

# Guidance on Energy in New Development

All major (residential and non-residential) development proposals are required (via the [Local Planning Application Requirements list](#)) to include the submission of energy information in the form of a Sustainable Energy Statement or as part of a Design and Access Statement. Major development is defined as residential development comprising 10 or more dwellings, or development comprising over 1000 sq.m. of floor space.

The guidance below sets out the minimum information that needs to be included in the Sustainable Energy Statement or Design and Access Statement to enable the Council to evaluate compliance with relevant planning policies.

The relevant planning policies are:

- Policies, Sites and Places (PSP) Plan Policy 6 “On site renewable and low carbon energy” (Adopted November 2017). Refer to the [PSP plan webpage](#) for further detail.
- [Core Strategy](#) Policies (Adopted December 2013):
  - CS1(8) “High Quality Design”;
  - CS3 “Renewable and Low Carbon Energy Generation”; and
  - CS4 “Renewable or Low Carbon District Heat Networks”

## New development – High Quality Design

**Policy CS1(8)** seeks to ensure that all new development minimises the amount of energy and natural resources used during construction and the operation of the development over its lifetime. The design of a development should enhance energy efficiency and enable the addition of renewable and/or low carbon energy technologies (such as heat pumps to generate renewable heat or solar photovoltaic (PV) panels to generate electricity). If schemes outperform statutory minima (i.e. current building regulations in terms of energy conservation) then this will be considered a primary indicator of good design. The policy encourages higher energy efficiency standards to be achieved, for example BREEAM ‘Very Good’.

All developments are expected to ensure the design and orientation of roofs will assist with the potential siting and efficient operation of solar technology.

**Parts 1 and 2 of PSP Policy 6** encourages all development proposals to minimise end-user energy requirements over and above those required by current building regulations. This is expected to be achieved through energy efficiency measures. Also, in the same way as Policy CS1, the policy expects the design and orientation of the development to assist the siting of solar technology. In respect of residential for sale and speculative commercial development, micro-renewables should also be offered as an optional extra.

To ensure policy compliance, planning applications should therefore set out the design principles and detailed measures that will be applied to the proposed development to demonstrate: how the current building regulations requirements, in terms of energy reduction and efficiency, will be outperformed; and how the appropriate siting and efficient operation of solar technology, micro-renewables, and/or other renewable / low carbon energy installations and infrastructure will be achieved.

In terms of ‘outperforming building regulations’, we would normally expect developments to achieve at least a 10% improvement in energy conservation, and would particularly welcome developments which seek to achieve the equivalent of Code for Sustainable Homes Level 4 (which equates to a 19% improvement on Building Regulations Part L).

We may ask for SAP (Standard Assessment Procedure) calculations to be submitted to show how improved standards will be achieved.

Furthermore, evidence of ‘as built’ performance may be required to demonstrate that higher efficiency standards have been met in practice e.g. Air tightness certification. This is to limit the energy performance gap between the design and actual operation of the building.

An important issue recognised in the revised NPPF (2018) that needs to be factored into the design of a development is the potential risk of overheating. We therefore advise applicants to carry out an assessment of overheating risk using a recognised methodology such as the Chartered Institute of Building Services Engineers technical memorandum 52 [CIBSE TM52](#) or equivalent, using the latest climate projections for the lifetime of the development (normally considered to be at least 60 years). Any issues identified by the modelling should be addressed in the design of the development through appropriate mitigation measures, including passive measures such as external shading and green infrastructure. Active cooling measures that increase carbon emissions (i.e. air conditioning units) should be avoided.

In order to mitigate climate change, one of the most significant issues that needs to be addressed in new developments is the choice of heating system. We must move away from fossil fuel based systems (i.e. gas boilers) towards alternative renewable sources of heat. All new developments are therefore expected to incorporate renewable sources of heat, for example, heat pumps (air, ground, water source), micro heat networks, biomass, solar thermal, waste water heat recovery etc. To be counted as renewable, heat pumps must have a minimum seasonal efficiency of 250%.

## New development – Sustainable Energy Information

The specific energy information that we would expect to be included with planning applications for different types of development proposals is detailed below.

### Major residential, commercial and mixed-use developments

1. State which version of the building regulations is applicable to the development, taking into account any planned changes in the energy requirements of building regulations over the build-out period.
2. Calculate the **Regulated** energy demand and **Regulated** CO<sub>2</sub> emissions of the proposed development, assuming construction to the minimum energy performance required by the applicable building regulation standards.
3. Demonstrate how landform, layout, building orientation, massing and landscaping will be designed to minimise energy demand for heating, cooling and power.
4. Describe what energy efficiency measures are being included which will reduce the energy demand of the development beyond the requirement set by the building regulations, with quantification of the additional energy and a simple explanation of how this has been calculated.
5. Describe the heating and hot water system that is being proposed, and how this reduces carbon emissions compared to a typical high efficiency gas boiler system.

6. Describe what other renewable / low carbon energy generation measures are being included, their installed capacity (kW), predicted energy generation (kWh/yr) and associated CO<sub>2</sub> savings (tonnes/yr) and a simple explanation of how this has been calculated. For example, heat pumps to provide space heating and hot water and solar PV.
7. Provide a concluding section summarising the energy strategy for the development.

## Additional information to be provided for proposals for Major greenfield residential development (10 or more dwellings)

For major greenfield residential development proposals, PSP Policy 6 has an additional requirement for proposals to reduce CO<sub>2</sub> emissions by at least 20% via the use of renewable and/or low carbon energy generation sources on or near the site.

The following guidance focuses on how applicants are expected to calculate the 20% reduction in CO<sub>2</sub> emissions, thereby ensuring compliance with Policy 6.

### Calculation:

The baseline against which development will be required to reduce CO<sub>2</sub> emissions by at least 20% is total residual energy consumption, which includes regulated energy use (space heating, hot water, lighting and ventilation); and unregulated energy use (appliances and cooking).

Therefore, the lower the residual energy consumption of the development, the lower the requirement for renewable and / or low carbon energy generation will be. This provides an incentive to minimise energy requirements through energy efficiency measures beyond that required by Building Regulations (as encouraged by the first part of Policy 6).

In order to calculate total residual energy consumption and the CO<sub>2</sub> arising from it, applicants should:

1. Set out projected annual energy demands for heat and power from the proposed development. The projected annual energy demands must include both regulated and unregulated energy use. The associated CO<sub>2</sub> emissions should then also be calculated.
2. Subtract the additional impact of any further energy reduction and energy efficiency measures (e.g. building fabric measures) incorporated into the design. This will give a figure for total residual energy consumption. Then calculate the associated CO<sub>2</sub> emissions.
3. Applicants should then demonstrate how they have calculated the onsite renewable/low carbon energy generation measures they propose will generate sufficient carbon savings to offset at least 20% of the of the CO<sub>2</sub> arising from the total residual energy consumption. For example, this could comprise a combination of rooftop solar PV with an air source heat pump.

As noted above, projected annual energy demands for heat and power should be calculated to include both regulated and unregulated energy use.

Part L of the Building Regulations sets out the Target Emissions Rate (TER). The actual Dwelling Emission Rate (DER) must not exceed the TER in order to comply with Part L.. To avoid double counting energy efficiency measures, the TER is used as the starting point for calculating the projected annual energy demands for heat and power from regulated energy use.

To calculate the unregulated element of projected energy use, the latest Building Regulations Standard Assessment Procedure for Energy Rating of Dwellings (SAP) methodology (currently SAP 2012, which includes guidance in Section 16 on estimating energy use for cooking and appliances) should be used.

### Evidence requirements:

In order to demonstrate compliance with the 20% CO<sub>2</sub> reduction element of Policy 6, compliance tables (templates set out below) and supporting evidence, should be submitted with a planning application. The information would normally form part of a sustainable energy statement, or can alternatively be included in a Design and Access Statement.

### Compliance Tables:

<b>ENERGY TABLE 1: Expected compliance with PSP Policy 6</b>		<b>Energy (kWh per year)</b>	<b>CO<sub>2</sub> emissions (kg per year)</b>
<b>A</b>	<p><b>Projected annual energy demands for heat and power, and associated CO<sub>2</sub> emissions:</b></p> <p><b>Regulated energy</b> - to calculate projected regulated energy the Target Emissions Rate (TER)<sup>1</sup> should be used. This is set through Part L of the Building Regulations at the time of full application or reserved matters approval.</p>		
<b>B</b>	<p><b>Projected annual energy demands for heat and power, and associated CO<sub>2</sub> emissions:</b></p> <p><b>Unregulated energy</b> - the latest Building Regulations Standard Assessment Procedure for Energy Rating of Dwellings (SAP) methodology (currently SAP 2012, which includes guidance in Section 16<sup>2</sup> on estimating energy use for cooking and appliances) should be used to calculate projected unregulated energy use.</p>		

<sup>1</sup> **Note:** the TER is the minimum standard required in Part L of the Building Regulations for regulated energy use. It is based on a 'notional dwelling' with set values for building fabric and a gas heating system. The Dwelling Emission Rate (DER) must not exceed the TER. This information is also compiled by applicants in order to comply with Building Regulations.

<sup>2</sup> **Note:** the relevant equations are L14 and L16 which cover electrical appliances and cooking respectively (refer to Appendix L of the SAP).

<b>C</b>	<b>Total Projected annual energy demand and CO<sub>2</sub> emissions arising from regulated and unregulated energy demands = A+B</b>	<b>A+B</b>	<b>A+B</b>
<b>D</b>	<p><b>Additional energy efficiency measures reducing energy demand and associated CO<sub>2</sub> emissions (that exceed compliance with Part L (Building Regulations)).</b></p> <p>This records the impact of measures that are being incorporated into the design to meet the first part of Policy 6, and that go over and above those required by the current Building Regulations. These measures normally relate to the building fabric, but could also include other measures such as reductions in air permeability, and connection to a district heat network.</p>		
<b>E</b>	<p><b>Total residual energy consumption and associated CO<sub>2</sub> emissions = C-D</b></p> <p>This includes regulated energy use (space heating, hot water, lighting and ventilation) and unregulated energy use (appliances and cooking).</p> <p><b>BASELINE FOR CALCULATING COMPLIANCE WITH POLICY 6</b></p>	<b>C-D</b>	<b>C-D</b>
<b>F</b>	<p><b>Reduction in energy demand and CO<sub>2</sub> emissions from renewable heating system included in the design</b></p> <p>For example: air/ground/water source heat pumps, solar thermal, micro-heat networks, etc. (connection to District Heat Network is not included here as it is counted under Row D above).</p>		
<b>G</b>	<p><b>Reduction in energy demand and CO<sub>2</sub> emissions from renewable energy generation sources included in the design</b></p> <p>For example: solar photovoltaic (PV) panels</p>		
<b>H</b>	<b>Total Reduction in energy demand and CO<sub>2</sub> emissions from renewable heating and renewable energy generation = F+G</b>	<b>F+G</b>	<b>F+G</b>
<b>I</b>	<b>Reduction in energy demand and CO<sub>2</sub> emissions from renewable heating and renewable energy generation expressed as a percentage of the baseline.</b>	<b>H/E X 100</b>	<b>H/E X 100</b>  <b>THIS MUST EXCEED 20% TO COMPLY WITH POLICY 6</b>

A list of the measures used for calculating the 20% reduction requirement in CO2 emissions is to be provided in Table 2 below. The total carbon savings from the renewable heat and energy generation measures must equal the carbon reductions cited in Energy Table 1.

<b>ENERGY TABLE 2: List of renewable technologies to comply with Policy 6</b>				
<b>Technology type (e.g. Air Source Heat Pump, Solar PV*, solar thermal, biomass)</b>	<b>Description</b>	<b>Planned installed capacity from this technology (kW)</b>	<b>Estimated annual generation* (kWh)</b>	<b>Total CO<sub>2</sub> saving from this technology (kgCO<sub>2</sub>/yr)</b>
<b>TOTAL</b>				<b>[THIS MUST BE EQUAL TO "H" IN ENERGY TABLE 1]</b>

*\*for solar PV, the impact of shading (Shading factor) should be calculated using the Standard Estimation Method as detailed in the current Microgeneration Certification Scheme guidance.*

## Other developments

For all other developments, where a Design and Access Statement is required, the following energy information should also be included in the Statement or in a separate Sustainable Energy Statement:

1. State which version of the building regulations is applicable to the development.
2. Describe what energy efficiency measures are being included which will reduce the energy demand of the development over and above those required to meet the minimum building regulation standards, including any passive energy measures that have been incorporated into the design.
3. Describe what heating and hot water system is being proposed, and how this reduces carbon emissions compared to a high efficiency gas boiler system.
4. Describe what renewable / low carbon / decentralised energy generation measures are being included, their installed capacity (kW) and predicted energy generation (kWh/yr).

## New development – Standalone Renewable / Low Carbon Energy Installations

**Policy CS3** supports proposals which will generate energy from renewable or low carbon sources, subject to criteria which protects, for example, residential amenity and landscape designations. The policy sets out four factors which will be taken into consideration in assessing proposals and significant weight will be given to these. Proposals will also be required to meet objectives of Policy CS1 (High Quality Design), as far as engineering requirements permit. Further guidance is provided in the [Renewables SPD](#) (Adopted November 2014) which includes specific guidance on renewable technologies including: anaerobic digestion; biomass; heat pumps; hydro power; landfill gas; solar park; solar roof; and wind. With regard to wind, reference should also be made to paragraph 154 and footnote 49 of the [NPPF](#) (July 2018).

The Core Strategy identifies that renewable and/or low carbon energy supplies include, but not exclusively, those from biomass and energy crops, Combined Heat and Power (CHP), waste heat from industrial processes, energy from waste, ground and air source heating and cooling, hydro, solar thermal, photovoltaic generation (including solar farms) and wind power.

Applications for stand-alone renewable / low carbon energy installations should include information which states the proposed installed capacity (kW), predicted energy generation (kWh/yr) and associated CO<sub>2</sub> savings (tonnes/yr).

## New development - Heat Networks

**Policy CS4** requires development proposals of over 10,000sqm (non-residential) or 100 dwellings (that are wholly or in part at a greater density than 50dph) to fully explore the feasibility of incorporating renewable or low carbon heating or Combined Heat and Power (CHP) infrastructure on site, or connect to or provide a heat distribution network. For smaller developments the policy requires connection to a district heat network if there is one available, subject to it being practical and viable. The policy also ensures that proposals for development that generates significant waste heat as part of an industrial or commercial process must recover the heat and distribute it, or provide evidence as to why heat distribution is unfeasible.

‘Full exploration’ of the potential for heat networks in line with Section 2 (Feasibility) of the Chartered Institute of Building Services Engineers (CIBSE) [Heat Networks Code of Practice](#) (CP1) will be accepted as meeting the requirements of the Policy.

The Council is currently investigating, along with Bristol City Council, the potential for developing heat networks to distribute waste heat from the energy generators and industrial plants of Avonmouth-Sevenside to energy consumers in the enterprise area, South Gloucestershire’s urban fringes and Bristol city centre. The potential for developing a heat network at Cribbs-Patchway new Neighbourhood (CPNN) is also being explored. The results of these investigations will be published on our [heat networks webpage](#) and will inform the development of future policy and planning decisions.