

The evidence base for sustainable energy policies in the South East

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Future Energy Solutions ♦ Savills

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One ◆ Introduction

A REGIONAL RESPONSE TO SUSTAINABLE ENERGY ISSUES

With an ever-increasing emphasis on developing regional and local responses to national imperatives, SEERA is aiming to establish the extent to which regional land-use policies relating to energy issues might be strengthened further. This report summarises the available evidence in support of regional interventions by:

- Setting out the key aspects of the national policy context;
- Outlining the indicative costs and benefits of compliance with current leading-edge policy approaches;
- Reviewing the practical experience of policy implementation at local level;
- Identifying key conclusions relevant to SEERA's future approach in this area.

Two ◆ Policy contexts for sustainable energy use

NATIONAL ENERGY POLICY

National energy policy is set out in the Government's Energy White Paper, published in February 2003¹. This lays out the principal issues and aspirations for change. The four principal goals of energy policy set out in the White Paper are:

- to put ourselves on a path to cut the UK's CO₂ emissions by some 60% by about 2050, with real progress by 2020;
- to maintain the reliability of energy supplies;
- to promote competitive markets in the UK and beyond, helping to raise the rate of sustainable economic growth and improve our productivity; and
- to ensure that every home is adequately and affordably heated.

The Energy White Paper identifies national targets for the deployment of renewable energy and Combined Heat and Power (CHP). Nationally the UK is seeking to deploy sufficient renewable energy electricity-generating capacity to provide 10% of UK electricity requirements by 2010, and 15% of electricity by 2015; the CHP target is to install 10,000MW of capacity by 2010. The presumption is that these targets are stepping stones on the way to significantly higher deployments of sustainable technologies, commensurate with the need to reduce the UK's emissions of CO₂ by 60% by 2050.

¹ "Our Energy Future – Creating A Low Carbon Economy", (February 2003)

More recently the Government has announced an Energy Review². At the time of writing the analysis of the consultation responses has not concluded and the outcome of the review itself is as yet unknown. However it can reasonably be expected that the Energy Review will seek to encourage and speed the rate at which energy reduction (and greenhouse gas reduction) targets are achieved, which in turn is likely to imply increasing emphasis on the policy contexts reviewed within this document.

The South East has also proposed the adoption of regional targets for carbon dioxide reduction within the draft South East plan³ and within the draft Regional Economic Strategy⁴. These targets complement earlier targets for the deployment of renewable energy technologies, which were based upon the analysis carried out for the revision of RPG9 summarised below.

AVAILABLE POLICY INSTRUMENTS

There is a variety of existing policy instruments for achieving sustainable energy policy goals at the local level. However these instruments vary substantially, both in their approach and their status. Their characteristics are summarised briefly in the Table below.

INSTRUMENT	APPROACH	STATUS / LIMITATIONS
Building Regulations (Part L)	Compliance with standards	Mandatory. New construction / renovation / material change of use
EU Energy Performance in Buildings Directive ⁵	Promotion of building energy performance improvements	Mandatory. All buildings – mainly being implemented via Building Regulations

² “Energy debate kicks off as Ministers warn doing nothing not an option”, DTI Press Release 23rd January 2006. Consultation documents at www.dti.gov.uk/energy/review.

³ Policy CC2 – Climate Change, within “A Clear Vision for the South East”, Draft SE Plan (SEERA March 2006) http://www.southeast-ra.gov.uk/southeastplan/plan/view_plan.html

⁴ Target 1 within Objective 3 Sustainable Prosperity, within “Draft RES – The Regional Economic Strategy” (SEEDA 2006) <http://www.seeda.co.uk/RES/>

⁵ The EU’s Energy Performance of Building Directive (2003) is to be implemented by Member States by January 2006. ODPM has been developing the Government’s proposed approach to each of the articles that it contains.

BREEAM (via EcoHomes / BREEAM Offices and other rating systems)	“Good practice” rating of building environmental performance	Voluntary. Does not apply to all building types. Good coverage of sustainability issues. Energy not a focus
South East Plan / South East Spatial Strategy / Development Plans / LDFs	Regulation of land use in the public interest. Sustainable Development is now the “key purpose” of the planning system.	Precedent for coverage of energy issues still developing. Can be flexible for development type. Allows wider site layout, form, and orientation issues to be addressed.

The South East Plan contains a draft policy EN1⁶ which sets out a proposed approach in this area.

To understand the extent to which these separate policy instruments might help to achieve energy policy goals for the South East, whether singly or through their combined effect, we review briefly below the likely characteristics of each of the above instruments within the regional context.

EVOLUTION OF THE BUILDING REGULATIONS

In parallel with the development of planning frameworks covering sustainable energy, the Building Regulations are continuing to develop and enhance their oversight of energy issues.

Historically, amendments to improve the standards of energy efficiency within Part L of the Building Regulations have come into effect in 1990, 1995 and 2002. The final Regulatory Impact Assessment for the 2002 changes⁷, published in October 2001, estimated that these improvements would raise the performance of new dwellings by about 25% (adding around one to three per cent to construction costs), and significantly improve the performance of replacement boilers and windows. Similar performance improvements were introduced for buildings that are not dwellings. The cumulative effect of the

⁶ Draft SE Plan, Policy EN1 – Core Document Section D5 (SEERA March 2006)

2002 changes on carbon emissions in 2010 was estimated to be a saving of 1.4 Mtonnes per year.

A new version of Part L (Energy) of the Building Regulations came into effect on 6 April 2006⁸. This revision is predicted to lead to an improvement in the energy efficiency of new buildings of around 40%. Principal features in the new Regulations include setting performance standards for buildings as a whole rather than for construction and services elements (in line with the new EU Directive) and to firm up on pre-completion testing of airtightness. Improvements on a lesser scale would also be obtained whenever people carry out work on existing buildings.

The Building Regulations address both the construction of new buildings and the alteration and extension of existing ones. Amendments to Part L are now paying much greater attention than previously to work in existing buildings. In ODPM's view, such an emphasis is important, given the goal of reducing total carbon emissions. The existing stock of dwellings for instance numbers around 24 million and the UK is proposing to continue to build about 180,000 new units per year. Since turnover in the building stock is minuscule (ca. 1% per annum), it is important to improve the existing stock as well as to improve the standards for new buildings.

However, within the South East context, the rate of progress for energy performance improvements within the Building Regulations - on both new build and existing dwellings – could be seen as insufficient. The major expansion of the region's housing and other buildings foreseen within the South East Plan (Policy H1 of the draft SE plan states that "In the South East provision will be made for an annual average of 28,900 net additional dwellings between 2006 and 2026") implies an increase of nearly 580,000 dwellings over this twenty year period. Such an implied increase in energy demand across the region would make the achievement of the Government's "60% cut in CO₂ emissions by 2060" aspiration virtually impossible without further complementary (and

⁷ Regulatory Impact Assessment of the 2002 Bldg. Regs., Part L – Conservation of Fuel and Power (ODPM, October 2001)

⁸ ODPM Press Release 15th March 2006 – "Revised Building Regulations to tackle climate change laid in Parliament"

currently non-mandatory) measures, designed to improve the energy performance of new and existing building stock.

THE EU ENERGY PERFORMANCE IN BUILDINGS DIRECTIVE (EPBD)

This Directive was published in January 2003 and requires Member States to transpose its requirements into national law by January 2006. The Energy White Paper welcomed the EPBD and the UK is aiming to implement its provisions primarily through changes to Part L of the Building Regulations.

The aim of the Directive is to promote building energy performance improvement within the European Union, rather than to set specific targets. It lays down requirements for calculating energy performance in accordance with a national standard, making the results of such calculations known to prospective purchasers and tenants whenever buildings are constructed, sold or rented out, and for the display of such results in certain larger buildings that are occupied by public authorities. The principal provisions of the EPBD are set out in the Table below.

Principal Requirements of the EPBD

Article	Requirement
4	Setting of energy performance requirements. Minimum performance levels for different buildings (including existing) must be based on a methodology
5	New buildings. New buildings over a useful floor area of 1000m ² shall have technical, environmental, and economic alternative systems such as CHP, district heating, heat pumps
6	Existing buildings. When a building over 1000m ² useful floor area undergoes major renovation, energy performance shall be upgraded where technically, economically and functionally feasible
7	Energy performance certificate. When buildings are constructed, sold or rented out, an energy performance certificate shall be made available to the owner or by the owner. For buildings occupied by public authorities and institutions an energy certificate should be displayed in a prominent place clearly visible to the public
8	Inspection of boilers. Regular inspections of boilers OR the taking of steps to ensure that user advice is available
9	Inspection of air conditioning systems. Regular inspection of air conditioning systems

For the South East, it can be anticipated that these changes may have a useful - but perhaps not critical - influence on the energy in buildings context. Most of the provisions above apply to existing buildings and the provision of market information for existing buildings.

PLANNING POLICY AND GUIDANCE

The 2003 Energy White Paper is complemented by significantly enhanced approaches to energy within the planning system. These approaches are contained within various forms of national and regional guidance:

- *RPG9 – Alterations to Regional Planning Guidance for the South East (1994) – Energy Efficiency and Renewable Energy*⁹ identifies regional and sub-regional targets for deployment of renewable energy electricity generating technologies. These targets are accompanied by indicative breakdowns of technology types and scales, based in turn on work carried out for both SEERA¹⁰ and GOSE¹¹;
- *PPS1: Creating sustainable communities*¹², advises that planning policies should reflect a preference for minimising the need to consume new resources over the lifetime of a development by making best use of existing resources and by seeking to promote and encourage, rather than restrict, the development of renewable energy resources. The PPS notes also that consideration should be given to encouraging energy efficient buildings, community heating schemes and the use of combined heat and power in development;
- *PPS22: Renewable energy*¹³, sets out a number of preferred policy approaches to renewable energy technologies and schemes, and is

⁹ Alterations to RPG9 (SEERA, 2004)

¹⁰ "An Assessment of the South East's Renewable Energy Capacity and Potential to 2026", AEA Technology / FPDSavills, May 2002

¹¹ "Development of a Renewable Energy Assessment and Targets for the South East", January 2001

¹² Planning Policy Statement 1 (February 2005) – Para 22: The prudent use of natural resources

¹³ Planning Policy Statement 22 – Renewable Energy – August 2004

complemented by a Companion Guide that seeks to illustrate schemes and principles¹⁴.

THE EMERGENCE OF LOCAL POLICY PRECEDENT

In October 2003 the London Borough of Merton became the first local authority in the UK to include a policy in its Unitary Development Plan that requires new non-residential developments to generate at least 10% of their energy needs from renewable energy sources. The actual policy reads: *“All new non-residential development above a threshold of 1,000 sqm will be expected to incorporate renewable energy production equipment to provide at least 10% of predicted energy requirements.”*

Since the introduction of this policy, a large number of individual Local Authorities have sought to introduce a policy of this nature, building upon the “Merton precedent” in a number of ways. Examples of how the wording of such a policy has continued to evolve since the original LB Merton case are shown in the Appendix to this document. A noteworthy current example is that of the London Borough of Croydon, which is shown below, coupled with a commentary on the principles that it establishes.

London Borough of Croydon

“The Council will expect all development (either new build or conversion) with a floor-space of 1000m² or ten or more residential units to incorporate renewable energy production equipment to provide at least 10% of the predicted energy requirements.”

The Croydon policy above contains eight important criteria essential for a prescriptive policy.

1. It includes the word “Require” or “Expect”.
2. It states it is for “new build or conversion” – *to catch change of use in regeneration areas*
3. It is for the *combined floor space* of commercial and residential.

¹⁴ “Planning for Renewable Energy – A Companion Guide to PPS22”, 2004

4. It establishes the floor-space and residential unit number threshold.
5. It states it is for on site renewable energy equipment - *thus ruling out green energy purchase and other means of satisfying a policy without new implementation.*
6. It sets the % target.
7. It is for the “predicted energy/ CO₂ usage” – *Thus ruling out an approach that requires building, monitoring and then retrofitting renewable sources.*
8. It says to provide “at least 10%” - *which means that a higher target can be required if technically feasible and financially reasonable.*

The impetus that Merton’s exemplary policy has given to policy-making on energy issues is also demonstrated by the fact that – by the beginning of 2006 - a number of draft Regional Spatial Strategies had incorporated a policy of this nature.

Much of the rest of this document is concerned with a review of the implications of the “Merton precedent” for the South East and – in particular – its potential influence on the scope and wording of draft policy EN1 within the South East Plan. Section 3 of this report sets out a brief summary of the costs and benefits of sustainable energy in buildings. Section 4 summarises the experience of a number of Boroughs in respect of such a policy and its practical implementation. Finally, in Section 5, we review the current wording of the draft South East plan in the light of the preceding Sections, and suggest ways in which the implementation of such a policy could best be encouraged and ensured.

Three ◆ What 10% means: costs and benefits of sustainable energy technologies in buildings

SUSTAINABLE ENERGY CHARACTERISTICS

The menu of available sustainable energy technologies is extensive. This provides a wide range of possible approaches to - and solutions for – a prospective “10% renewable energy” policy. This section discusses the scale of costs and benefits likely to arise and seeks to identify some of the methods available to identify these costs and benefits more specifically.

It is perhaps helpful to summarise some of the generic characteristics of various technology options.

- *Size and scale of technology:* Sustainable energy technologies come in a very wide range of sizes and scales. There are technologies suitable for:
 - **individual buildings** (such as solar photovoltaics, micro CHP, ground source heat pumps, small wind turbines or chargers);
 - **groups of buildings** (for example CHP associated with heat networks, the principles of passive solar design applied to site layouts); and
 - **generation of electricity for feeding into the electricity distribution network** - such as wind turbines, CHP, etc.
- *Passive / active technologies:* Sustainable energy measures may be passive (in which typically they act to reduce energy demand) or active (in which they act to generate electricity, heat or both through their operation). Illustrative of these alternatives are the different forms of solar energy technology:

- **passive solar design** - which optimises the use of solar heat, daylight and natural ventilation in buildings leading to reduced energy demand and enhanced occupant comfort;
 - **solar water heating** (which uses solar panels to collect the Sun's heat, contributing to reductions in energy demand for water heating);
 - **solar photovoltaics** - which uses the Sun's radiation to stimulate an electrical current in PV cells, thus generating electricity.
- *Applicability to different forms of development:* Sustainable energy technologies can be applied readily to new greenfield or in-fill development sites, and may often also be applicable in retrofit or refurbishment situations. This range of applicability makes it possible to consider solutions of this kind in almost any context.

In parallel with this wide range of applicability, sustainable energy technologies cover a very wide cost range. Some technologies are currently more expensive than conventional alternatives but others are essentially competitive in particular contexts and some may have virtually zero cost (e.g. aspects of passive solar design within estate layouts).

Nevertheless, regard has to be made to the warning in PPS22: Renewable Energy (para. 8 ii) to the effect that undue burdens should not be placed on developers. This section of the report seeks to quantify some of the costs and benefits of sustainable energy technologies in order to help clarify the requirements on developers.

A significant guidance document (The London RE Toolkit), setting out measures, approaches, costs and benefits of renewable energy technologies, was published in September 2004 as a supporting guide for assisting the implementation of renewable sources across London¹⁵. This guide remains a definitive source and so much of the material set out below is derived directly from it.

¹⁵ "Integrating renewable energy into new developments: Toolkit for planners, developers and consultants", London Energy Partnership / London Renewables (September 2004)

ENERGY DEMAND AND THE CONTRIBUTION OF RENEWABLE ENERGY TECHNOLOGIES

Every development in any location and of any size – when considering energy issues - should always pay primary attention to the reduction of energy demand through the effective use of energy efficiency measures and technologies. Standards of energy performance in buildings continue to be determined primarily by the requirements of the Building Regulations. However it should be noted that one of the consequences of the wording of the “Merton precedent” is that it encourages indirectly the achievement of higher standards of energy performance (i.e. reduction in energy demand), since this in turn leads to a reduced requirement to source a percentage of remaining energy demand from renewable energy sources. The London RE Toolkit therefore discusses energy efficiency measures in the first instance.

The London RE Toolkit sets out a series of renewable energy technologies that it considers could be applicable for new development within the London context, both now and into the future. In broad terms, it is reasonable to consider these technology lists as appropriate also to the South East, given that renewable energy within new development will tend to have similar characteristics, opportunities and drawbacks independent of the wider context. Exceptions to this generalisation might include:

- *Biomass-related technologies*, where the South East is very much more favoured with wood and other forms of organic resources (e.g. farm slurries for anaerobic digestion) – and opportunities to deploy them - than Greater London;
- *Micro (and other small-scale) hydro*, where the South East’s limited resources may nevertheless be somewhat greater than within London.

The table below adapts the London RE technology list to the South East context.

Table 1 – RE technologies applicable for developments in the SE

Renewable Energy Technologies	
Current	Potential Future
Wind	Fuel cells using hydrogen from RE
Photovoltaics	Ground cooling air systems
Solar hot water	Solar air collectors
Biomass heating	
Biomass CHP	
Ground source heating	
Ground source cooling	
Anaerobic digestion	
Geothermal (limited opportunities)	

Determination of which RE technologies might be most applicable to differing building types, and the contributions that such technologies might make to energy demand of these buildings, will be dependent upon a very wide variety of factors. The London RE Toolkit addresses this by providing some indicative energy output ranges for various scales of RE scheme, in comparison to typical building applications. Table 2 summarises some of the data of this kind shown within the London RE Toolkit, supplemented by other data sources where available.

Of course the actual test of whether a development is likely to comply with a “Merton” policy requires a more detailed analysis than the indicative figures shown in Table 2. To support the process of ascertaining compliance with the “Merton” policy and other policies of this kind within Greater London, the London RE Toolkit sets out a procedure that can be applied to individual developments containing a wide variety of building types. A route map is used within the Toolkit to help consider the feasibility of renewable energy technologies and their inclusion within development proposals. Its key provisions are shown below.

In addition to the route map, the Toolkit document generates a series of “typical examples” for development types within London, reproduced in Table 3. Clearly these act to illustrate the possibilities for achieving compliance in specific London circumstances rather than being a set of prescriptive solutions. Arguably, however, most development across the South East will have greater scope and flexibility in demonstrating compliance with a “Merton” policy in comparison with the London context.

Table 2 – Indicative Energy Outputs for Possible RE Technology Applications

Technology	Installed Capacity (kW)	Range of Yearly Energy Output (kWh / yr)	Percentage of Typical Requirement
Wind	0.6	800 – 2,970 ¹⁶	A gas heated, 2 bed flat (built to 2002 Bldg. Regs.) uses approximately 1,500kWh/yr in electricity (for lights and appliances). A 600W turbine operating at an AMWS of 6 m/s could provide all of the flat's electricity needs over a year. At an AMWS of 7 m/s it could also provide all of the electricity for a gas-heated 4 bed 3 storey terraced house (built to 2002 Bldg. Regs.), using approximately 2,500kWh/yr.
	2.5	2,470 - 10,250	
	6	6,760 – 26,210	
	15	16,900 – 65,500	
Photovoltaics	1	700 - 750 ¹⁷	A gas-heated 2-bed flat as above uses ca. 1500 kWh/yr. A typical 1kW _p system could therefore provide approximately 45% of electricity demand. Similarly it could provide ca. 28% of demand for the 4-bed 3 storey terrace described above.
Solar Water Heating	NA	450 – 580 ¹⁸ per m ²	Assuming a 4m ² system, this could contribute between 34 – 44% of an average modern house's space and water heating demand.
Biomass Heating ¹⁹	i) stand-alone stoves (6-12) ii) boilers (15 – 20,000+)	i) 38,400 – 76.800 ii) 108,000 – 128,000,000	Stand-alone stoves (logs or pellets) can provide space heating for a room (can also be fitted with a back boiler to provide water heating). Biomass boilers connected to central heating and hot water systems can supply all heating / hot water needs. Schemes sized to meet demand (+option for district heating).
Biomass CHP	Micro CHP (e.g. 250kWe) systems under development. Currently single to multi-MW systems (up to 200MWe)	1,500 – 1,000,000+ MWh/yr	Biomass CHP only limited by the size of the heat market they can be connected to. Very important to size scheme for optimal performance/availability.

¹⁶ Depending upon average mean windspeed (AMWS). Ranges in this case based upon Proven wind turbines operating within an average mean wind speed of between 4-8 m/s

¹⁷ Efficiencies of PV systems are likely to increase with time, Therefore energy outputs from a 1kW_p system could increase.

¹⁸ Based upon Energy Efficiency Commitment Scheme assumptions for – respectively – flat plate and evacuated tube technology.

¹⁹ Wood burning stove efficiency ~80%, biomass boilers 90%+ (assumed 8,000hrs/yr for output calculations)

Table 2 – Indicative Energy Outputs for Possible RE Technology Applications (cont).

Technology	Installed Capacity (kW)	Range of Yearly Energy Output (kWh / yr)	Percentage of Typical Requirement
Ground source heat pump	16 ²⁰ (4 per dwelling)		Likely to supply most of domestic heating / hot water needs but more limited for larger buildings due to ground pipe lengths required.
Ground source cooling	80 ²¹		Unlikely to supply full cooling requirements for central office needs but suburban buildings could be cooled solely by these means.

²⁰ "Earthdome" case study – 4 domestic flats in LB Croydon. Systems sized to meet 100% of space and water heating demand for these properties (estimated 13,800 kWh).

²¹ Alexandra Park school extension case study, LB Haringey. Cooling supplied for Information and Computer Technology suite of 1400 pupil comprehensive school.

The London Renewables Toolkit Route Map

1 Draw up a shortlist of renewable technologies to study.

Consider the site location and the types of buildings in the proposed development and draw up a shortlist of renewable energy technologies that will be the subject of further feasibility studies. *The toolkit provides advice on suitable technologies and simple flowcharts to highlight the major issues that need to be considered for each technology at the outline planning stage.*

2 Calculate the annual predicted energy demand of the site

In kWh for each fuel (e.g. gas and electricity) after the application of suitable energy efficiency measures and technologies (including CHP). *The toolkit contains delivered energy benchmarks for a range of building types as well as guidance on available and preferred methods for estimating building energy demand if the benchmarks are not considered appropriate.*

3 Calculate the baseline carbon emissions of the development

I.e. the carbon emissions arising from the predicted use of energy in all the buildings, structures and infrastructure in the proposed development. *The toolkit provides guidance on the selection and use of carbon emissions factors in this calculation.*

4 Calculate the contribution of each proposed renewable energy technology

to reducing the baseline carbon emissions of the development. *The toolkit suggests a calculation method for each of the seven renewables technologies covered in the technology guide. Alternatively, default figures provided in reference tables can be used if insufficient detail is known to do full calculations.*

5 Calculate the costs of technically feasible renewable technologies.

The toolkit provides indicative cost information for the seven technologies covered in the technology guide. Reference tables indicate the likely impact of renewables costs on total development (build) costs. This is to help developers gain an early idea of where to steer their efforts in feasibility studies and to give planners an independent feel for cost implications of renewables in different scenarios.

6 Assess the benefits of technically feasible renewable technologies.

Developers should consider the potential benefits of renewables to themselves and others, as part of the process of deciding which technologies to include in development proposals. *The toolkit briefly discusses appraisal of benefits, including in-use cost savings for eventual building occupiers.*

7 Calculate the reduction of baseline carbon emissions for the development

achieved by applying the proposed renewable technologies. The preceding steps should generate the information required by the developer to make decisions on which renewables to include in development proposals. The final calculation step is to combine the results of applying the selected technologies to the one or more building types, structures, etc. in the development to calculate the overall reduction in carbon emissions achieved. *The toolkit suggests a suitable calculation method and provides worked examples based on the reference tables provided.*

8 Include renewables proposals in the planning application.

The toolkit makes suggestions on the content and format of information on renewable energy technologies that developers should consider presenting as part of a planning application.

Table 3 – Development examples used within the London RE Toolkit

Building Type	Scenario description	Rationale for selection of RE sources
Retail Buildings	Town centre single / multi-storey retail building not shared with other uses	Ground heating and cooling possible. Some roof PV / solar water possible. <i>Biomass?</i>
Small retail units	Town centre retail unit in a building with other uses, e.g. offices or flats above	GSHP possible for small heating unit. <i>Space cooling unlikely. Roof space unlikely to be available for solar applications.</i>
Prestige offices	Central city office building 3,000 m ²	Ground heating and cooling possible. PV on roof and south façade possible. <i>Biomass?</i>
Standard offices	Air-conditioned office in suburbs, possibly shared with other uses 3,000 m ²	Ground heating and cooling possible. Biomass heating possible. PV on roofs possible. Wind may be possible. <i>PV cladding unlikely.</i>
Standard infill offices	Naturally ventilated office building on an infill site, possibly shared with other uses. 1,000 m ²	Ground heating possible. Biomass heating possible depending on location. Solar water may be possible depending on demand. PV on roof possible.
Industrial buildings	Factory building (e.g. manufacturing, assembly, chemical process etc.) on an industrial site	Ground heating possible. Biomass heating – even biomass CHP, solar water and rooftop PV, wind, all possible on suburban site. <i>Cooling?</i>
Storage and distribution warehouses	Storage or distribution warehouse on an industrial park	Ground heating possible. PV on roofs and wind both possible in suburbs. <i>Cooling demand unlikely. Space heating / hot water unlikely to be sufficient for biomass or solar hot water. CHP unlikely.</i>
Hotels and hostels	Luxury hotel in city centre and/or prime location	Ground heating and cooling possible. CHP possible, therefore biomass CHP. Solar heating and PV on roofs possible.
Care homes, sheltered housing	Care home or similar building in suburban location, probably not shared with other uses.	Ground heating possible. Biomass possible. PV and solar heating on roof possible. <i>No cooling demand. Wind unlikely.</i>
Medium density housing	Medium density suburban development with a mix of individual houses and low-rise multi-residential and row houses.	Ground heating and biomass possible if district heating envisaged. Solar hot water and PV on roofs of individual dwellings possible. <i>No cooling demand. CHO electricity cannot be supplied to housing without private wire system. Wind may be possible.</i>
Medium density housing	Medium density infill block 3-6 storey. E.g. 15 units possibly shared with other uses below.	As above, except wind.
Residential tower	Very high density high-rise urban development	Biomass heating possible with communal heating system. Some solar heating and PV possible on limited roof space. PV cladding possible. <i>No cooling demand. CHP possible? GSHP unlikely due to demand required.</i>
Primary and secondary schools	Primary or secondary school on an open site	GSHP and biomass heating possible. Solar water and PV on roofs possible. Wind on “open site” possible. <i>No cooling demand. Biomass CHP normally not possible.</i>
Sports centres / health clubs	Suburban sports centre or health club (possibly with pool) probably not shared with other uses.	Ground and biomass heating possible. CHP appropriate for leisure centres so biomass CHP possible. Solar hot water and PV on roof possible.

THE COSTS OF RENEWABLE ENERGY TECHNOLOGIES

In seeking to understand the possible consequences of a “Merton type” policy, it is important to ascertain the possible additional financial costs that compliance might entail. Whilst other kinds of costs (e.g. public perception and acceptance of renewable energy within developments) might form part of an eventual planning decision, they can be considered as issues separate from the financial and commercial issues faced by the developer in bringing forward a compliant scheme.

Table 4 below summarises some indicative cost ranges for the renewable energy technologies highlighted within the London RE Toolkit.

Table 4 – Indicative Cost Ranges for Renewable Energy Technologies²²

Technology	Cost Range
Wind	£2,500 - £5,000 / kWe installed
Photovoltaics	£5,000 - £8,000 kWp – roof mounted £10,000 - £15,000 kWp – façade / atrium
Solar Water Heating	£2,500 - £4,000 / household system (depends also on technology)
Biomass Heating	£2,000 – Single house £30,000 - Office ²³
Biomass CHP	Generic figures not possible to quote due to lack of existing reliable precedent
Ground source heating	£2,500 – Single house £50,000 – Office building ²⁴
Ground cooling	£50,000 – Retail ²⁵ £90,000 – Prestige office

Indicative cost ranges are only an outline guide to the financial implications of installing RE technologies. Other key factors that may influence the ongoing costs of these technologies include:

- ♦ Technology Price Changes
- ♦ Economies of Scale (bulk purchase)
- ♦ Availability and Scale of Grants
- ♦ Impact of Legislation

²² These costs must be viewed as indicative and subject to ongoing variation due to a wide variety of factors discussed further.

²³ These are the additional capital costs of biomass boiler systems (including fuel storage and automatic feeding).

²⁴ Indicative cost to provide 50% of heating demand.

²⁵ Indicative cost to provide 50% of cooling load.

♦ Fossil Fuel Price Changes

To provide further confidence that the overall development cost implications of compliance with a “Merton policy” is unlikely to be prohibitive under most circumstances, the London RE Toolkit gives a series of worked examples of the % increase in base build costs for the examples shown in Table 3. Table 5 below shows a number of these examples for information.

Table 5 – Examples of % increase in base build costs

Building Type	Technologies	% increase in base build costs
Central retail block	Ground cooling / ground heating / solar hot water	0.2 – 4.4%
Naturally ventilated office	GSHP / biomass heating / solar water heating / PV	0.6 – 7.2%
Infill medium density housing	GSHP / biomass heating / solar water heating / PV	1.0 – 7.3%
Industry	GSHP / biomass heating / biomass CHP / solar water heating / PV / wind	0.5% - 34.5%

Perhaps the most important additional evidence in understanding the cost quantum associated with inclusion of RE technologies are examples of successfully achieved schemes from elsewhere that are compliant with the relevant planning policy. Examples of this kind are shown within the London RE Toolkit document and are also evidenced from our discussions with local planning officers (see Section 4).

Four ◆ Current policy approaches: practical experience

In order to ascertain the practical implication of the increasingly widespread adoption of the “Merton precedent”, we have undertaken a selected review of recent development control experience through a series of structured telephone interviews with Local Planning Authorities.

BACKGROUND

Approach

Telephone questionnaires were chosen for this study because they afford a higher response rate, more detailed answers can be obtained using this method of questioning, and because any points of interest that arose could be questioned in more depth. It also gave the opportunity to talk directly to the people in the local authorities who deal with these policies on a day-to-day basis and ask follow-up questions of the people who have the best working knowledge of the subject.

The questions

The questionnaire was designed to provide factual information as to the respondents' current position on sustainable energy policies and to expose how these policies are working in practice. The questions also aimed to understand the motivations behind the implementation of these policies and look into the reasons why some authorities still do not have renewable energy policies that require eligible developments to generate a proportion of energy demand from on site renewable energy generation. A copy of the questionnaire is reproduced in Appendix 2.

Local planning authorities were selected, from existing knowledge of who is employing these policies, from a websearch on the topic, and by asking

respondents if they knew of other local authorities who were adopting Merton-type renewable energy policies.

A total of 19 authorities were approached and 13 were willing to respond. Most of the authorities were happy to talk about the policies (even if they did not have a current adopted policy), and were willing to discuss in detail the positive and negative aspects of their experience.

The majority of authorities that responded were also willing to explain how they believed the policies should evolve and which aspects of the policies should be changed / modified.

OVERVIEW OF FINDINGS

In general the feedback was positive with the respondents being prepared to talk candidly about the policies in some detail explaining their own experiences of the policies and giving examples of how they are being implemented.

The majority of the respondents were very supportive of the principle of having a policy that requires eligible developments to generate a proportion of energy demand from on site renewable energy generation, but various practical problems were also identified. The London Borough of Merton was referred to in nearly every interview and praised for leading the way in the field and giving all the authorities something to work towards. Respondents commented that the experiences of Merton have helped them to understand how and why the policy needs to be implemented and that most the authorities have learnt something from Merton's experiences.

Many of the respondents considered that it was too early to start analysing the results of the policies as many have not been adopted for long or are still in preparation.

Some of the respondents were very forward looking and ambitious in wanting the target to increase from the current standard of around 10% to 15% and in some cases even as high as 20%. This was felt by others to be too ambitious

and that achieving the current 10% in all developments was the most important goal for the time being.

Most of the respondents seemed fairly well informed about the policy and its application in developments, but there was a general consensus that without the London Renewable Energy Toolkit, the authorities would have struggled to cope with the policies.

Some of the authorities have specialists in their departments to help with the policies. It was mentioned on numerous occasions that at times planners in local authorities have been expected to be renewable energy experts and that this is too much of a burden to place on them as they have many other issues to deal with. The workload in most of the authorities seems to have been distributed between the planning department and other departments that have expertise / interests in the renewable energy field. Therefore the workload does not seem to have increased significantly for one department in particular.

The wording of some of the policies was also highlighted in the responses. Some of the earlier policies use the word 'encourage' and it was generally felt that this should be changed to 'require' to make the policy more enforceable.

The general consensus from the questionnaires was positive. The majority of the authorities questioned feel that so far they have been doing a relatively good job with the resources they have. They do however feel that these renewable energy policies have a long way to go before they are 'perfect', but at the present time they are all learning from one another and especially from the London Borough of Merton.

CURRENT DEVELOPMENT CONTROL EXPERIENCE

It was evident from the local authority questionnaire returns that there is, at present, only a limited foundation of development control experience from which lessons can be drawn. Such experience as exists is variable, reflecting factors such as the level of commitment shown by individual planning authorities to the policy, the length of time over which the policy has been

applied and the apparent receptiveness of the local developer community to work within the policy.

The nature of policy

Many of the planning authorities surveyed have policies that are based around the Merton '10 per cent' model, with variations evident on the type and scale of development that are eligible for such a requirement. This is unsurprising given support for the Merton approach expressed widely in regional spatial strategies. Some authorities have set the 10 per cent requirement within wider obligations, including LB Barking and Dagenham, which also expects new development to have a BREEAM EcoHomes 'excellent' rating.

Where 10 per cent-type policies are not applied, authorities sometimes rely on a more general expression of support for renewable energy use on new development. For instance, Guildford Borough Council claims to 'strongly encourage' renewable energy use in general. Elsewhere in England, Derby City Council likewise relies on a more general statement of intent. We are sceptical as to the effectiveness of these more generalised policy expressions as effective instruments for development control, because they lack any clarity of expectation in individual development circumstances.

It is noteworthy that some authorities are considering moving away from policies requiring a proportion of a development's energy demand from renewable sources towards policies seeking lower carbon dioxide emissions. This is a more flexible approach that goes to the heart of the matter whilst providing encouragement for new development to incorporate energy efficiency measures such as passive solar design.

Motivation for Merton-type policies

From the limited sample of local authorities questioned in our survey, there appear to be two motivations for adopting a Merton-type policy – external and internal. The external motivation arises from requirements imposed by regional bodies – particularly the Greater London Authority, as several respondents confirmed. The internal motivation appears to originate in an enlightened commitment within certain authorities to respond to the challenge of global

warming and deliver a more sustainable form of development in their localities. The ideal situation would appear to be where both conditions prevail.

Ease of implementation

Again, the recent adoption of renewable energy policies by some of the authorities surveyed demands caution in drawing conclusions about the ease of implementation. However, a common determining theme emerging from the responses received was the influence of technical resources and member and officer commitment on the ease of policy implementation.

For example, LB Camden acknowledged the benefit of both the Greater London Authority's commitment to 10 per cent-type policies, and the practical support available from the GLA's renewable energy toolkit. LB Barking and Dagenham and Sefton Council are both finding their policies challenging to implement. Their development control officers have found this to be a time-consuming exercise and local developers are generally unresponsive to the policy. Their experience points towards the need for a clear managerial expression of commitment to the policy within planning departments, and the need for appropriate training and support for hard-pressed development control officers who might otherwise side with developers in viewing the policy as a wearisome encumbrance. This inference is supported by the experience of Croydon Borough Council, which is committed to making its 10 per cent policy work, and allows its planners to draw on the advice and support available from the Croydon Environment Network. Developers are thus made aware of the expectation that the policy places upon them and understand that they must respond appropriately.

Development control workload

Responses to this question were varied. Some authorities are finding the Merton-type policies are causing an increase in workload. However, those with more experience of the policy find this to be less of an issue, suggesting again that the commitment that a planning authority shows towards the implementation of the policy, coupled with the training, support and experience available to development control officers, are important influences on workload. For example, LB Ealing observed that the more 10 per cent schemes the

council deals with, the easier it becomes to implement the policy. Again, LB Croydon's officers can call upon the support of the Croydon Environment Network.

Policy lessons

In response to the question of whether the planning authorities approached would change their policy approach if starting out again, some responded that it was too early to say, and others with more experience are considering the carbon dioxide reductions approach already mentioned. LB Ealing noted that it has had experience of instances where development has met the 10 per cent renewable target but performed less well in terms of carbon dioxide emissions. LB Waltham Forest identified a need for better enforcement of the policy, through the use of s.106 legal agreements that would ensure the upkeep of the generation equipment once installed. This approach is similar to that employed in LB Croydon.

The admission of energy efficiency measures that a carbon reductions approach would allow might address Sefton Council's concern that, in a deprived area, it would be difficult to impose any renewable energy generation requirement on residential development. Whilst the basis of this assertion is itself open to question given the contribution that such a policy can make towards addressing energy poverty, the flexibility implicit in a carbon dioxide reduction target could suit local authorities in Sefton's circumstances. Sefton has acknowledged the benefits of renewable energy grant schemes.

Benefits and disbenefits

Planning authorities have mixed opinions on the benefits of the Merton-type policy. In part, their responses would seem to reflect the degree of commitment they have to the policy. This presents a difficulty in interpreting the survey feedback, in that authorities that are highly committed to the policy might be seeing tangible benefit because of the commitment shown in the implementation of the policy, or might simply believe it to be beneficial in any event, from a more philosophical perspective.

In any event, benefits identified by the respondents include the incorporation of

sustainable energy features in new development, more awareness of the issue, the enhanced reputation of the local authorities and, fundamentally, reduced carbon dioxide emissions in new development.

In response to our question about the disbenefits of a Merton-type policy, the principal issue seems to be one of priority. Even LB Croydon acknowledged that it took a long time to persuade people to accept the policy. LB Ealing raised the issue of additional development control workload, and LB Camden noted that there were tensions between the energy policy and the fact that 50% of the borough has conservation area status.

Developer responses

The positivity with which developers have responded to Merton-type policies appears to be related to the clarity with which the policy – and the council's commitment to implementing it – are communicated. Authorities with most experience of implementing such a policy report that the local developer community has become accustomed to the policy and is finding the means of working within it. The cost of compliance was highlighted as an issue often raised by developers. This might suggest that they view the requirement as a negative as opposed to something that could differentiate and add value to their product in the marketplace.

Future policy developments

The local authorities contacted who do not currently apply a Merton-type policy are each giving consideration to such an approach in their local development frameworks. Reading BC has a draft policy that will require 15 per cent of the energy demand in eligible developments to be met from a renewable source. Derby supports the principle of the policy but is concerned about the costs even of finding out about what a reasonable and realistic requirement might be. Guildford's draft LDF has a draft policy that will seek a 20 per cent reduction in carbon emissions from new development.

The following chapter considers the implications of these findings for regional planning in the South East.

Five ◆ Conclusions and way forward

GENERAL OBSERVATIONS

Our analysis of the benefits and costs of including renewable energy installations within development shows that this is a practical technical and economic proposition. Whilst this cannot give unequivocal guidance as to the technical and economic feasibility of achieving “10% RE” every time and in every single development type, it provides the backdrop against which a number of councils are now actively and successfully pursuing the policy within London and elsewhere.

The survey of planning authorities gave cause for optimism that the Merton approach is widely applicable, particularly in the South East, which is generally an affluent region. LBs Merton and Croydon now have in excess of sixty developments meeting the 10 per cent target. Beyond the immediate energy and environmental benefit, these path-finding projects are symbolically important because they demonstrate to developers that the costs and technical options for complying with the policy are tenable.

That said, the emerging interest in carbon reduction targets as an alternative to a renewable energy generation requirement could have the additional benefit of flexibility, admitting as it would the contribution of energy efficiency measures beyond normal building regulations requirements, such as passive solar design. As well as going to the heart of the matter in an environmental sense, a carbon reduction target could thus provide a means of addressing the tension between Merton-type policies and conservation area policy, an issue highlighted by LB Camden in our survey.

The energy policies of the draft South East Plan (policies EN1-EN6) are generally considered to provide an appropriate basis for the widespread application of Merton policy principles in the region, in their own right and all the

more so now that the RSS forms a part of the development plan. The experience of the Greater London Authority suggests that the success with which these policies are implemented will depend in part on the extent to which the regional bodies can actively promote the application of these policies at the local level. A strong regional lead would be highly beneficial.

APPLICATION OF A '10 PER CENT' RULE IN THE SOUTH EAST PLAN

Current provisions

Policy EN1 of the draft South East plan concerns 'development design for energy efficiency and renewable energy'. The policy includes the following provision:

A proactive approach towards the implementation of this policy may involve:

- i. encouraging developers to submit an assessment of a development's energy demand and provide at least 10% of the development's energy demand from renewable sources for housing schemes of over 10 dwellings and commercial schemes of over 1,000 m².*

This provision builds upon the equivalent policy (INF4) in RPG9 as amended, which states simply that:

A proactive approach towards the implementation of this policy may involve:

- i. encouraging developers to submit an assessment of a development's energy demand.*

Supporting para. 11.19 of the draft SEP advises that 'the Assembly will develop guidance on how the target in policy EN1 can be achieved, drawing on existing practice, for example in London'. Para. 11.21 notes that the 'use of development briefs, design guides and supplementary planning documents (SPDs) can help ensure that new developments incorporate energy efficiency measures in design and construction which go beyond the minimum measures required by building regulations. SPD can be a material consideration in the determination of planning applications . . . '.

The evidence of the questionnaire survey reviewed in the previous chapter of this report would suggest that an important influence on the extent to which draft SEP policy EN1(i) is implemented will be the commitment that local

planning authorities show towards it in normal development control practice. In turn, this raises the questions of how far, and by what means, this commitment can be enforced by regional government, whether the policy itself needs to be strengthened, and whether there are other or supplementary measures that might help to ensure that the policy requirement is met.

Energy as a regional planning issue

Para. 1.5 of Planning Policy Statement 11: *Regional Planning* advises that the RSS should confine itself to matters of genuine regional and sub-regional importance, and should strike the right balance between providing a clear strategic framework and avoiding unnecessary or inappropriate detail. In the current context it is noteworthy that both the Energy White Paper and PPS22: *Renewable Energy* support a clear commitment to renewable energy use in regional spatial strategies, with targets set for renewable energy generation.

Para. 22 of PPS1: *Delivering Sustainable Development* states that:

'development plan policies should . . . seek to promote and encourage, rather than restrict, the use of renewable resources (for example, by the development of renewable energy). Regional planning authorities and local authorities should promote resource and energy efficient buildings; community heating schemes, the use of combined heat and power, small scale renewable and low carbon energy schemes in developments . . .'

It is thus considered appropriate that the SEP should include a percentage target for renewable energy use in new development because renewable energy targets are themselves expressed regionally – as in draft policy EN3. Draft policy EN1 would thus assist in the attainment of these targets, and would help to set a level playing field and a minimum benchmark for developments across the region. Given the time sensitivity of the targets in draft policy EN3, the early adoption of a regional percentage requirement would also encourage a more immediate implementation of the policy than would result if the setting of targets was left to local development frameworks.

Ensuring effective implementation

Three mutually supportive approaches might be considered to ensure that the percentage renewable energy requirements of policy EN1 are implemented effectively at the local level. The first would be to strengthen the policy wording.

Para. 8 of PPS22: *Renewable Energy* notes advises that, subject to considerations of viability and reasonableness:

Local planning authorities may include policies in local development documents that require a percentage of the energy to be used in new residential, commercial or industrial developments to come from on-site renewable energy developments . . .

On this basis, SEP policy EN1(i) might be redrafted along the following lines:

EXISTING WORDING:

A proactive approach towards the implementation of this policy may involve:

i. encouraging developers to submit an assessment of a development's energy demand and provide at least 10% of the development's energy demand from renewable sources for housing schemes of over 10 dwellings and commercial schemes of over 1,000 m².

PROPOSED WORDING (revised text underlined):

To achieve these objectives, local authorities should:

i. encourage developers to submit an assessment of a development's energy demand and require at least 10% of the development's energy demand to be met from renewable sources for housing schemes of over 10 dwellings and commercial schemes of over 1,000 m², unless it can be demonstrated that such provision would be technically or commercially unviable.

This revised wording seeks to make fuller use of the latitude afforded in para. 8 of PPS22²⁶. It is considered that it would also meet the 'soundness' tests set out in para. 2.49 of PPS11.

The second approach to ensuring effective implementation of the percentage requirement would be for the regional bodies to be clear in their expectations with respect to compliance with policy EN1 in their comments on local development documents and planning applications. This matter is considered in more detail below in the Implementation section.

A third, complementary, approach to ensuring effective implementation would be to publish a supplementary planning document at the regional level to

²⁶ *In the context of policy EN1 and other draft SEP policies, there is a wider question of whether the format of the policy reflects the new role and status of the plan as a regional spatial strategy. As indicated on page 33 of the ODPM's Planning for Renewable Energy: a Companion Guide to PPS22, there might be a case for the policy*

explain how policy EN1(i) should be applied, supported by relevant technical information and case studies to equip development control officers with the foundation they need (and which, from the questionnaire responses, many feel they currently lack) to successfully negotiate over the renewable energy content of a development proposal. Chapter three of this report could provide a partial foundation for such a document.

In proposing a regional-level SPD, consideration has been given to the question of whether such guidance might emanate more appropriately from local planning authorities. This might be so in the case of those authorities that give appropriate priority to sustainable energy considerations, but for the many authorities that do not, regional-level guidance would provide a valuable safety-net.

The case for a rising target

In reviewing the wording of draft policy EN1(i), a further consideration is whether the percentage requirement should be expressed as a rising scale, related either to the targets set out in draft SEP policy EN3 or increasing annually by – say – one per cent. The merits of such an approach are self-evident, and the annual increase would be reasonable having regard to factors such as the anticipated reductions in the cost of renewable energy installations. It is recommended that SEERA gives consideration to some form of rising scale.

ALTERNATIVE MEANS OF ACHIEVING THE EN1 POLICY OBJECTIVES

Most energy requirements for buildings originate in the building regulations. This begs the question of whether the '10 per cent' approach might better be applied through the building regulations. The building regulations apply to most forms of development and generally set clear requirements with less room for manoeuvre in their interpretation than is customary with planning policy.

to impose its requirements directly rather than by setting expectations for local planning authorities in the manner of 'old-style' regional planning guidance.

However, with part L of the building regulations only recently revised and any future amendments likely to be subject to prolonged defensive lobbying by construction industry interests, it is considered unlikely that a 10 per cent rule would be incorporated unless it received explicit support in Westminster.

There is a sound case for planning policies to address sustainable energy considerations in new development in any event. Many of the aspects of development that influence energy demand, including the orientation of buildings, the extent to which they are sheltered or overshadowed by adjacent buildings and trees, and the propensity of the architectural design to accommodate renewable energy installations in an aesthetically acceptable manner, fall essentially outside of the remit of the building regulations. Development plan policy and SPD can exert a beneficial effect by drawing attention to these considerations and setting appropriate planning and design requirements.

The case for carbon reduction targets

An overall carbon reduction target in SEP policy could serve a valuable unifying purpose, because it would embrace the full range of technologies and design measures that the draft South East Plan seeks to promote. It would also help to promote the message that, the more energy efficient a development is, the less onerous becomes the task of providing for a proportion of the project's energy requirements from renewable sources.

Finally, in support of the premise that carbon reduction targets and energy reduction targets are mutually consistent and reinforcing, it should be noted that the London RE Toolkit methodology explicitly converts all energy calculations into carbon equivalents so reinforcing the point that there are two ways of looking at the same problem.

IMPLEMENTATION

In terms of how the emerging regional policy might best be implemented, the questionnaire survey provided some relevant pointers. First, it confirmed the

value of strong leadership and direction with respect to these policies at the regional level. The Greater London Authority's clearly-communicated commitment in this respect has been to good effect, compelling even the London boroughs that do not see global warming as a leading policy priority to respond in planning terms.

Equally, the questionnaire highlighted the importance of commitment within local authorities. Without this, officers accord energy considerations a low priority amongst the many other issues they have to consider, the policy goes unenforced, and developers gain competence in evading the requirement altogether.

To avoid this cycle of negativity, the questionnaire responses highlighted the need for clear member and senior officer commitment, backed by on-going training and technical support for planning officers. Supplementary planning documents could usefully articulate a planning authority's requirements to developers, illustrating a range of viable technical options for meeting policy requirements, and promoting best practice in the physical and visual integration of energy installations on development. On the basis of the positive London experience, there is a case for a regional 'toolkit' to provide such guidance. It might also be worthwhile to examine the costs and benefits of funding the existing network of sub-regional energy agencies in the South East to provide on-call technical support for planning authorities in the same way that the Croydon Environment Network assists the planning function in south London.

NEXT STEPS

It is recommended that consideration is given to the following initiatives.

- **Promotion of an amended form of words for draft SEP policy EN1(i)**, along the lines proposed earlier in this chapter.
- **The setting of the energy policies of the draft South East Plan within an over-arching regional carbon dioxide reduction target**,

the target set on a rising scale over time to reflect national and international obligations.

- **A proactive approach by the regional bodies to ensuring the application of renewable energy and energy efficiency in development planning and development control at the local level**, with local authorities not allowed to overlook the relevant obligations. A supplementary planning document could useful assist in the interpretation of the SEP energy policies.
- **Funding for sub-regional energy agencies to enable them to provide**, for at least the next two or three years, **technical support for local planning authorities** on the practical application of sustainable energy measures. This would be subject to the agencies' demonstrating that they can offer the requisite knowledge and advice.
- **Production of a regional 'toolkit', akin to or even derived from that in Greater London**, to provide practical guidance on energy efficiency, on-site renewables and, potentially, other construction measures that can reduce carbon emissions.
- Finally, **it is recommended that consideration is given to how the measures considered in this report might be extended to development involving the use or conversion of existing buildings**, having regard to the fact that most of the region's building stock dates from a time when building regulation requirements for energy use were much less demanding than today.

Appendix 1 ◆ Policy examples from other authorities

Contents

The London Plan
London Borough of Merton
London Borough of Waltham Forest
Sefton Metropolitan Borough Council
London Borough of Croydon
London Borough of Ealing
London Borough of Bromley
Oldham Unitary Authority
North Devon District Council
Leicester City Council

The London Plan - February 2004

The London Plan sets out strategic guidance to which London borough UDPs must be in general conformity. The policies relating to climate change and energy efficiency are reproduced below.

Policy 4A.7 Energy efficiency and renewable energy

The Mayor will and boroughs should support the Mayor's Energy Strategy and its objectives of reducing carbon dioxide emissions, improving energy efficiency and increasing the proportion of energy used generated from renewable sources by:

- *improving the integration of land use and transport policy and reducing the need to travel by car (see Chapter 3, Part C)*
- *requiring the inclusion of energy efficient and renewable energy technology and design, including passive solar design, natural ventilation, borehole cooling, combined heat and power, community heating, photovoltaics, solar water heating, wind, fuel cells, biomass fuelled electricity and heat generating plant in new developments wherever feasible*
- *facilitating and encouraging the use of all forms of renewable energy where appropriate including giving consideration to the impact of new development on existing renewable energy schemes*
- *minimising light lost to the sky, particularly from street lights. The Mayor will work with strategic partners to ensure that the spatial, transport and design policies of this plan support the Mayor's Energy Strategy and contribute towards achieving CO₂ and renewable energy targets.*

Policy 4A.8 Energy assessment

The Mayor will and boroughs should request an assessment of the energy demand of proposed major developments, which should also demonstrate the steps taken to apply the Mayor's energy hierarchy (see Paragraph 4.19).

The Mayor will expect all strategic referrals of commercial and residential schemes to demonstrate that the proposed heating and cooling systems have been selected in accordance with the following order of preference: passive design; solar water heating; combined heat and power, for heating and cooling, preferably fuelled by renewables; community heating for heating and cooling; heat pumps; gas condensing boilers and gas central heating.

Boroughs should apply the same criteria to major developments.

Policy 4A.9 Providing for renewable energy

The Mayor will and boroughs should require major developments to show how the development would generate a proportion of the site's electricity or heat needs from renewables, wherever feasible.

Policy 4A.10 Supporting the provision of renewable energy

The Mayor will support and encourage the development of at least one large wind power scheme in London together with building mounted schemes, where these do not adversely affect the character and amenity of the area. UDP policies should identify suitable sites for wind turbines and other renewable energy provision, such as non-building integrated solar technologies along transport routes, reflecting the broad criteria to be developed by the Mayor in partnership with the Environment Agency and boroughs.

Policy 4A.15 Climate change

The Mayor will and boroughs should assess and develop policies for the likely impacts of climate change on London identified in the work of the London Climate Change Partnership. Policies will be developed in conjunction with the Partnership and addressed in the first review of the London Plan.

Policy 4B.6 Sustainable design and construction

The Mayor will, and boroughs should, ensure future developments meet the highest standards of sustainable design and construction and reflect this principle in UDP policies. These will include measures to:

- *re-use land and buildings*
- *conserve energy, materials, water and other resources*
- *ensure designs make the most of natural systems both within and around the building*
- *reduce the impacts of noise, pollution, flooding and micro-climatic effects*
- *ensure developments are comfortable and secure for users*
- *conserve and enhance the natural environment, particularly in relation to biodiversity*
- *promote sustainable waste behaviour in new and existing developments, including support for local integrated recycling schemes, CHP schemes and other treatment options (subject to Policy 4A.1 and 4A.2).*

Applications for strategic developments should include a statement showing how sustainability principles will be met in terms of demolition, construction and long-term management.

Boroughs should ensure that, where appropriate, the same sustainability principles are used to assess planning applications.

Source: http://www.london.gov.uk/mayor/strategies/sds/london_plan_download.jsp

London Borough of Merton Unitary Development Plan - adopted 2003

The energy-related planning policies of Merton's UDP were adopted in 2003, having successfully withstood objections heard at public inquiry.

POLICY PE.12: ENERGY GENERATION AND ENERGY SAVING

Proposals for development of facilities that generate energy locally, in particular renewable energy and those that reduce the use of energy and its transmission, will be permitted provided that:

- **There is no demonstrable harm on visual or residential amenities or by way of pollution generation, or**
- **It can be demonstrated that benefits contributing to diverse and sustainable energy supplies and to reducing greenhouse effects will outweigh harm arising from the development.**

4.162 *The generation of renewable energy is an important contributor to reducing the overall energy use of the population. It reduces the use of primary resources and makes more efficient use of those resources. Generation of renewable energy therefore makes a valuable contribution to sustainable development goals, which are discussed in more detail in Part 1 of this Plan and outlined in Policy ST.1. The Government has set a target of generating 10% of electricity from renewable resources by 2010. The Council also has a commitment in the LA21 Action Plan to reducing energy use throughout the Borough wherever possible.*

4.163 *The Council will therefore encourage the development of renewable and local energy facilities, subject to their impact on local amenities. These facilities either generate energy themselves, or contribute to savings in energy consumption, or perform both functions. Examples of such facilities would be waste-energy plants, combined heat and power plants, facilities which make use of landfill gas, sewage sludge, hydroelectric power and wind energy. Active and passive solar designs are another widely used form of energy generation/conservation. Energy-saving and energy-producing facilities may have environmental impacts, such as causing noise, light, smell or air-borne pollution. They may also be visually intrusive. When assessing applications, the Council will assess the energy benefits of the proposal, whilst having regard to the degree of any negative effects on local amenity and the existing character of the area.*

4.164 *Energy saving measures and energy generation facilities take a number of forms. The relative benefits of these and their various location and design implications are too detailed to cover in this Policy. Some of the detailed issues are outside the scope of land-use planning. The Council's Supplementary Planning Guidance Note for Sustainable Development provides further guidance on this subject.*

4.165 *The process of the transmission of energy may be inefficient in that it uses up some of that energy produced and entails costs in the provision of the necessary equipment. Some of the transmission equipment such as sub-stations, overhead wires and pylons also has negative effects in terms of noise, their visual impact and causes concern regarding possible effects on health. The Council therefore supports the provision of more locally produced energy where possible. The visual impact of transmission equipment and other electrical equipment is also covered under Policies BE.34, BE.35 and BE.36. Overhead power lines are covered by Policy PE.4.*

POLICY PE.13: ENERGY EFFICIENT DESIGN AND USE OF MATERIALS

The council will encourage the energy efficient design of buildings and their layout and orientation on site. All new non-residential development above a threshold of 1,000 sq.m will be expected to incorporate renewable energy production equipment to provide at least 10% of predicted energy requirements. The use of sustainable building materials and the re-use of materials will also be encouraged, as will the use of recycled aggregates in the construction of buildings. This will be subject to the impact on the amenity of the local environment, taking into account the existing character of the area.

4.166 *This policy applies to all new development, however the expectation that renewable energy production equipment will be incorporated in new developments relates only to non-residential developments (those outside the C use class). Where incorporating renewable energy production equipment is shown (by the applicant) to make the development unviable, it would not be expected. In the light of its Agenda 21 objective of reducing local reliance on non-renewable energy sources the Council is concerned to ensure that these types of development are designed to utilise renewable energy sources. For the purpose of this policy the means of generating renewable energy include photovoltaic energy, solar-powered and geo-thermal water heating, energy crops and biomass, but not energy from domestic or industrial waste. For residential developments the Council will encourage developers to achieve a 'very good' or 'excellent' rating in the BRE eco-homes standards. In future additional guidance will be given in the New Residential Development SPG.*

4.167 *The design of a building and its layout and orientation can have significant effect on the energy consumption of the building and is therefore an important contributor to sustainability goals of reducing energy consumption. Use of recycled materials in the construction of buildings will contribute to the efficient use of resources and help to conserve the supply of the source material. Use of materials from 'sustainable sources' such as from softwoods from sustainably farmed forests will be encouraged.*

4.168 *The Council has a Sustainability Checklist which outlines a number of criteria that are taken into account when assessing planning applications. Energy efficiency and use of recycled materials are two of the criteria. When assessing applications, the Council will seek to maximise energy efficiency where possible.*

4.169 *Variations in the orientation of buildings, pitches of roofs, large glazed areas, construction from heat-absorbing materials, or additional ventilation and a high density of development are all possible components of energy efficient developments. These can sometimes lead to differences with surrounding areas. When assessing applications, the Council will have regard to the existing character of the area and the appropriateness of the design.*

4.170 *Some elements of this policy are outside the control of land use planning. However, the Council wishes to encourage their development in the interests of sustainability. The Council's Supplementary Planning Guidance Note for Sustainable Development provides further guidance on this subject.*

Source: <http://www.merton.gov.uk/udpprotectionenv.pdf>

Waltham Forest Council has carried out two formal public consultations on the policies contained in the UDP. An Inquiry into the UDP was held early in 2005 and the inspector's report is expected in June 2005.

POLICY WPM 21

The council requires 10% of total predicted energy consumption to be from renewable energy sources, through on-site generation for all new commercial / industrial developments over 1000 sq.m and housing developments of 10 or more units.

9.93 The Mayor's Draft Energy Strategy (January 2003) sets out the Mayor's strategy to bring about a shift in the way London supplies and uses its energy in order to minimise the effects on climate change and promote a green economy. The Mayor expects all boroughs to implement the proposals contained in the strategy: Proposal 20 (Implementation Plan) requests the inclusion in development plans of a renewable energy policy, specifying the 10% requirement in order to meet London's targets for the generation of renewable energy. At the national level, the Government's Climate Change Programme (November 2000), sets a target of 10% of the UK's electricity requirements to be met from renewables by 2010.

9.94 Developing renewable energy schemes helps to minimise the use of fossil fuels and therefore reduces emissions of greenhouse gases. The Council's Green Charter sets out in its Local Agenda 21 objectives, how the Council will develop and review a comprehensive energy strategy for the borough, basing this strategy on the principles of energy efficiency and energy conservation (see also Policy WPM20).

9.95 It is appreciated that the requirement will place additional costs upon developments in terms of plant and equipment and the space to accommodate it. However, the costs will only affect new development and these will effectively be transferred to the value of the development land and possibly be reflected in a reduced land cost. It should also be noted that business and residential premises incorporating renewable energy generating infrastructure would be in a position to command higher market value and as such will be able to counteract any loss in land value.

9.96 It is intended that by combining economic incentives and prescriptive development policy for renewable energy systems, the Council will assist the "demand push" which will reduce the costs of such systems through economies of scale.

9.97 The policy proposal is reinforced by a national financial instrument which will further strengthen the viability of developments which incorporate independent renewable energy systems. The Government's Climate Change Levy adds about 8% to the electricity and gas bills of businesses from April 2001. The Government has introduced enhanced 100% first year capital allowances for approved energy saving investments by businesses, who will be able to take this investment into account in calculating corporation tax.

9.98 Examples of suitable technologies are as follows:

- *Biomass heat or Combined Heat Power (CHP) plants serving the whole development;*
- *Solar water heating;*
- *Solar electricity (PV) photovoltaic and active solar heating systems: both could be incorporated into south facing roofs or units;*
- *Ground source heat pumps;*

- *Passive solar design – designing a building to take maximum advantage of sunlight which reduces overall energy consumption, making 10% an easier target to meet;*
- *Borehole cooling – where a suitable ground water source exists.*

POLICY WPM 20

In all new residential, commercial and industrial developments, the council will seek to ensure that issues affecting design, density, location and orientation have regard to the principles of energy efficiency and make use of materials which maximise the potential for energy generation from renewable sources and take account of principles of energy conservation and sustainability.

9.89 *A building constructed now will consume substantial quantities of heat and power during its lifetime, where such factors are subject to planning control the Council will ensure that the interests of energy conservation and renewable energy systems are taken into account. The Council will also encourage in all aspects of commercial development, methods of production and practices which are environmentally sustainable, such as the recycling of building materials, green purchasing and reducing vehicular trips. The growth of 'Green Industries' in Waltham Forest, will be an integral part of the Council's sustainable development objectives over the coming years.*

9.90 *The Council will encourage specific improvements in energy efficiency for new developments and refurbishment schemes, using advice and guidance from the Department of the Environment's Energy Efficiency Best Practice Programme and Design Advice, these schemes are operated by the Building Research Establishment (BRE). Renewable forms of energy can also contribute to meeting the Council's targets for the Home Energy Conservation Act (HECA) 1995, which requires local authorities to reduce household energy consumption. Part L of the Building Regulations also sets down minimum energy efficiency targets.*

9.91 *The use of energy has a bearing on many aspects of transportation and land use planning. This is recognised by the Council's Local Agenda 21 Action Plan and in the Government's Planning Policy Guidance Note 13, Transport. It is desirable to protect the environment and to reduce pollution by conserving energy. This can be achieved by the co-ordination of transportation and land use planning, through efficient transport systems, in building construction and industrial processes. The Council's transport policies in Chapter 6 have the objective of reducing unsustainable modes of travel and thereby assisting energy conservation.*

Source:

<http://www.walthamforest.gov.uk/index/environment/envpl-page1/envpl-page3/envpl-page3a/udp-deposit2.htm>

Sefton Metropolitan Borough Council

Sefton's UDP is at an advanced stage, following a public inquiry held in 2004. The Inspector's recommendations have been reported to committee and the proposed modifications will be published for consultation in July 2005.

The following policy was introduced as a pre-inquiry change:

POLICY DQ1A RENEWABLE ENERGY IN DEVELOPMENT

All proposals for major non-residential development will be expected to incorporate renewable energy production equipment to provide at least 10% of their predicted energy requirements from renewable sources.

16.14A The policy seeks to secure use of renewable energy from on-site sources in major non-residential development schemes. The technologies for small-scale generation of renewable energy make it possible for major developments to incorporate the production of renewable energy. This will contribute to achieving national and regional targets for energy, as set out in the introduction to Chapter 9 'Energy, Minerals and Waste'.

16.14B The Building Research Establishment can advise on the typical energy consumption of different types and sizes of development. Developers will be encouraged to make schemes as energy efficient as possible. This will reduce the total energy used and thus the total amount of energy required from renewable sources.

16.14C Major non-residential development is defined as having a gross floorspace of 1,000 sq metres or more, and includes both new buildings and conversions.

16.14D For the purpose of this policy renewable energy technologies are set out in the Renewable Energy Information Note and include photovoltaic energy (PV cells), solar-powered and geo-thermal water heating, energy crops and biomass, small scale wind generation and hydro-power. It does not include energy production from domestic or industrial waste is not included. Grants are likely to be available that will cover a proportion of the cost of any renewable energy scheme.

16.14E Renewable energy production equipment covered by this policy will not be expected to meet the requirements of Policy EMW2 'Renewable Energy Infrastructure', unless they are largescale infrastructure schemes in their own right.

16.14EA There may be some cases where the achievement of 10% of energy from on-site renewable sources would make unviable a development proposal which would otherwise meet the aims, objectives and strategy of the Plan – for example due to exceptional site circumstances – especially in Urban Priority Areas. In such cases, a lesser percentage of energy from on-site renewable sources may be acceptable. However, the developer must demonstrate that:

- *a variety of renewable energy sources and generation methods have been assessed and costed; and*
- *the achievement of 10% of energy from on-site renewable sources would make the proposal unviable; and*
- *the need for the development proposal and its contribution to the aims, objectives and other policies of the Plan outweighs the lesser use of on-site renewable energy.*

The Council would usually expect some percentage of on-going energy use to be from on-site renewable sources.

16.14EB The Renewable Energy Information Note sets out more information about renewable energy, total energy use and the achievement of this policy, including any exemptions as set out in paragraph 16.14EA above.

Inspector's recommendations have been added to the following policies.

POLICY EMW1 PRUDENT USE OF RESOURCES

1. Development should minimise the consumption of resources by:

(i) adopting forms of development and ~~methods of construction~~ design which are energy efficient and use renewable sources of materials and energy wherever practicable; and

(ii) re-using and recycling existing materials.

POLICY EMW2 RENEWABLE ENERGY INFRASTRUCTURE

1. Proposals for renewable energy infrastructure will be judged against the national and Sefton-wide benefits that the proposal may bring and the availability of other sites that will allow the particular renewable energy source to be harnessed.

Procedures:

2. Proposals should be accompanied by:

(i) a project overview which identifies the cumulative impacts of the proposed development;

(ii) a statement which indicates what measures will be taken during and after construction to minimise the impact on local land-uses.

9.11 Local initiatives to harness renewable energy resources will be supported. However, the benefits and potential impacts of each proposal will have to be considered case by case. Renewable energy schemes should only be developed where they will be of most benefit and cause least harm, although some impact will be unavoidable. Potential impacts on the environment may be acceptable if they are minor, or are outweighed by wider benefits, such as national need for energy from non-fossil fuels which will contribute to reducing emissions of harmful gases or substances.

9.12 Renewable energy projects may consist of many different elements. It is important to know if any specific proposal forms part of an wider project. A project overview is therefore required which identifies all significant impacts.

Source: <http://www.sefton.gov.uk/content-3323>

**London Borough of Croydon:
second deposit draft replacement UDP, 2003**

The emerging Croydon UDP includes the following provisions:

Energy

EP22 The design and layout of new development should maximise energy efficiency (see UD2).

EP23 The Council will encourage the development of renewable energy facilities subject to any environmental issues being satisfactorily resolved. All proposals for development of uses that consume energy should include renewable energy facilities and/or energy saving technologies whenever possible (for example combined Heat and Power systems, solar water heating systems and photovoltaic cells). The Council will expect all development (either new build or conversion) with a floorspace of 1000m² or more or ten or more residential units to incorporate renewable energy production equipment to provide at least 10% of the predicted energy requirements (see UD2).

Building form and design

UD2 The Council will require a high standard of design in all proposals for new development including alterations and extensions to existing buildings. The Council will take account of the following three factors regarding the layout and siting of new development when considering applications.

UD2.1 The layout and siting of new development

...j) Be designed to allow adequate daylight and sunlight to penetrate into and between buildings and to take account of opportunities to optimise solar gain in winter, (with options to limit passive solar gain in summer), and to include capacity to utilise solar energy for solar water heating and/or electricity generation. (see EP22-23)

Source: <http://www.croydon.gov.uk/environment/dcande/UDP/DCP/depdraft2?a=5441>

London Borough of Ealing: adopted UDP

The current Unitary Development Plan was adopted in 2004 and is intended to remain in force for three years while a LDF is prepared.

2.1 Environmental & Other Sustainability Impacts

1. The Council will take decisions on developments based on the whole range of sustainability impacts and relationships to the policies in this plan, including the desirability of retaining and renovating buildings. In the case of major developments (buildings exceeding 1,000 sq m gross, or 10 dwellings or more), developers will be expected to consider sustainability issues and their inter-relationships prior to preparation and submission of applications, and a Sustainability Checklist is available as Supplementary Guidance for this purpose;

2. Where a proposal is likely to give rise to the need for Assessments to accord with individual policies in this plan, developers are encouraged to prepare and submit an Environmental Statement, to enable a more comprehensive and systematic consideration of the issues raised. Developers are encouraged to seek an opinion as to whether an Environmental Statement will be required, and the likely scope of effects to be required; and

3. An Environmental Statement will be required where the screening of applications indicates that a development as defined in the current Environmental Regulations may have significant environmental effects or affect an environmentally sensitive area within the borough.

2.9 Energy

The Council will :

1. Encourage environmentally sensitive forms and schemes of energy efficiency and generation (as an integral part of a development or for the generation of energy for use elsewhere), particularly where locally sourced, consistent with national and local renewable energy targets. No significant harm should be caused to landscape, nature conservation or historic features within or immediately adjacent to the site;

2. Expect all major developments (above a threshold of 1,000 sq m or 10 dwellings) to incorporate equipment for renewable power generation so as to provide at least 10% of their predicted energy requirements;

3. Seek application of energy efficiency principles and environmentally sensitive forms of energy generation wherever suitable for new development and other schemes with new floorspace, in their location, layout, design, and orientation.

The Council will consider applications for renewable energy installation in terms of both the immediate impacts on the local environment and its wider contribution to reducing greenhouse gases. Provided there is no significant harm to landscape, nature conservation or historic features, permission can normally be recommended. As will be clear from the policies on waste management which follow this section, proposals for energy from waste schemes which are based on incineration are not necessarily considered to be a source of renewable energy, including Combined Heat and Power (CHP) schemes involving waste incineration.

Aspects of energy conserving design include, in descending order of efficiency:

- *maximising passive solar gain (by location and orientation);*
- *natural ventilation;*
- *thermal insulation;*
- *energy efficient domestic appliances and boilers;*
- *solar panels, including photovoltaic cells and cladding;*
- *micro-wind.*

Research by the Greater London Authority indicates that each of these techniques can be utilised successfully in an urban context, but 'passive solar' design (PSD) has particularly strong potential for new developments, where the technique can be incorporated at preliminary layout stage prior to submission of a detailed application. Prime examples of PSD energy efficiency include utilisation of the maximum heat gain for living and bedrooms in housing, and avoiding the need for air conditioning in workplaces. Larger extensions for dwellings and workplaces can also benefit from PSD. New buildings should aim to achieve the highest standards of energy efficiency and conservation, as measured by the Building Research Establishment standard assessment of building energy efficiency (BREEAM), or an equivalent standard of energy efficiency and management.

Policies for Urban Design

4.1 Design of Development

1. The design of development should be guided by the following principles:

- i) Good Layout;***
- ii) Appropriate Height and Scale;***
- iii) High Quality Architecture and Character;***
- iv) Appropriate Materials;***
- v) Sustainability;***
- vi) Inclusive Design - Access for all;***
- vii) Community Safety;***
- viii) Legibility;***
- ix) Appropriate Hard and Soft Landscaping;***
- x) Adaptability.***

2. The Council will only approve development that respects current standards of safety, natural light, health, privacy and freedom from traffic nuisance, disturbance or visual intrusion in relation to neighbouring land uses.

3. An Urban Design Statement should be submitted for all significant development proposals within the Borough, particularly those sites that are likely to have a significant impact on the public realm, are sited within an area of character or are major regeneration schemes.

Source: <http://www.ealing.gov.uk/services/planning/planning+policy/vol1.pdf>

London Borough of Bromley

A UDP inquiry was held in 2003/4 with the Inspector's final report released early in 2005. Text below is taken from the 2002 second deposit draft with proposed modifications and the inspector's recommendations added as appropriate.

Energy efficiency and design

POLICY ER4

The Council will expect all development to have regard to the principles of energy efficiency through their design, orientation, density and location. Subject to other policies of the plan, the Council will support proposals for low energy buildings.

Renewable energy

POLICY ER5

Subject to other policies of the plan, the Council will consider favourably proposals which encourage incorporate and enable the generation or use of renewable energy.

Proposals for any development which will result in a gross floor area of 1,000 sq m or more (or 100 or more Class C3 residential units) will be expected to incorporate on site renewable power generation equipment to provide at least 10% of the projected energy requirement from one or more renewable sources. Where it is proposed not to include renewable energy generation, the applicant will be expected to demonstrate why this is not feasible.

However, the inquiry inspector has recommended rewording Policy ER5 (above) to the following:

Sustainable and energy efficient development

All new development exceeding 5 dwellings (in the case of residential development) or incorporating gross floor area of 1,000 sq.m or more (in the case of other developments) will be required to either include or make suitable for the following energy-efficiency measures:

(i) siting, design, layout and building orientation to maximise sunlighting and daylighting.

(ii) Landscape or planting design to optimise screening

(iii) Sustainable urban drainage systems, including rainwater and waste water collection and recycling.

(iv) Where appropriate, the use of small renewable energy schemes or devices that minimise energy consumption. In the case of non-residential developments of 1,000 sq.m or more and residential development comprising 100 dwellings or more applicants will be required to include the use of on-site renewable power generation equipment to provide at least 10% of the projected energy requirement from renewable sources. Where it is proposed not to include renewable energy generation, the applicant will be expected to demonstrate that the installation of such equipment is not viable or appropriate because of the type of development, its location or design.

Source: http://www.bromley.gov.uk/cms-service/download/asset/asset_838634.pdf

Oldham UDP: revised deposit draft 2003

Part 1 Energy developments

NR3 The council will support development proposals which improve energy efficiency and conservation and for forms of energy generation which contribute to reducing greenhouse gas emissions, subject to consideration of their potential environmental and health impacts.

The Council aims to encourage renewable energy developments as part of its broader strategy to tackle carbon dioxide reduction, but will not accept proposals without careful consideration of their possible impact on the local environment and on health.

Policies to encourage energy efficiency in new developments are contained in Section 3, The Design of New Development. The following detailed policies set out first, broad criteria for all renewable energy developments, and secondly, because of their particular characteristics in relation to location, specific additional criteria for the development of wind turbines and, thirdly, a policy which requires major new developments to produce some of their energy requirements from renewable sources.

Renewable energy developments can have an impact on a wide range of issues. The following policies therefore need to be read in conjunction with other policies in the Plan for example those relating to protection of species and habitats, protection of archaeological remains, etc.

Part 2 Renewable energy developments

NR3.1 Renewable energy developments will be permitted where the development and any ancillary facilities or buildings would not create a hazard or nuisance that could not be overcome and would not have an unacceptable impact on any of the following:

- a. **residential amenity and human health;**
- b. **the character or appearance of the surrounding area;**
- c. **the openness and visual amenity of the Green Belt;**
- d. **public access to the countryside;**
- e. **sites designated for their nature conservation value;**
- f. **the biodiversity of the Borough;**
- g. **sites or buildings of cultural, historical or archaeological interest; and**
- h. **ground and surface water quality and air quality.**

Permission will only be granted if any unavoidable damage that would be caused during installation, operation or decommissioning is minimised and mitigated or compensated for. Applications must indicate how this will be achieved.

NR3.1 The Council will permit developments which generate energy from renewable sources, where the development, or any ancillary infrastructure or buildings, would not result in an unacceptable impact on:

- a. **residential /workplace amenity or human health;**
- b. **the visual amenity of the local area, including landscape character;**
- c. **local natural resources, including air and water quality;**
- d. **biodiversity, nature conservation or historical/archaeological interests;**
- e. **the statutory purposes of the Peak District National Park; and**
- f. **public access to the countryside.**

Developments will be expected to be located at, or as close as possible to, the source of the resource needed for that particular technology, unless, in the case of Combined Heat and Power schemes, it can be demonstrated that the benefits of the scheme outweigh the costs of transportation. In all cases, redundant plant, buildings and infrastructure shall be removed and the site restored. The Council will expect applications for such developments to be accompanied by an appropriate detailed statement of the environmental effects of the development, and its benefits in terms of the amount of energy it is expected to generate. Permission will only be granted if any unavoidable damage that would be caused during installation, operation or decommissioning is minimised and mitigated or compensated for. Applications must indicate how this will be achieved.

This policy is intended to apply to all renewable energy technologies although wind turbines, which have specific locational requirements, are dealt with in policy NR3.2. The Council supports the use of renewable energy resources to provide energy, and Combined Heat and Power schemes which utilise the heat arising from energy production, subject to other UDP policy considerations. Apart from their obvious role in reducing greenhouse gas emissions, resources such as biomass and wind farms may also provide opportunities to diversify the rural economy

The criteria relate generally to all forms of renewable energy. A separate policy on wind turbines is required to deal with their unique locational requirements and potential effects, including visual impact, electromagnetic interference and low frequency noise.

Wind turbines: Developments

NR3.2 The development of wind turbines will be permitted, provided that all the following criteria are satisfied:

The Council will permit wind developments located within the areas of search identified on the Proposals Map, subject to them meeting criteria a-f of policy NR3.1, and the following criteria:

a. the proposed development will not cause have an unacceptable harm to impact on any of the following:

- i) the landscape, through the number, scale, size and siting of turbines, impact on the skyline, cumulative impact or the need for new power lines for connection to the electricity supply grid;***
- ii) highway or aviation safety; or***
- iii) existing transmitting or receiving systems;***

b. the proposed development will not lead to significant nuisance to the public, including footpath and bridleway users, arising from noise, shadow flicker, electromagnetic interference or reflected light;

c. in the case of proposals within or having an impact on habitats of international or national importance or adjacent to the Peak District National Park, the applicant can show that there is no other suitable site and that any harm to the habitat or to the objectives of the National Park likely to be caused by the proposed development would not be significant;

d. the proposed development would be at least 500m from any sensitive existing land use, for example housing, schools or hospitals, other than by the express agreement of all the relevant parties;

e. the proposed development accords with the renewable energy policy NR3.1; and

f. redundant turbines, plant, transmission lines and access roads will be removed and the sites restored.

Outside the areas of search, wind power developments comprising more than two turbines will be permitted subject to the developer satisfactorily demonstrating that:

- i) sufficient wind resources exist, and***
- ii) criteria a-c are met, and***
- iii) criteria a-f of policy NR3.1 are met.***

Developments comprising two or less turbines, which are primarily intended to provide energy for local use, will be permitted anywhere within the Borough provided that:

- iv) criteria a-c are met, and***
- v) criteria a-f of policy NR3.1 are met.***

In all cases, the Council will expect applications for wind developments to be accompanied by an appropriate detailed statement of the environmental effects of the development, and its benefits in terms of the amount of energy it is expected to generate.

This policy for wind turbines is considered necessary because wind energy can only be exploited where wind speeds are sufficiently fast. By its very nature, the wind resource is likely to be greatest in upland areas, which are particularly sensitive in terms of landscape and nature conservation value and are likely to be highly visible from some distance. Such areas are also likely to be within the Green Belt.

Renewable Energy in Major New Developments

NR3.3 For all major new developments, including residential developments comprising 10 or more units, and non-residential developments exceeding 1000m² gross floorspace, the Council will require 10% of total predicted energy requirements to be provided, on site, from renewable energy sources.

The Council is committed to encouraging a reduction in carbon dioxide as part of its draft Climate Change Strategy and Renewable Energy Strategy. The Council is therefore concerned to ensure that major new developments start to reduce their dependence on non-renewable energy sources by incorporating the means to produce some of their energy needs from renewable sources. The requirement for 10% of energy needs to be produced from renewable sources reflects the Government target set out in its Climate Change Programme (November 2000) for 10% of the UK's electricity requirements to be met from renewables by 2010. In relation to housing developments, the Council will accept the 10% being provided as part of each unit, or for all the 10% being provided in one unit.

Such energy production could include energy from wind, biomass, photovoltaic equipment or solar powered water heating. The Council would seek to ensure that the technology is appropriate to the location in question in terms of any visual or amenity impact it may have, and will therefore encourage discussion on such schemes at the earliest opportunity.

Passive solar design, that is designing a building to take maximum advantage of sunlight, can significantly reduce the overall energy consumption of a building. Where developers can satisfactorily demonstrate that a percentage of the development's energy requirements have been reduced through passive solar design, that percentage will be deducted from the 10% target required by this policy.

Applications for developments where it is claimed that such a requirement would be non-viable should be supported by a development appraisal which substantiates why this is the case.

Source: <http://www.oldham.gov.uk/living/planbuildmatters/planning-udp.htm>

North Devon District Council - Revised Deposit Draft 2003

North Devon DC is seeking to encapsulate in-building renewable energy systems into a general policy on renewable energy.

POLICY ECN15 (RENEWABLE ENERGY)

1. Renewable energy should provide at least 11% of all the electricity production in North Devon by 2010. In considering proposals for renewable energy, the benefits of the development in meeting this target will be balanced against the impact on the local environment. A proposal for the generation of energy from a renewable source will be permitted where:

- a) the proposal, including any associated transmission lines, access roads and other related works does not harm the surrounding area;***
- b) it does not adversely impact on residential properties and other uses in the locality;***
- c) it does not have an adverse impact on aviation or maritime safety or telecommunications; and***
- d) in the case of small scale proposals for a local community, it is primarily for that community's use only.***

2. A proposal for renewable energy will not be permitted where, together with existing and approved schemes, it would result in a scale of development which would significantly harm the character of the landscape.

3. Major employment, retail and residential development will be required to incorporate renewable energy generation to provide at least 15% of predicted energy requirements.

Source: http://www.northdevon.gov.uk/services/local_plan/index.shtml

City of Leicester Local Plan - 2nd Deposit July 2003

The Draft Replacement City of Leicester Local Plan now places a requirement on some developers to demonstrate that they have fully considered the use of renewable energy technologies and the possibility of connecting to a community heating network system based upon CHP (policies BE18 and BE18A). Energy efficiency issues must also be considered in the design process (policy UD08).

BE18. RENEWABLE ENERGY

Planning permission will be granted for the development of renewable energy installations where they do not have an unacceptable effect on the local environment that would outweigh their wider community and/or environmental benefits.

All major developments will be expected to provide an assessment of how they will contribute towards the regional targets for renewable energy. Planning permission will only be granted for major developments that realise their potential for meeting their energy requirements from renewable sources.

BE 18a. COMBINED HEAT AND POWER AND COMMUNITY HEATING

Planning permission will be granted for infrastructure associated with combined heat and power schemes where it does not have an unacceptable effect on the local environment that would outweigh their wider community and/or environmental benefits.

All major developments and developments within the Strategic Regeneration Area will be expected, where feasible, to source their energy requirements from combined heat and power (either through on-site plant or a community heating network). Planning permission will only be granted for those developments that source their energy requirements from combined heat and power or can demonstrate that this is not a feasible option.

All new developments within proximity to existing or proposed community heating networks must assess the possibility of sourcing their energy requirements from such networks. Planning permission will only be granted for those developments that propose to meet their energy requirements from the network or can demonstrate that this is not a feasible option.

UD08. ENERGY EFFICIENCY

Planning permission will not be given for development proposals which fail to sufficiently demonstrate consideration of efficiency in the use of energy and incorporate measures suitable to the proposal by:

- a) maximising the benefits of solar energy, passive solar gain, natural ventilation and the efficient use of natural light through siting, form, orientation and layout whilst addressing the density requirements of buildings;*
- b) using landscaping to optimise energy conservation.*

Source: <http://www.leicester.gov.uk/endev/r1p/09BuiltEnvironment2D.pdf>

Appendix 2 ◆ Telephone Interview Proforma

South East England Regional Assembly

Energy policy questionnaire

INTRODUCTION

This questionnaire has been prepared on behalf of the South East England Regional Assembly (SEERA). The Assembly is gathering evidence on the value of development plan policies that require certain developments to provide a specified amount of their energy demand by on-site renewable energy generation.

This approach was pioneered in policy PE13 of the adopted Merton Unitary Development Plan, and has since been emulated widely in London and elsewhere. Merton's policy states that:

All new non-residential development above a threshold of 1,000 square metres will be expected to incorporate renewable energy production equipment to provide at least 10% of predicted energy requirements.

The London Borough of Croydon is applying a similar policy that applies also to residential developments of ten or more units. To date, more than 60 developments in these boroughs have complied with these policies. Part 8 of *PPS22: Renewable Energy* encourages planning authorities to consider this type of policy approach.

Policy EN1 of the draft South East Plan proposes that the 10% policy should apply across the region for specified types of development. In developing its understanding of the practical issues surrounding the application of this type of policy, SEERA would appreciate your assistance. Please complete this questionnaire and return it to the contact identified at the end of the document.

QUESTIONNAIRE

Your name: _____

Job title: _____

Local authority: _____

Contact e-mail _____

Contact phone no. _____

Continue overleaf /

1. Does your authority have an adopted or draft development plan policy that requires eligible developments to generate a proportion of energy demand from on-site renewable energy generation?

YES / NO (*please specify*)

1a. If YES, please set out the relevant policy in full, and indicate the current status of the document in which it is contained.

Policy status:

1b If your authority does NOT have such a policy, please explain if there is any particular reason why this is the case:

If your authority has an adopted or draft development plan policy that requires eligible developments to generate a proportion of energy demand from on-site renewable energy generation, please answer questions 2 and 4.

If not, then please answer questions 3 and 4.

2a. Has your policy been easy to implement?

YES / NO (*please specify*)

Please explain your reasons to the above answer.

2b. What motivated your authority to formulate a 'Merton'-type policy?

2c. Has the policy affected the development control officers' workload?

YES / NO (*please specify*)

If YES, then in what ways?

2d. If your authority was to formulate this policy again from the start, would you change anything?

YES / NO (*please specify*)

If yes, then what would you change?

2e. What have been the benefits of the policy, if any?

2f. What have been the negative effects of the policy, if any?

2g. How have applicants / developers responded to the policy?

2h. Has the policy been tested at appeal?

YES / NO (please specify)

If YES, please give the PINS reference number and describe briefly the outcome.
