Supplementary Planning Guidance

CARBON EMISSIONS FROM NEW DEVELOPMENTS – 2nd DRAFT MARCH 2009

Policy 19 is intended to ensure new development includes building integrated technologies to assist in meeting Scottish Government targets for reducing greenhouse gases. The policy is considered central to sustainable development in that it recognises the energy consumption and carbon emissions attributable to our buildings and realises that new development can bring about significant increases in energy efficiency and local energy generation.

1.0 Introduction

This guidance note supplements Local Plan Policy 19: Reducing Carbon Emissions in New Development. This policy requires:

Policy 19 Reducing Carbon Emissions in Development
Development with a total cumulative floorspace of 500 square metres or more should incorporate on-site zero and low carbon equipment contributing at least an extra 15% reduction in carbon dioxide emissions beyond the 2007 Building regulations carbon dioxide emissions standard.

This is a national energy standard applicable to all development meeting the prescribed threshold of 500sqm, as required by Scottish Government and reflects the requirements established on planning authorities by SPP6: Renewable Energy and PAN84: Reducing Carbon Emissions in New Development. Applicants are expected to demonstrate how proposals have met the 15% target as a minimum.

In Scotland, our existing buildings account for around 40% of all carbon dioxide emissions; typically each household creates six tonnes annually, through space heating (60%), water heating (20%) and the remainder for lighting and appliances (Energy Saving Trust). The design and management of new development therefore provides significant opportunities to reduce carbon dioxide emissions. Good, careful design at the outset will minimise the total energy demand for the lifetime of the building.

The policy expects that through the use of energy efficient, micro-generation and decentralised renewable energy systems such as combined heat and power (CHP) boilers, proposals should incorporate sufficient equipment to reduce a building's carbon emissions by 15% over and above the level set by the current building standards. Requiring new buildings to meet these increased energy standards will

lessen their environmental impact, make them more affordable to heat, lessen their energy consumption and provide significant stimulus in new technology, practices and design in low and zero carbon technologies.

This guidance note provides examples of technology, general considerations and outlines the information required and the calculations to be compliant with the 15% carbon reduction targets: a step-by-step flow chart details the requirements. It is recommended that this is read in conjunction with the Sustainable Design Guide and other guidance such as PAN84, which will set out in more detailed advice and requirements on siting, design and materials to minimise the environmental impact of a building. PAN45: Renewable Energy Technologies provides good practice advice on renewables.

2.0 Policy Context

Scottish Government policy and guidance including SPP6 and PAN84 states that a key role of the planning system will be to support a move towards new low and zero carbon development ensuring that opportunities for incorporating energy efficient, microgenerating and decentralised renewable energy technologies are fully considered and secured at the design stage of projects, complementing the increasingly high levels of energy efficiency required by building regulations.

The wording of the policy is in line with Scottish Government planning advice SPP6 (paragraph 36) which sets out a consistent and comprehensive national policy framework aimed at reducing CO2 emissions by 15% beyond the 2007 building regulations carbon dioxide emissions standards.

3.0 Renewable Energy Technologies examples

Renewable sources of energy such as sun, wind, waterpower and geothermal energy can offer diversity and security of supply and can reduce harmful emissions to the environment. Table 1 provides examples of some technologies which could be utilised:

Table 1: Measures to be considered in Energy Statements

Passive Energy Efficiency Measures	**Operational Energy Efficiency Measures**	**Renewable Technologies**	**Emerging Technological Measures**
- Orientation - Day lighting - Natural ventilation	- Heating system - Insulation - Lighting and appliances	- Photovoltaic's - Solar water heating - Micro wind	- Fuel Cells - Anaerobic digestion - Solar air

- Air tightness - Avoidance of wind chill	- Glazing - (Micro) CHP - Heat recovery systems	- Biomass - Micro-hydro - Ground, water & air source heat pumps	collectors

4.0 General Considerations

- The applicant provides the necessary information to demonstrate compliance with the policy target, submitting a statement outlining measures and equipment, including the calculations and use of the appropriate BRE software programme;
- The policy target is specific to CO2 emissions from energy performance which is distinct from environmental performance, specifically, requiring an examination of how energy is used – in heating, cooling and lighting;
- The planning policy requirement is a separate requirement to the building standard, its requirement is a material planning consideration for all applications that meet the area thresholds;
- Outline planning permissions: the developer should provide a statement of the intended equipment to meet the target percentage reduction including types, scale, location and likely issues regarding the equipment. Once the applicant completes the design of the development they should submit the energy calculations within an energy statement with the reserved matters application.

5.0 Use of Energy Statements: Demonstrating compliance

Applicants should consider how to meet the requirements of this guidance early in the stages of design of buildings. An energy statement should be submitted at the planning application stage or when discharging a planning condition demonstrating how the development will satisfy the requirements of the policy requirement. Specifically, the energy statement should include specific information that:

I. Demonstrates how the design minimises energy demand (for example, through environmentally friendly layouts, energy efficient design and thermally efficient buildings;
II. Demonstrates how the developer intends to incorporate the use of renewable resources in the development;
III. Demonstrates how the use of non-renewable resources within the development has been minimised;
IV. Demonstrates how the development incorporates renewable energy equipment while providing protection for the built, natural and historic environment and residential amenity;

Alongside this energy performance calculations (5 step-by-step detailed technical calculations) must be submitted. The applicant is to provide the necessary information to demonstrate that the proposal complies with the policy target. PAN 84 p.10 and p.15-21 provide further information on the required calculations. Planning authorities should be able to accept the calculations provided by the applicant in the same way as other information is accepted. It is not expected that planning officers will carry out the calculations;

Table 2: Summary of Calculations and Process

The table provides a step-by-step guide to firstly, assessing the CO2 base rating of the building itself without the equipment, with the equipment and then goes on to establish the reduction in percentage terms attributable to the equipment. Details of which software programme to provide the basis to the calculations is provided below:

THE 5 CALCULATIONS : THE APPROACH TO MEASURING THE REDUCTION
It is recommended that applicants refer to PAN84 for further details and worked examples, at http://www.scotland.gov.uk/Publications/2008/03/06133051/0

1. 2007 Building Regulations CO2 Emissions Standard
The appropriate software program (SAP/ SBEM) is used to calculate the 2007 Building Regulations CO 2 Emissions Standard. This is the Target Emissions Rate (TER);
2. Actual Emissions Rate Using LZC Equipment
The appropriate software program (SAP/ SBEM) is used to calculate the actual emissions rate for the development, including the low and zero carbon equipment. This is the Dwelling or Building Emissions Rate (DER/ BER);
3. Percentage Reduction

Calculate the percentage reduction from step 1 to step 2: (100 - (step 2 ÷ step 1 x 100);

4. Actual Emissions Rate Without LZC Equipment

The appropriate software program (SAP/ SBEM) is used to calculate the actual emissions rate for the development without the low and zero carbon equipment. This is a re-calculation of the DER/ BER;

5. Percentage Reduction Due to LZC Equipment

Calculate the percentage reduction due to the low zero carbon equipment: ((step 4 - step 2) ÷ step 1) x 100).

For Dwellings

The Government's Standard Assessment Procedure for Energy Rating (SAP 2005) should be undertaken. BRE approved SAP 2005 software is available to the public www.bre.co.uk/sap2005 and it incorporates a function which automatically generates the target carbon dioxide emissions level (TER) when the fuel type is selected and the 'notional dwelling' dimensions and living area fraction have been fed into the program. The information submitted should demonstrate that the Dwellings Emissions Rate (DER) is at least an extra 15% reduction on the Target Emission Rating (TER) i.e. the developer has demonstrated that the dwelling has met the Building Standard and has improved on this by 15%.

For All Other Developments

The Simplified Building Energy Model (SBEM) www.ncm.bre.co.uk.index.jsp should be undertaken. The Target Emissions Rate (TER) should be calculated by inputting a) the size and shape data into the calculation methodology, b) the Scottish standard package of construction and building services performance measures and c) the formula that reflects the type of heating and cooling system for the building. The Building Emission Rate (BER) is calculated by inputting the data for the proposed building design. These calculations are required to be submitted and must show that the resulting BER indicates at least an extra 15% reduction on the TER.

6.0 Use of Conditions in Planning Permissions

In order to avoid any unnecessary delays in processing planning applications, a suspensive condition may be used to allow developers to submit a detailed energy saving or renewables scheme at the time of submission for Building Warrant. Such a condition may be specific to the individual development, but will generally require: a) details of the proposed energy efficiency measures or renewable technologies to be incorporated into the development, b) calculations using the SAP or SBEM methods which demonstrate that the reduction in carbon dioxide emissions rates for the development enable it to comply with the policy requirements.

7.0 Constraints: Technical, Policy or other

Applications shall only be exempt where applicant can demonstrate that constraints exist, alternative carbon savings shall be sought. The following is a list of examples of constraints which may limit the application of equipment, it is not exhaustive, note that on their own, financial considerations do not constitute a constraint. It is recommended that applicants contact the CNPA if necessary:

- areas where the supply of natural energy sources may be obstructed by another building or structure (overshadowing or wind screening);
- areas where space is constrained (storage, pipes, delivery of fuel);
- locations which restrict particular emissions (such as clean air zones);
- locations with an unsuitable type of ground or building for the location of the equipment;
- buildings with limited roof/wall areas or angles suitable for the equipment
- areas with designations would be considered in relation to the merits of individual applications (eg listed buildings, conservation areas or scenic areas).

8.0 Provision of Equivalent Carbon Savings Elsewhere

Where the CNPA agrees that there are technical or other constraints to achieving the emissions reduction target on-site, alternative provision may be made. These would normally be secured by S.75 Agreement and may involve the installation of equipment on another site or building, offsetting or payment into an appropriate fund, which is used to reduce carbon emissions (if available). The amount of provision will be directly related to the requirement for the application site.

9.0 Further Information

It is recommended that the following other sources of advice are read in conjunction with this guidance note, available on the Scottish Government and the Cairngorms National Park Authority websites http://www.scotland.gov.uk/planning and www.cairngorms.co.uk. Other useful information is contained within the Scottish Building Standards System website at www.sbsa.gov.uk and at the Energy Saving Trust http://www.energysavingtrust.org.uk.

SPP 6: **Renewable Energy**
PAN 84: **Reducing Carbon Emissions in New Development**
PAN 45: **Renewable Energy Technologies and annex**

CNPA SPG: **Sustainable Design Guide**
CNPA SPG: **Renewable Energy**

10.0 Reasoned Justification

Policy 19 aims to ensure the provision of on-site low carbon and renewable sources of energy in new development with a total cumulative floor space of 500 sqm metres or more. Proposals must effectively demonstrate fulfilment of Paragraph 36 of SPP6 which sets a target for the provision of at least an extra 15% reduction in carbon dioxide emissions beyond the 2007 Building Standards Carbon Dioxide Emissions Standards

11.0 Contact Us

Please get in contact if you have any queries:

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Carbon Emissions from New Developments: Flow chart