



## Building Energy Rating (BER)

### ADVISORY REPORT

Energy use in our homes is responsible for more than a quarter of Ireland's total CO<sub>2</sub> emissions. Reducing energy use will save you money and is good for the environment. This report provides advice on improving your Building Energy Rating, reducing your energy usage and costs, while improving the comfort and condition of your home.

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### About this Advisory Report

Energy use in our homes is responsible for almost a quarter of Ireland's total CO<sub>2</sub> emissions. Reducing energy use will save you money and is good for the environment. This report provides advice on improving your BER, reducing your energy usage and costs, while improving the comfort of your home. The improvement measures recommended in this report are not mandatory and can be completed at your own discretion. Some improvements may require the use of suitably qualified installers or professional advice. All works should be completed to the relevant health and safety standards. Where applicable, works should be completed to the relevant Building Regulations.

In this report an associated cost and impact are provided for the recommendations specific to your home. Costs and impacts are divided into categories and these are defined as follows:

**Low Cost** are improvements that are expected to cost less than 100 euro to complete.

**Medium Cost** are improvements that are expected to cost 100 euro to 1,000 euro to complete.

**High Cost** are improvements that are expected to cost more than 1,000 euro to complete.

The above costs are guidelines only and actual costs will vary depending on house size, work specification and market conditions.

**Low Impact** are measures that will make a small improvement in energy efficiency.

**Medium Impact** are measures that will make a medium improvement in energy efficiency.

**High Impact** are measures that will make a large improvement in energy efficiency. Implementing any improvement measure will reduce your energy consumption. When implementing improvements it is sensible to prioritise those with a low cost and a high impact first. The money saved by reducing energy usage can help to pay for the

improvement measures. Moreover apart from increasing the comfort and costs the measures could increase the value of your home and reduce its environmental impact.

## **Ventilation**

### **General Operational Advice on Ventilation**

Care should always be taken to ensure a sufficient level of ventilation to maintain fresh air levels in each room and to remove moisture, water vapour and pollutants. For health and safety reasons it is important to ensure an adequate air supply to combustion appliances e.g. gas, oil or solid fuel. Signs of inadequate ventilation are persistent condensation and mould growth. If such problems exist, they should be addressed first, since reducing ventilation may make the problem worse. In a typical home 20% of all heat loss is through ventilation and draughts. Energy consumption can be improved while maintaining adequate ventilation. If draught sealing is damaged at any time make sure to replace it. When draughtproofing or making houses more airtight, it is important to maintain recommended ventilation standards.

Radon concentrations can increase in existing houses as a result of greater airtightness. Further information on Radon is available from the Radiological Protection Institute of Ireland in their publication "Radon in Homes". This guide can be downloaded from [www.rpii.ie](http://www.rpii.ie).

## **Chimneys**

This dwelling has no chimneys.

No specific action is advised.

## **Draught Lobby**

This dwelling has no draught lobby.

Open doors and air gaps around doorways are a source of heat loss in a dwelling. The construction of a draught lobby/porch on the frequently used external doorways in this dwelling would reduce these heat losses. Lobbies should be constructed to the relevant Building Regulations. Care should be taken not to block any existing ventilation openings inadvertently.

**Cost:** High     **Impact:** Low

## **Suspended Wooden Floor**

This dwelling has an unsealed suspended wooden floor.

Suspended wooden floors allow air to infiltrate the dwelling.

Sealing the suspended floor(s) would reduce heat loss by increasing the air tightness.

Typically a floor is sealed with a manmade board such as plywood or oriented strand board (OSB). A suspended wooden floor is considered sealed if all joints in the floor (at the edges and main part of the floor) are draught sealed using membranes or adhesives. Carpets with a good underlay or lino can have a similar impact. It is important for health and safety to maintain proper ventilation in rooms. Suspended timber ground floors require sub-floor ventilation to avoid dampness and wood rot. Ventilation openings to the sub-floor space should not be blocked.

**Cost:** Medium     **Impact:** Low

## **Draught Stripping**

This dwelling has 100% draught stripping.  
No specific action is advised.

### **Ventilation System**

This dwelling has natural ventilation.  
No specific action is advised.

### **Building Elements**

#### **Floors**

##### General Operational Advice on Floors

Floors can be a source of significant heat loss and dampness in a dwelling. For example heat loss through the ground floor of a two storey house typically accounts for about 10% of total heat loss. For a single storey house this figure is about 15%. However, if a house is well insulated everywhere except for the ground floor, this percentage will be higher. A U-Value is a measure of the heat loss through the fabric of the building. The lower the U-Value the better and the higher the U-Value the greater the heat loss. Floors with a U-Value greater than 0.25 could be improved in a number of ways. A relatively simple way to reduce heat loss through a ground floor is to lay a carpet with foam backing or a foam underlay ensuring that both carpet and underlay are laid wall to wall. Sealing of gaps in the ground floor will help to reduce draughts. Modern insulation methods for new houses may also be implemented in existing houses. In some cases this would be disruptive and costly, but if work needs to be done on the floor anyway, this is a good time to consider an insulation upgrade. For further details please refer to publication 'A Detailed Guide to Insulating Your Home' available on [www.seai.ie](http://www.seai.ie)

Part of the floor area in this dwelling has a U-Value of greater than or equal to 1.  
The insulation in this floor can be greatly improved.

**Cost:** High    **Impact:** High

Part of the floor area in this dwelling has a U-Value of less than 0.6 and greater than 0.25.

The insulation in this floor can be improved.

**Cost:** High    **Impact:** Low

#### **Roofs**

All pitched roofs insulated on the ceiling in this dwelling have a U-Value of less than or equal to 0.16. These roofs have reasonable insulation qualities.

No specific action is advised.

#### **Walls**

Heat loss through the walls can account for up to 30% of the total heat loss. This can typically be reduced by two-thirds by insulating the walls and so reduce the energy demand of the dwelling. A U-Value is a measure of the heat loss through the building fabric. The lower the U-Value the better and the higher the U-Value the greater the heat loss. Walls with a U-Value greater than 0.27 could be improved. Insulation may be installed as cavity fill. This is where the gap between the inner and outer layers of

external walls is filled with an insulating material. If cavity insulation is not applicable or is not technically possible, insulation may be installed internally or externally. Internal insulation involves a layer of insulation being fixed to the inside surface of external walls, and a suitable fire resistant finish being incorporated or applied. External solid wall insulation is the application of an insulant and a weather-protective finish to the outside of the wall.

For further details please refer to publication 'A Detailed Guide to Insulating Your Home' available on [www.seai.ie](http://www.seai.ie)

Part of the wall area in this dwelling has a U-Value of greater than or equal to 1.1. The insulation in this wall can be greatly improved.

**Cost:** High    **Impact:** High

### **Windows**

All windows in this dwelling have a U-Value of less than or equal to 2. These windows have reasonable insulation qualities.

No specific action is advised.

### **Hot Water**

General Operational Advice on Hot Water.

Ensure that the hot water cylinder insulation is not disturbed or damaged. Incomplete insulation increases heat loss and costs money.

### **Hot Water Cylinder Insulation**

The hot water cylinder insulation is less than 80mm.

Installing a cylinder lagging jacket of at least 80mm thickness reduces hot water storage heat losses. If the cylinder is reaching the end of its useful life, consider replacing it with a preinsulated cylinder model.

**Cost:** Low    **Impact:** High

### **Lighting**

General Operational Advice on Lighting

Compact Fluorescent Lamps (CFLs) use 20% of the energy used by typical incandescent bulbs to give the same amount of light. A 22 Watt CFL has the same light output as a 100 Watt incandescent. LED (Light-emitting diode) lights use less than 10% of the energy required for corresponding tungsten lights. Low energy lighting will give highest savings in rooms that are most often used.

### **Lighting - Low Energy Bulbs**

The low energy lighting in this dwelling is greater than or equal to 50% but less than 100%.

Replacement of traditional light bulbs (tungsten or incandescent) with energy saving bulbs (CFL or LED) can reduce lighting costs significantly. They also last considerably longer than ordinary light bulbs thereby saving on replacement costs. Consider replacing traditional light bulbs with energy saving bulbs.

**Cost:** Low    **Impact:** Low

### **Efficiency of Main Heating System (Electricity)**

## General Operational Advice on Efficiency of Electric Heating Systems.

Electric storage heaters are more cost effective if you use electricity supplied at a cheaper night-time rate. Checking your tariff with your electricity supplier could save you money.

This dwelling has an electric main heating system.

Traditional electricity production is energy intensive and the use of direct electric heat sources can have a very negative impact on your BER result. A number of alternatives should be considered. Renewable or Low Carbon heat sources can be considered as replacements for electric heating. Two such alternatives are biomass boilers and heat pumps. A biomass boiler burns renewable fuel such as wood pellets and therefore is less damaging to the environment than fossil fuels. Biomass boilers usually require more fuel storage space than gas/oil boilers. Heat pumps use electricity to extract "free" heat from the ground, air or water. This extracted heat is then used to heat your home. Heat pumps run on electricity but for every one unit of electricity used about 3 to 4 units of heat can be provided. Heat pumps operate more efficiently when providing space heat via an underfloor heating system rather than radiators. Gas or Oil boilers can also be considered as an alternative to electric heating. Where installing a gas or oil boiler a condensing boiler should be used. A condensing gas or oil boiler is capable of much higher efficiencies than other types of boiler, meaning it will burn less fuel to heat this dwelling. While boiler upgrades can be undertaken at your own discretion, please note that, in the case of replacement boilers, it is a mandatory requirement under current Building Regulations that a replacement boiler has a minimum efficiency of 86%. Boilers with efficiencies of greater than 90% are available.

Condensing boilers need a drain for the condensate which can limit where they are located. This can be borne in mind if you are considering remodelling the room. For further details please refer to publications "Detailed Guide to Heating Your Home" and "A Guide to Renewable Energy in the Home" available on [www.seai.ie](http://www.seai.ie)

**Cost:** High    **Impact:** High

## Thermal Solar Panels

This dwelling has no solar water heating.

Solar Panels, also known as "collectors", can be fitted to a building's roof. They use the sun's heat to warm water, or another fluid, which passes through the panel. The fluid is then fed to a heat store (e.g. a hot water tank) and helps provide hot water directly or can provide a source of hot water for the central heating system in the dwelling. Solar panels work throughout daylight hours, even if the sky is overcast and there is no direct sunshine. Solar panels can also be used to meet some space heating demand. Ideally the panels should be located on an unshaded, south facing roof at a tilt angle of 30°- 45° to the horizontal. Space will be need to accommodate an appropriately sized cylinder for the system and a thermal mixing (anti-scald) valve should also be installed.

**Cost:** High    **Impact:** Medium

## PV Solar System or Microturbine

This dwelling has no Photo Voltaics (PV) or Microturbine installed.

A solar photovoltaic (PV) system is one which converts light directly into electricity via panels placed on the roof with no waste and no emissions. This electricity is used

throughout the home to supplement the electricity purchased from an energy supplier. Ideally the panels should be located on an unshaded, south facing roof at a tilt angle of 30°- 45° to the horizontal. Batteries can be used to store electricity from the PV array or wind turbine. However, this increases the installation and equipment cost as well as maintenance cost.

A Micro-windturbine is a small turbine placed on the property which uses wind to generate electricity. The electricity is used throughout the home to supplement the electricity from an energy supplier. The turbine should not be subject to wind shelter. To be effective, the turbine should be at a height well clear of nearby roofs and other obstructions.

**Cost:** High     **Impact:** High

## **General Advice on Energy Use in Your Home**

The way we use energy in our homes can reduce energy consumption. Some simple everyday measures will save money, improve comfort and reduce your impact on the environment. Some of these are outlined below.

**Appliances:** New kitchen appliances carry an energy rating label which rates energy efficiency on a scale of A to G. When buying new appliances look for A rated products which are more energy efficient and cost less to run. Do not under or overload appliances, such as dishwashers and washing machines. For washing machines, a 40°C rather than a 60°C wash cycle cuts electricity use by approximately a third. (Modern washing powders and detergents can work equally effectively at lower temperatures.) Defrost your freezer regularly to save energy and extend the operating life. Equipment on standby uses up to 20% of the energy it would use when fully on. When an appliance is not in use, turn it off fully.

**Lighting:** Avail of natural daylight whenever possible and avoid leaving electric lights switched on in unoccupied rooms. All lighting lamps carry an energy label similar to that on appliances (i.e. an A to G label) so always choose the most efficient to suit your particular needs.

## **Useful Links and Sources of Further Information**

Useful energy saving tips are available on [www.change.ie](http://www.change.ie) (Tel. 1890 242643) and [www.powerofone.ie](http://www.powerofone.ie). For specific queries on BER please contact SEAI on 1890734237 or by email [info@ber.seai.ie](mailto:info@ber.seai.ie). There are many useful documents available on The Sustainable Energy Authority of Ireland's (SEAI) website [www.seai.ie](http://www.seai.ie)

The most recent Technical Guidance Documents for the Building Regulations and other supporting documents are available from the Department of Environment, Heritage and Local Government website [www.envron.ie](http://www.envron.ie) on the link to Building Standards (Tel. 1890 202021). Some of these documents are listed below.

Technical Guidance Document Part L Conservation of Fuel and Energy - Dwellings;  
Technical Guidance Document Part J Heat Producing Appliances;  
Technical Guidance Document Part F Ventilation.

When performing building works it is important to take the correct health and safety measures. Useful health and safety information on ventilation, radon and combustion devices can be found on the Carbon Monoxide safety website:

[www.carbonmonoxide.ie](http://www.carbonmonoxide.ie) Tel. 1850797979 and The Radiological Protect Institute of Ireland website [www.rpii.ie/radon](http://www.rpii.ie/radon) Tel. 01 269 77 66.

Please consider the environment before printing this document

Further advice on improving the energy efficiency of your home is available from the Sustainable Energy Authority of Ireland, [www.seai.ie](http://www.seai.ie)

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