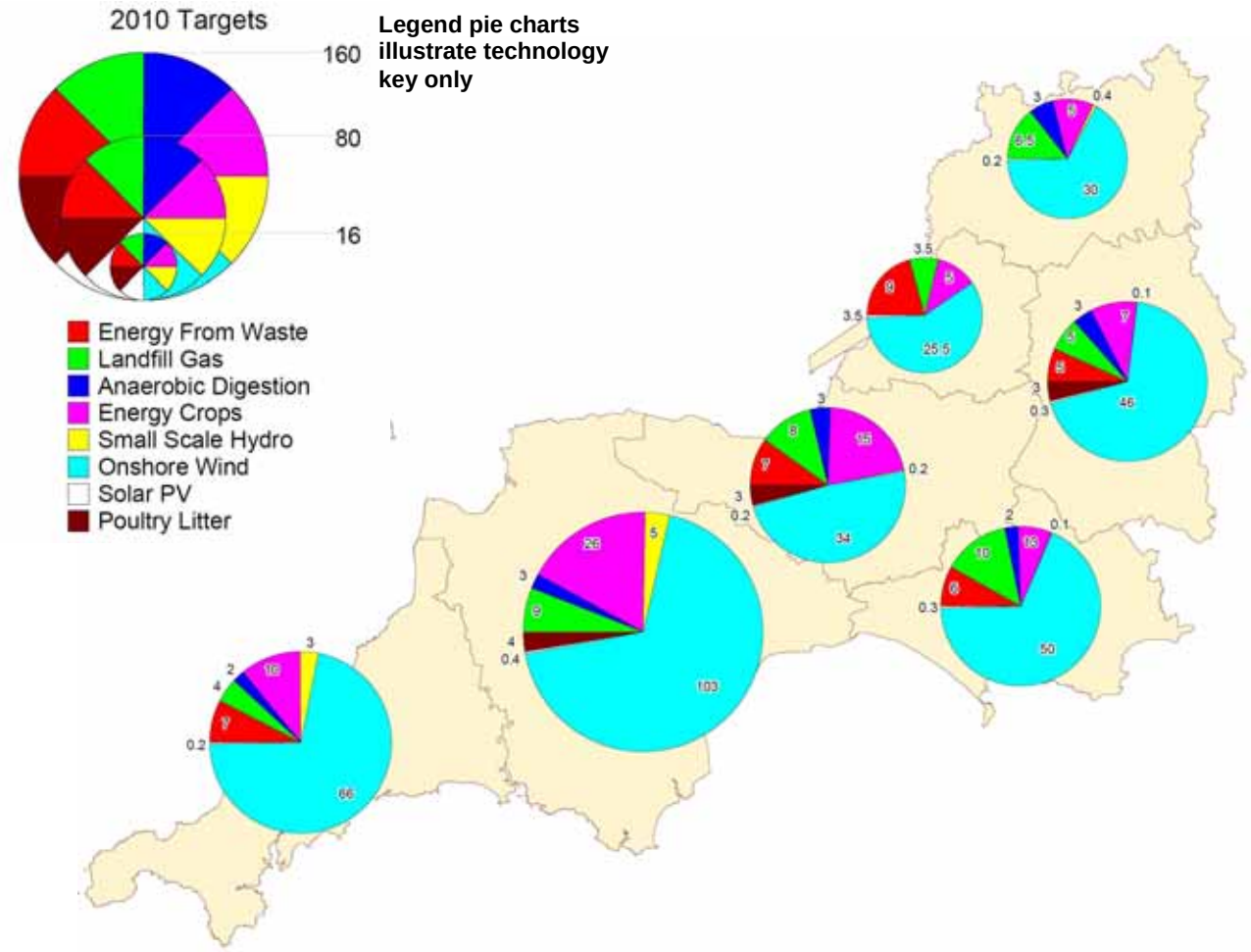
c) Schemes should minimise and deal satisfactorily with any impacts resulting from construction and operation including air quality, landscape and visual impact, atmospheric emissions, noise, odour, water pollution, flood risk, and the disposal of waste;

The wider environmental, community and economic benefits of proposals, whatever their scale, (e.g. carbon reduction, job creation etc) are material considerations that should be given significant weight in determining planning applications.

4 SPATIAL DISTRIBUTION OF RENEWABLE ENERGY DEVELOPMENT

Map 1 illustrates the possible level and spatial distribution of the technology mix for the 2010 renewable electricity targets. However the mix outlined here is indicative only and is not part of the targets outlined within table 1. For presentation purposes the map takes the mid point range of the figures in table 1. The assumptions that form the basis of this analysis are fully set out at www.oursouthwest.com/revision2010 and summarised in the *[RSS associated document title].*

Map 1: Sub Regional Renewable Electricity Targets for 2010 (MW)

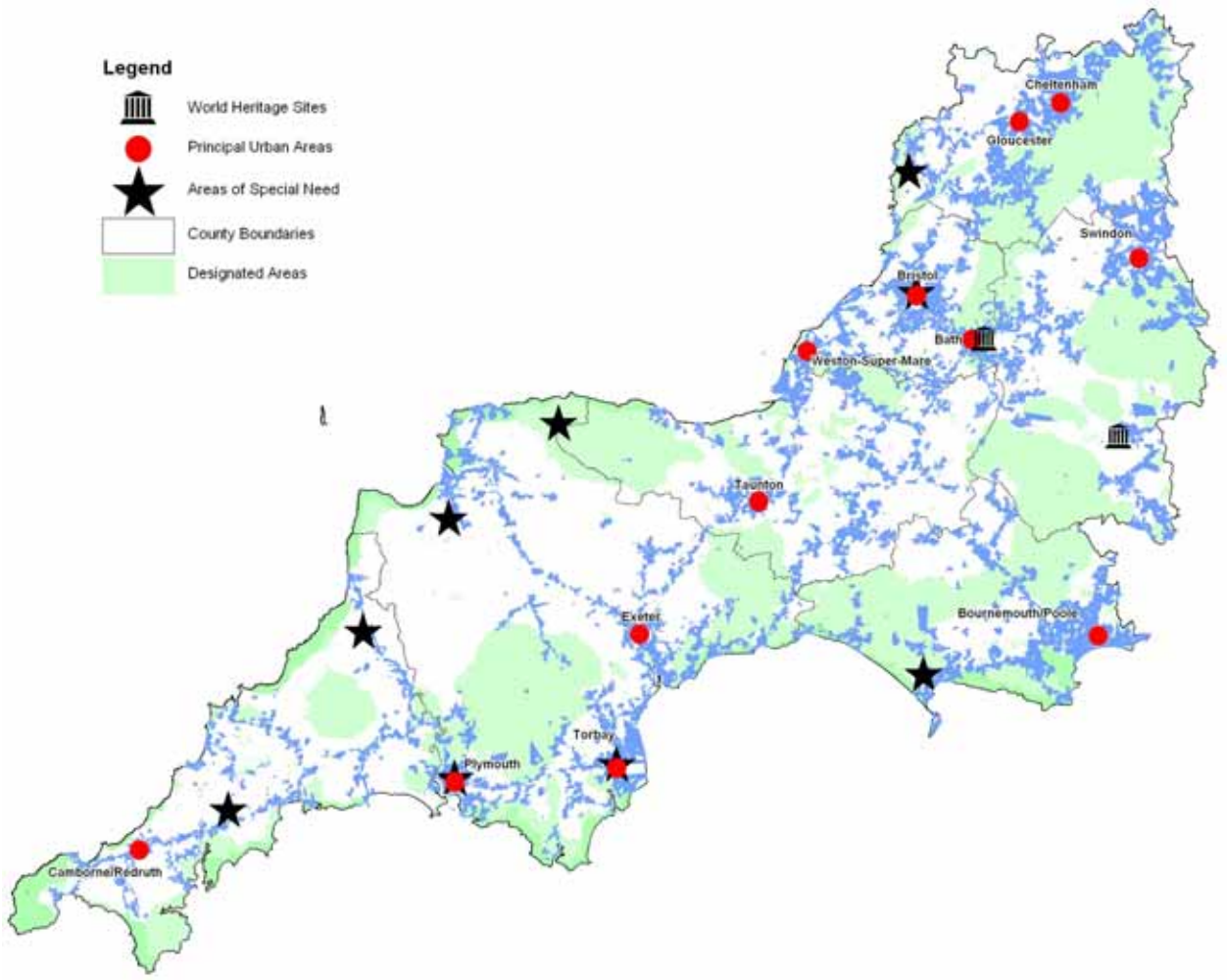


Map 2 outlines the opportunities and constraints that present themselves for renewable energy development within the South West, beyond the actual renewable energy resources themselves, like wind speed, biomass resources etc.

Renewable energy development will be guided by the resources available for development (see *[RSS associated document title]*), the development criteria outlined within section 3 and the opportunities and constraints highlighted within map 2.

Consideration of all these factors suggests that there are no broad areas that should be identified as major locations for renewable energy development within the region, as opposed to any other. Whilst some areas do have greater resources than others, it seems likely that development will take place in a more distributed manner across the South West.

Map 2: Opportunities & Constraints on Renewable Energy Development



4.1 Principal Urban Areas (PUAs) and Areas of Special Need (ASNs)

PUAs offer considerable opportunity for renewable energy development.

As the largest producers of municipal and commercial/industrial waste, PUAs present significant opportunities for developing Energy from Waste plants (utilising advanced thermal treatment), although ,there may also be opportunities for smaller scale EfW plants in less populous areas. EfW plants should be located close to good transport networks to facilitate the movement of waste to the plant. As with EfW, large scale biomass plants will also need to be located close to road networks. Locating EfW plants close to new industrial estates or housing developments, maybe possible within ASNs and PUAs to supply process heat or district heating.

On existing industrial estates or other brownfield sites, opportunities exist for the development of a range of different renewable energy schemes, from medium sized wind turbines in small clusters to the installation of building integrated systems. PUAs and ASNs are expected to be the focus for new development New developments offer significant opportunities for identifying and utilising large heat loads to support biomass based community heating schemes and also provide extensive opportunities for the integration of renewable energy technologies into buildings.

There is also considerable potential for retrofitting renewable energy systems to existing buildings. There are many instances where this would fall within the planning system, for example, as part of major refurbishments taking place as part of urban regeneration.

4.2 Off gas areas

The parts of the region that do not have access to the gas network and therefore have to rely on higher cost fuels such as oil and liquefied petroleum gas to supply space heating and hot water, offer significant opportunities for implementing renewable heat technologies such as biomass boilers, solar water heating or ground source heat pumps.

4.3 Designated areas

Designated areas as highlighted within map 2 include, World Heritage Coasts, Areas of Outstanding Natural Beauty, National Parks and Nature Reserves, SSSIs, Ramsar sites, Special Protection Areas and Special Areas of Conservation. Whilst it is not expected that there will be the opportunity for the development of large scale renewable energy schemes within designated areas, there are significant opportunities for the development of smaller scale renewables which should be addressed in the management plans of these areas.

4.4 Non-designated rural areas

It is within the non-designated rural areas of the region where the larger scale development of renewable energy is expected to occur, subject to site specific constraints.

The highest wind energy resource exists within Devon and Cornwall. However there are increasing opportunities in the rest of the region, as minimum economic wind speeds[4] reduce over time. Lower economic wind speeds may result in reduced pressure on areas outside designated areas with higher quality landscapes and the highest wind speeds. The region's settlement dispersal and landscape character suggests that the majority of wind farm development in the South West is likely to be distributed in small and medium clusters[5] through out the region rather than concentrated in any one area.

There are opportunities for biomass plant development in almost every county in the region. Plants should be located as close as possible to fuel sources to minimise carbon emissions from transport.

4.5 Offshore

The best locations for wave energy devices depend on the technology employed.

In general, the wave energy available increases with water depth. Although more energy is available further offshore, connection costs are increased due to the increased length of cable required. To support these costs, commercial wave farms will need to be large, eg 50-100MW, and there are a limited number of shoreline connection points that can accept this capacity, eg Hayle and Padstow. There are also several no-go areas (shipping lanes,

[4] An economic wind speed represents the wind speed at which a developer may consider a particular site to be economically viable. Economic wind speeds may reduce over time in response to technology development and other economic factors

[5] For the purposes of the study that has supported the development of the targets, Land Use Consultants assumed that large clusters involved more than 10 turbines.

MOD restricted areas, etc) that need to be avoided. Consequently, most of the development will be focused well off the north and west Cornish coasts and possibly off north Devon.

Unlike wave energy, the best locations for tidal stream devices are in shallower waters where there are strong currents. These include the Bristol Channel, the Isles of Scilly, several sites around the Cornwall and Devon coastline and Portland Bill. Again, shoreline connection points will be limited.

Although the offshore wind resource is very large, a major limitation to development is water depth. There are similar locational constraints as for wave and tidal resources and again connection costs can be considerable. The seabed shelves very quickly off most of the southwest peninsular so there are a limited number of sites where offshore wind development would be possible.

5 PROMOTING SUSTAINABLE ENERGY USE WITHIN NEW DEVELOPMENT & REGENERATION

PPS22 emphasises the importance of developing positively expressed policies on building integrated renewables. However, policies that encourage the on site generation of renewable energy must be placed within a wider context of the need for development, both new build and refurbishment, to incorporate the principles of sustainable energy design. This will involve reducing building energy demand through energy efficiency and low energy design, before meeting the resulting demand from first renewable energy and then fossil fuels or grid electricity. This approach has been characterised as the 'Energy Hierarchy' within the South West, and will ensure that energy efficiency opportunities are maximised before renewable energy is considered within proposals for new developments.

While the majority of actions required to achieve greater energy efficiency and the clean use of fuels fall outside the scope of the planning system, it is possible to influence the overall use of energy by the way in which development is located and served by sustainable transport, and by careful design.

There are several initiatives at both national and regional level that support the development of policy in this area. These include:

- the EU Energy Performance in Buildings Directive (EPBD) which us due to come into force in the UK in January 2006. This will require all buildings, domestic and non-domestic, both new and existing to have energy performance ratings;
- it is already mandatory, under current building regulations, for all new domestic dwellings to have a "SAP" rating, which is a measure of energy performance and CO2 emissions;
- the UK Government, in partnership with industry, is currently developing a Code for Sustainable Buildings (CSB). This will be a voluntary scheme to promote more sustainable building practices. The CSB will apply to all new building developments, with the initial focus on new build housing.
- for the SW, the Future Foundations initiative has an ongoing programme to promote sustainable construction within the South West;
- the draft regional housing strategy proposes that all new *social housing* (see action B.2. in RHS) should meet EcoHomes[6] "Very Good" accreditation, where there is access to the mains gas network, and "Good" accreditation in areas off the mains gas network;

[6] The Building Research Establishment's Environmental Assessment Method (BREEAM) is a measure of best practice in environmental design and management of offices, industrial units and retail units. BREEAM assesses the performance of buildings, management, energy use, health and well-being, pollution, transport, land use, ecology, materials, and water. The EcoHomes Assessment is the version of BREEAM for new, converted or renovated homes, covering both houses and

- the SW RDA has a policy that RDA funded new build projects should meet BREEAM "Very Good" rating.

Major development proposals must be accompanied by an "Energy Use Assessment" which describes how much energy is expected to be used within the proposal and goes on to consider ways by which the "Energy Hierarchy" can be put into effect. Existing methods that could be used to prepare such assessment are the BRE EcoHomes (for residential) and BREEAM (for non-residential) tools, that include an assessment of energy use and carbon emissions, and are already widely used by developers. Also, additional tools are in development to support the implementation of the EPBD.

This energy use assessment should provide a baseline for annual CO_2 emissions arising from fossil fuel energy use within the building (i.e. energy used for heating, cooling, lighting and appliances, and cooking, but not including industrial processes, transport or embodied energy).

This baseline for CO_2 emissions should be before the use of any on-site renewable energy generation, but after the application of measures to reduce energy use (including passive solar design), and improved energy efficiency.

Policy E5 Sustainable Energy within Development Proposals

All developments will include a proportion of their energy from renewable sources. Major developments will be expected to provide, as a minimum, sufficient on-site renewable energy to reduce carbon dioxide emissions from energy use on site by 10%.

Proposals for major developments must be accompanied by an energy use assessment which sets the baseline for the calculation of the proportion of on site generation and describes the measures that are being taken to put the "Energy Hierarchy" into effect.

Although there are capital costs associated with installing renewable energy systems, there are also benefits, financial and otherwise. These include the reduced energy costs arising from both reduced energy use and protection from rising energy costs. There is potential for improved comfort and health, improved capital value, reduced maintenance costs and environmental impacts. Business benefits can include enhanced corporate social responsibility, prestigious designs, exemption from climate change levy, renewable obligations certificates, local job creation and increased community spirit.

The feasibility of supplying a proportion of renewable energy may depend on technical or financial issues, and what is feasible is likely to change as energy prices vary, the costs of technologies change, as grants become available and legislation is adopted. Developers will be expected to demonstrate that they have explored all renewable energy options, and designed their developments to incorporate any renewable energy requirements. A detailed justification will be required from developers if they do not consider that it is feasible to provide the required proportion.

Compliance with the 10% target will be measured with reference to the Energy Use Assessment, which will give a baseline figure for CO_2 emissions for a development, before

apartments. Both BREEAM and EcoHomes assessments are expressed on a scale of "pass" to "excellent", carried out by independent assessors who are trained and licensed by the Building Research Establishment.

the use of any renewable energy. As well as enforcing compliance with this 10% target, Local Planning Authorities (LPAs) will need to check that built developments comply with the plans submitted as part of the Energy Use Assessment. [7]

Major development proposals include significant urban regeneration projects covering new build, refurbishment, conversion and change of use and are defined here, based on the ODPM PS2 definition used for reporting general developments, as:

- for dwellings, the development of 10 or more dwellings or sites of more than 0.5 ha, if the number is not given;
- for all other uses, where the floor space will be 1000 square metres or more, or the site is 1ha or more. Floor space is defined as the sum of floor area within the building measured externally to the external wall faces at each level. Basement car parks, rooftop plant rooms, caretaker's flats etc should be included in the floor space figure.

Individual Local Planning Authorities may use lower thresholds for what constitutes a major development and set higher percentages for on site generation, to suit their particular circumstances, within their Local Development Documents. However for reporting purposes, Local Planning Authorities will be required to monitor against the above definitions of "major developments".

Public authorities have a key role to play in providing examples of best practice in energy efficiency and the capture of renewable energy. Local authorities in particular should develop exemplar projects which are accessible to the public and properly explained.

Energy use on site is defined as that used for servicing buildings and includes energy used for:

- Space and water heating
- Cooking
- Lighting, appliances, and equipment, including computers, lifts, etc.
- Ventilation and cooling

It excludes energy used for:

- Industrial processes (as these can change depending on who occupies the building)
- Transport
- Embodied energy (e.g. energy used in building fabric)
- Energy used to provide water, food, and shared infrastructure

Eligible forms of renewable energy for meeting the target currently include: solar water heating, photovoltaics (rooftop or cladding), biomass heating, biomass CHP, wind generators, micro-hydroelectric, ground source heating and cooling, and air and water source heat pumps. It can also include heat from renewable CHP plants, such as: landfill gas, sewage gas, anaerobic digestion, biomass, and energy from waste.

Off-site renewable energy generation would be eligible where there is a physical connection to the site, via a heat main or private wire. However, buying in green electricity is not eligible, as such arrangements can be temporary in nature.

[7] The Energy Use Assessment will therefore reflect actual practice and can be used to monitor the implementation of this policy by recording renewable energy capacity installed and CO_2 emissions saved.