
ENERGY EFFICIENCY IN WEST SOMERSET

An information pack for householders

*Compiled by members of Forum 21
and Transition Minehead and Alcombe
2010*





ENERGY EFFICIENCY IN WEST SOMERSET

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ENERGY EFFICIENCY IN WEST SOMERSET

Introduction

The need for the information in this pack has been obvious for some time. It has been collected from many different sources, put together in one place to be easily used for reference. It comes in a looseleaf format so that appropriate sheets can be given to individual householders.

It will be useful for the Forum 21 volunteers who carry out the energy efficiency campaign in West Somerset; and for the members of the public we meet in the course of that campaign. The materials are intended to help householders decide what is the best way of making their homes more energy efficient, and how to set about it. Information is given on the cost and relative efficiency of products, including renewables, and local builders and fitters; and grants available to help.

For the past few years Forum 21 has received grants from WSC to carry out the energy campaign, aimed to reduce fuel poverty by increasing home insulation. As an environmental group, the Forum is also concerned about climate change and reducing carbon emissions. It is accepted that fully insulating all our existing homes could save 45% of our energy consumption.

Nothing in these materials constitutes a recommendation. We have gathered together as much information as we can to help people make their own decisions about what is best for them. All the people, for instance, on the list of builders have been mentioned to us or are known to us as having done work of this kind; but no checks have been made.

This pack will no longer be useful unless we can keep it up to date. We ask anyone who comes across it to provide us with any new, changed or additional information that should be included, together with suggestions for improvement.

Particular thanks to Martin Evans, Tim Greenland and Hester Watson, from the Forum 21 energy team and Transition Minehead and Alcombe energy group who have worked on the pack text.

Thanks too to the planning departments of WSC and ENPA for their comments.

But this pack would not have been possible without the work of the Forum 21 energy team who have researched the issues they have encountered when carrying out energy surveys around West Somerset.

We are grateful to them all.

The individuals who have written the pack have knowledge and experience of this work, and would be happy to talk to you about issues that arise.

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Section One

HOMES IN WEST SOMERSET

The West Somerset Context

Section One

HOMES IN WEST SOMERSET GETTING STARTED

The housing context

- There are 17,000 dwellings in West Somerset, 4,000 of which are in the Exmoor National Park.
- Government has deemed that 2,500 new homes should be built in West Somerset between 2006-2026, most of which will have to be in and around Minehead, Williton and Watchet.
- The average cost of a house in the district is £218,000 (national average is £164,000)
- Average earnings are 15% below national average and 25% of households are in fuel poverty.
- 70% of homes in the district have solid walls and are therefore difficult to insulate
- 60% have no mains gas. Containerised gas (bottle or tank) is more expensive
- There are a high number of listed buildings, and many in conservation areas

We also produce 30% more carbon dioxide than the average for the south west - 11.41 tonnes per annum. These conditions mean that making West Somerset homes more energy efficient can be more complicated than in other parts of the country. This section provides an introduction and overview of ways of upgrading the energy efficiency of your home.

Upgrading your home will help reduce carbon emissions and use of the world's resources, and will save on energy bills in the future. There are two different ways to get to your goal.

1. Researching and doing or overseeing it yourself. It can be cheaper to buy the materials and do the work yourself or employ a local builder.
2. Hand the whole job over to an installer. This will cost more than option 1 but will involve you in less work.

Whichever you decide, you may need planning permission, or building regulations requirements (see section 2).

Before you start any insulation or heating project it's a good idea to talk to as many people as you can to find out what materials and prices are available. At the end of this section is a list of the main sources of advice, national and local - a good place to start.

Many homes in West Somerset are let to tenants by private landlords. Landlords may be able to get grant money for repairs, insulation and renewables. In West Somerset the Landlord Accreditation Scheme administered by Sedgemoor council offers a grant up to £3000 plus a 3% loan up to £15,000 to bring homes up to the decent homes standard. There is also an empty property grant of £10,000. For information about this contact Esther Carter and Nick Jobson (on 0845 2417 243 sedgemoor.gov.uk). Landlords can offset repairs against tax due if they improve properties.

Grants and discounts for heating and insulation are available to home owners and private tenants (not housing association tenants). There are certain income and other requirements (see section 6).

Effective ways to make your home energy efficient

1. Insulation The easiest, cheapest, quickest place to start, which makes the biggest difference to your bills and comfort, is to insulate so that the heat you generate inside the building stays inside! There's a lot more about this in section 3.

Before starting to insulate you need to find out whether the building has any problems that need to be addressed, such as damp. If it is an old building which needs to breathe it may be better to use natural products.

2. Heating. After you have thought about insulation you should think about how you create heat for heating and hot water in your home or business. We assume that you want to change, add to or reduce the heat inputs (heat producers) that you currently have in an existing building. And much of this information is relevant if you are building new too. Reviewing the systems you have is a good starting point and is worth doing well before your current system breaks down. The process of upgrading can be time consuming and is best not attempted after your boiler terminally breaks down in the middle of winter.

Heating water and heating rooms are things we will always need to do in our homes. We can use various fossil fuels to do this, or we can use the sun to provide the heat. Solar thermal systems can provide hot water and photovoltaics can produce electricity. The new Feed in Tariff (FIT) pays for every unit of electricity produced, and a similar scheme is proposed for solar hot water. The return may be greater than putting money into a bank. (see section 4).

3. Creating a system that works for you.

It's satisfying to create a system that works for you, but deciding which systems, products and tradesmen to use is the difficult bit, and it helps to get as much advice as possible. There is lots of information and advice out there, and most is good but not all of it. The more investigation you do, the more you will get out of it. There are a lot of websites and advice lines. You can talk to manufacturers, suppliers, builders and other people who have renovated their houses (see section 5).

Talk to the authorities. Planning departments will advise you on what you can and cannot do in relation to planning permission. The District Council building regulations officers know a lot about building work. If you plan to make changes that will affect the character or appearance of your home, or if you live in a listed house or conservation area you need to find out what the authorities will allow.

Understanding the language used will help when deciding which products to buy and which businesses will fit and service them. If you do not want to get to grips with the language used you will have to trust your chosen supplier. If you go for a system that is provided and fitted by more than one organisation you should have a basic understanding of what they are talking about to be able to keep on top of the overall project, because individual suppliers may not.

Almost every building will be different which means that almost every solution will be different. Whether you chose to use very ecologically sound products or products that are expensive in energy and resources is your choice.

Decide on your budget. What fuels are available to you; whether you can make use of renewable technologies. There are many ways to help you make your house more energy efficient, and these are discussed in this pack.

4. Sources of advice. We have listed advice and grant giving agencies, commonly used websites, manufacturers, and building suppliers (see section 5). It's useful to get several quotes if you are going to employ a contractor. You may find that different contractors suggest different systems, which the advice centres can explain to you. Not all builders, or suppliers, will stock or work with the same materials. Section 4 is a good place to start, with a list of the main websites and builders and suppliers; but be aware that an energy advice centre, for instance, may well suggest higher prices than a local builder or fitter, because it will be giving you figures from national companies.

Everything changes constantly. New products are developed, criteria for grants and loans are altered. It also helps to know what might happen in the future. The schemes offering free insulation, draught proofing and heating will visit to tell you what can be done for free, or whether they can arrange for you to have work done at a subsidised rate. As we've said earlier, start by talking to as many people as you can.

Heat loss from the home



SOURCES OF ADVICE AND INFORMATION

Care and Repair

01278 442407

Practical help for vulnerable people (old/disabled) who find it hard to deal with the process of grant applications etc. They also help with repairs and improvements eg disabled adaptations.

Centre for alternative technology (CAT)

0845 330 4572

www.cat.org.uk

Their centre in Wales demonstrates sustainable building and their website has a lot of information.

Centre for Sustainable Energy (CSE)

01179 341400

info@cse.org.uk

Runs energy advice centre (see EST). Manages Somerset's Warm Streets scheme.

ECOS Trust

01458 259 400

www.ecostrust.org.uk

Promotes design and build techniques with reduced impact on the environment.

Energy Action Devon (DARE)

01837 892 000

www.devondare.org

Gives phone advice on what can be done and what it might cost. They will visit a site to assess the most appropriate kinds of insulation and renewable energy sources, but charge for this.

Energy Efficiency officer

01278 436 426

Somerset West Partnership: West Somerset, Sedgemoor and Taunton Deane

The Energy Saving Trust (EST)

0800 512 012

www.energysavingtrust.org.uk

They have an extensive database on all aspects of energy efficiency and renewable sources of energy. Their energy advice centres run advice lines and they refer people to schemes providing free or subsidised insulation and improved heating systems. They work with communities and have set up a Green Communities network (see below).

Exmoor National Park (ENPA)

01398 323 665

www.exmoornationalpark.gov.uk

Their sustainability officers give advice and information on schemes to bring energy efficiency to rural communities; and sources of funding. Planning and heritage officers give information on what can be done in the Park.

Green Communities network

0844 848 0077

www.energysavingtrust.org.uk/cafe

Set up by EST with a helpline for members giving more detailed information provided by people who have specialist knowledge of aspects of this work. Green Communities – 0844 848 0077

Landlord Accreditation Scheme

0845 2417 243

www.sedgemoor.gov.uk

Administered by Sedgemoor council. Offers a grant up to £3000 plus a 3% loan up to £15,000 to bring homes up to the decent homes standard. There is also an empty property grant of £10,000. Contact Esther Carter and Nick Jobson for information.

National Energy Action (NEA)

0191 261 5677

www.nea.org.uk

A charity that provides information and training on all aspects of energy efficiency

REGEN SW

01392 494 399

www.regensw.co.uk

Supports renewables in the SW. Communities for Renewables: new scheme (2010). This initiative aims to support and bring together communities in the south west interested in developing local renewable energy projects.

Warm Front

0800 316 2814

This is a national scheme providing home owners and private tenants with insulation, draught-proofing and new or improved heating systems. They have been conducting trials of renewable energy systems and hope to extend the scheme to cover these. Warm Front is managed by **EAGA** for the government (Lawrence Connelly 0191 247 3844 for developments in Warm Front www.eagarenewables.co.uk).

Warm Streets

0800 512 012

The Somerset grant scheme that offers cavity wall and loft insulation to residents, This is free to people who meet certain income or age criteria.

West Somerset Council (WSC)

01643 703 704

For planning and building regulations

Website for trusted suppliers

01395 579 879

Cathy Debenham

www.yougen.co.uk

Yougen is building up details of companies people have used across the UK. It wants feedback and other names to add to the list. There is discussion on their blog.

WISH

0800 512 012

Helps people over 50 in Somerset to stay warm and well in their home. Offers help with energy, adaptations and financial support.



Section Two

PLANNING REQUIREMENTS

and Building Regulations

Section Two

PLANNING REQUIREMENTS

Planning Permission and Building Regulations Requirements for installing insulation and micro-renewable energy systems in dwellings

Introduction

Installing certain renewable energy technologies, such as solar panels and biomass boilers, has now been made a lot simpler thanks to permitted development rights introduced on 6th April 2008 in England which mean that planning permission is not always required. This section tells you what needs planning permission from West Somerset Council or Exmoor National Park Authority (ENPA) and what you can install without permission. Both are keen to promote the introduction of domestic renewable energy systems and have already granted permission for numerous schemes. You can find their policies for renewable energy development online at:

(put in *references for planning policies*)

For the most part, installing insulation will not require planning permission. If your property is a listed building, however, you may require consent for some types of external and internal insulation, and it is advisable to contact West Somerset Council or Exmoor National Park Authority before planning any work. These bodies are the Local Planning Authorities for their areas.

The National Park Authority has published guidance on planning requirements for domestic renewable energy installations within the National Park which can be found online at:

http://www.exmoor-nationalpark.gov.uk/renewable_energy.pdf

If you are uncertain whether or not the work you have in mind requires some form of permission, it would be wise to contact West Somerset Council or the National Park Authority to discuss it before committing time and money to the project. Both bodies are happy to help and advise.

Cavity wall insulation

Planning Permission

While planning permission will not be required in the great majority of cases, if the property is a listed building consent may be required and you should contact West Somerset Council or the Exmoor National Park Authority.

Building Regulations

Cavity wall insulation is specifically defined as notifiable building work in the Building Regulations so for most buildings it will be necessary to submit a building notice stating that cavity wall insulation work will be carried out. West Somerset District Council does not charge for such building notices. If installers are registered with the Cavity Insulation Guarantee Agency or the BBA Cavity Wall Installer Scheme they will in most cases submit the building notice. In any case building owners should always check that a building notice will be submitted.

The Building Regulations require that the insulation material used is suitable for the wall construction concerned. In the case of some foam cavity wall insulating materials an assessment of the risk of the emission of formaldehyde gas will need to be carried out.

Insulation has to comply to the relevant building regulations both when installed during construction or when fitted retrospectively.

West Somerset Council Building Control section can give more detailed guidance.

The General Permitted Development Order (GPDO) 2008 grants rights to carry out certain limited forms of development on the home, without the need to apply for planning permission, including the types of renewable energy installation described in the following pages. These works, granted under the Order, do not then require formal planning permission, and are known as permitted development.

External and internal insulation

Planning Permission

You do not need to apply for planning permission for repairs, maintenance or minor improvements, such as painting your house, nor for internal insulation work (for example to lofts, floors and solid walls). If you live in a listed building, however, you will need listed building consent for any works whether internal or external which may affect the character or fabric of the building (or any structure within the curtilage of the building) and you should contact West Somerset Council or Exmoor National Park Authority before starting any work so that they can advise. If Listed Building Consent is required then you should, after taking the appropriate advice, factor in the time needed to apply for and have your Listed Building Consent application determined.. If the building is in a Conservation Area, Exmoor National Park or the Quantock Hills Area of Outstanding Natural Beauty, you will need to apply for planning permission before cladding the outside of your house with stone, artificial stone, pebble dash, render, timber, plastic or tiles, whether for the purposes of insulation or not. If you live outside these areas, it is still advisable to contact West Somerset Council before planning any work as sometimes permission may be required.

Building Regulations

If you want to re-render or replace timber cladding to external walls, building regulations may apply depending on the extent of the work.

Where 25 per cent or more of an external wall is re-rendered, re-clad, re-plastered or re-lined internally or where 25 per cent or more of the external leaf of a wall is rebuilt, the regulations would normally apply and the thermal insulation would normally have to be improved.

Biomass energy

Planning Permission

Planning permission is not normally needed when installing a biomass system in a house if the work is all internal. If the installation requires a flue outside, however, it will normally be permitted development if the conditions outlined below are met.

- Flues on the rear or side elevation of the building are allowed to a maximum of one metre above the highest part of the roof.
- Flues are also allowed on the principle elevation provided the dwelling is not in a designated area (1 m height restriction still applies) – [this is consistent in Part 40 and Part 1 Class G of the GPDO 2008](#)

If the building is listed or in a designated area even if you enjoy permitted development rights it is advisable to check with your local planning authority before a flue is fitted. Listed Building Consent is also likely to be needed for internal alterations and the flue.

In a conservation area the flue should not be fitted on the principal or side elevation if it would be visible from a highway.

If the project also requires an outside building to store fuel or related equipment the same rules apply to that building as for other extensions and garden outbuildings. Therefore you cannot cover in excess of 50% of the curtilage. It must be single story and not exceed stated heights dependent on position. The GPDO sets out the full provisions (see [ukplanningportal website](#)).

Building Regulations

If you wish to install a biomass appliance, building regulations apply. You should take into account factors such as ventilation, noise and general safety. Installation should be carried out by a suitably qualified installer.

Building regulations also apply to other aspects of the work such as electrical installation and plumbing work.

Roof or wall mounted solar panels

The information provided below applies to both types of solar energy installation – solar hot water and solar photovoltaic.

Planning Permission

In many cases fixing solar panels to the roof of a single dwelling house is likely to be considered 'permitted development' under planning law with no need to apply for planning permission. There are, however, important exceptions and provisos which must be observed.

- Panels should not be installed above the roof ridge line and should project no more than 200mm from the roof or wall surface.
- If the property is a listed building, installation is likely to require an application for listed building consent, even where planning permission is not needed.
- If the property is in a conservation area, planning permission is required when panels are to be fitted on the principal or side elevation walls and they are visible from the highway. If panels are to be fitted to a building in your garden or grounds they should not be visible from the highway.–
Permission is only required to fit panels to a wall of a domestic outbuilding that is visible from a highway (not the roof slope) – see changes to part 40 within paragraph 4 of statutory instrument 2008 No. 2362.

These permitted development rights apply to houses. If you live in a flat and are considering fitting solar panels you are advised to contact West Somerset Council or Exmoor National Park Authority for guidance: – A “building which consists wholly of flats” is included in the definition of a dwellinghouse in Part 40 (see paragraph G1).

Stand alone solar panels

Stand alone solar panels will not require planning permission, subject to the following limits:

- they should be no higher than four metres
- they should be at least 5m from boundaries
- the size of the array is limited to 9 sq. m. or 3m wide and 3m deep
- they should not be installed within the boundary of a listed building
- In the case of land in a conservation area, panels should not be visible from the highway. (*including public footpaths?*)
- Only one stand alone solar installation is permitted

All solar installations are also subject to the following conditions:

- panels on a building should be sited, so far as is practicable, to minimise the effect on the appearance of the building.
- they should be sited, so far as is practicable, to minimise the effect on the amenity of the area.
- when no longer needed for micro-generation they should be removed as soon as possible.

These permitted development rights apply to houses. If you live in a flat and are considering fitting solar panels you are advised to contact the planning authority for guidance.– A “building which consists wholly of flats” is included in the definition of a dwellinghouse in Part 40 (see paragraph G1).

Building Regulations

If you wish to install a solar panel on your roof building regulations will normally apply. Reputable contractors will normally be able to advise you. The ability of the existing roof to carry the load (weight) of the panel will need to be checked and proven. Some strengthening work may be needed.

Building regulations also apply to other aspects of the work such as electrical installation. It is advisable to contact an installer who can provide the necessary advice.

Ground, air, and water-source heat pumps

Planning Permission

Installing a ground source or water source heat pump system does not usually need planning permission and should fall within permitted development rights. If you live in a listed building or a conservation area, however, you should contact the local planning authority to check on local policy.

Air source heat pumps currently require planning permission. It is expected that air source heat pumps will be permitted developments in due course. Further legislation is expected later in 2010.

Building Regulations

Installation of ground source or air source heat pumps will have to comply with the Building Regulations. It is advisable to contact West Somerset District Council Building Control section who can provide the necessary advice.

Micro-combined heat and power

Planning Permission

Planning permission is not normally needed when installing a micro-combined heat and power system in a house if the work is all internal. If the installation requires a flue outside, however, it will normally be permitted development if the conditions outlined below are met:

- Flues on the rear or side elevation of the building are allowed to a maximum of one metre above the highest part of the roof - [flues are also allowed on the principal elevation provided the dwelling is not in a designated area \(1m height restriction still applies\) – this is consistent in Part 40 and Part 1 Class G.](#)
- If the building is listed or in a designated area, even if you enjoy permitted development rights, it is advisable to check with West Somerset Council or Exmoor National Park Authority before a flue is fitted. Consent is also likely to be needed for internal alterations – [for LB's only; not if just in a designated area.](#)
- In a conservation area the flue should not be fitted on the principal or side elevation if it would be visible from a highway

If the project also requires an outside building to store fuel or related equipment, the same rules apply to that building as for other extensions and garden outbuildings.

Building Regulations

As micro-CHP systems operate within the context of the building, the equipment, installation and testing must all comply with the relevant standards. Details of these standards are set out in full in the LZC guide. The guide also sets out the factors to be considered for the purposes of calculating the potential of a micro-CHP system to contribute towards lowering the carbon dioxide emissions of a building in order for it to meet the compliance requirements of Part L.

Building regulations also apply to other aspects of the work such as electrical installation and plumbing work.

Small and micro-wind systems

Planning Permission

Due to legal technicalities the current planning regulations do not cover micro or small wind systems. Once these issues have been resolved, it is expected that roof-mounted and free standing wind turbines will be permitted, subject to size and position limitations, at detached properties that are not in conservation areas. Further legislation is expected later this year.

The planning regime for installing wind turbines is complex and evolving. At present, in most cases, you will need to apply for planning permission from the local authority to add a domestic wind turbine to your house, or in the grounds surrounding your home.

It is up to the local authority to decide what information you may need to provide with your application. It may be helpful to contact West Somerset District Council or Exmoor National Park Authority, before applying, to discuss the following planning issues:

- Visual impact
- Noise
- Vibration
- Electrical interference (with TV aerials)
- Safety

The key Planning Policy that the National Park will use to judge the suitability of your application is Local Plan Policy LNC19. This can be viewed at www.west-somerset.gov.uk.

Building Regulations

If you wish to install a wind turbine which will be attached to your house, building regulations will normally apply. Size, weight and force exerted on fixed points would be considerable.

Building regulations also apply to other aspects of the work such as electrical installation. It is advisable to contact an engineer who can provide the necessary advice.

If the wind turbine is not attached to your house, then only the electrical installation and connection will require consent under the building regulations.

Micro-hydro power

Planning Permission

Planning permission will usually be needed, and it should be noted that the Environment Agency must also be consulted about water abstraction licences because the water is not owned by the landowner. There may be a need to consult with Natural England as well if the watercourse has any ecological interest.

Some form of environmental assessment is essential when it comes to applying for planning permission and environmental licenses.

Under the Town and Country Planning (Assessment of Environmental Effects) Regulations 1988, the planning application for any development that the planning authority considers likely to have a significant impact on the environment must be accompanied by an Environmental Statement.

This document provides an assessment of the project's likely environmental effects, together with any design, construction, operational and decommissioning measures that are to be taken to minimise them. It would typically cover such issues as flora, fauna, noise levels, traffic, land use, archaeology, recreation, landscape, and air and water quality.

Key features of a small hydro scheme include:

- a hydraulic 'head' - vertical distance from water source to the turbine
- a water intake above a weir or behind a dam
- a pipe or channel to take water to the turbine
- a turbine, generator and electrical connection
- an outflow, where the water returns to the watercourse

These elements raise a number of important planning issues and planning permission will usually be needed.

Get further information on water abstraction from the Environment Agency web site:

www.environment-agency.gov.uk

Building Regulations

If you wish to install a small scale hydro-electric facility, building regulations will normally apply to aspects of the work such as electrical installation.

It is advisable to contact an engineer who can provide the necessary advice.

Conventional boilers

Planning Permission

Planning permission is not normally required for installation or replacement of a boiler though if you live in a listed building you should check with the Local Planning Authority.

Building Regulations

If you are planning to install or replace an existing gas boiler you should have a condensing boiler fitted if it is reasonable to do so. However, non-condensing boilers are acceptable if it would be too difficult to install a condensing boiler in your home. Your installer will tell you whether your circumstances are too difficult.

Work to install a new boiler (or a cooker that also supplies central heating - Aga, Raeburn etc.) needs Building Regulations approval because of the safety issues and the need for energy efficiency.



Section Three

MAKING HOMES
MORE ENERGY EFFICIENT

Preventing heat loss
Heating systems

Section Three

MAKING HOMES MORE ENERGY EFFICIENT

Part I: PREVENTING HEAT LOSS

As much as two thirds of the heat in a poorly insulated house can be lost to the air. This represents a waste of fuel (a scarce resource) and money as well as contributing to global warming and climate change. There is widespread understanding today of the need to make homes more energy efficient through preventing heat loss and more efficient forms of heating, including the use of renewable energy.

Outside walls lose a lot of heat both through the fabric of the building, windows, doors and ventilation loss. Cavity walls can be insulated relatively easily by the injection of an insulating material. Solid walls lose heat more easily than cavity walls and are more difficult to insulate. Significant amounts of heat can also be lost through other areas of the home such as the roof/loft, hot water tanks and pipes and floors.

Draughtproofing

Heat is lost through doors, windows, chimneys, loft hatches, cracks in walls and floorboards. Free draught-proofing is offered by the loft and cavity wall schemes for those who qualify. Sealing gaps around windows and doors is an effective way to reduce heat loss through draughts and a range of materials is available to fit most sizes of gaps and cracks. Double or secondary glazing will seal windows, and secondary doors are effective draught stoppers. Chimneys can be sealed with chimney balloons, dampers or fire screens and there are products to seal gaps between floorboards. Reflective foil behind radiators will make them more effective.

Professionally done, draught-proofing could cost around £200, but some people will qualify to have much of the installation done free. A DIY job may cost half as much and is relatively straightforward.. The free schemes do not include double and secondary glazing, secondary doors, automatic door closers and sealing gaps in floor boards and skirting, although these can greatly improve the efficiency of the house.

Although the building needs to be sealed as much as possible to avoid heat loss, **adequate ventilation** is vital to prevent condensation which causes mould growth which can be harmful to health and to the structure of the building. Ventilation will disperse the internal moisture-laden air and replace it with drier air from outside (external air is drier than internal air most of the year). It can be achieved by opening windows for a short time, installing air vents, and using extractor fans. However, it is most effective to remove the water vapour from where it is usually generated, e.g. kitchens and bathrooms. This can be done with the installation of a powered extractor fan. Better still, rather than making the occupant responsible for operating the fan, a humidistat controlled unit can be used. These activate when moisture levels in the atmosphere reach a point at which they may begin to cause a problem. Condensation problems can be tackled by increasing insulation, improving ventilation, addressing structural defects and by more effective dry heat. If there is still condensation a dehumidifier can be used.

Insulation

Before carrying out work, any damp should be treated by identifying the source of water – whether it is due to condensation, rising or penetrating damp; checking drains, guttering and earth around the walls. Installing a vapour barrier on the inside of an external wall is essential to reduce condensation when installing insulation. The simplest and cheapest insulation should be undertaken first. For example, a thick hot water cylinder jacket is cheap and will prevent heat loss. Tank and pipe lagging are important, especially when insulation in the loft makes it cold. This is done free or cheaply by the national schemes which provide insulation and heating systems for eligible house owners or tenants.

Roof and loft insulation

Loft Insulation

One of the easiest and most financially attractive ways to save energy, loft insulation reduces heat loss

through the roof of a house. The recommended thickness of loft insulation is 270mm. Heat loss through uninsulated lofts typically constitutes around 25% of thermal losses. Ensure ventilation is not blocked off, at the edge of the roof space and above the insulation if it is on the floor. The cheapest material is mineral wool which is laid 10.5 inches thick between and over the joists, and national insulation schemes will do this free or at a discount. If you are not eligible for this the cheapest loft insulation usually costs £200-300 after subsidies. Savings can be made if it is a DIY installation. Energy Efficiency schemes providing free loft insulation do not apply if the loft is of unusual construction, difficult to access or lived in. National schemes will send an assessor to say whether insulation can be carried out free.

If an attic is used insulating boards can be put between the joists or rafters. Many products can be used including sheeps wool, polyester fibre, expanded polystyrene, hemp, shredded paper, composite panels and blow-in granules for inaccessible attics. For permeable insulation wood fibre boards can be used.

Flat roofs can be insulated by adding insulation externally to include a ventilation space below. Insulation can be added from inside using boards inserted between the rafters, making sure there is a ventilation space. The vapour barrier should be on the inside with a breathable barrier on the outside. Insulation can also be attached to the ceiling, using products such as Cellotex, Kingspan Spacetherm, Warm-a-wall and Sempatap.

Thatch is a good insulator but will let air in at the edges which need to be sealed.

Cavity wall insulation

Houses built after 1929 often have cavity walls – walls constructed with two skins either side of an air gap. This air gap can be insulated to reduce heat loss through walls. In homes with uninsulated cavity walls approximately 35% of heat loss is through the walls. Although cavity wall insulation requires Building Regulations approval an approved installer will carry out all the necessary liaison with the Council. The national schemes send an assessor to see whether you are eligible for the work to be done free. If you are not eligible, cavity wall insulation will cost you around £250, after subsidies. The assessor may say the cavity is not suitable or the walls are too hard to access for the scheme to carry out the work.

The most convenient way of insulating cavity walls is by injecting insulating material into the walls through pre-drilled holes. Three main types of material are used:

- mineral wool fibre
- polystyrene or polyurethane beads or granules coated with a binding agent
- ureaformaldehyde foam (rarely used now)

It is very important to ensure the material used is moisture-repellent and the cavity is checked prior to installation to ensure it is unobstructed by debris, and the wall ties are undamaged.

Solid wall insulation

The UK's housing stock is estimated at approximately 24.5 million dwellings, and of those approximately 36% are of non-cavity wall construction such as solid brick, solid stone, concrete, pre 1944 timber frame and cobb. (In West Somerset over 60% have solid walls.)

Improving the thermal efficiency of solid-wall properties has massive potential for the future as this is an area where very little work has been done to date. However, more and more individuals are now starting to recognise the advantages of insulating such houses and this is an area which is now seeing a real growth with many effective cost-effective solutions now available.

The benefits of solid wall insulation

If you live in a home with solid walls, 45% of your heat is escaping through the walls, which is costing you money. Insulating the walls will dramatically prevent heat loss in the winter (and also reduce heat gain in summer). A solid wall can be insulated either internally or externally – either option will greatly increase comfort, while also reducing running costs and the associated environmental impact. Timber frame houses may not have suitable cavities for filling but they can be insulated externally or internally. Care should be taken to avoid interstitial condensation. At present there are no grants for solid wall insulation.

External insulation

External insulation systems are made up of an insulation layer fixed to the existing wall (using a combination of mechanical fixings and adhesive, depending on the insulation material used) and a protective render or cladding finish. Dry cladding offers a wide range of finish materials that can be used – timber panels, stone or clay tiles, brick slips or aluminium panels. Insulating external walls may be more effective as thicker walls have greater thermal mass which retains heat. If the appearance of the property is altered by cladding, planning permission may be required and you should contact your local planning authority to discuss this (see Section 1, Planning).

Most external renders consist of either thick sand/cement render applied over a wire mesh, or a thinner, lighter polymer cement render applied over a 'GRP scrim'. A pebbledash render should need less maintenance than a painted render finish.

Internal insulation

There are many types of insulation and cheaper ones are generally less efficient, so greater thickness is required. Thinner products tend to be more expensive but do not reduce the size of the room so much. Relative efficiencies of products can be compared by finding out their U value on a particular wall. Old buildings need to be able to breathe and natural insulation materials that are permeable may be better, eg sheep's wool, wood board and lime render.

Internal Insulation typically consists of either laminated insulating plasterboard (known as thermal board), held in place either by adhesive, or on a studwork frame), or a built-up system, again held in place using a studwork frame. There are also flexible thermal linings which can be stuck on like wallpaper. If there might be a damp problem it is better to dry line the walls using studwork.

• Internal Rigid Boards

Almost all brands of thermal boarding can provide high thermal efficiencies in regard to thermal insulation. Therefore, it is possible to achieve a high level of thermal performance using a relatively thin layer of insulation (which can be a major asset for small dwellings).

A combination of both insulated studwork and thermal board (instead of just finishing off with ordinary plasterboard) can be used to increase the thermal performance and further reduce running costs. This method can be especially advantageous where the internal wall face is uneven, because time spent preparing the internal wall face is reduced. The combined method also helps reduce thermal bridging.

• Internal Rigid Thermal Boards

Thermal boarding is a composite board made of plasterboard (providing a surface that can be decorated) with a backing of insulation. The insulation backing can be specified in a range of thicknesses. Insulation in excess of 60mm will typically be required to achieve best practice performance. Thermal boards are fixed to the wall surface either using continuous ribbons and dabs of adhesive, or fixed to studwork.

• Internal Flexible Thermal Linings

Flexible thermal linings are insulation on a roll and sold specifically for use in solid wall homes, mansard roofs and dormer ceilings. The lining is 10mm thick and supplied in rolls one metre wide, 12.5 metres long. Sempatap is made from a natural product (latex) in an open and closed cellular construction and has a durable fibreglass face that can be decorated with emulsion, wallpaper or even tiled. Warm-a-wall is made from polyurethane and it can be plastered. Such products, which can be fixed to walls and ceilings, are effective in preventing condensation, but less effective as insulation. The only tested products available are Sempatap Thermal and Warm-a-Wall.

There are also products that can be added to paint which may help with condensation, but their value as insulation is not confirmed. There is a range of materials and techniques available for internal insulation.

Floor insulation

Filling draughty gaps and insulating under a wooden floor is a fairly simple DIY job for those with moderate skills. Good carpet underlay is an effective insulator, or the floor can be covered with insulation such as Sempafloor or Spacetherm. If it is necessary to repair the floor, insulation can be put in the space underneath, ensuring adequate ventilation below.

Purchasing silicone sealant to seal gaps in the floor will cost around £20. Insulating under the floorboards costs around £90 and will require lifting boards. Not possible with a concrete base.

Building material u-values

The u-value of a wall measures heat loss with a particular insulation material, low values being more effective, and manufacturers will calculate this if you tell them the type of wall eg cavity, brick, stone, and its thickness. It is expressed in W/m^2k , and shows the amount of heat lost in watts (W) per square metre of material (for example wall, roof, glazing, and so on) when the temperature (k) is one degree lower outside. A u-value of 0.35 is recommended for the walls of buildings. The Building Regulations set out minimum requirements for all the elements of new buildings. For example a typical solid wall with a high (less efficient) u-value of 1.8 – 2.0 can be insulated to a value of 0.35 with 100/110mm mineral wool, sheeps wool, cellulose fibre or expanded polystyrene. With extruded polystyrene 85mm is needed and 65mm is required if the insulating material is polyurethane/phenolic foam board. Aerogel/Spacetherm needs 45mm.

Flexible linings such as Sempatap only achieve a U value of 1.58.

Table showing typical u-values for different types of uninsulated walls, floors and roofs

Material/construction	Typical U-value
Solid 9" brick outer wall	2.1
11" brick cavity wall	1.5
Solid concrete floor	0.76
Suspended - timber floor	0.68
Pitched roof	2.1
Flat roof	2
Glazed metal framed window	5.9
Glazed wooden framed window	4.7

It's worth noting that the Building Regulations currently require a u-value for glazing of 1.8 to 2.0 (about the same as a solid uninsulated brick wall!). This is achieved with a double-glazed unit with an air gap of around 16- 20mm and one pane of low emissivity glass, which lets light through, but tends to limit heat loss.

Part 2: HEATING SYSTEMS

There are a number of different ways in which the home can be heated using the main types of fuel – gas, oil, solid fuel, LPG and electricity. Fuel costs change constantly and the Energy Advice Centre can let you have up to date information. They can all be used for central heating or individual room heaters, and if several types are used they can be fed into a thermal store to make them more effective. Wood heating systems are carbon neutral so they are described in the section on renewable energy.

Energy costs are high, and vary over time and between one supplier and another. It is sometimes recommended that we should think about switching our energy supplier at least once a year, to get the best price. (See Switching Tariffs at the end of this section.)

Fuel	Price per unit	kWh per unit	pence per kWh
Wood chips (30% moisture)	£80 per tonne	3,500 kWh/t	2.3p/kWh
Wood pellets	£185 per tonne	4,800 kWh/t	3.9p/kWh
Natural gas	4.1p/kWh	1	4.1p/kWh
Heating oil	44p per litre	10 kWh/ltr	4.4p/kWh
LPG (bulk)	40p per litre	6.6 kWh/ltr	6.1p/kWh
Electricity	13.3p/kWh	1	13.3p/kWh

Central heating is the most common type of system and is described below. The most common method of heating water for domestic purposes and for central heating is the gas boiler. The heat is carried around the home by water in a wet central heating system or warm air central heating can be used. Modern boilers can be of two main types – condensing boilers and combination or “combi” boilers. Condensing boilers extract the heat from the products of combustion using a second heat exchanger. The efficiency of the boiler is thus increased. Combi boilers combine a standard boiler for room heating with instantaneous hot water to all hot taps.

Conventional boilers and high efficiency condensing boilers

Boilers account for around 60% of the carbon dioxide emissions in a gas heated home. By replacing an old “G” rated boiler with a new high efficiency condensing boiler and improving your heating controls, you will significantly cut your home's carbon dioxide emissions and could save as much as £235 a year. A high efficiency condensing boiler works on the principle of recovering as much as possible of the heat which is normally wasted from the flue of a conventional (non-condensing) boiler. High efficiency condensing boilers convert 86% or more of their fuel into heat, compared to 65% for old “G” rated boilers.

Costs and savings

There are schemes to help with the cost of replacing or repairing an old heating system and details can be obtained from the Energy Advice Centre and Utility companies.

Old Boiler Rating	Annual Saving (£/yr)	Annual Saving (kgCO ₂ /yr)
G (< 70%)	£235.00	1260
F (70% - 74%)	£150.00	800
E (74% - 78%)	£110.00	575
D (78% - 82%)	£70.00	375

Pumped systems

These are by far the most common though the sealed system is becoming more and more popular. The water is heated by the boiler and sent round the pipework by a pump. The water is then routed to the radiator circuit and/or the hot water cylinder by a motorised valve.

Sealed systems

These are gaining in popularity now for a number of reasons. As the name implies, the system is closed and has no feed and expansion cistern. It is most common for the boiler to be a combination type rather than connected individual components. These are very efficient and have the added advantage of saving space. A pressure vessel copes with expansion and contraction of the water. In addition there is a safety valve to relieve excess pressure instead of a vent pipe.

One advantage of these systems is that they run at a generally higher temperature than other types and therefore radiators can be a little smaller. They also suffer less from corrosion. The other major advantage is that not only is less pipework needed, but also no space is required in the loft for a feed and expansion cistern.

On the other hand, because the system runs under pressure, the installation requires higher quality fittings to ensure leaks do not occur. Also, since the system is not automatically topped up, in addition to the thermostat, the boiler must have a safety cut out to prevent over heating in the event of water loss.

Underfloor heating

Wet underfloor heating systems pump hot water through plastic pipes laid under the floor. Electric systems use heating wires running below the surface of the floor. The advantage of this type of system is that there is an even distribution of heat and the thermal store (the concrete floor) is valuable. However, they are slow to respond and, during a cold snap, may result in low initial temperatures.

Central heating controls

Significant amounts of energy can be saved with careful management. Below is a list of some tools that grant a greater degree of control over energy consumption.

- Programmable thermostats allow control over the timing and temperature of central heating. A boiler can, for example, be set to turn on only during those times when the house is occupied
- Room thermostats switch the boiler off when a certain temperature (set by the user) is reached.
- Programmable room thermostats perform both of the above functions
- Cylinder thermostats manage the temperature of hot water in the hot water cylinder. When the set temperature is reached, the heat supply from the boiler is cut off
- Thermostatic radiator valves manage the temperature around individual radiators. When the set temperature is reached, the flow of hot water into the radiator is halted.

Fitting correct heating controls can save 17% of a heating bill. The actual amount of energy saved will depend on how well the controls are used. Higher savings are possible.

Night storage heaters

These store off peak electricity during the night and release it during the day. The heaters cost less to buy and install than a wet central heating system, and can be relatively cheap to run, especially if other appliances eg washing machines and immersion heaters, can be used during the off peak period. However, on the Economy 7 tariff, daytime electricity costs more per unit than a standard tariff. The heaters are less flexible than other forms of heating, since they cannot be turned up or down quickly. Understanding how to operate the controls is essential (see handout at the end of this section).

Smart meters

An important part of reducing energy consumption is improving awareness of energy consumption. The vast majority of UK electricity customers pay their bills in arrears, and check their meters infrequently. Smart meters are a way of bringing real-time information about electricity consumption into the home. A smart meter displays current electricity use and cost, so that the financial benefit of paying close attention to energy use can be more easily seen.

The government has plans to install smart meters in every home by 2020.

It is difficult to say exactly how much energy can be saved by installing a smart-meter. How much is saved depends on whether the user pays attention to and responds to the smart meter, and whether electricity was being used frugally before the adoption of the smart meter.

Studies suggest that electricity savings achieved are around 5-10%.

Thermal stores

Heat banks, or thermal stores, are advanced hot water storage units, providing high flow rates of mains pressure hot water. The heat bank stores heat energy in an insulated repository for later use in heating and hot water. It balances supply from several sources eg wood stove, solar panel, oil boiler, which can be used to provide domestic hot water or even central heating if required. This heat energy is transferred to mains water by a plate heat exchanger. No domestic water is stored, hot or cold.

Fuel Supplier Insulation Discount Schemes

Information updated: 09.04.10

You can call any of the phone numbers below to arrange for a free survey for loft and cavity wall insulation.

*If your loft already has some insulation then you may need to pay an additional cost for a top up. The maximum depths are given below.

N.B. ALL PRICES QUOTED ARE SUBJECT TO SURVEY

Fuel Supplier	Approximate cost to customer PRICES GIVEN ARE BASED ON A 3 BED SEMI-DETACHED HOUSE			Available to all homeowners, privately renting, council and housing association tenants?	Company energy efficiency/ insulation advice line
	Loft Insulation in an uninsulated loft	Top up Loft Insulation*	Cavity Wall Insulation		
British Gas	Customers: £249. Non-customers: £274.	£249 if current depth is less than 6 inches	Customers: £225. Non-customers: £250.	Yes	0845 301 4927
EDF Energy	Customers and Non-Customers: £199	£199 if current depth is less than 4 inches	Customers and Non-Customers: £199	Homeowners and privately renting tenants only	0800 096 9966
Npower	Customers £149. Non-customers: £149.	Price subject to survey. Only available if current depth is less than 4 inches	Customers £149. Non-customers: £149.	Homeowners and privately renting tenants only	0800 980 2135
E-ON	Customers and Non-customers: £150	Price subject to survey. Only available if current depth is less than 4 inches	Customers and Non-customers: £150.	Homeowners and privately renting only. Will not insulate flats or maisonettes at all.	0845 3017836
Scottish & Southern Energy	Customers and Non-Customers: £145 if current depth is less than 2.5 inches	£260 if current depth is between 2.5 and 6 inches	Customers and Non-Customers: £150.	Homeowners and privately renting only.	0800 072 7201
Scottish Power	Customers and Non-customers: £199 semi-detached, £249 detached	£199 if current depth is less than 2.5 inches	Customers and Non-Customers: £199.	Homeowners and privately renting only.	0845 601 7836

Insulation is available for **FREE** for those **over 70** and those in receipt of **qualifying benefits** up to the depth of insulation quoted above for each fuel supplier



TOP TEN TIPS FOR ENERGY SAVING

1. Turn down your heating thermostat by 1° to save **10% or £30 a year**
2. Close your curtain at dusk and stop money flowing out of your windows – **save £15 a year**
3. Wash your clothes at 30° instead of 40°, using 30% less electricity, and make sure the washing machine is full
4. Hang your washing out to dry and use the sun and wind, not your money, to dry your laundry. A tumbler dryer uses more energy than any other electrical appliance in your home.
5. Use low energy light bulbs. They can last 12 times longer and **save £78** over the life of the bulb
6. Only boil as much water as you need in the kettle – kettles use up to 15% of all the electricity used in our homes
7. Keep the lid on saucepans to reduce condensation and shorten cooking times
8. Don't leave your electrical appliances on standby – up to 85% of the electricity they use is while they are on standby
9. Do some simple draughtproofing round windows, letter boxes, keyholes and floorboards. Maximum cost £25, **saving £5-10 a year**
10. When you buy new white goods (fridge, freezer, washer, dryer, cooker) buy one that is energy efficient (A or A+ rated)

**And a big save at very low cost
Fit a hot water tank jacket costing £10 and save £10–15 a year**



Which costs the most over a year?

Tumbler drier	197.00
Plasma TV	117.00
Fridge freezer	51.00
Dishwasher	45.00
Washing machine	45.00
Computer	45.00
TV old style	38.00

NIGHT STORAGE HEATERS

These heaters take in electricity during the night and store it in heat retaining material. They release the heat slowly during the day.

To get the best results from these heaters, the controls have to be used correctly. There are usually two controls on the top or the side of each heater.

One is the INPUT control.

Set this last thing at night

This controls how much electricity is taken in during the night. It needs a bit of practice to work out what the forecast is for the next day and set the control accordingly.

The other is the OUTPUT control

This controls how much heat is released during the day, and when it is released. This knob should be turned to minimum during the night. If it's left on, the heat will be released during the night when it's not needed, and use more electricity. Turn up the output control when you need to use the room, if it's not warm enough. Most people find they turn it up in the evening when they wish to sit in a living room, or in a bedroom before they go to bed. Turning up the knob opens a flap in the heater which releases the heat.

Paying for night storage heaters.

They are usually cheaper to buy and install than a central heating system with radiators. They need a separate electricity supply from the meter.

If you have storage heaters, you will probably be put on an Economy 7 tariff by your electricity supplier. This gives you 7 hours of off peak power during the night (times vary between suppliers but often from midnight to 7 am). This off peak electricity is a lot cheaper per unit than a standard tariff. At the time of writing (2010) it can be as little as 5p per unit. The downside of this is that daytime units are charged at a higher peak time rate than the standard tariff. If you are a big user of on peak time electricity you will have to work out whether installing storage heaters would be economical for you. Other appliances eg washing machines, can be run during the off peak hours to save money.

There are other off peak tariffs eg Economy 10, which gives 3 more hours, usually during the afternoon. The cost per unit is more expensive than Economy Seven, but is still cheaper than the standard rate. Contact your electricity supplier for details.

Properly used, storage heaters can work well and heat a home effectively. But electricity is the most expensive fuel, and since everyone expects that prices will continue to rise, they may not be the cheapest way to heat a house in the long run.



Section Four

MICRO RENEWABLES

Solar

Wind

Biomass

Heat pumps

Hydro

CHP

Section Four

MICRO RENEWABLES

Introduction

Renewable energy can be used to provide hot water, heating and electricity. A number of options are available to householders and communities. They include biomass, solar, heat pumps, wind, hydro, geothermal and combined heat and power. A thermal store can be used to store heat generated and can be particularly useful if several sources are used. To decide which is the most suitable it is necessary to assess the site, storage and other requirements, consider what you want from it and how efficiently it is likely to work in your particular situation. If electricity is produced and sold to the grid you will be paid the feed in tariff (FIT: see handout section 6). The renewable heat incentive (RHI) is planned to pay for hot water generated from 2011.

Microrenewables are most effective in a well insulated home. So good insulation is the first step.

Domestic microrenewables do not normally need planning permission; but homes in conservation areas or listed buildings will need discussion with your planning authority, and sometimes building regulations departments.

Solar thermal water heating. Solar panels of two types can be used; flat panels or evacuated tubes. They supply hot water into a large, very well insulated tank. They need clear sunshine to work best.

Solar Photovoltaic panels produce electricity. Both types of solar heating need an unshaded south facing roof. Clear sunshine works best but there is some production on bright days.

Wood fuel is carbon neutral. Stoves need adequate ventilation and dry wood to work properly. With a back boiler a wood stove can provide hot water and heat radiators. Wood stoves and boilers can run on logs, wood pellets or chips.

Heat pumps run on electricity, extracting heat from the air, ground or water. They produce more energy than they use and are effective in well insulated homes.

Wind turbines need suitable conditions to be effective.

Hydro systems need consistent flow and drop.

Combined heat and power (CHP). These installations simultaneously generate usable heat and power (electricity) in a single process. It is a technology still in development

All the figures in the tables come from the EST website.

Biomass (wood) stoves and boilers

Biomass is produced from organic materials, either directly from plants or indirectly from industrial, commercial, domestic or agricultural products. It is often called 'bioenergy' or 'biofuels'. For small-scale domestic use the fuel usually takes the form of wood pellets, wood chips or wood logs.

Producing energy from biomass has both environmental and economic advantages. It is a carbon neutral process as the CO₂ released when energy is generated from biomass is balanced by that absorbed during the fuel's production, if the plants burnt for fuel are replaced.

Biomass can also contribute to waste management by harnessing energy from products that are often disposed of at landfill sites.

Applications

There are two main ways of using biomass to heat a domestic property:

- stand-alone stoves providing space heating for a room or part of a house, burning logs or pellets (shop around for pellets and make sure the system you are having installed will work with this type of fuel). Generally stoves are of 6-12 kW in output, and some models have a back boiler which will provide domestic hot water for radiators. A big wood stove can provide all your hot water and heating if you want to keep it on all the time.
- boilers connected to central heating and hot water systems. These are suitable for pellets, logs or chips, and are generally larger than 15 kW.

For buildings with a higher space heating requirement, larger wood chip boilers and log batch burners become viable. Wood (usually in the form of chip) can also be used in district heating systems whereby a central boiler provides heat for several properties.

Most log burning stoves and boilers have to be filled with wood by hand. Some pellet and chip burners use automatic fuel feeders which refill them at regular intervals from fuel storage units called hoppers. It's important that dry wood is used for maximum efficiency (and less air pollution).

Costs and savings

Costs for a standalone stove will depend on the size of the stove and other factors, but could be in the range £1,500 to around £3,000 including installation. DIY is cheaper, but requires a significant level of knowledge and skill. A typical automatically fed boiler for an average home costs around £9,000 including installation and fitting a suitable flue. Manually fed log systems are slightly cheaper. The automatic feed boilers may be eligible for an income from the renewable heat incentive, but a wood stove is cheaper and as effective. Savings in CO₂ emissions are dependent on usage but can be significant - up to 9.6 tonnes per year when a wood boiler replaces a solid (coal) fired system.

Fuel savings are less significant, and if you replace a gas heating system with a wood burning system you may end up paying more for your fuel. But if you replace solid fuel or electricity you could save between £170 and £410 per year. The cost of wood heating varies a lot, and logs can be very cheap if you have access to free wood and enough space to store it until it is dry. For a list of wood fuel suppliers in your area, see the classified ads in your local paper or visit the log pile website (www.nef.org.uk/logpile)

Types of wood fuel

Wood fuel	Comments
Logs	Cheapest form of wood fuel Most labour intensive
Chip	Typically 30kW boilers and over Suitable for larger buildings due to space requirements and boiler size
Pellets	Most expensive Most convenient Requires least storage space Needs to be dry

Is a wood fuelled heating system suitable for your home?

To tell if wood-fuelled heating is right for you, there are a few key questions to consider:

- **do you have appropriate space for a wood fuel boiler?**
- **do you have enough storage space?**
- **do you have a suitable flue?** You need a vent which is specifically designed for wood fuel appliances, with sufficient air movement for proper operation of the stove. Your existing chimney can be fitted with a lined flue, which is relatively inexpensive
- **do you live in a smokeless zone?**

You might need planning permission if an outside flue will be required, or if it will extend 1m or more above the height of your roof. There may be conditions that apply to you if you live in a conservation area.

Building Regulations apply to biomass appliances. You should take into account factors such as ventilation, noise and general safety as well as other aspects such as electrical installation and plumbing work.

Solar thermal and solar photovoltaic systems

1. Solar thermal

Solar water heating uses energy from the sun to work alongside your conventional water heater. Panels or vacuum tubes can be used to produce hot water for domestic use, not for heating.

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

Solar water heating can be used in the home or for larger applications, such as swimming pools. You will need 3-4 square metres of southeast to southwest facing roof receiving direct sunlight for the main part of the day for a typical domestic system. You may also need space to locate an additional water cylinder.

It is possible to install solar panels as a DIY job, if you have the necessary skills. But for most people they will need to be installed by a trained and experienced installer. A NAPIT accredited installer is required to be eligible for the feed in tariff.

Benefits of solar hot water

- Hot water throughout the year: the system works all year round, though you'll need to heat the water further with a boiler or immersion heater during the winter months.
- Cut your bills: sunlight is free, so once you've paid for the initial installation your hot water costs will be reduced
- Cut your carbon footprint: solar hot water is a green, renewable heating system and doesn't release any harmful carbon dioxide or other pollutants

To tell if solar water heating is right for you, there are a few key questions to consider:

- **do you have a sunny place to put solar panels?** You'll need around 5 square metres of roof space (less for vacuum tubes) which faces east to west through south and receives direct sunlight for the main part of the day. Alternatively, if you do not have a south facing roof and if you have space, you could install two panels, one facing east and one facing west - but this will make installation more costly. The panels don't always have to be mounted on a roof; they can be fixed to a frame on flat roofs or on the ground.
- **do you have space for a larger, or an extra, hot water cylinder?** If a dedicated solar cylinder is not already installed then you will need to replace the existing cylinder, or add a dedicated cylinder with a solar heating coil.
- **is your current boiler compatible with solar water heating?** Most conventional boiler and hot water cylinder systems are compatible with solar water heating. If your boiler is a combination boiler (combi) and you don't currently have a hot water tank then a solar hot water system may not be compatible.
- **do you need planning permission?** (*see section 2*)

Costs and savings

Costs for a typical solar water heating system range from £3,000 to £5,000. Vacuum tubes cost a bit more. Savings are moderate. A solar water heating system can provide about a third of your hot water needs, reducing your water heating bill by between £50 and £85 per year. It will also save up to 580kg of CO2 emissions, depending on what fuel you will be replacing. Maintenance costs are very low. Most solar water heating systems come with a 5-10 year warranty and require little maintenance. You should take a look at your panels every year and have them checked more thoroughly by an accredited installer every 3-5 years, or as specified by your installer.

Fuel displaced	£ saving per year	CO2 saving per year
Gas	£50.00	200kg

Electricity	£85.00	580
Wood	£50.00	320
Solid	£65.00	530

2. Solar photovoltaic (PV)

Solar photovoltaic uses energy from the sun to create electricity to run appliances and lighting. It requires only daylight - not direct sunlight - to generate electricity. PV cells are panels you can attach to your roof or walls. Each cell is made from one or two layers of semiconducting material, usually silicon. When light shines on the cell it creates an electric field across the layers. The stronger the sunshine, the more electricity is produced. PV cells come in a variety of shapes and colours, from grey "solar tiles" that look like roof tiles to panels and transparent cells that you can use on conservatories and glass. The strength of a PV cell is measured in kilowatt peak (kWp) - that's the amount of energy the cell generates in full sunlight. Solar panels are not light and the roof must be strong enough to take their weight, especially if the panel is placed on top of existing tiles (see Building Regulations in section 2). They should always be carried out by a trained and experienced installer.

Benefits of solar electricity

- It cuts your carbon footprint: solar electricity is green, renewable energy and doesn't release any harmful carbon dioxide or other pollutants. A typical home PV system could save around 1200 kg of carbon dioxide per year - that's around 30 tonnes over its lifetime.
- It cuts your electricity bills: sunlight is free, so once you've paid for the initial installation your electricity costs will be greatly reduced. A typical home PV system can produce around 40% of the electricity a household uses in a year.
- You can sell electricity back to the grid: if your system is producing more electricity than you need, or when you can't use it, someone else can use it - and you could make a bit of money (see Feed in Tariffs section 6)
- You can store electricity for a cloudy day: if your home isn't connected to the national grid you can store excess electricity in batteries to use when you need it.

To tell if solar PV is right for you

- you will need enough roof space to take the large panels (you will need 8-10 for an average installation).
- do you have a sunny roof? (See solar water heating).
- do you have a grid connection? If not, you will need to store the electricity in batteries, or a thermal store.

Costs and savings

Costs for installing a solar electricity system vary a lot - an average system costs between £8,000 and £14,000, depending on its size and type. A 2kWp system can provide around 40% of your yearly needs. You can save almost a tonne of CO2 a year and around £200 off electricity bills, and have electricity to sell to the grid – to a total value of about £1000 per year. Panels built into a roof are more expensive than those that sit on top but if you need major roof repairs PV tiles can offset the cost of roof tiles.

Heat pumps

Heat pumps can produce heat from a number of sources, principally the air and the ground. There are also water source heat pumps, which are very much less common and about which there is little technical information. Heat pumps run on electricity but produce more power than they use. This section deals with the first two types of heat pumps.

1. Air source heat pumps

Air source heat pumps absorb heat from the outside air. This heat can then be used to warm water for radiators or underfloor heating systems, or to warm the air in your home directly. The heat pumps extract heat from the outside air in the same way that a fridge extracts heat from its inside. They can extract heat from the air even when the outside temperature is as low as minus 15° C, although at this temperature the efficiency of the system will be greatly affected.

There are two main types:

- **an air-to-water system** uses the heat to warm water. Heat pumps heat water to a lower temperature than a standard boiler system would, so they are more suitable for underfloor heating systems than radiator systems.
- **an air-to-air system** produces warm air which is circulated by fans to heat your home.

The efficiency of air source heat pump systems is measured by a coefficient of performance (CoP), which is the amount of heat they produce compared to the amount of electricity needed to run them. A typical CoP for an air source heat pump is around 2.5. Ideally you need a low temperature demand.

Benefits of air source heat pumps

- **reduce your fuel bills:** air source heat pumps run on electricity, so there's no need to pay for gas, oil or solid fuels to heat your home.
- **cut down on wasted electricity:** heating your home with an air source heat pump is much more efficient than using electric radiators.
- **save space:** an air source heat pump system is compact, and requires no storage space for fuel.

To tell if an air source heat pump is right for you, there are a few key questions to consider:

- **do you have somewhere to put it?** You'll need a place outside your house where a unit can be fitted to a wall or placed on the ground. It will need plenty of space around it to get a good flow of air.
- **is your home well insulated?** Since air source heat pumps produce less heat than traditional boilers, it's essential that your home is well insulated and draught-proofed for the heating system to be effective.
- **what fuel will you be replacing?** The system will pay for itself much more quickly if it's replacing an electricity, Liquid Petroleum Gas (LPG) or coal heating system than a gas or oil one.
- **what type of heating system do you want?** Air source heat pumps are much better at powering underfloor heating systems or warm air heating than radiator-based systems.
- **is the system intended for a new development?** Combining the installation with other building work can reduce the cost of installing the system.

Costs and savings

Costs for installing a typical air to water system suitable for a detached home range from about £5,000 to £9,000 including installation. Air to air systems cost about £2000.

Running costs for space heating and hot water for washing are likely to be around £790 per year. This will vary depending on a number of factors - including the size of your home and how well insulated it is. Savings can be considerable - up to 5 tonnes of CO₂ and £700 per year for a system that replaces an electric heating system.

Fuel displaced	£ saving per year	CO2 saving per year
Gas	£50.00	No saving
Electricity	£700.00	5 tonnes
Oil	£20.00	No saving
Solid	£460.00	4.6 tonnes

2. Ground source heat pumps

A ground source heat pump circulates a mixture of water and antifreeze around a loop of pipe - called a ground loop - which is buried in the garden. When the liquid travels around the loop it absorbs heat from the ground which is used to heat radiators, underfloor heating systems and even hot water. It can also be used to pre-heat water before it goes into a more conventional boiler. Beneath the surface, the ground stays at a constant temperature, so a ground source heat pump can be used throughout the year - even in the middle of winter.

The length of the ground loop depends on the size of your home and the amount of heat you need - longer loops can draw more heat from the ground. Normally the loop is laid flat, or coiled in trenches about two metres deep, but if there is not enough space in your garden you may be able to install a vertical loop to a depth of up to 100 metres.

The efficiency of a ground source heat pump is measured by a coefficient of performance (CoP) - the amount of heat it produces compared to the amount of electricity needed to run it. A typical CoP for a ground source heat pump is around 3.2 without any reductions for the type of distribution system. A higher CoP gives greater costs and CO2 savings.

Benefits of ground source heat pumps

- **eliminate your fuel bills:** ground source heat pumps run on electricity, so there's no need to pay for gas, oil or solid fuels to heat your home.
- **cut down on wasted electricity:** heating your home with a ground source heat pump is much more efficient than using electric radiators.
- **reduce your CO₂ emissions:** on average a ground source heat pump could save around 540kg of carbon dioxide every year when replacing an oil boiler.

To tell if a ground source heat pump is right for you, there are a few key questions to consider:

- **is your garden suitable for a ground loop?** It doesn't have to be particularly large, but the ground needs to be suitable for digging a trench or a borehole and accessible to digging machinery.
- **is your home well insulated?** Since ground source heat pumps only run efficiently at a lower temperature heat than traditional boilers, it's essential that your home is well insulated and draught proofed for the heating system to be effective. It could also make the system cheaper and smaller.
- **what fuel will you be replacing?** If you're replacing an electric, oil, Liquid Petroleum Gas (LPG) or coal heating system, a ground source heating system will pay for itself quite quickly (probably over 10 years). If you're replacing a gas heating system, your savings will be much smaller.
- **what type of heating system do you want?** Underfloor heating systems or warm air heating will work much better than radiator-based systems.
- **is the system intended for a new development?** Combining the installation with other building work can reduce the cost of installing the system.

Costs and savings

Fuel Displaced	£ Saving per year	CO2 saving per year
Gas	£190	No saving
Electricity	£840	6 tonnes
Oil	£160	540kg
Solid fuel	£600	5.6 tonnes

Costs of installing a typical system range from about £7,000 to £13,000. Running costs for a year, where all hot water and space heating can be provided by the system are likely to be around £650 per year, but will depend on a number of factors, including the size of your home and how well insulated it is. Savings can be considerable - up to 540kg of CO2 and £160 if you're replacing an oil-fired central heating system. To save more money on running costs, and to reduce your home's CO2 emissions further, consider installing solar electricity or some other form of renewable electricity generating system to power the compressor and pump.

Micro combined heat and power

Micro CHP systems simultaneously generate usable heat and power (electricity) in a single process and it is a technology still in development. Currently micro CHP systems are mainly used in new large housing developments. However, systems are available which are suited to use in single dwellings, and range in size from around 4kW heat output (suited to small, well insulated dwellings) up to 36kW (these units will incorporate a supplementary boiler for additional heat output in larger or hard to heat dwellings). Electrical power output is typically 1kW to 3kW and is grid-connected.

Costs and savings

Costs for an installation start at around £2500 for smaller (1kWe) units to around £3500, plus any work required to the heat distribution network. The maximum total fuel cost and carbon savings are around £150 per annum, compared with a conventional gas-fired boiler. This is more widely used in other countries but could also be developed here.

MCHP is suitable in any dwelling where conventional gas boilers can be used. Maintenance is comparable to gas boilers (up to £150 per annum). An annual service is recommended. The lifetime of an installation is around 15 years.

More information can be obtained from the Energy Saving Trust.

Micro or small wind turbines

Wind turbines use large blades to catch the wind. When the wind blows the blades are forced round, driving a turbine which generates electricity. The stronger the wind, the more electricity produced.

There are two types of domestic-sized wind turbine:

- **mast-mounted:** these are free standing and are erected in a suitably exposed position, often around 2.5kW to 6kW
- **roof-mounted:** these are smaller than mast mounted systems and can be installed on the roof of a home where there is a suitable wind resource. Often these are around 1kW to 2kW in size.

If your small wind system is connected to the National Grid then you can make money by selling any generated electricity to an electricity supply company. The Feed in Tariff will pay for each unit of electricity you generate using this technology for 25 years. If the turbine is not connected to the electricity grid then unused electricity can be stored in a battery for use when there is no wind.

NOTE: many experts do not believe that roof mounted turbines work efficiently in most situations

Costs and savings

Costs for a roof mounted micro-wind system start at about £1,500. Larger mast mounted systems could cost between £11,000 and £19,000, including installation (the suitability of the site affects costs). These provide enough electricity for lighting and appliances in a typical home. There are a number of types of wind turbine, and it is recommended that you research which would be the most appropriate for you. The Microgeneration Certification Scheme gives information on available products.

Savings can be significant. Recent monitoring of a range of small domestic wind systems has shown that a well sited 2.5kW turbine could save around £380 a year on electricity bills when some electricity generated is sold to the grid, and a saving of around 2.6 tonnes of carbon dioxide per year.

Maintenance checks are necessary every few years, and a well-maintained turbine should last over 20 years. Battery storage life is typically between 6 and 10 years.

To tell if a small scale domestic wind turbine is right for you, there are a few key questions to consider:

- **are there any large obstacles like buildings, trees or hills near your home?** Small domestic wind turbines work best in exposed locations, without turbulence caused by these type of obstacles
- **is your home in a windy area?** To be effective you need an average windspeed of no less than 5m/second.
- **is your home located away from the National Grid?** Small domestic wind systems are particularly suitable for use in remote locations where mains electricity is unavailable.
- **do you need planning permission?** (*See separate sheet*) Permission is specific to a site and the proposed turbine, and it helps to be well informed when applying.
- **What are your energy needs?** As electricity is not good for heat generation it is worth considering other renewable energy sources as well if you mainly want to generate heat.

Small hydro schemes

Small hydro-electricity systems generate electricity from running water - usually a small stream. Small systems can produce enough electricity for lighting and electrical appliances in an average home.

Hydro power systems use running water to turn a small turbine which generates electricity. The faster the water flows and the more water there is, the more electricity can be generated. The amount of electricity a system actually generates depends on how efficiently it converts the power of the moving water into electrical power.

To tell if a hydro system is right for you, there are a few key questions to consider:

- **is there a river or stream close to your home?** You'll need access to a fairly fast flowing water course, and the right to build around it
- **does the water flow vary significantly during the year?** If so, the hydro system may not be able to supply you with all the electricity you need during dry months. If you're not connected to the electricity grid, you'll need a backup power system.
- **do you want to sell excess energy?** Hydro systems can be connected to the National Grid if a suitable connection point is available. Any electricity you generate but don't use can then be sold to electricity companies.

Costs and savings

Costs for installing a hydro system vary a lot, depending on the location and the amount of electricity it can generate. A typical 5kW scheme suitable for an average home might cost £20,000 - £25,000 including installation. Depending on the site and water availability the costs can be greater.

Savings depend on the amount of hydroelectricity that is used in place of electricity bought from another source. If the hydro system replaces electricity bought from the National Grid then typical savings could be substantial, but initial costs are high. It's important to get expert advice on the suitability of the site and the effectiveness of any system considered.

Maintenance costs vary but are usually low as hydro systems are very reliable.



Section Five

MATERIALS AND SUPPLIERS

MATERIALS AND SUPPLIERS

There are many products that are used to make our homes more energy efficient, and new ones are being developed all the time. Before you start any insulation or heating project it's a good idea to talk to as many people as you can to find out what materials and prices are available. Not all builders, or suppliers, will stock or work with the same materials. A list of websites on the next page is a good place to start, but be aware that an energy advice centre, for instance, may well suggest higher prices than a local builder or fitter, because it will be giving you figures from national companies.

Suppliers will recommend the products they sell so it is worthwhile checking websites and manufacturers as well as builders' suppliers when deciding what to buy.

Local building suppliers and DIY stores will hold certain products and they might be able to order others if requested. Some products are only available through the manufacturers.

Trade Associations give details of installers, whether they are accredited, and the type of work they specialise in.

We can put you in touch with people who have made their homes energy efficient to help you decide what would be most appropriate for your property, whether you are doing it yourself or employing a contractor.

Nothing in this section should be taken as a recommendation. We have gathered together as much information as we can to help householders seek what they need, and to make their own choices and decisions.

WE WELCOME ANY ADDITIONS OR AMENDMENTS TO THIS INFORMATION SO THAT WE CAN INCLUDE THEM IN THE NEXT UPDATE.

SOME USEFUL WEBSITES

www.energysavingtrust.org.uk	general information	0800 512 012
www.carbontrust.co.uk	business guide to energy saving	0800 085 2005
www.cat.org.uk	Centre for sustainable building	0845 330 4572
www.microgenerationcertification.org	for certified installers and products	0207 090 1082
www.aecb.net	environmental builders and architects	
www.greenbuildingstore.co.uk	natural insulation and air-tightness products	01484 461705
www.therenewableenergycentre.co.uk	renewable technologies	01926 865 835
www.sw-ecowarehouse.co.uk	environmental builders merchants	01872 277 100
www.naturalenergy.org	DIY information on renewable energy	
www.ecomerchant.co.uk	natural building materials	01795 530 130
www.nationalinsulationassociation.org.uk	for insulation installers	01525 383 313
www.chpa.co.uk	combined heat and power association	0207 828 4077
www.sigss.co.uk	Sustainable Solutions – building materials and advice	0845 873 8612
www.inca-ltd.org.uk	Insulated render and cladding association – exterior walls	01428 654011
www.biomassenergycentre.org.uk	use of biomass, biofuel etc in CHP and other systems	
www.knaufinsulation.co.uk	simple and technical information on manufactured insulation products	01420 526 197
www.sheffins.co.uk	Sheffield Insulation – all types of insulation	01179 313 400
www.solarenergyalliance.com	installers, suppliers of solar PV and wind power systems	01502 515 53

BUILDERS SUPPLIES AND CONTRACTORS

Bradfords building supplies, Taunton		01823 254 666
Warren Insulation, Bridgwater	www.warren.co.uk	01278 686 000
Wickes, Taunton	www.wickes.co.uk products and information	01823 326 943
Jewsons, Minehead	www.jewsons.co.uk builders merchant	01643 703 265
Travis Perkins, Minehead	www.travisperkins.co.uk builders merchant	01643 703702
Timber Reuse Centre	www.timberreuse.org.uk	01643 707397
Hickin Electrics, Minehead	low energy light bulbs	01643 707 505
Seconds & Co	www.secondsandco.co.uk low prices for some products	01544 260 501
Domestic and general	insulation installers and grants	0844 543 0043
Mould Growth consultancy	www.mgcltd.co.uk products for mould treatment	0208 370 731

RENEWABLE ENERGY PRODUCTS AND INSTALLERS

Local companies (Somerset and south west)

Ian Armstrong	wood fuel supplier	01984 656 518
Beco Solar, Dartmouth	www.becosolar.com P V cells and wind turbines	01803 833 636
Bramshaw heating and plumbing	ground source heat pumps, solar thermal	01392 277 199
Brendon Hill Stoves	www.brendonhillstoves.com	
	wood stoves/stand alone/central heating	01984 640 238
John Buswell	air source heat pumps	01364 631 358
Dunster Woodfuels	wood central heating	01643 821 188
Eco Exmoor, Wellington	www.eco_exmoor.com renewables installers	01823 652 611
Eco First, Yeovil		01935 848 543
Exmoor Stoves, Shillingford	www.exmoor-stoves.co.uk wood heating	01398 332 015
Alec Gannon	hydro and wind systems, general advice	01984 641 177
Solar Systems, Ilminster		01823 481 329
Springfield plumbing & heating	wood boilers, heat pumps	01823 333 499
Stoves and Spares, Collumpton	www.woodwarm.co.uk	
	stoves, thermal store, solar thermal	01884 335 59

Further afield

Navitron	www.navitron.org.uk solar panels	01572 725 512
Solar Fusion	www.solarfusionltd.co.uk PV installers	01202 208 208
Solar Twin	www.solartwin.com solar panels	0845 130 0137
Worcester, Bosch group	www.worcester-bosch.co.uk heat pumps	01905 754 624

INSULATION MATERIALS

NATURAL

sheeps wool (quilt or loose fibre)

untreated wool

recycled newspapers (cellulose)

timber based panel

wood fibre: slabs, board

cork: external use

cotton fibre

hemp slabs

straw bale

MANUFACTURED

fibreglass (quilt)

mineral wool roll or slab

polystyrene

polyurethane/plasterboard

multi-layered reflective film (thin quilt)

multifoil with vapour control (gold and silver)

phenolic foam slab/composite panels

phenolic foam/plasterboard (internal use)

polyisocyanurate foam

polyester multifoil

polyurethane/insulating render – external wall insulation

silica – Aerogel/plasterboard (internal use)

Aerogel/recycled plastic (external use)

FLEXIBLE LININGS

latex foam bonded to fibreglass (flexible roll)

polyurethane

PAINT ADDITIVES

silica microspheres

FLOOR INSULATION

underfloor

sempafloor

recycled tyres

underlay

cork

fibreboard underlay, under floorboards

DRAUGHTPROOFING

chimney balloon

dampers, foil

fire screens

flexible silicone window sealant

DOUBLE AND SECONDARY GLAZING

Everest Windows

Exmoor Windows, Minehead secondary glazing

DIY plastics

Filmglaze

EXAMPLES

Nature Pro (Sheffield) 0117 931 3400

from local tannery

Warmcell 01484 461 705

Nature Pro 0117 931 3400

Sigss 0845 873 8612

Alumasc 01744 648 400

www.Bonded Logic.com

Eco Merchant 01795 530130

DIY shops, Crown

DIY shops, Rockwool 01656 862 621

DIY shops - Jablite

DIY shops

Actis 01380 730 195

WEB Dynamics 01204 674 730

Kingspan 0870 733 8333

Gyproc thermaline plus

Celotex 0208 579 0811

Euroform 01925 860 999

Walltransform 01642 714 123

Spacetherm 01904 471 298

Paraclad 01279 876 698

Sempatap 0208 337 0731

Warm-a-wall 01642 714 123

Dr Energy -Thermilate, Thermcells

Nansulate

Ecoboard U heat 01394 384 077

Mould Growth 0208 337 0731

Easylay 07794 129 006

Cloud 9, Axfelt – carpet shops

Wickes 01823 326 943

Wickes 01823 326 943

Nonfumo flues 01494 565 361

Wickes 01823 326 943

01924 368 899

0800 010 124

01643 704 655

0870 444 262

01473 251 051

WHAT IT MIGHT COST

When deciding what to do it is important to get a number of quotes in order to establish what the cost of insulation or renewable energy systems might be, and what choices you have. Information on costs and products is available from the Energy Saving Trust, approved installers and manufacturers websites, local builders and DIY shops, and from people who have installed energy efficiency measures. Quotes are likely to vary a lot, and DIY or work done by builders who are not accredited are cheaper, although local builders can be just as good as large national companies. DIY stores and builders' suppliers often have offers, making some materials much cheaper there, although they only have a limited range of products. It is useful to talk to manufacturers and their distributors to find out about all their products, because each kind of insulation material comes in many types and sizes. It might not be cost effective to buy the thinnest and cheapest as this may not give you the required level of insulation. However, some products like foils and composite panels are more effective insulators so a thinner product can be as effective as a cheaper, thicker one. These are useful if you do not want to reduce your room size or alter fittings to accommodate the insulation. They are not usually found in local builders merchants, so if you contact the manufacturers they will give you the range and prices of their products and information on how to purchase them. They can sometimes be ordered through local builders' merchants. Energy efficiency products are also available through fuel suppliers whose discount schemes may be particularly cheap for their own customers. As prices vary so much we can only give a rough guide to costs.

Products offered through national schemes

loft insulation	free or from £150 to £200
cavity wall insulation	free or from £150 - £200
draught-proofing	free or up to £200.
tank jacket	free or up to £20

Products from local shops

silicone sealant for floors	from	£20
carpet underlay	from	£70 – £100 per floor
fibreglass 100 ml slab	from	£30 per pack – DIY
polystyrene 50ml	from	£11.59 - DIY
external wall insulation installed	from	£4000
internal wall dry lining installed		depends on product
internal wall flexible lining:	Sempatap	£159 plus VAT per roll, plus sealant etc
Internal wall lining: warm-a-wall		£1,200 (wall transform)

Further afield

replacement gas boilers	(Scottish Power)	from	£1500
gas central heating	(Scottish Power)	from	£3000
slimline storage heaters	(Scottish Power)	from	£220 plus fitting
wood stove		from	£1000
plus flue and plumbing for hot water etc			
wood chip boiler and hopper		from	£6000
wood pellet boiler		from	£5000 to £9000
depending on whether it is automatic feed			
ground source heat pump		from	£5000
(EST £7-9000)			
air source heat pump: air to water		from	£5000 - £9000
air to air		from	£2000
solar hot water		from	£3000 - £5000
solar PV		from	£10,000
wind - up to 10Kw		from	£4000 per Kw
- from 10Kw		from	£2,500 per Kw
CHP		from	£5000

Export meter to sell electricity to the grid £400, but free from some utility companies

Last updated July 2010

Section Six

PAYING FOR IT

Grants and loans

Section Six

PAYING FOR IT

All the products in the preceding sections cost money; some a lot of money, some less. Fortunately, it's possible to get discounts on many of these products, and grants are available for some people.

1. Insulation

The cheapest and most effective way to save energy is by installing insulation. An average loft costs about £250 to insulate with 10" or equivalent. Cavity insulation costs a little more.

The place to start in West Somerset is the WARM STREETS grant. This offers free loft and cavity insulation and draughtproofing for eligible residents.

Eligible residents are people who are

- owner occupiers or private tenant

And are either

- over 70
- or • have an income less than £30,000 and savings of less than £20,000
- or • are in receipt of certain benefits

Anyone who does not meet the above criteria will still be eligible for a discount of roughly 50%

Please note insulation works are subject to survey and grant availability. Grant criteria can change at any time.

Ring 0800 512 012 or contact Forum 21 to confirm current arrangements.

WARM FRONT is a national scheme, government funded. It will provide a heating system (up to a certain limit) if the house has no central heating, or one that is irretrievably broken, and also provides free insulation and draughtproofing. This is free to eligible homeowners and private tenants, but the eligibility criteria are tighter than for Warm Streets. Ring 0800 316 2805 or visit warmfront.co.uk

Both these schemes ring to arrange a survey, followed by installation if appropriate. Warm Front can be slower.

NOTE: Currently (July 2010) Warm Front has no CERT funding. We have been told that new applications may be delayed. Fuel suppliers also offer similar schemes. It may be faster to apply to one of these.

Forum 21 can refer you directly to Warm Streets and Warm Front grants.

2. Heating

A new central heating system using wet radiators can cost £3000 upwards; night storage heaters a bit less. A new condensing boiler can cost £600-700 plus fitting costs. There are no grants for boilers, but see the Warm Front scheme above for central heating grants.

3. Schemes from energy companies

Utility companies offer a variety of things either free or with discounts, which may be greater for their own customers. What is offered changes quite frequently so you need to keep checking.

They will insulate loft, cavity wall, tank, pipes, free for priority groups: people over 70 and on disability or means tested benefits; with discounts for others. They do a free survey and quote, and may be quicker than government schemes. Some companies run a boiler scrappage scheme:

see www.boilerscrappagescheme.co.uk

How to find out what they offer

- Heat project 0800 093 4050 funded by utility companies to provide insulation
- Contact energy companies for details of schemes

SCOTTISH & SOUTHERN	0800 300 111
EDF	0800 269 450
E'ON	0800 051 1480
SCOTTISH POWER	0845 601 7836
NPOWER	0808 975 1373
BRITISH GAS	0800 072 7100

• Some companies have funds for community organisations 0870 126 1444

Help with fuel bills

The Home heat helpline (0800 336 699) helps people who have trouble paying bills. Companies run various schemes for vulnerable people such as social tariffs and the priority service register, for people paying more than 10% of their income on energy. (See Social Tariffs on p...)

4. Switching suppliers

This can save as much as £200 pa on energy bills. Some people recommend checking at least once a year to see if you can get a better deal. (See Switching Tariffs on p...)

5. Low cost loans for home improvements

Wessex Reinvestment Company, a not for profit company, offers cheap (3%) loans for home improvement work which is not covered by other grants, which can include insulation and heating. They may give an additional £1000 top up, eg for windows. These loans are for home owners who may not be eligible for the free schemes.

This scheme is supported by West Somerset Council.

6. Grants for renewables

There is more information on this in section 3, Renewables.

The government grant for solar thermal was ended by the new government in June 2010.

The feed in tariff for producing electricity and hot water helps to pay for installing these technologies (see section 3).

The Low Carbon Communities Challenge grant, available through the Exmoor National Park, makes grants to communities for renewables and insulation.

See www.exmoor-nationalpark.gov.uk/.../carbon.../lowcarbonchallenge.htm

[Additional sheets from CSE](#) (updated regularly)

Switching tariffs

Social tariffs

Switching tariffs



[Information updated 2/4/09]

We recommend that you regularly check you are getting good value for money from your fuel supplier, ideally once a year. Ofgem, the industry regulator, says you could make potential savings of £130 per year simply by switching supplier or checking you are on the cheapest tariff possible with your existing supplier. This fact sheet will tell you where to go to find the best deal for you and how to switch.

Existing Supplier:

The first step is to establish with your existing supplier what tariff you are currently on. You should ask if there is a cheaper option available. Usually the cheapest way to get your gas and electricity is to get them both from the same supplier as you will often get a dual fuel discount and to pay monthly by direct debit. Paperless billing over the internet often gives an additional discount. If you are in receipt of certain benefits or are over a certain age you may find you are able to access a social tariff. A social tariff is a cheaper tariff that is offered to vulnerable households who would otherwise struggle to stay on top of their energy bills. Social tariff criteria differ from company to company however.

The main social tariffs are:

British Gas:	Essentials Tariff	0800 0727100
EDF:	Energy Assist	0800 269450
EON:	Staywarm/Age Concern	0800 0511480
Scottish Power:	Carefree Plus	0141 2726042
Npower:	Spreading Warmth	0808 9751373
Scottish & Southern:	Energy Plus Care	0800 300 111

The Priority Services Register:

If you are of pensionable age, disabled, visually or hearing impaired or have long term health issues you can request to be put on the Priority Services Register. All fuel suppliers are obliged to keep this register to provide additional care to those who need it. You will then be entitled to some or all of the following services:

- Quarterly meter readings (avoids building up debt or being over-charged)
- Free gas safety check
- Meter relocation (to a more accessible place)
- Advance notice of disruption to your electricity supply
- Special controls/adapters for appliances and meters
- Password protection scheme (so you can be sure you are letting in a genuine representative of the company rather than a bogus caller).
- Bill nominee scheme (bills may be sent to friends, relatives or carers)
- Services for hearing/vision impaired customers

Switching Supplier:

To find the best deal in your area you can do the following:

- Contact the fuel suppliers directly
- Check with an Consumer Focus accredited comparison service
- Contact Consumer Focus (consumer watchdog) on 0845 9060708

The following are Consumer Focus accredited price comparison and switching services. For more information please see Consumer Focus website: www.consumerfocus.org.uk.

www.uswitch.co.uk	0800 4047961
www.moneysupermarket.com	0845 3451296
www.saveonyourbills.co.uk	0800 0553800
www.switchwithwhich.co.uk	
www.theenergystore.com	0845 3307247
www.simplyswitch.com	0800 011 1395

The main things to check when shopping around for the best deal are:

- Is there a standing charge?
- Is there a dual fuel discount?
- Is the contract fixed term and will I be charged if I end it early?
- What are the unit prices for gas and electricity?
- Can I pay by my preferred method?
- Do they offer any discounts or incentives?

Once you have decided on the new package it is simply a question of actually switching. You can use a switching service (see above) who will deal with the switch for you or you can approach your chosen new company and ask to switch. They will then set up your new account. They will need to know your meter numbers which you can find on the meter itself or you can ask your current supplier. Some companies will inform your old supplier about the switch for you but it is worth telling them yourself that you will be leaving as they will need 28 days notice. It helps to inform them both by telephone and in writing. If they are not informed it could delay the switching process. From start to finish the process takes about six weeks.

Note: Always take a meter reading when switching supplier. That way you will be sure you have been billed correctly by your new and old supplier. If you have an unpaid bill with your old supplier this could hold up the process so make sure any outstanding amount has been paid. For prepayment meter customers always make sure you are issued with a new payment card or key from your new supplier.

If you would like to speak to a trained adviser, for any further details or more general advice on how to save energy, money and the environment, call 0800 512 012

This free phone line is provided by the South West Energy Saving Trust advice centre, which is a free and impartial energy advice service and is available to all domestic households in the region. It is part of a national network of advice centres managed by the Energy Saving Trust.

The Centre for Sustainable Energy can also provide training sessions, presentations and resources to groups and organisations – please call 0117 934 1400 to find out more.



Social Tariffs

Fuel suppliers often offer reduced tariffs to more vulnerable customers. These are known as Social Tariffs. The qualifying criteria and the reductions offered differ from company to company and can change periodically so it is important to always check what is available with the suppliers before signing up. If you are in receipt of certain benefits, or you are over a certain age or spending over a certain percentage of your income on your fuel bills you may be eligible. This fact sheet will give you more information on the main tariffs available.

Fuel supplier	Tariff	Qualifying criteria and details	Contact number
British Gas	Essentials Tariff: 10% discount on gas, 10% discount on electricity	Customers must be over 70 or have a chronic illness or receive either Attendance Allowance or Disability Living Allowance. In addition customers must be in receipt of a means tested benefit and have a household income of less than £15,000	0800 072 7100
EDF	Energy Assist: 6% discount on gas, 6% discount on electricity and £37.50 off gas and £37.50 off electricity per year	Customers in receipt of Pension Credit or Income Support or those spending more than 10% of their net income on energy. (Prepayment customers receive an annual rebate rather than the 6% ongoing reduction).	0800 096 9966
Eon	<p>Staywarm: Fixed price tariff</p> <p>Warm Assist: 15% discount on gas, 15% discount on electricity</p> <p>Age Concern Tariff: £10 daily discount on heating bills in severe cold weather (£20 for over 80s)</p>	<p>Staywarm: Available to the over 60s only. The price is fixed regardless of usage and is calculated according to the previous year's usage. There is a fair use policy however and the tariff is not open to very high users. Annual assessments made.</p> <p>Warm Assist: Available to over 60s who receive Disability Living Allowance or Attendance Allowance or Pension Credit. There is a minimum spend of £60/month required on fuel bills to qualify.</p> <p>Age Concern: Available to all householders over 60. This is in addition to the national Cold Weather Payment.</p>	0845 303 3060

Scottish Power	<p>Fresh Start: Discounted tariff</p> <p>Carefree Plus: (To be confirmed): £30-£50 annual rebate onto account</p>	<p>Fresh Start: Customers must be over 60 and be in receipt of certain benefits including Attendance Allowance, Disability Living Allowance, Pension Credit etc. This is the cheapest tariff offered by Scottish Power currently.</p> <p>Carefree Plus: Rebate for customers registered on the Priority Services Register (known as 'Carefree') for vulnerable households. Yet to be confirmed by Scottish Power.</p>	0141 568 6182
Scottish and Southern	<p>Energy Plus Care: Annual rebate of £50 for gas, £50 for electricity and £100 for dual fuel customers</p>	<p>The qualification for the tariff is worked out using a points system. Those spending 10% or more of their income on fuel will automatically qualify. Other circumstances will be awarded points which will then be added up. Depending on the result the customer may or may not qualify. For more details contact Scottish and Southern.</p>	0800 622 838
N Power	<p>Spreading Warmth: Discounted tariff</p>	<p>Currently this scheme is over subscribed but customers who qualify may still be able to access the scheme if a third party such as the Citizens Advice Bureau makes a referral</p>	0808 172 6999

Please note that if you are on a direct debit tariff, an internet tariff or a fixed price tariff you may find it is cheaper to continue paying by this method than switching to a social tariff. The best thing to do is discuss this with your fuel supplier or call us for advice.

Always do a price comparison when considering your options to make sure you do get the best deal for your circumstances.

If you would like to speak to a trained adviser to get free and impartial advice on how to save energy, money and the environment call the Energy Saving Trust Advice Centre on: **0800 512 012**.

This information was correct on day of printing 03.12.09 and is provided by the Centre for Sustainable Energy. The Centre for Sustainable Energy can also provide training sessions, presentations and resources to groups and organisations. Please call 0117 9341400 for more info.

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