



Upgrading To An A-Rated Home

Homeowner Guide

HOW SEAI CAN HELP YOU AND YOUR HOME

The Sustainable Energy Authority of Ireland (SEAI) is Ireland's national energy authority, investing in and delivering appropriate, effective and sustainable solutions to help Ireland's transition to a clean energy future. SEAI works with citizens, communities, business and Government to help achieve Ireland's clean energy transition. As part of its role, SEAI helps thousands of homeowners each year to make their homes more comfortable and energy efficient, while also reducing their energy bills.

This ranges from free energy upgrades if you are in receipt of certain social welfare allowances, to varying levels of grant support depending on the scope of the energy upgrade. You can get grants to do individual energy upgrades such as insulation grants or heating systems grants, or you may choose to undergo a deep retrofit all at once. While this is a big undertaking, higher grant support exists for deep retrofit to help you achieve a really energy efficient A-rated home.

SEAI is offering this support on a limited basis to help investigate the challenges and benefits of deep retrofit.

INTRODUCTION

We have put this booklet together to provide you with information on the different types of energy upgrades which can be used to improve the energy rating of your home. These can be combined into a deep retrofit package, tailored to bring your home to an A-rating, or you can consider adopting one or more of these energy upgrades on a phased basis.

We also explain what is required if you decide to carry out a deep retrofit, how the grant application process works and where you can find more information.

HOW UPGRADING YOUR HOME WILL BENEFIT YOU

There are multiple benefits to carrying out a home energy upgrade. It will result in a warmer, cosier home with an improved BER rating. Plus you could be eligible for SEAI grant support towards the cost of works. Research has shown that a warmer home also benefits overall health and wellbeing. And, since your home will be much more energy efficient, your heating bills should also be lower.

In the following pages, you will find more information on individual energy upgrades which can be combined to bring your home to an A-rating as part of an SEAI deep retrofit.

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WALL INSULATION

WHY INSTALL IT?

Up to 35% of your home's heat can be lost through your external walls. This heat loss can be reduced by insulating the walls so that more heat is kept inside your home. There are three different ways to insulate your walls; **cavity**, **external** and **internal wall insulation**. These can be used on their own or in combination depending on your existing wall construction.

Additional internal ventilation is needed when your walls are insulated. Your contractor will assess the best method and discuss this with you before the work begins. For further information on the importance of ventilation in your home, see the section on ventilation systems.



WALL INSULATION

CAVITY WALL INSULATION

WHY INSTALL IT?

If your home has cavity walls which are not insulated, or only partially insulated, then cavity wall insulation is an easy, cost effective first step to reduce heat loss.

WHAT'S INVOLVED?

If your home has a cavity wall, insulation is pumped into the cavity. A series of small holes are drilled in the wall, at regular intervals, on the outside. The insulation is then pumped into the cavity through these holes, and the holes are filled in so that they match the rest of the wall.



EXTERNAL WALL INSULATION

WHY INSTALL IT?

For solid block or concrete walls with no cavity, external wall insulation is generally the preferred option. It can also be used in addition to cavity wall insulation to further improve the performance of your external walls.

WHAT'S INVOLVED?

External wall insulation involves wrapping a layer of rigid insulation around your home, fixing it to the walls, embedding mesh in it to provide strength, and covering it in a render to provide weather resistance.



INTERNAL WALL INSULATION

WHY INSTALL IT?

Internal wall insulation might be recommended for your home because it has solid or cavity block walls, and external insulation is either not possible (i.e. for some protected structures) or is not considered the best solution.

WHAT'S INVOLVED?

Internal insulation (sometimes referred to as 'drylining') usually involves fixing insulation boards to the inside of the external walls and covering them with a vapour control layer, plasterboard, skim and new painting. As the boards are applied to the inner side of the walls, there will be some loss of space in the rooms.



ATTIC INSULATION

WHY INSTALL IT?

Heat rises – and up to 30% of your home's heat can be lost through your roof. Insulating your attic space keeps the heat below the ceiling and in the rooms below, thus reducing heat loss.

WHAT'S INVOLVED?

If you have an attic, a thick layer of insulating material will be rolled out over the ceiling below. The water tank and pipework will also need to be insulated, and a walkway and ventilation provided. It is also possible to insulate sloping ceilings or flat roofs where necessary.

With the new insulation, proper attic ventilation is very important; it reduces the risk of condensation build-up in the attic space, which can reduce the effectiveness of your insulation and cause damage to your roof structure.



FLOOR INSULATION

WHY INSTALL IT?

Up to 10% of your home's heat can be lost through your floors. As with attic and walls, this heat loss can be reduced by insulating the floors so that more heat is retained inside your home. However, upgrading the floor insulation may not be possible in all homes as the level of disruption is dependent on the type of existing floor construction.

WHAT'S INVOLVED?

Different approaches will be needed depending on whether you have a solid ground floor, a suspended concrete floor or a suspended timber floor. In some cases it may be possible to lay insulation on top of the existing construction or in other cases it will be necessary to fit insulation to the underside of the concrete or timber structure.



WINDOW AND DOOR UPGRADES

WHY INSTALL THEM?

You can lose about 10% of your home's heat through your windows and doors depending on the age of your existing windows. If you've got well insulated walls and attic, then the heat lost through poorly performing windows and doors will be even greater. Generally, replacement to current standards will be required as part of the deep retrofit to meet the minimum energy rating.

WHAT'S INVOLVED?

During the pre-works survey, your contractor will measure the windows and doors to be replaced. Once the specification and costs are agreed, the contractor will then send the dimensions to the supplier so they can be manufactured. The standard waiting time is around 4-5 weeks from order to installation of the new windows and doors.



VENTILATION SYSTEM

WHY INSTALL THEM?

Proper ventilation improves the air quality in the home. It is very important for both the building's health and the occupant's health. As the overall airtightness of your home will be dramatically improved as part of a deep retrofit, ensuring that there is good ventilation is even more important – to improve the indoor air quality and reduce the possibility of any condensation or mould.

WHAT'S INVOLVED?

If your home is going to be fully insulated and new windows and doors are going to be installed to eliminate draughts and air leakages, then a new ventilation system will be required as part of the deep retrofit. Typically, either a Demand Control Ventilation (DCV) system or a Mechanical Ventilation with Heat Recovery (MVHR) system will be required.

WHAT DIFFERENCE WILL I NOTICE WITH THE NEW VENTILATION?

Proper ventilation removes stale air and odours and ensures that fresh air is circulated throughout your home at all times. This does not mean that your home will be colder or draughty, but the warm air will not be harmful for your health. You may be able to hear air coming in through the vents, which is normal. If you choose, and when the weather permits, fresh air can also be provided naturally by opening a window.

Demand Control Ventilation

DCV is a background ventilation system that brings fresh air into all of the rooms in your home through trickle vents in the walls or windows while continuously extracting the stale air mechanically from the 'wet rooms' (bathrooms, utility, kitchen and toilets). DCV systems are controlled by humidity sensors that boost ventilation levels when humidity is high. Gaps must be left under doors or in internal walls to allow the air to flow to the extract area.

Mechanical Ventilation with Heat Recovery

MVHR is a forced air ventilation system that recovers heat from the stale air being taken out of the house and uses it to heat the cold air being supplied into the house. MVHR systems use heat exchange equipment in addition to supply and extract air ducts to provide complete control over the level of ventilation in your home.

WOODBURNING STOVES

WHY INSTALL ONE?

Modern room heating stoves are highly efficient when compared to a traditional open fire as they provide three times the heat and use only a quarter of the fuel. A wood burning stove with a minimum efficiency of 70% may be considered an appropriate element of the whole house solution that is proposed for your home.

WHAT'S INVOLVED?

The installation of the wood burning stove can be carried out within a single day, usually by two persons. As well as removing the existing fire grate and surround, it will be necessary to install a new metal flue liner in your existing chimney.



RENEWABLE ENERGY SYSTEMS

As part of an SEAI deep retrofit, all projects must include renewable energy solutions to support the transition away from fossil fuels. Renewable energy systems provide heat or electricity to your home without the need to burn fossil fuels and are generally required in order to achieve an A-rated home. There are a wide range of renewable energy systems currently available on the market with the most prominent to date being heat pumps, solar water heating panels and solar photovoltaic panels.

Other renewable heat systems include wood chip or pellet boilers, biomass boilers or combined heat and power (CHP) systems. In addition to generating electricity using solar power, there are also wind and hydro generating options. We focus on the three most common technologies for deep retrofits here.

HEAT PUMPS

WHY INSTALL ONE?

Older gas and oil-fired boilers are wasteful of energy and costly to run because of the amount of fuel needed to maintain adequate comfort levels and hot water in the home. Replacing a conventional heating system with a heat pump system can transform the comfort levels in your home while reducing running costs, energy usage and harmful greenhouse gas emissions. As part of a deep retrofit, the heat pump system will eliminate oil and gas bills from your home.

WHAT'S INVOLVED?

There are a number of different types of heat pump systems; air source, ground source and water source. The most common heat pump systems extract heat from external air, typically using an outside unit. These heat pump systems do not require underground piping to source heat and so are easier to install as part of a retrofit project.

Air to water heat pumps are the most popular choice of system. Heat is distributed through radiators or underfloor heating and they can also produce hot water.

As heat pumps operate with lower temperature water the installation may require the replacement of your existing radiators to low temperature radiators. The new system will have a range of different controls i.e. time and temperature regulation and you will be able choose which areas of your home you wish to heat at any time.



WHERE CAN I GET MORE INFORMATION?

More detailed information on all heat pump systems is provided in SEAI's **Homeowner's Guide to Heat Pump Systems** which is available under the grants area of our website: www.seai.ie

SOLAR PANELS

WHY INSTALL THEM?

Even in Ireland's climate, solar energy can contribute to your home's energy requirements. Solar energy can be used to generate electricity or for water heating. Solar photovoltaic (PV) generates renewable electricity from the sun, which can be used to power all electrical devices in your home, such as your kettle, fridge, shower and TV. Solar thermal collectors will also reduce the amount of energy needed to heat your water, by supplying hot water to your hot water cylinder.

WHAT'S INVOLVED?

Most of the works will take place outside the home as the solar panels will generally be installed on your rooftop depending on the orientation of your house. There are some planning restrictions on the size and positioning of domestic solar panels to be taken into account as part of the pre-works survey. The condition of the existing roof will also need to be considered.

In the case of solar thermal panels it is likely that you will require a new hot water cylinder which will be bigger than your existing cylinder so there may be reduced space in the cupboard / room where this is located. This will be discussed with you as part of a pre-works survey.

As part of an SEAI deep retrofit the options for solar panels will be discussed with you to determine what is most suitable for your home.



WHERE CAN I GET MORE INFORMATION?

There is more information available on both types of solar panels under the grants area of our website: www.seai.ie

How an SEAI deep retrofit works

Here we explain the grant application process



STEP 1

EXPRESSION OF INTEREST

If you think a deep retrofit is for you, visit www.seai.ie to find a service provider who is participating in the pilot and can put together a funding application. As this is a pilot programme, SEAI is currently not accepting applications directly from individual homeowners. The service provider (or 'Project Owner') will co-ordinate a minimum of five homes for an application and will advise if there is a suitable bundle that your home can be included in.

The Project Owner is responsible for the end to end delivery of the retrofit works from application stage to completion of the deep retrofit and post works.

STEP 2

HOME SURVEY

The Project Owner will arrange for an initial survey to assess the current energy performance of your home and inform a pre-works BER. This survey will usually take about two hours and will include:

- Inspection of all internal and external areas of your home, including the attic.
- Assessing the overall suitability of your home for energy efficiency upgrades.
- Measurement, photography and recording information on various aspects of your home.
- Making initial recommendations for your home to achieve the requirements of an A3 BER based on the information gathered.
- Discussing the recommendations with you and answering any questions you have.

In addition to the home survey, an air tightness test (or 'blower door' test) will also be required at this stage to test existing draught levels in your home. This will be carried out by a registered air tightness tester and will involve a blower door kit being fitted to your front door in order to learn where the cold air is getting in and where the warm air is leaking out.

The test will take between 2 to 3 hours to complete and you may be asked to pay for this testing up-front until the grant application is approved.

AIR TIGHTNESS TESTING:

Air tightness testing is carried out using a blower door kit which is temporarily sealed in to the external door of your house. A fan is used to blow air into the house creating positive pressure and any leakage points can then be identified using a smoke pen. Cold air can also be drawn in from the leakage areas and captured using a thermal imaging camera. By identifying where the main leakages are, the retrofit works will be targeted to improve the overall airtightness which reduces the amount of energy required to heat your home.



STEP 3

DESIGN & COSTING

Following the survey and the air tightness test, the Project Owner will work with an independent BER assessor to develop an appropriate package of measures, and associated costs, which are needed to bring your home to an A rating. They will discuss these proposals with you to explain what is included and agree the final specification and costs.

This forms part of the overall grant application for the bundle of homes which the Project Owner will submit to SEAI. They will also need to gather information on your current energy consumption and billing as part of this process.

STEP 4

APPLICATION APPROVAL

SEAI will assess the funding application and contact the Project Owner if they require additional information as part of the review process. Assuming the grant application is successful, a Letter of Offer will be issued to the Project Owner and arrangements can then be made for the works on your home to start. The timeframe for issue of the Letter of Offer will vary depending on the specific details of each application but it may take up to 8 weeks to issue.

Once a Letter of Offer has been issued, and contracts agreed between SEAI and the Project Owner, your project then moves into the construction stage – more information is provided on this in *Your A-rated Upgrade Journey Welcome Pack*.

Want more information on an SEAI deep retrofit?

Visit www.seai.ie or check out SEAI's YouTube channel to hear from other homeowners and their deep retrofit experience.





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