Energy and Development

Supplementary Planning Document

Adopted March 2007

Prepared jointly by Daventry District Council and South Northamptonshire Council
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Part 1

Saving Energy
1. **Introduction**

1.1 This document has been prepared by Daventry District Council and South Northamptonshire Council.

1.2 It provides you with advice and guidance on ways in which development can be more energy efficient and maximise the use of renewable energy.

1.3 Both Councils consider the issues of Energy Efficiency and Renewable Energy to be vital in reducing our impact on the environment and contributing towards a healthier planet.

1.4 This document:

- Can be applied to all types of building, from residential to large-scale commercial and industrial developments
- Is divided into 3 Parts:
  - **Part 1 Saving Energy**: explains why everyone’s use of energy is so important and indicates how energy can be saved. It also indicates to developers what sort of energy saving devices they should be installing in their new developments
  - **Part 2 Sources of Renewable Energy**: provides advice on what renewable energy technologies are available, and how they can be incorporated into, and benefit new and existing buildings
  - **Part 3 Planning and Energy**: sets out planning issues

**Who is it for?**

1.5 The document should be used by those intending to undertake new development, large or small, refurbishment of existing buildings, including the conversion and/or extension of existing buildings to accommodate new activities, and the improvement of existing buildings relating to energy matters.

1.6 It also informs the general public and any third parties such as neighbours, who may be affected by new proposals. The guidance will be used when assessing planning applications for new development and changes of use and for building operations affecting existing buildings.

1.7 **Planning Context**

This Supplementary Planning Document (SPD) will form part of the Local Development Framework for both Daventry District and South Northamptonshire Councils. However, the SPD lies within a broader planning policy framework, which includes for example Government guidance in PPS 22: Planning for Renewable Energy (Aug. 04) PPS1 Supplement Planning and Climate Change (Consultation Draft) (DCLG, Dec. 06); PPS3 Housing (DCLG November 2006); Code for Sustainable Homes (DCLG, Dec. 06); Building a Greener Future: Towards Zero Carbon Development (Consultation Draft) (DCLG, Dec. 06); the Regional Spatial Strategy for the East Midlands 8 (March 2005) (currently under review); and the Northamptonshire County Structure Plan (March 2001). It should be noted that the Daventry District Local Plan (Adopted June 1997) and the South Northamptonshire Local Plan (Adopted October 1997) do not contain an energy
policy. This SPD will therefore supplement the saved policies of the Northamptonshire County Structure Plan namely GS5 and EN1. Developers shall refer to section 5 of this SPD for specific energy requirements. Appendix B contains brief details about the planning policy context.

Planning Permission/ Listed Building Consent and Building Regulations

1.8 It is always advisable to contact your local Council before considering making any changes to any type of building. Careful consideration will need to be given to the siting, visual amenity impact and other planning matters relating to renewable energy installations. Planners and building control officers can provide helpful advice and tell you if you will require any permission, consents and/or approvals before work can go ahead. This includes advice relating to Scheduled Ancient Monuments. Officers will give an indication of the issues, which will need addressing. Contact details are provided in Appendix C.

Information in this SPD

1.9 The information contained within this document is believed to be correct at the time of writing. However, it is acknowledged that prices, factual and technical information on this subject are constantly changing and this should be born in mind by the reader. The authors would particularly like to acknowledge the Energy Savings Trust, whose research and information has been invaluable in the preparation of this SPD.

Consultation Process

1.10 The Consultation Draft Supplementary Planning Document was consulted upon for a 6 week period until Friday 12th January 2007. The Consultation was in accordance with the Councils’ Statements of Community Involvement. The document was approved by both authorities in March 2007 (DDC adopted it on 1 March and SNC on 27 March 2007). A copy of the SNC Delegated Authority Adoption Statement is contained in Appendix A. A copy of the report of consultation is available on the Councils’ respective websites (see Appendix C).

1.11 Monitoring

- The SPD will be monitored on an annual basis, by both authorities, as part of their Annual Monitoring Reports;

- The process of the control of development through planning applications, application for approval of reserved matters and controls on the use of materials secured by planning condition, will assist with monitoring, along with the submission of relevant accompanying Statements.

1.12 For Further Copies and Information

If you require additional copies or further information about this SPD, please contact Daventry District Council or South Northamptonshire Council (see Appendix C).
2. **Energy: Why worry about it?**

2.1 Your use of energy impacts upon the environment. Have you ever thought about where your energy comes from, what process it goes through before it gets to you, or what the after effects may be once it has been used? All energy use whatever the source or however it gets to you produces greenhouse gas emissions, carbon dioxide being of key significance.

2.2 At a very local level our energy use impacts upon the local area through the need for new developments of electricity sub-stations, power stations and gas pipelines etc.

2.3 During the last 150 years, people have increasingly relied upon fossil fuels like oil, gas and coal. Fossil fuels are finite resources formed slowly compared to the rate of energy used. The burning of them also releases carbon dioxide (CO$_2$).

2.4 Carbon dioxide is the most common ‘Greenhouse Gas’, which is widely accepted as being a key contributor to climate change. In just 200 years, the amount of carbon dioxide in the atmosphere has increased by 30 per cent with concentrations of all greenhouse gases being higher now than at any point in the past 800,000 years.

2.5 The more energy each of us uses, whether heating our home, driving our car or at work, the more carbon dioxide we generate and add to the greenhouse effect and climate change. Most people are now well aware of the implications and evidence of climate change, which are increasingly apparent, such as rising temperatures and more frequent storms, which affect people’s health, crop production, rising sea levels and increase flood risk.

2.6 The following provides some examples of climate change:

- The ten warmest years on record have all been since 1990. Six of the ten warmest years on record in the UK were between 1995 and 2004
- In Europe, the August 2003 heatwave was probably the hottest for at least 500 Years
- During August 2003, the hottest temperature ever recorded in the UK was taken in Brogdale in Kent. It was 38.5°C
- Between 4 and 13 August 2003, over 2,000 people in the UK died as a result of the heat
- The autumn and winter floods in 2000 in the UK were the worst for 270 years in some areas. Flooding on farmland cost the farming industry nearly £500 million. (Facts Source: Defra website)
2.7 The diagram below provides a scenario of the expected change in the East Midlands annual average daily temperature to the 2080s.

2.8 The “Greenhouse Effect” is the build up of gases, such as carbon dioxide, in the atmosphere which creates a blanket around the Earth – the atmosphere acts like the glass walls of a greenhouse, which allows the sun’s rays to enter but keeps the heat in causing a gradual rise in the temperature “The Greenhouse Effect”. This is highlighted in the diagram on the next page.

The River Nene flooding in Northampton in 1998  (Source: Northampton Chronicle & Echo)
2.8 The need to address this issue has been recognised by governments around the world and agreements have been reached to limit the amount of harmful gases released into the atmosphere. The Kyoto Protocol calls for a 12.5% reduction in harmful gases worldwide between 2008-2012.

2.9 The Government has committed itself to meet this target of reducing greenhouse gases. To assist with this, the Government has produced the UK Climate Change Programme, which provides a framework for reducing emissions.

2.10 The principle means of achieving these reductions are through improved energy efficiency and increasing the proportion of renewable energy. The greater use of renewable energy is also identified in the Government’s Energy White Paper (February 2003, DTI). In addition these should be accompanied by a change in production and consumption patterns.

2.11 This SPD now goes on to provide information and guidance on how you and your development can be more energy efficient and incorporate renewable energy to help create a healthier planet.
3. **Your Guide to Energy Efficiency**

3.1 This section highlights ways to be more energy efficient. It also includes money saving measures, indicated by £££; facts about energy indicated by E Facts and advice highlighted by ASK.

### What is energy efficiency?

3.2 Energy efficiency is making the best use of energy or in other words improving how you use fuel.

3.3 By being more efficient you will

- reduce your impact on the environment
- reduce the amount of fuel you use
- reduce your energy bills

3.4 By being more efficient with your use of energy you will help the environment by

- reducing carbon emissions and their effect on global warming
- reducing the amount of new equipment and buildings required to produce energy and their impact on the environment through their production and location
- improving air quality through reducing emissions
- conserving resources

### Be more energy efficient

3.5 This is not as difficult as it may sound. Very simple things will make a real difference. The following picture illustrates just some ways in which you may already be wasting energy. Although this illustration shows a house, the same losses will apply to all buildings. So what can you do?

**Where are you wasting energy?**

1. **Roof** - 25%
2. **Walls** - 35%
3. **Windows** - 10%
4. **Draughts** - 15%
5. **Floors** - 15%
7 Steps to being more energy efficient

3.5 The best way to reduce energy costs and the production of CO$_2$ is to be more energy efficient. This applies to all types of buildings, new or old and whatever their use.

**Step 1 Turn Off**
Save energy by turning things off, such as lighting that is not needed and do not leave things on standby, such as televisions, computers and mobile phone chargers.

**Step 2 Low Energy Appliances**
Any new developments shall ensure that all boilers and appliances designed in are provided to “A-rated” standard. When buying new appliances only purchase replacements when it is absolutely necessary. When you do buy a new appliance or replace a central heating boiler, get one which has a low energy consumption i.e Energy Rating “A” under the EU Energy Efficiency Labelling Scheme is the best. New boilers are generally more efficient than older models with condensing boilers being the most efficient.

£££ A-rated appliances save in the region of £20 to £40 per appliance per year

**E-Fact** New “A-rated” boilers improve energy efficiency by between 20 and 30%

**Step 3 Lights**
Low energy lightbulbs can be used in most places, but give the best returns where lights are kept on for long periods. Think about fitting light sensors. Light sensors work well in existing buildings or can be incorporated in to the design of new ones. They are especially useful if the building is used/shared by a lot of people, for example an office, community or commercial building etc. Meanwhile, security lighting is important to reduce crime and fear of crime, however lighting levels for security should be kept to the minimum necessary. Passive Infrared detectors (PIR) are recommended for external lighting for dwellings.

£££ Low energy light bulbs use about 75% less electricity than a conventional bulb and can last 10 times longer

**E-Fact** Lights can account for 25% of your electricity bill

**Step 4 Hot Water and Heating**

**Timeswitches and Thermostats**
Different thermostats can be used to control different areas of a building e.g for dwellings you might have different thermostats for living rooms and bedrooms. A thermostat that has different settings for night and daytime can also reduce energy consumption, while **thermostatic radiator valves** can be used to set temperatures in individual rooms. Thermostats should be positioned within buildings so that
they are accessible to the occupants, however, thermostats should not be installed in the same room as a fire or a cooker, because heat from these can switch off the thermostat and the heating in the rest of the house.

£££ and E Fact  Reducing the thermostat by 1°C can cut up to 10% off your bills

Conservatories
Heating these will use relatively large amounts of energy. While a conservatory has the advantage of heating up on sunny days, it will cool down at other times. At night and in the winter the doors between the conservatory and the house should be closed to reduce heat loss. If more living space is required, a traditional built extension will cost more, but will be cheaper to run and will provide a more adaptable and comfortable living space.

Sheds and greenhouses
Heating these will also use relatively large amounts of energy and is not recommended, unless you are running a commercial business. You should look to locate these structures in the warmest location within your plot to make use of the natural heat and light from the sun.

Step 5  Draught Proof and Insulate

Check that your building is draught proof. High quality draught proofing will reduce or eliminate gaps around doors, windows, skirting boards and between ceilings and walls. This should be supplemented by the use of sealing materials. Door closers i.e spring systems fitted to doors, can reduce draughts throughout the house and between different parts that have different temperatures by ensuring doors automatically shut. However, door closers should not be fitted to doors in Listed Buildings.

You can also insulate hot water tanks and pipes between the boiler and hot water tank. Hot water tank jackets should be at least 75mm thick. Reflective panels can also be fitted behind radiators to reflect heat inwards and avoid it being transmitted to the outside of the building.

Loft insulation can be provided in roofspaces. A variety of insulating materials can be used. A new insulating material now available on the market is sheep’s wool. Wool can be installed without gloves or protective clothing as it is not irritating to the skin, eyes or respiratory tract and causes no discomfort during installation. At the end of its useful life, wool can be recycled and contains no permethrin, pyrethroids, pesticides or formaldehydes.

Houses with cavity walls can have insulating materials injected into them. The thickness of the wall indicates if it is a cavity wall. The wall is usually 30 centimetres (11 to 12 inches) thick, if it has a cavity wall, while a solid wall is usually 22 centimetres (9 inches) thick. Solid walls can have insulating material applied to the outside or to the inner surfaces (see ASK section).

Applying insulation to the external faces of the outer walls has the advantage of insulating the walls from the variations of cold and hot weather. This increases the thermal mass within the insulating envelope, which helps to provide more stable
temperatures inside the building. Exterior insulating materials will help to keep the walls dry which is a big advantage with solid brick walls. Consideration will have to be given to the changes external insulation makes to the appearance of the building.

£££ Insulation costs for hot water tanks and pipes can be as little as £20 or £30 and can be recovered in less than a year.

Loft insulation costs range between £100 and £250 and can be recovered in 2 to 6 years. The price of wool insulation is estimated at £200.

Cavity wall insulation can save between £75 and £150 per year depending on the form of construction, and payback can be achieved in as little as 2 years, although it is rather longer for external cladding.

E-Facts If every UK household fitted a jacket on their hot water tank tomorrow, we’d save over £95 million of energy every year.

The amount of heat lost in homes annually through roofs and walls is enough to heat around three million homes for a year.

Wool uses only 14% of the energy that is used to manufacture glass fibre insulation, therefore paying back its manufacturing energy cost seven times faster than glass fibre.

ASK You should check with the Council’s Planning Team about requirements relating to wall insulation.

Step 6 Ventilation and Windows

Natural ventilation involves no energy use and no costs and is very effective. Without natural ventilation, buildings can suffer from condensation. Adequate ventilation is also important for safety reasons when designing in/fitting new gas appliances.

Air conditioning uses relatively large amounts of energy and should be avoided (unless it can be run off a solar photovoltaic source).

Poorly fitted or single-glazed windows can be a big source of energy loss and draughts. Newer buildings will have been built with double glazed units having reflective treatments and inert gas between the panes. Replacement windows can reduce draughts and improve insulation.

£££ Double-glazing can cut heating bills by £80 to £100.

E-Fact Double-glazing cuts heat loss through windows by 50%.

ASK If you are planning to introduce artificial means of ventilation like flues, vents or pipes in to a listed building, you should first contact the Council’s Planning Team. This is because these changes may require listed building consent.

Before replacing windows, or installing secondary glazing, advice should be sought from the Council’s Planning Team to check that works are acceptable and that any relevant permission or consents are obtained e.g listed building consent. If work to historic
buildings has been approved by the Council, you should employ specialists to undertake the work.

**Step 7  Green Electricity Tariffs**

The electricity network is supplied with energy from many power stations, mostly fossil fuelled. However, some smaller renewable energy plants are supplying electricity to the grid. Green electricity is therefore being provided from renewable sources and a number of energy companies are offering green tariffs.

The company is obliged to source an amount equal to some or all of the electricity you consume from renewable sources e.g wind farms. Electricity is supplied to your home in the same way as it would be for fossil fuels.

£££  The cost of green tariffs varies - some energy suppliers will charge you the same as the fossil fuel power tariff, whilst others will charge you a few pounds more per month than a fossil fuel tariff.

**ASK**  Check with energy companies about green tariffs, as the electricity market is changing rapidly as are tariffs and pricing structures.
Part 2
Sources of Renewable Energy
4. Renewable Energy

4.1 Renewable energy comprises those energy sources that are not destroyed when energy is used. Uses of wind, water and solar power, for example are already widespread. They are distinct from fossil fuels e.g oil, coal etc, which must be burned to release energy. The following section provides information about the main different renewable energy options.

4.2 To assist you with references made in this section to kilowatts (kW) - 1kW will power an electrical kettle for about 30 or 40 minutes.

4.3 If you would like further details about the current grants available for these technologies, please contact your Council’s Home Energy Conservation Officer (Appendix C). You are reminded that grants are a separate issue to the need for you to obtain the necessary planning and/or listed building consents for any works i.e approval of a grant does not mean that works will be acceptable for the purposes of planning or building control.

Solar Hot Water

4.4 Solar hot water heating systems (also referred to as solar thermal systems) comprise of a number of solar panels (collectors), which use energy from the sun to heat hot water.

4.5 For domestic hot water systems, there are three main components: solar panels fitted to the roof, a heat transfer system, and a hot water cylinder. The solar panels collect heat from the sun's radiation. The heat transfer system uses the collected heat to heat the water. A hot water cylinder stores the hot water that is heated during the day and supplies it for use later. Solar hot water systems in domestic properties can provide all of the required hot water needs during the summer months and about 50% for the rest of the year.

4.6 There are different types of systems and selection of a particular system will depend on the direction the roof faces. Ideally they should be on south facing roofs or on roofs within 30 degrees of south receiving direct sunlight for the main part of the day. You should contact the Conservation Officer for advice on suitability within Conservation Areas and Listed Buildings. Your building should also have space to locate an additional water cylinder if required, or your existing water cylinder could be changed depending on the system.

Cost and maintenance

4.7 The typical installation cost for a domestic flat plate collector system is £2,000 - £4,000. Costs vary due to factors like size of collector, roof type, type of existing hot water system and geographic location. Evacuated tube systems cost £3,500 - £4,500.

4.8 Solar hot water systems generally come with a 10 year warranty and require very little maintenance. A yearly check by the householder and a more detailed check by a professional installer every 3-5 years should be sufficient.

Solar Photovoltaic

4.9 Solar photovoltaic (PV) uses energy from the sun to create electricity to run appliances and lighting. PV systems use cells to convert solar radiation into electricity. The PV cell
consists of one or two layers of a semi-conducting material, usually silicon. When light shines on the cell it creates an electric field across the layers, causing electricity to flow. The more intense the light, the greater the flow of electricity. PV requires only daylight rather than direct sunlight to generate electricity.

4.10 PV panels come in a variety of shapes and colours, ranging from grey ‘solar tiles’ that look like roof tiles, to panels and transparent cells that you can use on conservatories and glass to provide shading as well as generating electricity.

4.11 PV systems are suitable for roofs as well as walls that face within 90 degrees of south, as long as no other buildings or large trees overshadow. If the roof surface is in shadow for parts of the day, the output of the system decreases.

4.12 Solar panels are not light in weight and the roof must be strong enough to take them, especially if the panel is placed on top of existing tiles.

Cost and maintenance
4.13 Prices for PV systems vary, depending on the size of the system to be installed, type of PV cell used and the nature of the actual building on which the PV is mounted. The size of the system is dictated by the amount of electricity required.

4.14 For the average domestic system, costs are approximately £9,000. Solar tiles cost more than conventional panels. Panels that are integrated into a roof are more expensive than those that sit on top. If you intend to have major roof repairs carried out it may be worth exploring PV tiles as the cost of normal roof tiles can be used to offset the expense of the PV tiles.

4.15 Grid connected systems require very little maintenance, generally limited to ensuring that the panels are kept relatively clean and that shade from trees has not become a problem. The wiring and components of the system should however be checked regularly by a qualified technician.

4.16 Stand-alone systems, i.e. those not connected to the grid, need maintenance on other system components, such as batteries.

Wind Turbines
4.17 Wind turbines convert the power of wind into electricity. Turbines can be large or small scale i.e the latter can be fitted to domestic properties. The wind’s lift forces are used to turn aerodynamic blades that turn a rotor creating electricity. Wind power is proportional to the wind speed cubed, so relatively minor increases in speed result in large changes in potential output.

4.18 Wind speed is important, 3.5 metres per second and above is most suitable. Wind speed increases with height so it is best to have the turbine high on a mast or tower. The ideal siting is a smooth-top hill with a flat, clear exposure, free from excessive turbulence and obstructions such as large trees, houses or other buildings. Turbines should also not be sited so that they interrupt television and radio signals received locally or beyond.

4.19 Stand-alone or grid-connected system? Small-scale wind power is particularly suitable for remote off-grid locations where conventional methods of supply are expensive or impractical. Most small wind turbines generate direct current (DC) electricity. Off-grid
systems require battery storage and an inverter to convert DC electricity to AC (alternating current - mains electricity). You also need a controller to divert power to another useful source (e.g. space and/or water heaters) when the battery is fully charged. It is common to combine this system with a diesel generator for use during periods of low wind speeds.

4.20 A combined wind and diesel system gives greater efficiency and flexibility than a diesel only system. It allows the generator to be used at optimum load for short periods of time to charge batteries when there is little wind, rather than by constant use at varying loads.

4.21 Wind systems can also be installed where there is a grid connection. A special inverter and controller converts DC electricity to AC at a quality and standard acceptable to the grid. No battery storage is required. Any unused or excess electricity can be exported to the grid and sold to the local electricity supply company.

Cost and maintenance

4.22 Systems up to 1kW will cost around £3000. Larger systems in the region of 1.5kW to 6kW cost between £4,000 - £18,000 installed.

4.23 These costs are inclusive of the turbine, mast, inverters, battery storage (if required) and installation, however it is important to remember that costs always vary depending on location and the size and type of system.

4.24 Turbines can have a life of up to 20 years, but require service checks every few years to ensure they work efficiently. For battery storage systems, typical battery life is around 6-10 years.

Ground Source Heat Pumps (GSHP)

4.25 Although we may not know it, heat pumps are very familiar to us - fridges and air conditioners are two examples of these. GSHP transfer heat from the ground into a building to provide space heating and, in some cases, to pre-heat domestic hot water.

4.26 For every unit of electricity used to pump the heat, 3-4 units of heat are produced.

4.27 As well as ground source heat pumps, air source and water source heat pumps are also available.

4.28 There are three important elements to a GSHP:

1) The ground loop. This is comprised of lengths of pipe buried in the ground. The pipe is usually a closed circuit and is filled with a mixture of water and antifreeze, which is pumped round the pipe absorbing heat from the ground.
The ground loop can be 1 of 3 types:
1) borehole;
2) straight horizontal - trench costs less than a borehole, but needs more land area;
3) spiral horizontal (or 'Slinky coil') - needs a trench of about 10m length to provide about 1kW of heating load.

2) A heat pump. This has three main parts:

- the evaporator - takes the heat from the water in the ground loop;
- the compressor - moves the refrigerant round the heat pump and compresses the gaseous refrigerant to the temperature needed for the heat distribution circuit;
- the condenser - gives up heat to a hot water tank which feeds the distribution system.

3) Heat distribution system. Consisting of under floor heating or radiators for space heating and in some cases water storage for hot water supply.

Cost and maintenance

4.29 Installation: A typical 8kW system costs £6,400-£9,600. This can vary with property and location.

Running costs: The efficiency of a GSHP system is measured by the coefficient of performance (CoP). This is the ratio of units of heat output for each unit of electricity used to drive the compressor and pump for the ground loop. Typical CoPs range from 2.5 to 4. The higher end of this range is for under-floor heating, because it works at a lower temperature (30-35ºC) than radiators.

4.30 What to keep in mind when considering a ground source heat pump:
- The type of heat distribution system. GSHPs can be combined with radiators but under-floor heating is better as it works at a lower temperature.
- Is there space available for a trench or borehole to accommodate a ground loop?
- Is the ground suitable for digging a trench or borehole?
- What fuel is being replaced? If it is electricity, oil, gas or any other conventional fossil fuel the payback will be more favourable. Heat pumps are a good option where gas is unavailable.
- Want to be 100% renewable? Buy green electricity, or install solar PV or some other form of renewable electricity generating system to power the compressor and pump.
- Is there also a cooling requirement?
- What auxiliary heating will you use?
- Is the system for a new building development? Combining the installation with other building works can reduce costs.

Air Source Heat Pumps

4.31 Electric air-source heat pumps (ASHP) use the difference between outdoor air temperatures and indoor air temperatures to heat your home.

4.32 A heat pump is designed to move heat from one place to another. Even at very low temperatures a heat pump is able to extract heat from outside air to use in heating your home i.e it can extract heat from the air at temperatures as low as minus 15º C. The
coils filled with refrigerant gas absorb heat from the outside air and compress it to create more energy, which can raise the temperature to 75°C.

4.33 An air source heat pump typically runs at slightly lower efficiency (CoP) values than a ground source heat pump. However, their major advantage is the fact that you do not require any outside space in which to install one. An air source heat pump is simply attached to the outside of the building, which is ideal for apartment developments. This significantly reduces the installation costs when compared with a ground source heat pump.

Cost and maintenance
4.34 An ASHP typically costs about £3,500 (6kW) and £6,000 (12kW), excluding the distribution system i.e radiators.

Biomass
4.35 Biomass is organic matter either directly from plants or indirectly from industrial, commercial, domestic or agricultural products. It is often called 'bioenergy' or 'biofuel'. Biofuels fall into two main categories:
- Woody biomass includes forest products, untreated wood products, energy crops, short rotation coppice (SRC) e.g willow
- Non-woody biomass includes animal waste, industrial and biodegradable municipal products from food processing and high energy crops e.g rape, sugar cane, maize

4.36 It does not include fossil fuels and the CO₂ released when energy is generated from biomass is balanced by that absorbed during the fuel's production. This is therefore a carbon neutral process.

4.37 There are two main ways of using biomass to heat a domestic property:
- Stand-alone stoves providing heating for a room. These can be fuelled by logs or pellets but only pellets are suitable for automatic feed. Generally they are 6-12 kW in output, and some models can be fitted with a back boiler to provide water heating.
- Boilers connected to central heating and hot water systems. These are suitable for pellets, logs or chips, and are generally larger than 15 kW.

4.38 Stoves can be 80% efficient. Many wood burning stoves act as space heaters only. But the higher output versions can be fitted with an integral back boiler to provide domestic hot water and central heating through radiators, if needed. They also add aesthetic value in the living area of the house itself. However, care should be taken with wood, which can release pollutants into the atmosphere when poor burning techniques are used. The hazards include smoke and carbon monoxide. Further details about this can be found at www.nef.org.uk/logpile/woodfuel/emissions.htm

4.39 Biomass can also be used to heat non-domestic buildings.

4.40 There are many domestic and commercial log, wood-chip and wood pellet burning central heating boilers available. Some log boilers must be loaded by hand and may be unsuitable for some situations. Automatic log, pellet and wood-chip systems can be more expensive. Many boilers will dual-fire both wood chips and pellets, although the wood chip boilers need larger hoppers to provide the same time interval between refuelling.
4.41 You should consider the following issues if you are thinking about a biomass boiler or stove for your home.

4.42 Fuel: It is important to have storage space for the fuel, appropriate access to the boiler for loading and a local fuel supplier.

4.43 Flue: The vent material must be specifically designed for wood fuel appliances and there must be sufficient air movement for proper operation of the stove. Chimneys can be fitted with a lined flue.

4.44 Regulations: The installation must comply with all safety, building and planning regulations.

**Cost and maintenance**

4.45 Capital costs depend on the type and size of system you choose. But installation and commissioning costs tend to be fairly fixed. Stand alone room heaters generally cost £1,500 - £3,000 installed. The cost for boilers varies depending on the fuel choice; a typical 20kW (average size required for a three-bedroom semi-detached house) pellet boiler would cost around £5,000 installed, including the cost of the flue and commissioning. A manual log feed system of the same size would be slightly cheaper.

4.46 Running costs: Unlike other forms of renewable energy, biomass systems require you to pay for the fuel. Fuel costs generally depend on the distance from your supplier and the sustainability of both biomass supply and transportation are other issues for you to consider. As a general rule the running costs will be more favourable if you live in an area that does not have a gas supply.

4.47 Payback: This depends on the fuel being replaced and the type of wood fuel being used. It too is more favourable in areas that do not have a gas supply.

4.48 Local benefits: Producing energy from biomass has both environmental and economic advantages. It is most cost-effective when a local fuel source is used, which results in local investment and employment. Furthermore, biomass can contribute to waste management by harnessing energy from products that are often disposed of at landfill sites.

**Hydro**

4.49 Hydro-power systems convert potential energy stored in water held at height to kinetic energy (or the energy used in movement) to turn a turbine to produce electricity.

4.50 A micro hydro plant produces below 100kW. Improvements in small turbine and generator technology mean that micro hydro schemes are an attractive means of producing electricity.

4.51 Useful power may be produced from even a small stream. The likely range is from a few hundred watts (possibly for use with batteries) for domestic schemes, to a minimum 25kW for commercial schemes.

**Small scale hydro and your home**

4.52 Hydro power requires the source to be relatively close to where the power will be used, or to a suitable grid connection. Hydro systems can be connected to the main electricity
grid or as a part of a stand-alone (off-grid) power system. In a grid-connected system, any electricity generated but not used can be sold to electricity companies.

4.53 In an off-grid hydro system, electricity can be supplied directly to the devices powered or through a battery bank and inverter set up. A reservoir or back-up power system may be needed to compensate for seasonal variations in water flow.

4.54 Provided the resource is there, community hydro projects can also be a viable proposition.

4.55 Potentially, there are great benefits in clubbing together to increase buying power or sharing expertise - although the work involved should not be underestimated.

4.56 Energy available in a body of water depends on the water's flow rate (per second) and the height (or head) that the water falls. The scheme's actual output will depend on how efficiently it converts the power of the water into electrical power (maximum efficiencies of over 90% are possible but for small systems 50% is more realistic). Hydro-electric systems are generally divided into two categories, low and high head.

4.57 For houses with no mains connection but with access to a micro-hydro site, a good hydro system can generate a steady, more reliable electricity supply than other renewable technologies at a lower cost.

4.58 Total system costs can be high but often less than the cost of a grid connection and with no electricity bills to follow. It should be noted that in off-grid applications the power is used for lighting and electrical appliances. However space and water heating can be supplied when available power exceeds demand.

Cost and maintenance

4.59 Hydro costs are very site specific and are related to energy output. For low head systems (not including the civil works - so assuming there was an existing pond or weir), costs may be in the region of £4,000 per kW installed up to about 10kW and would drop per kW for larger schemes. For medium heads, there is a fixed cost of about £10,000 and then about £2,500 per kW up to around 10kW - so a typical 5kW domestic scheme might cost £20-£25,000. Unit costs drop for larger schemes.

Environmental impact

4.60 Turbines can have visual impact and produce some noise, but these can be mitigated relatively easily. The main issue will be to maintain the water's ecology by restricting the proportion of the total flow diverted through the turbine.

Energy From Waste

4.61 The Minerals and Waste Development Framework will provide the policy for waste issues. Developers are advised to refer to the Waste Local Plan (Adopted 6 March 2006, Northamptonshire County Council) and the emerging Minerals and Waste Development Framework at http://www.northamptonshire.gov.uk/Environment/Minerals/minerals_home.htm However, this SPD will just highlight some different technologies already available or under development in the waste sector. Whilst not a strictly renewable energy, energy from waste does make good use of a supply of waste material that will be available for the long term and fits in with waste strategies.
Wastes represent an increasingly important fuel source. Using wastes as fuel can have important environmental benefits. It can provide a safe and cost-effective disposal options for wastes that could otherwise present significant disposal problems.

A very wide range of municipal or industrial wastes may be used as fuel. The nature of the waste and the waste disposal method will determine the way that energy can be recovered. Dry household, commercial or industrial wastes can either be burned (combusted) as raw waste, or they may first undergo some sorting or processing to remove waste components that can be recycled separately.

Waste combustion with energy recovery is an established way to dispose of wastes. It decreases the volume of the waste and allows for recovery of metals and other potentially recyclable materials. After further basic treatment, most of the remaining residue can be combined with other materials and used as an aggregate material. Any residue that is landfilled is biologically inactive and does not generate potentially harmful emissions.

The heat recovered from waste plants can be used to generate electricity, or can be used for industrial heat applications. The size of energy from waste plant is designed to meet the waste disposal needs of the community, taking into account the potential for waste minimisation and recycling.

Where the waste stream is of a uniform nature, for example if it has been processed into a homogenous fuel, it may be better suited to the new more "advanced technologies", such as gasification or pyrolysis. Wastes that are not uniform in composition, for example municipal wastes, are less suited to treatment by advanced technology, although the technology is rapidly developing to handle more challenging wastes.

Gasification

Gasification is one of the newer technologies that is increasingly being used for waste disposal. It is a thermo-chemical process in which biomass is heated, in an oxygen deficient atmosphere to produce a low-energy gas containing hydrogen, carbon monoxide and methane. The gas can then be used as a fuel in a turbine or combustion engine to generate electricity. Gasifiers fuelled by fossil sources such as coal have been operating successfully for many years, but they are now increasingly being developed to accept more mixed fuels, including wastes. New gas clean-up technology ensures that the resulting gas is suitable to be burnt in a variety of gas engines, with very favourable emissions. Gasifiers operate at a smaller scale than incineration plant, and can also be provided in modular form to suit a range of different scales of operation. A number of British companies are leading in this emerging technology.

Pyrolysis

Pyrolysis is another emerging technology, sharing many of the characteristics of gasification. With gasification partial oxidation of the waste occurs, whilst with pyrolysis the objective is to heat the waste in the complete absence of oxygen. Gas, olefin liquid and char are produced in various quantities. The gas and oil can be processed, stored and transported, if necessary and combusted in an engine, gas turbine or boiler. Char can be recovered from the residue and used as a fuel, or the residue passed to a gasifier and the char gasified.

Strict environmental standards now apply in all European countries governing the emissions from energy from waste plant, particularly of heavy metals, furans and dioxins.
All energy from waste plant must now meet these standards, which can be achieved through the installation of extensive state-of-the-art gas cleaning systems.

**Landfill Gas**

4.70 A lot of waste we produce is disposed of in landfill sites. Each year the United Kingdom landfills 100 million tonnes of waste. When this waste decomposes over time, a lot of methane is given off. If left to accumulate in the atmosphere, this methane can contribute to global warming. However, it can be utilised to generate electricity by burning it. Although this releases carbon dioxide into the air, it is not as strong a greenhouse gas as methane. In fact, methane's global-warming potential is 21 times greater than that of carbon dioxide. Methane is also a danger underground - potentially migrating off site to nearby buildings and creating an explosive atmosphere. Landfill gas has to be dealt with to prevent both its emission to the atmosphere and its danger to surrounding property.

4.71 Landfill gas can be flared (the simplest option), converting the methane to CO\(^2\) but using it as an energy resource both displaces fossil fuel use and encourages more efficient collection, minimising emissions to the atmosphere. For this reason, energy recovery from landfill methane has considerable benefit to the environment: reducing global warming on two fronts.

4.72 Landfill gas is extracted from landfill using a series of wells and a flare system. This system diverts the gas to a central point where it can be processed and treated depending upon the ultimate use for the gas i.e either to be flared off or used to fuel a generator.

4.73 Particular management of the gas-fuelled engine in the generator system enables the impure and contaminated landfill gas to be used as a fuel. The damaging effects of the contaminants in the gas are minimised by adapting the engine's operation and adopting a tailored maintenance regime.

4.74 Landfill gas currently provides approximately 250 megawatts of electricity in the UK, about 21% of all electricity produced by renewable sources.
Part 3
Planning and Energy
5. **Planning Issues**

5.1 Developers or any one intending to install renewable energy systems shall take note of all planning issues and requirements raised in previous sections. The following section builds upon previous sections by providing a general guide to the requirements of planning. Chapter 3 has already highlighted some general planning advice under the heading of *ASK* in relation to energy efficiency issues.

5.2 Many renewable technologies can have an impact on individual buildings, neighbourhoods and the wider area, and may need planning permission, and/or listed building or conservation area consent. If you are thinking of installing any renewable energy technologies it is advisable to contact your Council’s Planning and Building Control Teams at an early stage before making any financial commitments. They will guide you through the requirements of the relevant legislation and assist you with achieving the best solution. Installing systems without the relevant consents may render you liable to enforcement action, which may require the removal of the installation in question.

5.3 This section is split into:

- Energy Efficiency: Planning a New Development
- Planning Guidance for Energy
- Energy Requirements for Developers
- Energy Statement
- Energy Information Pack

**Energy Efficiency: Planning a New Development**

5.4 New development can have a significant impact on energy use. By designing things in from the start, you can contribute to improving energy use. Developers are encouraged, subject to other planning considerations, to showcase innovative energy measures in development.

5.5 The impacts and use of energy in new developments are very diverse and it is therefore not the intention to go in to detail about every potential energy issue that new development may relate to. However, the following aspects have been highlighted briefly to at least recognise some of these, before moving on to consider some development issues in greater detail. When assessing planning applications the Council will take these into account along with other planning considerations including environmental impact.

5.6 In order to reduce energy use and reduce emissions from private transport, new development should, for example be designed with regard to access to public transport and local amenities and consider providing car free areas. They should incorporate safe and accessible pedestrian and cycle routes and cycle storage areas. Larger developments, such as new businesses and schools will also be required to provide a Travel Plan to highlight how they will achieve this. Further details about these may be obtained from Northamptonshire County Council which is developing its Transport Strategy for Growth (Appendix C). The sourcing and type of building materials used; construction methods; minimisation of waste and choice of fittings incorporated will also impact upon energy use.
5.7 The following section now provides a more detailed 5 step guide to planning new development with energy efficiency in mind.
5 Steps to planning your new development

Whatever the size of development you are considering, you should think about the following issues:

Do you need new development?
What kind of energy would be the most appropriate to power/heat the development?
The Site Location
The Building Layout and Orientation
The Building Design

Step 1  Do you need new development?

Before even contemplating new development, consider the current situation. If you have a current building, for example can it be improved? In terms of business premises, re-evaluating work processes can save energy, and reinvestment in plant and equipment can make savings reducing energy consumption. Such considerations should be taken into account when contemplating expansion or a move - it could save disruption and large expenses. Similar considerations e.g can it be improved? also apply to homes.

Step 2  What kind of energy would be the most appropriate to power/heat the development?

There are a variety of renewable energy options, which suit different locations. This chapter provides detailed information, which should assist you with making this choice. However, if the development is on a large scale, for example a new leisure centre, school/college, hospital, community centre, industrial area or large area-wide development, Combined Heat and Power (CHP) may be the best option. The feasibility of this option is currently being considered by Daventry District Council and the West Northamptonshire Development Corporation, as a possible energy source for the expanding Daventry Town.

CHP is not a strictly renewable technology, however it is a fuel-efficient technology, which through the burning of gas, coal, oil, biomass etc puts to use the by-product heat, which is normally lost through cooling systems. This improves the energy conversion from 60% to around 85%. Heat is distributed via a heat-exchanger and a circulating fluid and then used for hot water and heating. Energy usage ranges from 100kW to 6mW.

Cost and maintenance
Depends on output required. To be viable economically CHP plants require a relatively large and constant demand for heat. Greatest efficiency is achieved when CHP is used to serve a number of local buildings of different uses as part of a community (or district) heating scheme and wire scheme. Residential-only schemes are quite feasible and residents can benefit from lower heating/electricity costs and increased internal space through not having a gas boiler. Nevertheless, CHP will work most efficiently when supplying a mix of nearby residential and commercial buildings because of the diverse heating and electricity requirements throughout the day. Back up electricity supply is always available from the grid (and surplus electricity can be sold back to the grid).
Step 3  Site Location

When you plan a development do not just look at the prospective site itself, but consider the wider local area. Where are other buildings, trees and landscaping located in relation to what you propose? Do any of these impact upon your site creating, for example a wind tunnel effect, shading etc. Good siting ensures that buildings will maximise their energy efficiency and good design ensures that any impact issues can be minimised.

Step 4  Building Layout and Orientation

The orientation of buildings is a key design consideration. The way a building is situated in relation to the sun can have a significant effect on the energy the occupants consume.

Layouts should aim to be orientated towards the south.

Do not locate buildings so that they create wind tunnels.

Terraced development built in curves maximise warmth.

Depending on the site and area character, higher density and taller buildings should be placed on the northern side of developments to allow sunlight in to the development and to break up and reduce wind speeds for the rest of the development.

A wall, fence or dense planting to the north and east will help to shield buildings from the coldest winter winds.

Layouts should aim to avoid excessive overshadowing by buildings and trees.

However, existing trees should be protected and enhanced and new ones planted, as they convert the CO$_2$ to oxygen and can also reduce ambient air temperatures, as well as improving and providing wildlife habitats*. Where development results in a loss of trees, this shall be mitigated against by planting trees elsewhere on the site or off-site at a location to be agreed with the Council’s Planning Team.

It should be highlighted, however that energy efficient orientation may conflict with other layout design issues. These will need to be carefully considered.

Step 5  Building Design

Design a building with its well-used rooms, like living rooms or offices, to face between south-east and south-west as this can reduce energy requirements.

Locate less well-used rooms like garages, storage areas, utility rooms and bathrooms on the opposite side of the building i.e between north-east and north-west to conserve energy and reduce the impact of cold northerly winds.
Windows facing in a northerly direction should be smaller to reduce heat loss, while those facing in a southerly direction should be larger to maximise solar gain. Developers shall also ensure that all development fully considers and mitigates against any potential overheating, preferably using passive means, such as natural ventilation. The publication *Reducing overheating – a designers’ guide* *(Energy Savings Trust, March 2005)* provides useful design advice. Options might include, for example designing in awnings, external roller blinds, shutters etc.

Internal walls within buildings should be built using solid construction e.g heavy blockwork. This will increase the thermal mass within the insulated envelope conserving the heat inside the building. Timber is a sustainable material to use, however its heat retention properties are not as good as blockwork. There are also other innovative building materials such as straw, which you might wish to consider.

Green roofs or walls may also be appropriate. These consist of vegetation, often sedum plants, which act as an insulation barrier and also provide moderate temperatures in the building.

Building materials should be used efficiently and be sustainably procured e.g use wood from sustainable forests. Local materials should be used where possible to reduce vehicle miles and pollution, and recycled and salvaged materials should also be used, where feasible. Where any “waste” is produced during construction and/or clearance of a site, a re-use should be found on or off site, and if this is not possible every effort should be made to recycle.

* All developers are required to provide a net gain in habitats and/or species contained in the Northamptonshire Biodiversity Action Plan.
Planning Guidance for Energy

5.8 The following section provides a general guide to the types of planning requirements that you might expect for different types of energy. It is always advisable to contact your Council’s Planning Team for detailed advice prior to considering any energy options.

5.9 It should also be highlighted that renewable energy systems proposed to be incorporated/developed within garden areas or on outbuildings etc are also likely to require permission and/or consent, but again you should seek advice about this.

5.10 With all renewable energy technologies where planning permission is required, these will be assessed in accordance with relevant planning policies and planning issues such as visual impact, change to local amenity etc.

5.11 In addition it should be highlighted that whilst the Councils’ wish to promote the use of renewable energy, there may be cases where the preservation of buildings of historical and architectural merit will outweigh this.

5.12 Some general planning considerations

- Development should maintain and improve the quality of ground and surface water.

- Development should not be located in flood risk areas and should not increase high flood risk.

- Development should be compatible with the local geology/soil.

- Development shall enhance and respect the character and setting of historic, cultural and archaeological assets. Any subsequent removal of energy installations from development involving such assets shall ensure that the character of such assets is retained.

- Development shall respect landscape character. Developers are advised to refer to relevant planning policies and consider the Northamptonshire Environmental Character and Green Infrastructure Suite http://www.rnrpenvironmentalcharacter.org.uk/

- Where development results in a loss of trees, this shall be mitigated against by planting an equivalent number of trees elsewhere on or off-site at a location to be agreed with the Council’s Planning Team.

- Developers are required to provide a net gain in habitats and/or species contained in the Northamptonshire Biodiversity Action Plan. Where renewable energy systems have a negative impact on Northamptonshire Biodiversity Action Plan species, developers will be required to provide mitigation.

- Planning permission will normally be required for the incorporation of renewable energy development in non-domestic buildings e.g Retail, industrial etc

- Planning conditions will normally be set in relation to planning applications to require removal of energy installations e.g solar panels, turbines etc once their life has come to an end.

Energy & Development SPD Adopted March 2007
<table>
<thead>
<tr>
<th>Technology</th>
<th>Located Where?</th>
<th>Is Permission/ Consent Needed?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solar</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>On Listed Buildings</td>
<td>Planning Permission and Listed Building Consent needed</td>
</tr>
<tr>
<td></td>
<td>In Conservation Areas (non-Listed Building)</td>
<td>Planning Permission may be needed depending on factors involved e.g if visible from highway etc</td>
</tr>
<tr>
<td></td>
<td>On Flat Roof - when fixed permanently and not visible from street level</td>
<td>Normally Permitted Development depending on factors involved</td>
</tr>
<tr>
<td></td>
<td>Parallel to Exterior Walls &amp; Protruding less than 100 mm – when fixed permanently</td>
<td>Normally Permitted Development depending on factors involved</td>
</tr>
<tr>
<td></td>
<td>On Pitched Roofs of Permanent Buildings - when permanently fixed to roof and follow roof line, and do not protrude more than 100 mm above the line of the roof.</td>
<td>Normally Permitted Development depending on factors involved</td>
</tr>
<tr>
<td>Technology</td>
<td>Located Where?</td>
<td>Is Permission/ Consent Needed?</td>
</tr>
<tr>
<td>-------------------</td>
<td>---------------------------------------------</td>
<td>--------------------------------------------------------------------</td>
</tr>
<tr>
<td>Wind Turbines</td>
<td></td>
<td>Planning legislation is currently being developed to allow the use of small turbines in residential areas – however, this is not yet in place. Please consult the Council for the latest advice on this.</td>
</tr>
<tr>
<td></td>
<td>Small-scale on buildings</td>
<td>Planning Permission needed. Planning Permission and Listed Building Consent needed if it involves a Listed Building</td>
</tr>
<tr>
<td></td>
<td>Large scale wind turbines</td>
<td>Planning Permission needed. Environmental Impact Assessment may also be required</td>
</tr>
<tr>
<td>Heat Pumps</td>
<td>Ground Source Heat Pumps</td>
<td>Planning Permission needed. Planning Permission and Listed Building Consent needed if it involves a Listed Building</td>
</tr>
<tr>
<td></td>
<td>Air Source Heat Pumps</td>
<td>Planning Permission needed. Planning Permission and Listed Building Consent needed if it involves a Listed Building</td>
</tr>
<tr>
<td>Biomass *</td>
<td>Located within an Existing Building</td>
<td>Normally Permitted Development. Installation of a flue/ adaption of chimney must comply with Building Regulations and in the case of a Listed Building, may also require Listed Building Consent. An external flue may also need Planning Permission</td>
</tr>
<tr>
<td></td>
<td>New Commercial Biomass Plants</td>
<td>Planning Permission needed Environmental Impact Assessment may also be required</td>
</tr>
<tr>
<td>Technology</td>
<td>Located Where?</td>
<td>Is Permission/ Consent Needed?</td>
</tr>
<tr>
<td>------------</td>
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</tr>
<tr>
<td>CHP</td>
<td>Anywhere</td>
<td>Planning Permission needed</td>
</tr>
<tr>
<td>Hydro</td>
<td>Anywhere</td>
<td>Planning Permission needed. Also permission from Environment Agency normally required.</td>
</tr>
</tbody>
</table>

* It should also be highlighted that separate environmental legislation, such as the Clean Air Act 1993 may apply to biofuel proposals. You are advised to contact your Council's Environmental Health Team for advice (see Appendix C).
Energy Requirements for Developers

5.13 Developers are required to achieve the following:

- Residential development of 10 or more dwellings shall achieve Code Level 3* of the Code for Sustainable Homes (see Appendix D for Glossary/Definitions)

- Residential development of under 10 dwellings shall achieve Code Level 2 of the Code for Sustainable Homes (see Appendix D for Glossary/Definitions)

- All non-residential development over 1,000 square metres shall incorporate renewable energy equipment to provide at least 10% of predicted energy requirements**. This might include, for example solar voltaics, ground source heat pumps, wind turbines etc.

Where developers are unable to meet these targets, this must be justified within the Energy Statement, which will be stringently assessed as part of the application procedure.

To compensate for any loss in carbon savings, caused by an inability to meet the targets, Developers shall offset the loss by the equivalent amount that would have been otherwise saved. Details of how this is to be achieved should be provided in the Energy Statement.

It is recognised that at the time of writing this SPD, the Government is preparing a number of energy-related documents, including technical guidance on the Code for Sustainable Buildings; PPS1 Planning and Climate Change; Building a Greener Future: Towards Zero Carbon Development; Code of Best Practice for Offsetting etc. These documents may update the requirements above.

* To meet Code Level 3 a home is required to be 25% more energy efficient than one built to 2006 Building Regulations. In addition, Code Level 3 requires as a minimum standard that no more than 105 litres of water is used per person per day. Anglian Water advise that the current average water customer in the Anglian Region (both measured and unmeasured) uses 125 litres per person per day. To therefore save 20 litres/day would equate to approximately 35 pints of water. These two issues are considered to be realistically achievable by the relevant organisations.

** The Code only covers residential uses. The target for all other development has therefore been set based on the advice given in the PPS1 (Draft Supplement) (December 2006).

Energy Statement

5.14 The purpose of an Energy Statement is to show that the developer has considered the most appropriate ways to ensure that their scheme will be energy efficient. The Energy Statement shall accompany ALL Planning Applications for Outline and Full Planning Permission and shall assess the development as a whole. Planning Permission will not be granted for development unless an adequate Statement has been provided. The
Statement shall be presented as a clear sub-section within the Applicant’s Design Statement.

The **Energy Statement shall cover** the following:

1. A written submission stating in what ways (in detail) the proposed development will be energy efficient.

2. Details of any renewable energy measures to be incorporated in the development.

3. Details relating to para. 5.13 if applicable to the application.

**Energy Information Pack**

5.15 At the time of preparing this SPD, the Government are set to require a Home Information Pack to be provided by sellers from 1\textsuperscript{st} June 2007. Further details can be obtained from [http://www.homeinformationpacks.gov.uk/home.aspx](http://www.homeinformationpacks.gov.uk/home.aspx)

5.16 The Government are currently planning to include an Energy Performance Certificate (EPC) with this pack. Developers are advised that the Councils will apply the latest guidance, however in the interim period and until such time as the EPC becomes a requirement, all new development, no matter what size or use, should be accompanied by an Energy Information Pack. This shall specify the energy characteristics of the development and information about any renewable energy system(s) incorporated to assist prospective purchasers/lessees. It should also contain contacts for further energy advice information.
Appendices
Appendix A

The South Northamptonshire Delegated Authority Adoption Statement

SOUTH NORTHAMPTONSHIRE COUNCIL

PLANNING AND COMPULSORY PURCHASE ACT 2004
TOWN AND COUNTRY PLANNING (LOCAL DEVELOPMENT) (ENGLAND) REGULATIONS 2004
ENVIRONMENTAL ASSESSMENT OF PLANS AND PROGRAMMES REGULATIONS 2004

NOTICE OF ADOPTION OF ENERGY AND DEVELOPMENT
SUPPLEMENTARY PLANNING DOCUMENT

ADOPTION OF SUPPLEMENTARY PLANNING DOCUMENT
DELEGATED AUTHORITY

Energy and Development


Signed .................................................. Date ....27.03.07

Richard Fox
Head of Planning and Leisure

Delegated Powers granted at the Cabinet Meeting held on 13 April 2004, Minute 231
Appendix B

Planning Context

National

Climate change is arguably the greatest long term challenge facing the World today. The Government has set domestic targets to reduce carbon dioxide emissions to 20% less than 1990 levels by 2010. (PPS1 Draft Supplement paras.2 and 3 (DCLG, Dec.06)) The Stern Review: the Economics of Climate Change (HM Treasury, 30 October 2006) predicted that the costs of dealing with unchecked climate change could be as much as 20% of Global Gross Domestic Product compared with the cost of taking action at 1% of Global Gross Domestic Product. The Review states that there is still time to take action to avoid the worst impacts of climate change. "The investment that takes place in the next 10-20 years will have a profound effect on the climate in the second half of this century and in the next. Our actions now and over the coming decades could create risks of major disruption to economic and social activity, on a scale similar to those associated with the great wars and the economic depression of the first half of the 20th century. And it will be difficult or impossible to reverse these changes."

Under the Planning and Compulsory Purchase Act 2004 local authorities that draw up local development documents must contribute to the achievement of sustainable development and must have regard to national policies and advice contained in guidance issued by the Secretary of State (Section 39 of the Act). Councils therefore have a statutory duty to approach sustainability in a positive manner and to take on board Government advice unless there are compelling reasons to reject it.

The Government is committed to reducing emissions of greenhouse gases, including carbon dioxide, seen as the main cause of climate change. The UK emitted more than 150 million tons of carbon dioxide in 2004 with nearly half this coming from buildings (Building for a Greener Future, consultation, DCLG, December 2006). If the number of houses are built to meet the needs identified in the Barker Report by 2050 then one third of the housing stock will have been constructed between now and then. It is important therefore to build in such a way that it cuts carbon emissions. Also emissions will have to be cut from existing houses. The Government aims to seek to achieve this through the Code for Sustainable Homes and the Building Regulations and spatial planning is seen as having a pivotal and significant role. The intention is to achieve zero carbon houses by 2016 in stages. The first will be to have a 25% improvement energy and carbon performance in 2010, followed by a 44% improvement in 2013 finishing with zero carbon in 2016. Initially the Code will be voluntary, but is intended to become mandatory in April 2008.

To encourage the construction of zero carbon dwellings and the relevant technology, the Government is introducing time limited stamp duty concessions in 2007 for most zero carbon dwellings. Policies or measures in other areas include the Climate Change Levy, Climate Change Agreements, The Renewables Obligation and the Energy Efficiency Commitment. The Government states that it is possible to boost economic growth whilst reducing emissions. It points out that reducing emissions and fuel consumption will save money and is closely linked to reducing dependency on imported fuel supplies and energy security.

At the local level Councils will take every opportunity to reduce carbon emissions from buildings. It will closely follow Government advice and guidance and apply this whenever it is
reviewed and updated. It will seek the inclusion of energy efficiency measures and local low carbon generation in planning proposals. Developers should provide buildings which:

- are energy efficient (both heating and cooling)
- incorporate micro energy generation
- are adapted to climate change
- make the most of solar gain and shelter against cold winds
- include local low carbon decentralized energy generation
- minimize the number and length of journeys, especially by car
- avoid potential flooding or creating flooding
- provide for urban cooling

While seeking these objectives the Councils will aim to deliver early application of the higher levels of the Code for Sustainable Homes, especially where significant levels of housing provision are proposed. Large residential developments present opportunities for saving significant amounts of carbon emissions now. If these are lost the resulting development will contribute to climate change for generations to come. It would be irresponsible, given the information on climate change that is now available and Government guidance, to ignore measures that would secure a better future. The Councils will also seek the provision of low carbon and renewable sources of energy for residential and other developments, including those accommodating industrial and commercial activities.

[paras 1.11 and 1.13 PPS 1 Supplement]

[and para 32]

The need to minimise the use of energy, and to increase the proportion of energy used sourced from renewable sources is a key plank of government policy. Government published planning policy guidance in the form of PPS22 in 2005, accompanied by a good practice guidance note.

The importance that government attaches to renewable energy was re-emphasised in a written ministerial statement issued on 8th June 2006 by the Housing and Planning Minister. This statement emphasises the importance of local planning authorities taking full account of the positive approach to renewable energy set out in PPS22 at the earliest opportunity.

Regional

Regional Spatial Strategy for the East Midlands (March 2005)

Available at http://www.goem.gov.uk/goem/psc/suscom/rss/

Policy 40

Regional Priorities for Energy Reduction and Efficiency

Local authorities, energy generators and other agencies should promote:

- a reduction of energy usage at the regional level in line with the ‘energy hierarchy’; and
- the development of Combined Heat and Power (CHP) and district heating infrastructure necessary to achieve the regional target of 511 MWe by 2010 and 1120 MWe by 2020.

Development Plans and future Local Development Frameworks should:

- include policies and proposals to secure a reduction in the need for energy through the location of development, site layout and building design;
- safeguard sites for access to significant reserves of coal mine methane;
• identify suitable sites for CHP plants well related to existing or proposed development and encourage their provision in large scale schemes; and
• consider safeguarding former power station and colliery sites for energy generation.

Supplementary Planning Documents should be prepared where appropriate to explain how such policies will be implemented.

Policy 41
Regional Priorities for Renewable Energy
Development Plans and future Local Development Frameworks, should include policies to promote and encourage the delivery of the indicative targets for renewable energy set out in Appendix 6. In making provision for new development policies should be supportive of renewable energy proposals in locations where environmental, economic and social impacts can be addressed satisfactorily.

In establishing criteria for onshore wind energy Development Plans and future Local Development Frameworks, should give particular consideration to:
• landscape and visual impact, informed by local Landscape Character Assessments;
• the effect on the natural and cultural environment (including bio-diversity and the setting of historic assets);
• the effect on the built environment (including noise intrusion);
• the number and size of turbines proposed;
• the cumulative impact of wind generation projects, including intervisibility;
• the contribution of wind generation projects to the regional renewables target; and
• the contribution of wind generation projects to national and international environmental objectives on climate change.

In establishing criteria for new facilities required for other forms of renewable energy, Development Plans and future Local Development Frameworks should give particular consideration to:
• the proximity to the renewable energy resource;
• the relationship with the existing natural and built environment;
• the availability of existing surplus industrial land in close proximity to the transport network; and
• the benefits of smaller scale grid and non grid connected generation.

Local

Northamptonshire County Structure Plan (March 2001)

Available at http://www.northamptonshire.gov.uk

Policy EN1

In view of the general environmental benefits associated with the harnessing of renewable energy sources, provision will be made for the development of renewable energy schemes, provided that it can be shown that such development would not harm interests of acknowledged importance. When assessing proposals for renewable energy schemes, and in recognition that certain renewable energy resources can only be harnessed where the resources occurs, particular regard will be had to the following issues:

• The immediate and wider impacts of the proposed development on the environment and local amenity;
- The measures that will be taken, both in and after construction, to minimise the impact of the development on the environment and local amenity; and
- The local and wider benefits that the proposals will bring.

Policy GS5

In order to promote high quality design and sustainable development, all proposals will have regard to the following considerations:

- The visual appearance of the development in the context of the defining characteristics of the local area;
- The need to encourage mixed-use development and the relationships of different land-use with each other;
- The need for measures for planning out crime; and
- The need for conservation of energy, resources and the natural environment, and for developments and designs which give priority to means of transport other than the private car.
Appendix C

Useful Contacts

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Other Useful Contacts

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Travel Plans
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Northamptonshire County Council
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Tel: 01604 654442

Transport Strategy for Growth
Chris Wragg (Transport Planning Manager)
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Tel: 01604 654411

The Energy Savings Trust
www.est.org.uk
Address: Dartmouth Street, London SW1H 9BP
Tel: 0870 241 2089 21

Environment Agency
www.environment-agency.gov.uk
Address: Midlands Regional Office, Sapphire East, 550 Streetsbrook Road, Solihull, West Midlands, B91 1QT
Tel: 08708 506 506

Some useful websites

http://www.carbontrust.co.uk

http://www.climatechallenge.gov.uk/index.html

http://www.planningportal.gov.uk
Appendix D

Glossary

The Code for Sustainable Homes

The Code for Sustainable Homes has been prepared by the Government in close working consultation with the Building Research Establishment (BRE) and Construction Industry Research and Information Association (CIRIA). The Code for Sustainable Homes has been developed using the Building Research Establishment’s (BRE) EcoHomes System. The Code will complement the system of Energy Performance Certificates, which is being introduced in June 2007 under the Energy Performance of Buildings Directive (EPBD). The Code measures the sustainability of a home against design categories, rating the ‘whole home’ as a complete package. The design categories included within the Code are:

• energy/CO₂
• pollution
• water
• health and well-being
• materials
• management
• surface water run-off
• ecology
• waste

The full document can be viewed at:


The following page provides an example of Code Level 3 taken from The Code for Sustainable Homes document. Details of Level 2 can be found in the full document.
Code Level 3 – an illustrated example

A home meeting any level of the Code will have to meet minimum standards for certain items depending on what level is desired. For Level 3 this means:

The home will have to be 25% more energy efficient than one built to the 2006 Building Regulations standards. This could be achieved by:

- Improving the thermal efficiency of the walls, windows, and roof as far as is practically possible (by using more insulation or better glass for example);
- Reducing air permeability to the minimum consistent with health requirements (a certain amount of air ventilation is needed in a home for health reasons);
- Installing a high efficiency condensing boiler;
- Carefully designing the fabric of the home to reduce thermal bridging (thermal bridging allows heat to easily escape between the inner walls and the outer walls of a home);
- Possibly using district heating systems or low and zero carbon technologies such as solar thermal panels or biomass boilers to help heat the hot water.

The home will have to be designed to use no more than about 105 litres of water per person per day. This could be achieved by fitting a number of items such as:

- 6/4 Dual Flush WC;
- Flow Reducing/Aerating taps throughout;
- 6-9 litres per minute shower (note that an average electric shower is about 6/7 litres per minute);
- a smaller, shaped bath – still long enough to lie down in, but less water required to fill it to a level consistent with personal comfort;
- 18ltr maximum volume dishwasher;
- 60ltr maximum volume washing machine.

Other minimum requirements are required for:

- Surface water management – this may mean the provision of soakaways and areas of porous paving;
- Materials – this means a minimum number of materials meeting at least a ‘D’ grade in the Building Research Establishment’s Green Guide (the scale goes from A+ to E);
- Waste management – this means having a site waste management plan in place during the home’s construction, and adequate space for waste storage during its use.

But to get to Level 3 you need a further 46.7 points. So the builder/developer must do other things to obtain the other points such as:

- Providing drying space (so that tumble dryers need not be used);
- Providing more energy efficient lighting (both internally and externally);
- Providing cycle storage;
- Providing a room that can be easily set up as a home office;
- Reducing the amount of water than runs off the site into the storm drains;
- Using much more environmentally friendly materials;
- Providing recycling capacity either inside or outside the home;
- Enhancing the security of the home;
- Enhancing the sound insulation used in the home.
Glossary Continued....

**The Kyoto Protocol**
The Kyoto Protocol to the United Nations Framework Convention on Climate Change strengthens the international response to climate change. Adopted by consensus at the third session of the Conference of the Parties (COP3) in December 1997, it contains legally binding emissions targets for Annex I (developed) countries for the post-2000 period.

**Permethrin, Pyrethroids and Formaldehydes**
Permethrin and Pyrethroids are insecticides. Formaldehyde is a chemical used to kill bacteria.