YOUR GUIDE TO

RENOVATING AN OLDER HOME

SUSTAINABLE ENERGY IRELAND

The energy for life…

Energy is essential to our daily lives. It heats our homes, fuels our transport and supplies our electricity. At the moment, most of the energy we use comes from fossil fuels such as oil, gas, coal and peat. Unfortunately there is a limited supply of fossil fuels in the world and we are using them up at a very fast rate. The other downside to fossil fuels is that burning them for energy also produces CO_2, a greenhouse gas, which causes climate change. That's where sustainable energy comes in.

So what is sustainable energy?

Sustainable energy refers to a way we can use and generate energy that is more efficient and less harmful to the environment. Another way of explaining sustainable energy is that it will allow us to meet our present energy needs without compromising the ability of future generations to meet their own needs. We can do this by being more efficient in how we use energy in our daily lives and also by increasing the amount of energy that comes from renewable sources such as the wind, the sun, rivers and oceans.

What are the benefits of sustainable energy?

The good news is that being sustainable in how you use energy has immediate benefits:

- It will save you money on your electricity and heating bills
- Your home will be more comfortable and convenient
- And you will also be making a vital contribution to reducing climate change

Believe it or not, the small actions you take to be more energy efficient in your home can have a very significant impact on improving the environment. The collective efforts of individuals can often be the most powerful of all.

Who is Sustainable Energy Ireland?

Sustainable Energy Ireland (SEI) was set up by the government in 2002 as Ireland's national energy agency with a mission to promote and assist the development of sustainable energy. SEI's activities can be divided into two main areas:

- ***Energy Use -*** Energy is vital to how we live our daily lives but most of us don't use energy as efficiently as we could. By assisting those who use energy (mainly industry, businesses and householders), to be more energy efficient, SEI can help to reduce the amount of energy we use overall.

- ***Renewable Energy -*** Energy that is generated from renewable sources such as wind and solar power is clean and doesn't produce harmful greenhouse gases. By promoting the development and wider use of renewable energy in Ireland SEI can help to further benefit the environment, in particular reducing the threat of climate change.

SEI is also involved in other activities such as stimulating research and development, advising on energy policy and producing energy statistics.

Sustainable Energy Ireland is funded by the National Development Plan 2000-2006 with programmes part financed by the European Union.

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Did you know…

- **Energy use is responsible for two-thirds of Ireland's greenhouse gas emissions.**
- **Irish homes use around a quarter of all energy used in the country– that's even more than industry.**
- **The average home consumes almost 40% more electricity than it did in 1990.**
- **Renewable energy currently accounts for just 2% of Ireland's energy supply.**

1 The Purchase Decision

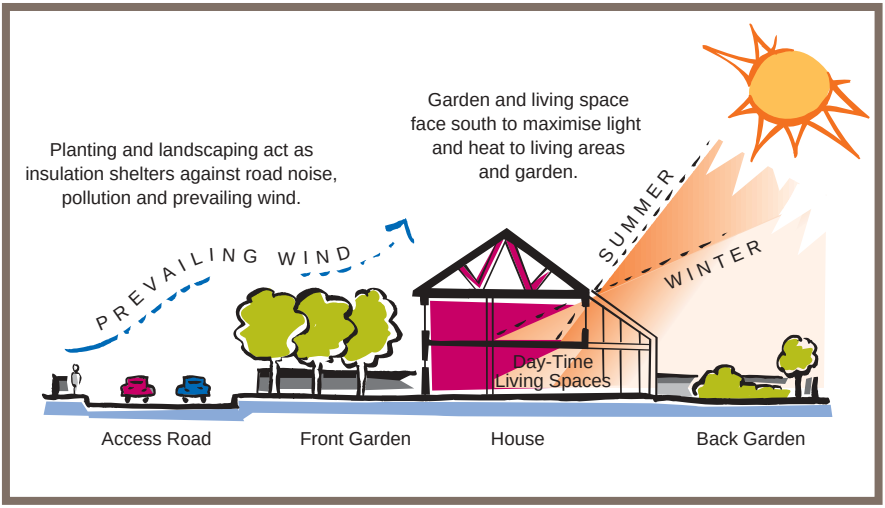
So you are looking at an old house and hoping to buy!

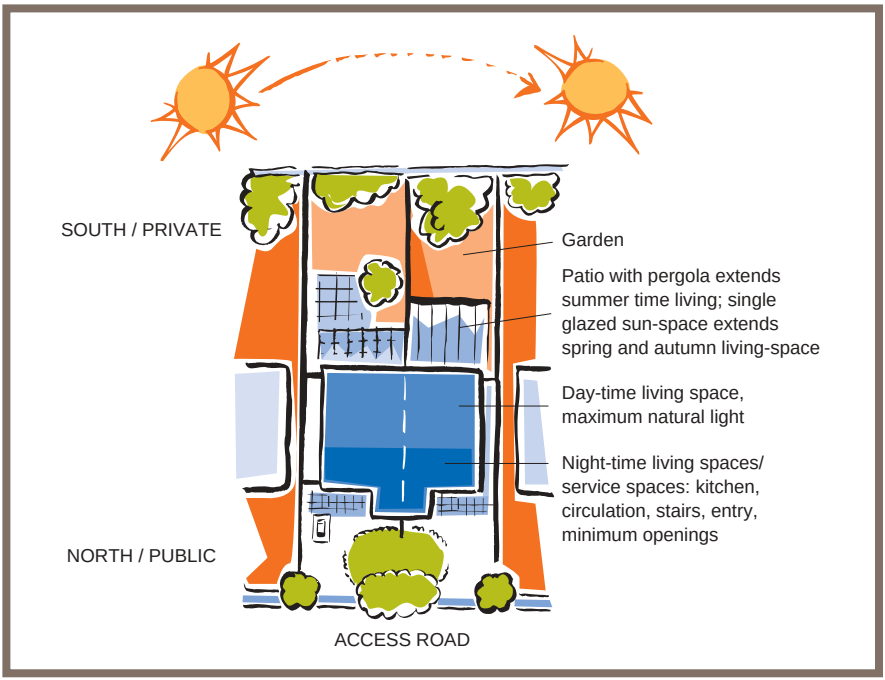
Renovation may be necessary, and it is sensible to incorporate energy saving measures with other home improvement work, to save you money in the long term.

You should consider the potential for architectural improvement, better comfort and facilities to suit your lifestyle, conserve energy and minimise maintenance requirements.

House orientation

Go to view the house around midday, when the sun from the south is at its highest in the sky. You will then know which rooms the sun will shine in throughout the day, moving east to west. It is desirable to have sunshine in the day-time living rooms of your house, so they should preferably be south-facing or south-east/south-west facing.





Sunlight brightens your home and minimises the need for artificial light. It heats up the room in which it shines and this heat can be dispersed to other areas, thus saving on heating fuel.

If your house is in an exposed area check for shelter from the prevailing wind as this can cut down heat loss from your house.

Some areas of the country have higher levels of radon gas; this should be checked if you are buying a house in a high level area, so that the problem can be rectified while renovations are in progress.

2 Adapt your House

You can take the following steps to adapt an older house to achieve a lifestyle which is both comfortable and energy efficient.

The building structure

By maintaining a dry, well insulated and draught-proof structure, it will be much easier to achieve comfort.

Older houses that do not have damp-proof courses may be damp-proofed. Uninsulated walls and roofs should be insulated, and draughts must be minimised to achieve comfort levels and save energy.

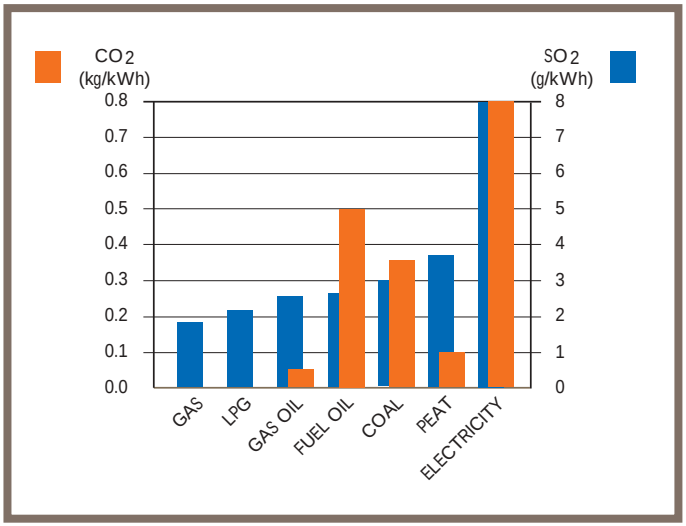
When renovating an older house you should strive to integrate these measures into the proposed remedial work, and adopt when possible passive solar heating and day-lighting techniques.

Double glazed south facing windows can maximise solar gain and, with some form of night insulation and low levels of infiltration, can sharply lower heating demand.

Heating system

Some form of conventional heating system will be necessary. When choosing fuels and appliances you should consider the pollution produced by burning the fuel, and the efficiency with which it can be used in available equipment. Plan to use the most efficient domestic hot water system and modern heating controls which will add considerable convenience to your lifestyle.

Typical emission factors for fuels (based on gross calorific value):



Typical heating appliance efficiencies:

Open fire	15-30%
Oil-fired boiler	55-70%
Gas-fired boiler	65-75%
Gas room heater	65-75%
Condensing boiler	80-90%
Electric room heater	100% nominal, but only 35% if account is taken of the primary energy consumed in electricity generation

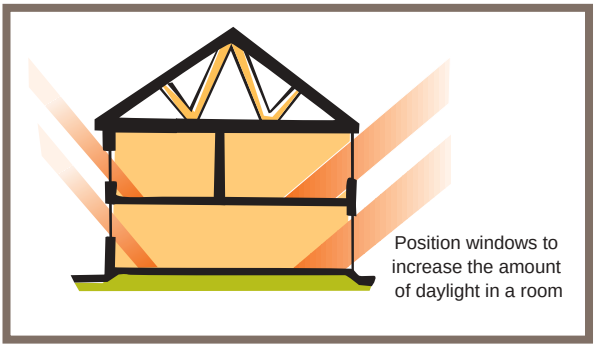
Hot water services

When replacing sanitary fittings, use water conserving fittings and appliances as these can reduce water consumption in your home by 20%-30%.

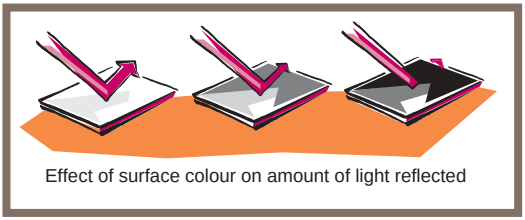
Water Using Appliances	Conservation Strategy
WCs	Six litre flush toilets should be specified
Taps	Taps should be fitted with pressure regulators, spray nozzles and sprung on/off control or infra-red detectors
Shower Heads	Low consumption heads should be specified
Water Heaters	Units for heating water should be located close to the point of use. This will reduce the volume run off before the user gets hot water.
Clothes Washers and Dish Washers	Check water consumption of equipment to be purchased.

Windows and daylight

Strive to maximise the use of natural light. Position windows and rooflights to increase the amount of daylight in a room, but take account of heat loss and heat gain. Replacement windows should be double glazed low emissivity to conserve heat. While double glazing is a great improvement over single glazing, even better glazings, such as argon filled, are available at affordable prices. Retain existing shutters to minimise heat loss at night and hang lined curtains.



Position windows to increase the amount of daylight in a room

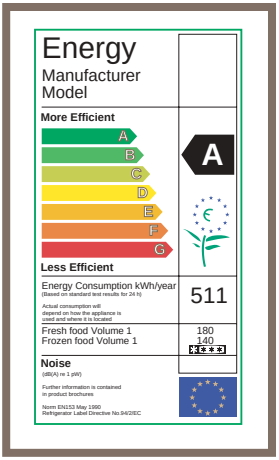


Effect of surface colour on amount of light reflected

When decorating your home, remember that light coloured walls and furnishings reflect light, and use energy efficient light bulbs in your home.

Household appliances

When buying new appliances for your home choose energy efficient models with Energy or Eco-labels displayed.



3 House Types

The house you are going to buy may be similar to one of the following:

POSSIBLE DEFECTS	 **MID-LATE 1800S** Rendered masonry walls Hardwood windows Timber floors Timber roof and slates	 **EARLY 1900S** Solid brick walls rendered Hardwood windows, bay Timber floors Timber roof with slates
Damp-proof course		
No damp-proof course in walls	✓	✓
No damp-proof membrane under floor	✓	✓
Insulation		
No roof insulation	✓	✓
No wall insulation	✓	✓
Insufficient insulation		
Windows + doors		
Single glazed	✓	✓
Double glazed		
No draught sealer	✓	✓
Central heating		
None	✓	✓
Inefficient		
Open fireplaces	✓	✓

 **1920-1950** Solid concrete, rendered Steel windows Concrete and timber floors Timber pitched roof with concrete tiles or flat roof	 **1960-1970** Hollow block, rendered Softwood windows Concrete ground floor Timber upper floor Timber roof with concrete tiles	 **1980-PRESENT** Cavity wall, block interleaf Block rendered or brick outer Concrete ground floor Timber upper floor Timber roof with concrete tiles
	✓	✓
✓		
✓		
✓		
✓		
	✓	✓
✓	✓	✓
✓	✓	✓
✓		
	✓	✓
✓		

4 Remedial Work

Defects	Remedial work
No damp-proof course in walls	Inject or render walls with damp-proofing solution
No damp-proof membrane under floor	Place damp-proof membrane on concrete slab with screed over or if replacing floor construct new concrete slab with damp-proof course underneath
No/insufficient roof insulation	Insulate attic space with a minimum of 250mm quilt insulation
No/insufficient wall insulation	Insulate severely exposed walls internally with insulated plasterboard and vapour check. Insulate externally with insulation, vapour check and render finish
No cylinder insulation	Insulate hot water cylinder with equivalent of pre-insulated type with 35mm PU foam
Single-glazed windows	If windows need to be replaced due to deterioration, replace with double-glazed low emissivity windows
No draught sealer	Weather-strip windows and doors. Integrate trickle vents to windows to provide sufficient ventilation to avoid condensation. Retain window shutters and lined curtains on older houses
Draughty floor boards	Seal joints between floor boards or put a good underlay under carpets
Central heating	Install efficient central heating system or if already installed evaluate and upgrade to include improved efficiency boiler and modern controls if necessary
Open fires	Close off chimneys when not in use with a patent chimney damper ensuring that there is adequate room ventilation

Notes

Notes

Relevant Standards

Building Regulations, 1991

Irish Agrément Board Certified Products
The Irish Agrément Board assesses, tests and certifies building products for compliance with the requirements of the Building Regulations. A complete listing of certified products is available from the Irish Agrément Board.

Useful contacts for further information

For further leaflets on home energy management contact
SEI, Glasnevin, Dublin 9.

For information on solar technologies contact
Energy Research Group, UCD School of Architecture, Richview, Clonskeagh, Dublin 14.

SEI, Renewable Energy Information Office, Shinagh House, Bandon, Co. Cork.

For information on radon contact
Radiological Protection Institute of Ireland, 3 Clonskeagh Square, Dublin 14.

ENFO, 17 St. Andrew Street, Dublin 2.

For information on insulation
Insulating Contractors Association, Construction Industry Federation, Federation House, Canal Road, Dublin 6.

For information on building products standards contact
National Standards Authority of Ireland, Glasnevin, Dublin 9.

Irish Agrément Board, Glasnevin, Dublin 9.

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Read our other publications:

A Detailed Guide to Insulating Your Home

A Detailed Guide to Home Heating Systems

Your Guide to Building an Energy Efficient Home

Your Guide to Renewable Energy

A Consumer Guide to Sustainable Energy

How to make your Home more Energy Efficient

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NDP NATIONAL DEVELOPMENT PLAN

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