

Powys County Council

Designing Energy Efficient Developments

Interim Development Control Guidance

January 2008



Community Solar Water Heating
(Photograph courtesy of Stuart Davies)



This guidance is intended to help applicants ensure that their development proposals have incorporated positive measures to increase the energy performance of their proposals.

This guidance should be considered alongside the Powys Unitary Development Plan and all other Supplementary Planning / Interim Development Control Guidance published in relation to it.

For free and impartial advice about domestic energy efficiency contact the Energy Efficiency Advice Centre on 0800 512012.

For enquiries relating to larger buildings contact the Carbon Savings Trust customer centre on 0800 0852005.

Examples of the Guidance contained on the Energy Savings Trust website on two issues, solar water heating and orientation are appended.

1 Introduction

1.1 The Welsh Assembly Government recognises that Climate Change is one of the most serious challenges facing the world and that Wales must take concerted action to reduce emissions of the greenhouse gases that cause climate change and to plan for, and respond effectively to, the changes already underway. Former Environment minister Carwyn Jones announced an aspiration for Wales to achieve zero carbon building ratings for all new development by 2011.

1.2 Powys County Council (in partnership with the Welsh Development Agency, Ecodyfi, Dulas Ltd, Llanidloes Energy Solutions, Forestry Commission Wales, Scottishpower and the former Mid Wales Energy Agency) were accepted into membership of the European Union's "Sustainable Energy Europe Campaign" in 2005. This followed a joint commitment setting out some specific targets over a ten year period but with the ultimate objective of seeing as much energy generated in Powys from renewable sources as is used in total.

1.3 This Interim Development Control Guidance (IDCG) is considered to be fundamental in achieving the Community Strategy's priority of 'providing a sustainable built environment within Powys'. **The objective of this IDCG is 'to encourage appropriate development while working to conserve and enhance the County's built heritage, landscape and biodiversity'**. This guidance seeks to aid the implementation of this objective. Water Management and sustainable drainage systems will be considered in a separate Interim Development Control Guidance.


1.4 This IDCG emphasises the policy approach taken by the Powys Unitary Development Plan (UDP) in relation to this topic and points to relevant information sources. In short, schemes will be expected to achieve the highest environmental design standards incorporating measures to conserve and generate energy, whilst respecting the context of each development site. The IDCG advocates the UDP's proposed design process (UDP Policy GP3 – Design and Energy Conservation) as the primary route in which to arrive at appropriately balanced proposals.

1.5 Achieving the highest environmental design standards, whilst respecting a site's context is likely to improve the saleability and value of homes particularly since Home Information Packs, where applicable, must include energy advice reports. Energy Advice Reports will focus prospective homebuyer's / tenant's minds towards the running costs of properties. Achieving the highest environmental design standards will reduce the running costs of new dwellings, also future proofing against energy price fluctuations and possible threats to existing energy supply at a time when the UK is increasingly reliant on gas imports and oil prices continue to rise. It is cheaper to design in technologies from the outset, for instance a retro-fitted solar water heating system can be installed for around £3000 whereas the kit can be purchased for a little over £1000.

1.6 It is also of utmost importance to have regard to building regulations from the outset of the design stage of a development. Building regulations assess the energy performance of buildings and are likely to tighten significantly over the coming years with the aim to reach zero carbon developments. It should also be noted that it is advantageous to design in energy savings from the outset of a development, rather than trying to meet building regulations through the

incorporation of more technological solutions at a late stage. Planning issues such as the orientation and landscaping of a development can impact on a building's ability to meet building regulations. In advising applicants to take into account building regulation requirements from the outset the County Council aims to avoid any situations arising where planning approval is granted that cannot meet with building regulation approval.

1.7 Powys County Council is proposing to implement a development team protocol in respect of large development schemes whereby planning, highways and building control staff and other professionals work together with applicants during the preparation of consent submissions. This should lead to a more timely decision making process. The protocol is intended to facilitate a constructive working relationship between the Council and lead developer(s). It represents a formalisation of existing good development control practice and processes but is also intended to enable constructive pre-application discussions and negotiations to take place within a more formal project management structure. Developing an ongoing process of joint working involving both internal partners and developers is at the heart of this proposed protocol.



2 Planning Policy Framework

2.1 National Policy Context.

2.2 Section 39 of the Planning and Compulsory Purchase Act 2004 firmly enshrines the duty of planning to contribute to the achievement of sustainable development.

2.3 In Wales, the Ministerial Interim Planning Policy Statement (MIPPS) 01/2005 Planning for renewable energy, along with Technical Advice Note (TAN) 8 also entitled Planning for renewable energy and the draft MIPPS on Climate Change along with its accompanying compendium (Dec 2006) set out the main national planning policy considerations for this topic. Because energy policy is not a function that has been devolved to the National Assembly, both the MIPPS and the TAN are set in the context of the Energy White Paper, Our energy future – creating a low carbon economy (DTI 2003).

2.4 The Energy White Paper is set in the context of the International Kyoto Protocol and has a target of achieving 10% of energy production from renewable sources by 2010. In Wales this target equates to 4 Terawatt-hours (Twh) of electricity being produced from renewable sources by 2010.

2.5 It is the Welsh Assembly Government's vision that the majority of the 4Twh target will be derived from wind power (roughly equivalent to the energy needed to power 400,000 homes per year), with 0.1Twh being produced from other sources of renewable energy (roughly equivalent to the energy needed to power 10,000 homes per year.) If this vision were to be met it would represent enough energy being produced through renewable sources to power roughly a third of Welsh households by 2010 (based on 2001 Census house numbers).

2.6 The County Council has prepared a separate planning guidance relating to larger scale wind proposals entitled the Draft Interim Development Control Guidance on Wind Farm Development in Powys 2006.

2.7 The Stern Review, which reviewed recent scientific evidence, contested that the targets set in the Energy White Paper are inadequate if Climate Change is to be kept to manageable levels. The Environment Strategy for Wales and Action Plan sets the headline target of cutting greenhouse gas emissions by 20 per cent between a 2000 baseline of 14.9 Megatonnes of carbon equivalent, and 2020.

2.8 Powys County Council recognises the contribution that it can make to achieving the targets set in TAN 8 - Planning for renewable energy, and those that are due be set out in the environment strategy. The Council is also aware that there is an opportunity in Powys due to its natural resources, geographical location and spatial context, to go beyond the minimum requirements that are necessary to meet these targets, fostering business ventures and creating a local knowledge base in this emerging sector.

2.9 The Powys Unitary Development Plan

2.10 Section 54A of the Town and Country Planning Act 1990, as amended makes the development plan central to the development control decision making process.

2.11 The Powys UDP sets out the policy considerations for new development and changes of use in the County and has undergone both a Sustainability Appraisal and the Strategic Environmental Assessment process in its preparation. The UDP supports sustainable development through a number of strategic aims; however these aims need to be considered in the context of the whole development plan which also supports conservation objectives. The strategic aims supporting sustainable development in the UDP are as follows:-

p) To promote energy conservation and efficiency.

q) To encourage appropriate energy generation from renewable energy sources.

r) To strengthen design standards and promote good design across the County.

2.12 These strategic aims are implemented by policy initiatives contained in the UDP as listed below.

- Through setting out a design process that will encourage applicants to thoroughly consider all of the relevant policies in the UDP, arriving at carefully considered applications for development that will contribute to meeting the aims and objectives of the Plan.
- Through basing the spatial strategy on sustainable principles. The Strategic Sustainable Settlement Hierarchy directs the majority of new developments to areas with essential services and facilities and away from sites likely to be affected by the impacts of Climate Change such as flood risk areas.
- Through including Policies (Policies UDPSP12 & GP3) stating that development proposals are to demonstrate that energy conservation and efficiency measures have been considered and where practicable incorporated.
- Through supporting the production of development briefs on important sites that will promote sustainable construction and also through promoting sustainable design techniques in line with Policy HP14 (as amended by PIC 063) section 5.19 of the plan – Sustainable Housing.
- Through the promotion of solar technologies in design proposals by Policy E7 – Solar Technologies.
- Through supporting heat generation in line with Policies E1 and E2 Larger scale “Thermal” Power stations and Smaller scale “Thermal” Power Units and by setting out policies for the consideration of wind power and hydro power developments Policies E3 – E6.
- Through including a transport user hierarchy and the encouragement of walking, cycling and community transport initiatives, also by requiring transport assessments and travel plans on larger applications through Policies T3 and T4.

2.13 Development proposals which do not demonstrate, through the design statement, how appropriate energy conservation and efficiency measures have been considered and incorporated into the design, will be refused by the Local Planning Authority.

3 Consideration of 'appropriate' measures in the context of Powys - Microgeneration.

3.1 MIPPS 01/2005 paragraph 12.8.12 strongly advocates that Local Planning Authorities should seek opportunities to 'facilitate the development of all forms of renewable energy and conservation measures which fit within a sustainable development framework'. It is the aim of this section to provide guidance on how to integrate this objective into the planning and design of new developments in the context of the County of Powys and the UDP.

3.2 The Welsh Assembly Government has undertaken a consultation in 2007 on the review of permitted development rights relating to microgeneration.

3.3 The consideration of 'appropriateness' is key to both applicants and Development Control Officers alike in interpreting the policies contained in the UDP and arriving at balanced development solutions. The following general principles will be taken into account when considering applications:-

- The Planning Authority recognises that new developments and redevelopment schemes have the most scope to incorporate design principles and technologies in arriving at innovative and ambitious energy efficient design solutions. It is also recognised that although providing less scope to incorporate a full range of design principles, alterations to existing development provide an opportunity to improve the energy performance of the building through incorporating technology. New build / redevelopment schemes will need to arrive at designs including comprehensive use of energy efficiency and renewable technologies to best practice standards if they are to gain the support of the Local Planning Authority.

- UDP Policy E7 – Solar technologies, specifically supports the incorporation of solar technologies in development proposals apart from where they impact on built heritage concerns. **Applicants must incorporate solar water heating systems within all design proposals where their use is practicable.**

- A fundamental constraint to supporting the inclusion of a renewable technology would be where the measure would be inefficient; it would be unwise to support an application for the use of solar technologies in areas of substantial shading, or for the use of micro wind technologies in areas of little wind. Information from the best practice websites identified in Appendix A will be utilised to ascertain the likelihood of any given technology working in the situation as proposed.

- The County Council's IDCG on affordable housing, paragraphs 8.1 and 8.2 make it clear that 'affordable housing proposals should comply with all relevant UDP policies and standards' and that 'exactly the same design considerations should also be applied to the design and external appearance of affordable housing as to the open market housing so they are indistinguishable'. The benefit of designing affordable housing to incorporate measures will be seen in perpetuity with the occupants benefiting from reduced energy bills. Acceptable Cost Guidelines, the information on which the County Council sets affordable housing for sale prices, include the presumption that new dwellings meet Eco-homes standard (above the minimum building regulations). The fact that a house is an affordable one will therefore not be accepted as a justification not to adhere to this guidance. Those

buying land must take the implications of this guidance into account in the price that they pay for the land.

- The Welsh Assembly Government's draft MIPPS on Climate Change suggests that applicants and local planning authorities should take into account the lifetime recovery costs of incorporating energy conservation and generation techniques into proposals. Powys County Council consider that there will not be any economic disbenefits of including comprehensive design measures (layout, orientation, solar water heating) in terms of lifetime recovery costs for the reasons provided in paragraph 1.5.

3.4 When considering the potential harm of development proposals in terms of energy efficiency and generation measures, their impact will be balanced against the other aims of the Unitary Development Plan as follows.

3.5 Where the application may impact on the UDP objective in relation to built heritage conservation:-

- (If listed) The desirability of preserving the listed building, its setting and any features of special architectural or historic interest that it possesses.
- (If in a Conservation Area) The desirability of preserving or enhancing the character of that area.
- The importance of the building, its intrinsic architectural and historic interest and rarity.
- The particular physical features of the building (design, plan, materials, location) which justify its listing.
- The building's setting and its contribution to the local scene.
- The extent to which the proposed works would bring substantial benefit to the community.

3.6 Where the application may impact on neighbouring land uses or the amenities of neighbours:-

- Would the benefits of the proposal outweigh any potential impact on the functioning or operation of existing neighbouring land uses?
- Would the benefits of the proposal outweigh the potential impact on the local scene?
- Would granting permission set a precedent and if so would the future cumulative impact of such a precedent be acceptable?

3.7 Where the application may impact on the UDP objective in relation to nature conservation aims:-

- Would the proposal impact on any habitat / species? And if so would the benefit of the proposed measure outweigh the impact on any habitat / species?
- The importance of the habitat / species.
- The level of protection provided by the Unitary Development Plan.
- The extent that the proposed measure would impact on the interest.
- The extent to which any proposed mitigation is proven to work.

4. The Design Process

4.1 The UDP's design process ensures that applicants consider all of the major planning issues before submitting their application leading to a speedier decision making process:

UDP Policy GP3 – Design and Energy Conservation states that:

“...A design statement shall accompany all detailed applications and will describe the actions taken to design and adapt the development to fit its location ...Wherever practicable, developments shall be designed to reduce energy consumption and maximise energy conservation through the use of appropriate materials, design, layout and orientation.”

4.2 The Assembly Government has resolved to pursue legislation to bring in a statutory requirement for design statements to accompany planning applications, bringing forward secondary legislation in 2007 to do so. Section 2.9 of the draft MIPPS on Climate Change suggests that design statements can be used to ensure that the sustainability implications of new developments are expressly outlined with planning proposals.

4.3 The process of preparing a design statement is explained in the County Council's Interim Development Control Guidance on Residential Design; although the guidance is primarily aimed at residential design, the principles that it sets out on preparing a design statement can be adapted to include the consideration of climate change in all development proposals. The design process is briefly discussed below.

4.4 The design statement, submitted alongside detailed proposals seeking planning permission, must include a section demonstrating how energy conservation and efficiency have been considered and where practicable incorporated into development proposals.

4.5 Different developments will be set in different contexts. Section 6 of this IDCG provides a discussion of the various development types and the broad context in which their response to energy considerations should be set.

4.6 Appendix A provides further sources of information on the measures/technologies that should be taken into account in designing schemes. Section 7 contains a matrix showing which measures will be expected to be incorporated in design proposals by development scenario.

4.7 Stage 1 in the Design Process – Appraisal stage

4.8 The pre-application site appraisal stage is of utmost importance when considering the future benefits that the development of the site can have on climate change. This stage is also particularly important in assessing whether there is potential for the development to contribute to wider community energy schemes and in thinking about comprehensive measures

4.9 Applicants must refer to the relevant guidance and policies that may be applicable to the site; these include UDP policies, supplementary or interim development control guidance and Building Regulations. Having regard to the

development type and site's individual context, applicants will need to explore the opportunities for the use of alternative energy generation and conservation technologies. A generic list of design principles and technologies is contained in section 5 below, these must be thoroughly researched during the site appraisal stage, identifying opportunities and constraints so that they can be taken forward into the design process and production of the concept plan.

4.10 Stage 2 in the Design Process – The concept plan

4.11 Having undertaken a thorough site and policy appraisal the applicant should approach planning services with a view to discussing their concept proposals. For major applications applicants should approach the County Council with a view to engaging in a development team approach to working on the application. Discussing the concept proposals will act as scoping exercise in order for applicants to gauge whether their appraisal and draft proposals are likely to be broadly acceptable to the Local Planning Authority. Conflicts arising between built form, built heritage conservation interests, landscape or biodiversity and measures proposed in response to climate change should be discussed at this stage. Some of the considerations relating to these conflicts are discussed in section 3. Schemes that will affect a Conservation Area or Listed Building will also be referred to the relevant Built Heritage Conservation Officer.

4.12 The aim of these discussions is to reduce the likelihood that the application is drawn up in detail and submitted before all of the major issues / policy matters relating to the scheme are resolved in principle. The benefits of this approach are clear; resolving issues before the planning application is submitted reduces the likelihood of applicants having to amend their proposals at a late stage.

4.13 During these discussions the Development Control Officer will refer to the measures/technologies for the appropriate development type from the matrix on page 20. At this stage the Development Control officer will want to ascertain whether all of the appropriate measures that will improve energy performance have been researched and considered in arriving at the concept proposal.

4.14 Stage 3 in the Design Process – Detailed plans, drawings and design statements

4.15 Having sought to resolve any issues identified during the appraisal stage through discussions over the concept plan, applicants will need to prepare detailed plans and drawings for the intended scheme. When submitted to the Local Planning Authority for determination these detailed plans should be accompanied by a design statement.

4.16 The design statement must include a discussion of any conflicts that have been resolved in the final solution resulting from discussions at the concept plan stage for example between conservation and sustainable development aims. The design statement must also highlight how the proposed development has been discussed with the local community.

4.17 The design statement must contain reference to the design's energy efficiency and generation credentials, along with evidence of research and survey work. One way of making these points clear in the design statement is to include a

section in the design statement solely on how the design solution responds to this Interim Development Control Guidance.

4.18 The design statement accompanying the Planning Application should incorporate a recognition that the planning submission has been screened against the building regulations that are likely to be in place when the proposal goes forward to the building regulations stage. This should lead to a seamless Planning and Building Control process.

5. Energy efficient design principles / technological measures.

5.1 The following section includes descriptions of energy efficiency measures and technologies that can be incorporated alongside wider energy efficiency design principles to ensure high energy performance.

5.2 As a minimum all proposals, where the site / scheme context allows, must:

- Take into account best practice principles on solar design.
- Incorporate solar water heating systems unless fully justified in the design statement.

5.3 Design principles

Planning – UDP Policy GP3 - Design and energy conservation, HP14 – Sustainable Housing

Appendix B contains guidance published by the Energy Savings Trust on the principles of solar layout, orientation and design.

The two key factors in terms of solar design are the orientation of the houses and the degree to which the south-facing glazing is free from overshadowing. Careful design helps to minimise the amount of energy that used to light and keep buildings at a comfortable temperature.

Careful layout will also ensure that complementary technologies such as solar water heating systems and design principles such as ‘thermal mass’ (absorbing and releasing heat) can be successfully incorporated into schemes. Sun paths, lower in winter, higher in summer should also be taken into account when designing schemes.

Other general design principles that will enhance schemes include designing in adaptability, incorporating recycling facilities and composting areas encouraging householders to recycle. The re-use and management of water is also an important planning consideration that will be considered by separate IDGC entitled ‘Water Management’. Site Waste Management Plans are currently encouraged by the Environment Agency.

Building Regulations

The consideration of energy efficient design principles is also key to the success of schemes in achieving Building Regulations approval. Building regulations matters must be considered alongside planning matters to ensure that schemes that achieve planning permission are capable of implementation.

The UK Government has set a target of all new homes reaching ‘zero carbon’ status by 2016, in achieving this it is likely that current Building Regulations will tighten. For instance schemes incorporating air conditioning will increasingly find it more difficult to obtain building regulations approval.

Matters such as insulation and ventilation must be considered as part of the overall proposal. It makes sense, especially since incorporating appropriate insulation into the design is the easiest and cheapest way of improving energy efficiency. One of

the best ways to insulate a roof is to incorporate a green roof (this planning matter is discussed later in the document).

Other issues that will improve SAP / SBEM ratings include ensuring that heating systems are sized correctly for the actual heat loss from the dwelling; over-sizing is likely to waste energy.

The consideration of best practice in terms of “designing- in” insulation and ventilation from the outset of a scheme is again considered on the Energy Savings Trust’s website.

Design issues currently falling between Planning and Building Control – UDP Policy HP14 – Sustainable housing

Other best practice design principles that fall between planning and building regulations and which will reduce the embedded energy in new development include:

- **Designing out waste from the outset of a development** (This issue is set to be addressed through the introduction of the **site waste management license** regime by the Environment Agency.)
 - Minimising the energy used during the construction phase of a development through careful project planning.
 - Using reusable and recycled materials.

As a minimum, applicants should seek to use 5% recycled materials in developments proposed, incorporating information on this into the design statement.

These practices and approaches are encouraged and are further explained and discussed on the best practice websites listed in appendix A.

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| 5.4 Technological measures |
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The incorporation of the following technologies will improve a design proposal both in terms of its Planning merits and its likelihood of achieving Building Regulations approval. These issues are also considered in the best practice websites listed in Appendix A, with further best practice information on the installation of solar thermal technologies from the Energy Savings Trust attached at appendix B.

Solar Thermal Systems (Solar Hot Water) - UDP Policy E7 – Solar technologies

This form of renewable energy has great scope for use in Powys given that it is a well established and cost effective technology. The systems produce their best results when positioned within approximately 45 degrees of due south at an incline and generally provide between 50% and 60% of typical water demand. Solar thermal systems normally operate with a back up source of heat which tops up the solar heated water when there is insufficient solar energy to reach the target temperature. Advice on incorporating solar thermal systems into design proposals impacting on a listed building or conservation area should be sought from the County Council’s built heritage conservation officers.

The incorporation of solar water heating schemes in proposals is required where it is practicable to do so. Any scheme not incorporating solar hot water must provide justification for not doing so in the design statement accompanying that planning application, such a justification may for instance include reasoning that the technology is not required since the building's hot water is generated from another, more suitable renewable technology.

Green Roofing – UDP Policy HP14 – Sustainable housing

Green roofs control water runoff, provide a high level of insulation, encourage biodiversity, reduce demand for primary materials such as slate and even take in a small amount of carbon dioxide turning it into breathable air. Green roofs can sit at anything up to about 40 degrees in pitch and with any orientation. Solar water heating technology can be incorporated into green roofs with suitable orientation.

Flat green roofs can provide larger commercial / office buildings with amenity space. Green roofs can also assist rural buildings to blend with the landscape.

Community Heating - UDP Policy E2 Smaller scale Thermal Power

Providing heating on a community / development scale has the benefit of providing heat to homes at a reduced price (economic) and is more resource efficient (environmental). Developments incorporating community heating schemes will need to plan for and incorporate the heat infrastructure (pipes and boiler house / fuel store with ramp and access) from the outset of the development; this may lead to more compact layouts.

The services of an Energy Services Company (e.g. Dulas Wood Energy Ltd in the Llanwddyn community heating pilot scheme) will generally be required. Energy Services Companies will be responsible for the day to day running of the 'heat' power unit, with the amount of heat used by individual properties being metered. Owners pay the Energy Services Company for the heat that they use in the same way that they would pay a traditional utility company for the gas that they use. The benefit to the consumer is that the price paid for heat would be considerably less and in terms of environmental benefits that emissions would be reduced because the heat would be generated in an efficient manner, potentially from a renewable source such as wood pellets / chip.

At the moment, for it to be worthwhile for an Energy Services Company to provide a service, it has been ascertained that the minimum scale of development would be around 25 units. For increased benefits and efficiencies it is desirable that a complementary development that could be linked to the community heating scheme is located within approximately 100 metres of the site. In preparing schemes applicants should investigate whether complementary developments that require a heat load, such as a school, a community facility or a residential care or nursing home would be willing to benefit from being linked to the new heat source.

Gas or Oil fired Community Heating systems can also have the benefit of creating electricity as a by-product. Such systems need to be heat demand led and have similar considerations to the biomass community heating systems detailed below although they are more efficient on a larger scale, for example providing heat and electricity for long periods for hospitals.



Biomass Fuel – UDP Policy E2 Smaller scale Thermal Power

Woodfuel and biomass systems are generally seen as carbon neutral. These systems work by burning wood / waste products to produce energy. This form of renewable energy has great scope for use in Powys given the availability of biomass fuels such as wood and manure.

Wood / biomass boilers can be used at various scales, providing heat at a community level as discussed above and also at an individual property scale. The most efficient boilers run off wood pellets which have lower moisture content than logs / wood chips. Pellet boilers are better in smaller installations. Woodchip and pellet boilers can run off automatic feed systems as well as manual feed.

Solar Electric (Photovoltaic) - UDP Policy E7 – Solar technologies

Whilst this form of power generation remains relatively expensive, its relative cost will reduce as electricity prices increase and the price of solar panels drop. As with solar thermal systems this technology requires appropriate access to sunlight and therefore the orientation of any solar collectors is important, taking into account high summer sun and lower winter sun paths to ensure maximum efficiency.

Solar electric collectors no longer only come as 'traditional' flat bed collectors; some solar electric collectors are now designed in the form of roof slates that can be incorporated into existing vernacular buildings and new build developments attempting to respect the site character.

As with the incorporation of solar thermal systems on listed buildings or conservation areas, applicants should seek advice from the County Council's built heritage conservation officers. In all other circumstances the incorporation of solar electric collectors is encouraged in line with the objectives of the UDP and of Building Regulations.

Micro Hydro Power UDP Policy E6 – Hydro power

Incorporation of small scale hydro generation technology is supported in principle by the UDP.



Heat Pump Technology UDP Policy GP3 – Design and energy conservation and HP14 Sustainable housing

Heat pump technology utilises energy from the ground, air or water to generate heat. Even at temperatures considered by many to be cold, air/ ground/ water contains useful energy that is continuously replenished by the sun. By applying a little more energy, a heat pump can raise the temperature of this heat energy to the level needed. Currently heat pump systems can supply as much as 3kW of heat output for just 1kW of energy input.

Planning Services, including Building Control is supportive of the incorporation of this technology into development proposals, again as with many of the renewable technologies it is best to design in this technology from the outset of a development although it can be retro-fitted to existing developments also.

Micro heat and power UDP Policy GP3 – Design and energy conservation and HP14 Sustainable housing

These systems run off small gas or oil fired engines, replacing or running in parallel with a domestic sized boiler and linking to the building's electricity distribution system. As with community scale heat and power systems, micro heat and power needs to be heat demand led. These systems are therefore most suitable for larger new houses, older houses with a high heat demand and some small commercial premises; however such systems are designed to maximize the length of time for which the generator produces electricity, in so doing maximizing the carbon emission savings, rather than being designed to be instantly responsive. The electricity produced is likely to be more than the background demand in an occupied house for much of the time and so the surplus would need to be exported to the grid.

Small scale wind energy UDP Policy E3 – Wind Power

Careful consideration will be given to planning applications proposing 'off the shelf' wind turbines that can be attached to dwellings as well as stand alone turbines that sit within the cartilage of dwellings of which maintenance will need to be assured.

Small scale wind turbines are eye catching, their movement impacts on the street scene. Poorly maintained / damage machines are likely to be noisy, causing annoyance at the micro level. Any precedent or potential cumulative impact of granting permission will be balanced against the amount of energy that the turbine is predicted to create in determining any application for such development. The results of a recent consultation by the Welsh Assembly Government on permitted development rights and microgeneration technologies is awaited.



5.5 Other complementary measures

Mitigating against climate change in relation to flooding and water conservation

The Water Management Interim Development Control Guidance (to be prepared) will further consider water management issues associated with development including the energy savings that can be achieved through grey water recycling by reducing the energy used to get water to a property. It is however, considered important to at least highlight the fact that water management will be a consideration taken into account at the planning stage of a development.

The rapid runoff of storm water from a site can increase the risk of flooding elsewhere. Consequently, at times of very heavy rainfall / ground saturation, the most appropriate action (known as attenuation) is to delay the flow of water at or close to its source in controlled conditions. Further conserving and re-using rainwater at source reduces the demand for the abstraction of water from other sources.

Natural lighting

Systems exist that channel natural light into buildings, reducing the energy requirement for lighting a development. These are sometimes known as 'sunpipes'.

Appliances

Whilst not strictly a Planning or Building Control matter, this guidance supports the consideration of the incorporation of energy efficient appliances in new developments. For information, the Energy Savings Trust manages a labeling scheme for products of proven energy efficiency covering not only household appliances but also lighting products, windows and insulation materials. Other such schemes exist.

Currently endorsed products can be found at:

<http://www.est.org.uk/myhome>



6 Development Types

6.1 The following section discusses briefly various development types in the context of Powys. Each development type grouping contains a discussion of appropriate measures, which should be taken into account when designing a scheme. Careful consideration will need to be taken in order to respond to both the site specific context and the UDP's sustainable development objectives. The matrix included in section 7 of sustainable development design principles and technologies against development types included in this section must be taken into account by applicants.

6.2 Reasons to utilise appropriate design principles and technological measures include:-

- The lifetime economic benefits associated with solar design principles and energy efficient technologies when taking into account diminishing traditional fuel supplies and their rising price.
- Society's concerns over the impact that climate change will have.
- The security of the supply of renewable energy.
- Regulatory requirements, such as tightening building regulations and a supportive planning policy framework.
- The introduction home information packs and energy advice reports for home sellers focussing homebuyer and tenants minds towards energy efficiency issues.

Development type A)

Essential Rural Workers dwellings in the open countryside, Rural Building Conversions outside development limits, isolated building redevelopment, affordable housing for local needs in rural settlements

Development proposals in this character grouping are generally located away from larger settlements where essential services and facilities are located. In terms of planning policy, this distance from services is balanced against the need to maintain the rural economy / deeply rural communities and to conserve rural buildings of interest.

Development projects in this character grouping often have great scope to include comprehensive energy conservation and generation measures because they are generally located away from areas of substantial built form. Their remoteness means that there is great benefit from being self sufficient in terms energy supply.

Development type B)

Small residential sites / residential redevelopments of <5 inside development limits, residential rural exception schemes of <5 and other small developments of less than 0.3Ha in size.

Development proposals in this character grouping are often proposed on sites where orientation, layout, massing and design considerations will be heavily influenced by the surrounding built form. Whilst this places certain limitations on what can be achieved, these sites should still seek to incorporate comprehensive energy conservation and generation measures through the careful design of each individual property.

Development type C)**Allocated / windfall / redevelopment and exceptions sites of 5 or more dwellings**

Development proposals in this character grouping account for a large proportion of the projected housing requirement during the plan period mid 2001 to mid 2016. It is therefore essential that these sites are developed responsibly as they will have a long term impact and will have a large impact on the UDP's aims. Large sites will also be expected to incorporate affordable housing. Design measures taken to maximise energy generation and conservation will be expected to benefit the affordable housing and open market housing equally. Developments in this character grouping have great scope to include comprehensive energy generation and conservation measures because of the opportunities to carefully design the orientation, mix and type of buildings and communal facilities. These schemes also have opportunities to act as a catalyst for wider community schemes through entering into a dialogue with the local communities.

Development Type D)**Householder applications**

Householder applications are by far the most common type of application for planning permission received by the County Council and include applications for household extensions and other alterations. Ensuring that energy generation and conservation measures are appropriately considered when making such planning applications is therefore important. Householders may consider carrying out extra work on their homes with regards to energy conservation and generation whilst building works are being carried out on their dwellings. It is possible even in such small projects to take proactive action in addressing energy generation and efficiency measures and all householder proposals will be expected to maximise opportunities to contribute positively.

Development Type E)**Non residential buildings development / redevelopment <1000sqm**

Development proposals in this character grouping are generally public buildings such as community centres, medical surgeries or small scale employment / workshop developments. These types of building can contribute successfully to the Council's commitment to see as much energy generated in the County from renewable sources as is used in total. Given the larger space that will need to be supplied with energy, energy conservation and generation measures will be important in keeping energy costs down in such buildings. Further these buildings can act as focal points and examples to the community in which they are situated of the benefits that can come from including such measures in design solutions. Given the larger footprint of these buildings, including associated amenities such as car parks, it is especially important that these types of development address the impacts of climate change through incorporating appropriate measure to deal with rainwater. Such buildings can also act as catalysts for community heating schemes.

**Development Type F)
Buildings >1000sqm**

The European Directive on the performance of buildings has been transposed into Britain through amending part L of the building regulations. Buildings of larger than 1000sqm must therefore meet building regulations part L and provide detailed information on the energy performance of the building. Such developments tend to create high travel demands particularly in rural areas and so it is important that this energy use is offset by comprehensive travel plans and energy efficiency and generation measures. Such developments are likely to have large façades lending themselves to capturing energy from the sun. Large internal spaces in this type of development will need to be comfortably heated and so passive solar gain is very important in reducing energy costs. Further, the size and nature of these developments means there are often opportunities for linking energy generation benefits with the surrounding community/ buildings. Given the larger footprint of these buildings, including associated amenities such as car parks, it is important that these types of development address the impacts of climate change through incorporating appropriate measures to deal with rainwater. In Powys such large buildings are generally away from residential properties and where this is the case the building design can afford to be more innovative in terms of design, although still within the parameters of the site's context.

7 Matrix of appropriate energy efficient measures against development types

7.1 The matrix below must be used by those preparing planning applications; it will be used as a checklist by planning officers in scrutinising development proposals and design statements.

Key:

- R** Required, compulsory where practicable – Planning applications not incorporating these technologies will be refused unless the non-incorporation is fully justified in the design statement.
- I** Investigate, these measures should be included where investigations show that such measures are practicable, fit with the site context and are appropriate to the integrated design solution.
- N** Not considered necessary for an application to investigate or include this measure.

Development types (See section 6 above)

- A** Essential Rural Workers dwellings in the open countryside, rural building conversions outside development limits, isolated building redevelopment, affordable housing for local needs in rural settlements
- B** Small sites / redevelopments of <5 inside development limits and rural exception schemes of <5
- C** Allocated / windfall / redevelopment and exceptions sites of 5 or more dwellings
- D** Householder applications
- E** Non residential buildings development / redevelopment <1000sqm
- F** Buildings >1000sqm

| Measure | Development type | | | | | |
|---|------------------|---|---|---|---|---|
| | A | B | C | D | E | F |
| Site layout and orientation, passive solar design & water management (Water Management considered in separate IDCG). | R | R | R | R | R | R |
| Solar Thermal Systems (Solar Hot Water) | R | R | R | R | R | R |
| Green Roofs | I | I | I | I | I | I |
| Community Heating / Heat and Power | N | N | I | N | I | I |
| Biomass Fuel | I | I | I | I | I | I |
| Solar Electric | I | I | I | I | I | I |
| Micro Hydro Power | I | I | I | I | I | I |
| Heat Pump Technology | I | I | I | I | I | I |
| Micro Combined Heat and Power | I | I | I | N | I | I |
| Small Scale Wind Energy | I | I | I | I | I | I |
| 5% Recycled Materials | I | I | I | I | I | I |

8 Monitoring

8.1 Section 7.1 of Technical Advice Note 8 (July 2005) states that 'Local planning authorities should ensure that they monitor the deployment of renewable energy technologies'. Local planning authorities must:

- Maintain data on developments, which have been completed over the previous year
- Maintain information on developments, which have the benefit of current full planning permission

8.2 This information will be maintained on a County wide development register, it will be the responsibility of planning officers to ensure that the relevant information in terms of the deployment of renewable energy technologies is extracted from the design statement / detailed plans and inputted on to the development register once full planning permission for a development is granted. It will also be the responsibility of planning officers to update the register to note any full planning permissions which lapse.

8.3 It will be the responsibility of Building Control to monitor completions and enter on to the development register when the development (subject of a full planning permission be it one unit or twenty units) has been completed.

8.4 The information will enable the Council to ascertain the benefits added to energy conservation and generation through the planning process in Powys. This will be helpful not only in reviewing this IDCG and preparing the Local Development Plan, but in identifying trends.

Appendix A

There are many websites and sources of information providing best practice and technical advice on the incorporation and performance of new and developing technologies and measures.

In arriving at balanced recommendations / delegated decisions development control offices will have regard to the following web sites. This is a selection of best practice internet sources of information.

For free and impartial advice about domestic energy efficiency contact the Energy Efficiency Advice Centre on 0800 512 012

The Energy Savings Trust – Guidelines on housing.

- <http://www.est.org.uk>
- <http://www.est.org.uk/housingbuildings/professionals/>

The following documents from the Energy savings trust are of particular help.

- Renewable energy sources in rural environments (CE70)
- Best practice in new housing (CE95)
- Building your own energy efficient house (CE123)
- Passive solar estate layout (GIR27) (Attached at Appendix B)
- Renewable energy factsheet 3, solar water heating (Attached at appendix B)
- Meeting the 10% target for renewable energy in housing (CE190) (Attached at appendix B)

The Carbon Trust – Guidelines on large buildings.

- <http://www.carbontrust.co.uk/>

General Guidance and latest research in Wales

- <http://www.energysavingwales.org.uk>
- <http://www.planningrenewables.org.uk>
- <http://www.naseg.co.uk>

Guidance on Sustainable Urban Drainage Systems / water conservation

- <http://www.environment-agency.gov.uk>

Guidance on Materials

- <http://www.ecoconstruction.org>
- www.wrap.org.uk

BRE Environmental Assessment Method

- www.breeam.org/

Planning Considerations, The Planning Portal

- <http://www.planningportal.gov.uk>

Flintshire County Council – Local Planning Guidance Note: Energy Conservation and Renewable Energy for Householders and Small Businesses.

Examples of the Guidance contained on the Energy Savings Trust website on two issues, solar design and solar water heating are appended.