

Dumfries and Galloway Council

LOCAL DEVELOPMENT PLAN 2

# Sustainability - Reducing Carbon Emissions in Buildings

*Supplementary Guidance - September 2021*



**Dumfries and Galloway Council**  
**Dumfries and Galloway Local Development Plan 2**  
**Supplementary Guidance**  
**Sustainability – Reducing Carbon Emissions in Buildings**  
**September 2021**

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## 1 INTRODUCTION

1.1 The purpose of this supplementary guidance (SG) is to provide further information and advice on the final bullet point of Local Development Plan 2 (LDP2) policy OP1(f) Development Considerations (Sustainability). This part of the policy states:

**1.2 All new buildings being required to demonstrate that a proportion of the carbon emissions reduction standard set by Scottish Building Regulations will be met through the installation and operation of low and zero carbon technologies. The relevant building standards and percentage contribution required is set out in supplementary guidance. The supplementary guidance will be kept under review to ensure that the proportion of the carbon emissions reduction standard to be met by these technologies will increase over time.**

1.3 Dumfries and Galloway Council declared a Climate Emergency in June 2019. The priority of which is to urgently respond to climate change and transition to a carbon neutral region. Dumfries and Galloway Council are one of the UKs leading authorities in the fight against climate change by committing to being a net zero carbon region by 2025. Dumfries and Galloway Council agreed an Action Plan which outlined 12 commitments to be implemented by the Councils Climate Emergency Cross Party Working Group.

1.4 The Scottish Government is committed to ensuring that, from 2024, new buildings must use heating systems which produce zero direct emissions at the point of use and are working towards this aim. This would result in all new homes and buildings being converted to dwellings which will be heated with “zero direct emissions at source” as a form of heating/hot water. Requiring new buildings to meet more stringent energy standards lessens their environmental impact and makes them more affordable to run. Encouraging the use of low and zero-carbon generating technologies in new buildings will help to lessen Scotland’s reliance on imported sources of energy and support the domestic market in such technologies.

1.5 Traditional buildings make up a significant proportion of the existing housing stock and will require upgrading when alterations or extensions are proposed at which time careful consideration should be given to the materials and carbon reduction technologies that are most sustainable and best suited for retrofitting which may differ from the new parts of a building. Information can be found at the Engine Shed, part of Historic Environment Scotland: [www.engineshed.scot](http://www.engineshed.scot) where there are links to the ‘short guide’ series of publications.

1.6 National Planning Framework 4 is currently being drafted and anticipated for adoption 2022. This supplementary guidance will be reviewed in line with the implementation of NPF4 and other key legislative requirements.

## **2 APPLICATION OF POLICY OP1(F) SUSTAINABILITY – REDUCING CARBON EMISSIONS IN BUILDINGS**

2.1 Proposals for new development must accord with the current carbon dioxide emissions reduction target as set out by Scottish Building Standards and demonstrate that low and zero carbon generating technologies will contribute towards at least 20% of these savings from 2021. The energy efficiency and performance of new buildings is considered in detail in the Building Standards process.

2.2 Dumfries and Galloway Council encourages developers to aspire to the Councils regional carbon neutral target of 2025 by exceeding the requirement above by using sustainable methods such as Passiv Haus standards. The Scottish Governments 2019 Building Standards technical handbook outlines sustainability awards which can be used to improve a buildings level of sustainability. Further information can be found: [Building standards technical handbook 2019: non-domestic - gov.scot \(www.gov.scot\)](https://www.gov.scot/publications/building-standards-technical-handbook-2019/pages/non-domestic.aspx).

2.3 Applicants should consider how to meet the requirements of Policy OP1(f) at an early stage in the planning process and are encouraged to contact Building Standards in this regard. The installation of low and zero-carbon generating technology may have an impact on the design of developments or may raise issues which need to be tackled at an early stage in the planning process.

2.4 It will be the responsibility of applicants to provide the necessary technical calculations in support of planning applications to demonstrate how the proposed development will satisfy the requirements of policy OP1(f). An Energy Statement should be provided as part of a planning application and further information can be found below on what should be included. The policy target is specific to CO2 emissions from the energy performance of the building (this covers the CO2 emissions arising from the use of heating, hot water, and lighting) and therefore the assessment relates directly to this.

2.5 Examples of some of efficient energy measures to meet the requirements of the policy are set out in Appendix 2. Further information on energy efficiency measures can be found on the Energy Saving Trust website: [www.energysavingtrust.org.uk](http://www.energysavingtrust.org.uk)

### 3 DESIGNING FOR REDUCED ENERGY DEMAND

3.1 Energy hierarchies are useful in considering how we design proposals to minimise energy demand and waste. A simple hierarchy can be considered as follows:

1. Use less energy
2. Use energy more efficiently
3. Use energy from renewable sources.

3.2 Good, careful design at the outset will minimise the total energy demand for the lifetime of a development. Design considerations for a development as a whole and for individual buildings will help to increase the efficiency of energy use. The use of passive energy efficiency measures should be considered for all developments to help reduce the energy demand of new buildings in addition to the building's standards energy requirements. Further guidance on these issues and sustainable development more generally can be found in Design Quality of New Development Supplementary Guidance: [https://www.dumgal.gov.uk/media/22620/Design-Quality-and-Placemaking/pdf/Design\\_Quality\\_and\\_Placemaking\\_SG\\_LDP2\\_Adopted.pdf?m=637184913554170000](https://www.dumgal.gov.uk/media/22620/Design-Quality-and-Placemaking/pdf/Design_Quality_and_Placemaking_SG_LDP2_Adopted.pdf?m=637184913554170000)

3.3 Key points to consider for successful sustainable and adaptable developments are:

- make optimum use of layout, design, and natural resources for minimising energy demands
- incorporate sustainable approaches to energy provision and efficiency to reduce carbon dioxide emissions
- incorporate the use of materials that are locally sourced and/or from sustainable sources
- incorporate building designs that will be both flexible and adaptable over time

## 4 EXEMPTIONS

4.1 The policy requirement applies to all new buildings with the following exemptions as outlined in the Scottish Governments Building Standards technical toolkit:

- Alterations and extensions to buildings
- Change of use or conversion of buildings
- Ancillary buildings that stand alone and cover an area less than 50 square metres
- Buildings which will not be heated or cooled, other than by heating provided solely for frost protection
- Buildings which have an intended life of less than two years.

4.2 Please note, however, that although the policy requirement only applies to new buildings, the Council will encourage and be supportive of the use of low and zero carbon generating technologies in other appropriate proposals. This will be the case for proposals that may not trigger the policy requirement but where the applicant wishes to reduce carbon emissions arising from the development.

4.3 For development where the policy does apply, it is usually unlikely that a site would not be able to accommodate any low and zero-carbon generating equipment. On their own, financial considerations do not constitute a technical constraint. However, difficulties accommodating such equipment should be discussed with the Council's Development Management team in the first instance.

## **5 ENERGY STATEMENT**

5.1 All new building applications must be accompanied by a written Energy Statement. This is in order to demonstrate compliance with policy OP1(f) and to ensure that the Council can adequately assess the impact of the technology on the design of the development. This will include how low and zero generating carbon generating technologies are incorporated into the development, ensuring that energy is an integral part of the development's design and evolution.

5.2 Appendix 1 provides guidance for completing the required Energy Statement to demonstrate the requirements of policy OP1f. All proposals will be required to complete section 1. Full Planning Applications or Applications for the Approval of Matters Specific in Conditions (AMS/C) will be required to complete section 2. Section 2 will require proposals to set out what low and zero carbon generating technology equipment is to be used. Section 3 is for the Building Warrant stage which will require proposals to demonstrate how low and zero carbon generating technology contributes towards at least 20% of the Scottish Building Standards carbon dioxide emission reduction targets.

5.3 Appendix 2 provides a non-exhaustive list of efficient energy measures that are eligible low and zero carbon generating technologies.

5.4 Appendix 3 provides guidance on how to calculate low and zero carbon generating technology will contribute towards at least 20% of the Scottish Building Standards carbon dioxide emission reduction targets.

## APPENDIX 1: ENERGY STATEMENT

Please provide a written Energy Statement that covers the below points where relevant. As stated earlier in the Designing for Reduced Energy Demand section, it may prove useful to consider the following when writing the statement:

1. Use less energy
2. Use energy more efficiently
3. Use energy from renewable sources.

The below list is to assist in the submission of the written Energy Statement for the proposed development for low and zero carbon building requirements.

Section 1 should be considered for all proposals.

Section 2 is required from Full or AMS/C applications.

Section 3 is required at the Building Warrant stage.

<b>Section 1 – All proposals</b>
Consider optimum use of layout, design and natural resources for your proposal. The Design Quality and Placemaking Supplementary Guidance listed above provides further information.
Consider what / if equipment would be required and where it would be located on site.
Consider methods to conserve, reuse or recycle resources.
<b>Section 2 – Full or AMS/C applications</b>
If your proposal is considered one of the above listed exemptions please provide further information.
What low and zero carbon generating technology equipment is to be used to meet the 20% requirement of the Scottish Building Standards carbon generating dioxide emissions reduction targets?
Where would equipment be located?
What scale is the equipment in relation to proposed buildings?
What materials are to be used and where have they been sourced?
Are there any issues the installation of the equipment is likely to raise? This may include visual impact or effects on the historic environment.
Any additional or supporting information?
<b>Section 3 – Building Warrant stage</b>
Please demonstrate how the proposals low and zero carbon generating technology contributes towards at least 20% of Scottish Building Standards carbon dioxide emission reduction targets. Appendix 3 provides further information.

## APPENDIX 2: EFFICIENT ENERGY MEASURES

The following is a non-exhaustive list of eligible low and zero carbon generating technologies.

**Air, water or ground source heat pumps:** A heat pump works like a refrigerator removing heat from a cold place to a warmer place and can be used to provide space and water heating. Heat exchangers transfer heat from the source to a heat pump. In the summer, the system can be used for cooling by reversing the heat pump. This can include ground-coupled heat exchangers which are located underground and can capture heat from and/or dissipate heat to the ground. If building air is blown through the heat exchanger for heat recovery ventilation, they are called earth tubes (also known as earth cooling tubes or earth warming tubes).

**Biomass:** Bio-fuelled boilers burn biomass (such as woodchip, wood pellets or straw), bio- diesels (such as rapeseed oil, vegetable oil), or bio-gases (such as bio-methane) to provide heat in a similar way to coal, oil or gas fired boilers or alternatively in a stand-alone traditional stove. Although bio-fuelled boilers are typically only as efficient or less efficient than gas-fired boilers, they are considered low carbon or near carbon neutral as the bio-fuel absorbs similar levels of carbon dioxide emissions in its growth as it gives off in its combustion.

**Combined heat and power:** These systems work by generating electricity on or near to a site, avoiding the heat loss that normally occurs from energy generation in power stations. Any heat that is lost can also be captured for space and water heating on the site.

**Community or District Heating:** A centralized heating system that supplies heat and hot water to a development comprising a number of properties with more than one heat customer.

**Geothermal:** Geothermal and ground energy systems exploit the thermal mass of the ground at 'ambient' temperatures (typically 10 to 14 degrees Celsius in the UK) from soils and rocks within 200m of the ground surface.

**Green Hydrogen:** Where hydrogen fuel is created using renewable energy instead of fossil fuels.

**Micro-hydro:** This type of technology uses running water, such as a small burn, to turn a small turbine to generate electricity.

**Micro-wind:** The most common design of a wind turbine is blades mounted on a tall shaft which is free to rotate into the wind driving a generator to produce electricity. These will either be free-standing or attached to the roof of a building<sup>2</sup>.

**Battery Storage:** Can be used to store energy from numerous sources to power electric vehicles, buildings, transportation etc.

**Photovoltaics:** Photovoltaic panels consist of semi-conducting cells that convert sunlight into electricity. They can produce electricity even in cloudy conditions, but the power output increases with the intensity of the sun.

**Solar thermal:** Solar water heating systems comprise solar collectors (tubes or flat plates), a heat transfer system and a hot water storage cylinder. They use heat from the sun to heat water for domestic hot water use.

**Thermal Heat Store:** A thermal store is a vessel for storing and managing heat until it is needed.

Further information on energy efficiency measures can be found on the Energy Saving Trust website: [www.energysavingtrust.org.uk](http://www.energysavingtrust.org.uk)

## APPENDIX 3 CALCULATING BUILDING EMISSIONS

Carbon dioxide emissions and energy ratings for dwellings are calculated using the Standard Assessment Procedure for the Energy Rating of Dwellings (SAP). For all other developments, the Simplified Building Energy Model (SBEM) can be used. The Building Research Establishment (BRE) [www.bre.co.uk](http://www.bre.co.uk) lists software approved for use in Scotland. Information on current approved software can also be found on the Scottish Government's website: <https://beta.gov.scot/policies/building-standards/monitoringimproving-building-regulations/>

The stages in the calculations are set out below:

1. The appropriate software programme (SAP/SBEM) is used to calculate the 2010 Building Regulations Carbon Dioxide Emissions Standard. This will provide a Target Emissions Rate (TER), which is the predicted carbon dioxide emissions for a building of the specified size.
2. The appropriate software programme (SAP/SBEM) is used to calculate the actual emissions rate for the proposed development, which includes the low and zero carbon generating equipment. This is the Dwelling or Building Emissions Rate (DER/BER), which is the predicted carbon dioxide emissions for the actual proposal.
3. Calculate the percentage reduction from step 1 to step 2:  $(100 - (\text{step 2} \div \text{step 1} \times 100))$
4. The appropriate software programme (SAP/SBEM) is used to calculate the actual emissions rate for the development without the low and zero carbon generating technologies. This is a repeat of stage 2 and provides a recalculation of the DER/BER without the low and zero carbon generating technologies.
5. Calculate the percentage reduction due to the low and zero carbon equipment:  $((\text{step 4} - \text{step 2}) \div \text{step 1}) \times 100$  Note: The calculation methodology may require to be updated if/when revised Building Standards come into force.

### Contacts

Please contact the relevant teams via:

- Development Management (planning applications) - [planning@dumgal.gov.uk](mailto:planning@dumgal.gov.uk)
- Building Standards - [buildingstandards@dumgal.gov.uk](mailto:buildingstandards@dumgal.gov.uk)
- Development Planning - [LDP@dumgal.gov.uk](mailto:LDP@dumgal.gov.uk)