Renewable Energy Information Office

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Dear Energy User,

Why should we care about renewable energy?

Renewable energy is the most environmentally friendly, reliable and cost effective source of heating for your home.

Climate change is arguably one of the greatest environmental threats the world is facing. At the heart of this major environmental issue is our current energy system, which is based around fossil fuels (such as coal, peat, oil and gas) and the resulting pollution is mainly responsible for global warming and climate change. The impacts of disruptive change leading to catastrophic events such as storms, droughts, sea level rise and floods are already being felt across the world.

In addition to the climate change problem, Ireland also has the most energy import dependent economy in the industrialized world, importing almost 90% of all our fuels. Taking advantage of Ireland's abundant renewable energy sources frees our energy options and reduces our over dependence on increasingly expensive imported energy. The 'old' ways can no longer secure our heating, electricity and fuel supply.

With the help of renewable energy sources like the sun, wood and wind we can continue to affordably produce the large amounts of electricity, heat and fuel needed by our modern society AND avoid the carbon dioxide emissions that cause global warming.

What are the benefits of renewable energy?

✓ **Clean – Pollution free**

✓ **Reliable - Predictable heating costs**
Renewable energy offers safe and reliable energy for all your needs - predominantly for heating, as over 80% of the energy used by you at home is for central heating and hot water. Renewables will also continue to provide heat even when conventional energy supplies are disrupted.

✓ **Cost Effective - Substantial savings on conventional heating bills**
Whether you are building a new house, replacing an existing heating system or renovating, renewable energy can save you a significant amount of money. **For example a heat pump can save 70% of your home heating bill, a wood stove over 20% and a solar thermal panel will give you 6 months free hot water!**

Many experienced renewable energy suppliers now operate in your area, offering competitive, high quality products including heat pumps, solar panels and wood pellet stoves. Your investment will not only help safeguard your wallet and the environment, it will also create new jobs and opportunities for local businesses. For further information and to download lists of registered installers and suppliers go to www.sei.ie/greenerhomes.

RENEWABLES – Harness the energy around you!

Sustainable Energy Ireland's Renewable Energy Information Office (REIO) is a national service established to independently promote the use of renewable energy resources.

A Buyers' Guide to Wood Pellet & Chip Boilers

SUSTAINABLE ENERGY IRELAND

Renewable Energy Information Office

Choosing and installing a wood boiler is not such a difficult process. However, there are important decisions to make and a few rules to apply to ensure that your boiler will be to your satisfaction and meet your requirements.

It is vital to look for high quality when choosing your boiler. All products registered by SEI under the Greener Homes Scheme have met minimum quality requirements in terms of efficiency, safety (CE marking) and eco-friendliness (low emissions).

We advise that you ask your supplier to recommend an installer as reputable suppliers will generally only deal with experienced and qualified installers.

Please visit www.sei.ie/greenerhomes for lists of suppliers and installers. We highly recommend that you shop around and view a fully operating system before you make your final decision in order to get the best product and the best value for your money.

Questions to ask your supplier and installer

SEI REIO has compiled a list of questions you should ask suppliers and installers before making your purchase. It is in your best interest to make sure you are satisfied that all the questions are answered.

Wood Boiler

- Is the boiler on SEI's list of registered products? (Remember, if it is not listed you will not be eligible for a grant under the Greener Homes Scheme?
- Is the boiler certified by a quality label?
- Can the boiler modulate (vary) its heat output according to the heat demand without a large loss in efficiency?
- What is the efficiency rating of the boiler at maximum and minimum heat output respectively?
- What type of burn back protection is in place, i.e. protection against fire spreading back to the pellet hopper?
- Has the boiler been sized accurately (over sizing the boiler can lead to a loss in efficiency)?
- Is it recommended to connect the boiler to a buffer tank (large heat store)?
- Does the boiler include automatic heat exchanger cleaning and allow for easy ash removal?
- Does the boiler design allow for easy cleaning of the internal passages if manual cleaning is required?
- What is the noise level from the boiler during operation?
- How do the controls work and are they suitable for my requirements?
- How will the installation of a wood fired boiler affect the Building Energy Rating (BER) of the dwelling (where required)? See http://www.epbd.ie for more information.

Location

- Is the boiler located to allow sufficient clearance from combustible surfaces and materials?
- Is there a properly wired outlet for electricity near the boiler location?
- Is there enough fresh air supply to the boiler for safe and efficient combustion? If not, how can outside air be drawn from an appropriate location?
- Is there provision for appropriate access for maintaining and cleaning the boiler?

Chimney or flue pipe

- Will there be provision for appropriate access to maintain and clean the flue / chimney?
- Will minimum clearance between the flue and combustible materials be respected?
- Does the existing or proposed flue or chimney comply with boiler manufacturer's instructions and building regulations?
- Does the flue or chimney recommended take into consideration local factors like windy conditions?
- Will the joints and seams of the flue pipes be properly sealed to avoid exhaust gas leakage in the boiler room?

Wood fuel and fuel storage

- Where can good quality fuel (chips or pellets) be sourced reliably and at a reasonable cost in my area?
- What is the fuel quality recommended by the boiler manufacturer?
- What type of fuel storage system is compatible with the boiler?
- What is the optimal fuel storage size for the convenient and cost-effective delivery of fuel? (For wood pellet systems a minimum size of 3 tonnes is recommended).
- Does the fuel store specified ensure that the fuel is kept dry?
- Will the boiler room and fuel store be of robust construction and give a long life in service?
- Is the access to the fuel store appropriate for the delivery vehicle?
- Does the fuel delivery system (screw / conveyor / suction) between the store and boiler comply with the manufacturer recommendations?

Installation and commissioning

- Does the supplier offer delivery, installation, commissioning and after sales service?
- What training and experience do the installers have?
- How long will the installation take?
- What is the commissioning procedure?
- Who is responsible for making good disruption to walls / ceilings etc. necessary during the installation of the system?
- Will the floor supporting the boiler be protected and structurally adequate?
- Will all the pipe work including fittings be insulated to a good standard?
- Is the outlet of the pressure relief valve piped for the safe disposal of expelled water?
- Does the electrical installation of the boiler room meet safety standards?

Operation and maintenance

- Is full documentation, including the operation manual, provided with the boiler (in English)?
- Is boiler ignition manual or automatic?
- How often does the boiler need to be cleaned and what is the cleaning procedure?
- What maintenance tasks have to be performed by a professional and how regularly?
- How often will I have to refill the fuel store under normal operating conditions?
- What is the range of annual costs (fuel and maintenance) under average operating conditions?
- How often do I have to empty the ash pan? What do I do with the ash?
- Does the supplier / installer have spare parts available?

Costs and payment

- Does the quotation cover all the costs associated with the installation of the system (boiler, fuel storage, fuel feed, flue, installations/delivery, floor protection)?
- What are the financing options and payment terms?

After-sales services

- What is the guarantee on parts (for each component of the system) and labour?
- Is an annual service contract available from the supplier?
- How does the dealer provide emergency service work if required?
- If there are any issues with the electrical system or heating circuit (radiators/underfloor) will the installer troubleshoot or work with the other contractors to solve the issues?

For further information on renewable energy and energy efficiency, please visit www.sei.ie. Call 023 42193 or email renewables@reio.ie for a free information pack on how renewable energy can be applied to your house or business.

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A Buyers' Guide to Wood Pellet Stoves

SUSTAINABLE ENERGY IRELAND

Renewable Energy Information Office

Choosing and installing a wood pellet stove is not such a difficult process. However, there are important decisions to make and a few rules to apply to ensure that your stove will be to your satisfaction and meet your requirements.

It is vital to look for high quality when choosing your wood pellet stove. All products registered by SEI under the Greener Homes Scheme have met minimum quality requirements in terms of performance (efficiency) and eco-friendliness (low emissions).

We advise that you ask your supplier to recommend an installer as reputable suppliers will generally only deal with experienced and qualified installers.

Please visit www.sei.ie/greenerhomes for lists of pellet stoves suppliers and installers. We highly recommend that you shop around in order to get the best product and the best value for your money.

Questions to ask your supplier and installer

SEI REIO has compiled a list of questions you should ask suppliers and installers before making a purchase. It is in your best interest to make sure you are satisfied that all your questions are answered.

Equipment

- Is the stove on SEI's list of registered products? (Remember, if it is not listed you will not be eligible for a grant under the Greener Homes Scheme).
- Does the stove carry any additional quality labels?
- Is the stove CE marked?
- What is the efficiency of the stove at maximum and minimum heating output?
- What is the noise level from the stove during operation?
- Can the stove modulate (vary) output according to the heat demand?
- What kind of room temperature regulation (thermostat) does the stove have?
- Does the stove have an integral programmer / timer?
- How will the stove interact with other heating systems?
- What kind of safety features does the stove have?
- Does the stove design allow for easy cleaning of the burner area and flue?
- Is the pellet stove going to feed into the central heating system? If yes, how many radiators can it heat? Can it also heat hot water?
- What kind of flame pattern and view does the stove give?
- How will the stove installation affect the Building Energy Rating (BER) of the dwelling (where required)? See http://www.epbd.ie for more information.
- Is the stove correctly sized for the space it is intended to heat?
- Will the installation be in compliance with all Building Regulation requirements, e.g. Parts F, J and L.

Location

- Are there any fans present which will interfere with the operation of the stove?
- Can the stove be located to allow sufficient clearance with combustible surfaces and materials?
- Is there a properly wired outlet for electricity near the stove location?
- Is their enough fresh air supply to the stove for safe and efficient combustion? If not, how can outside air be drawn from an appropriate location?
- Is there provision for appropriate access for maintaining and cleaning the stove?

Chimney or flue

- Is there provision for appropriate access to maintain and clean the chimney system?
- Is the minimum clearance between the flue and combustible materials respected?
- Does the existing or proposed flue comply with the stove manufacturer's instructions and with the Irish building regulations?
- Does the flue system recommended take into consideration local factors like altitude, windy conditions, or possible negative pressure within the house itself (e.g. in very airtight houses or due to extract fans)?
- Are the joints and seams of the flue pipes properly sealed to avoid exhaust gas leakage into the room?

Installation and commissioning

- Does the supplier offer delivery, installation, commissioning and after sales service?
- Is the floor protected according to the pellet stove manufacturer's instructions?
- What training and experience do the professionals involved with the installation possess?
- How long will the installation take?
- Who is responsible for making good disruption to walls / ceilings etc. necessary during the installation of the system?
- What are the procedures and tests carried out when commissioning the system?

Operation and maintenance

- Is full documentation, including the operation manual, provided with the stove (in English)?
- Does the stove have automatic ignition fitted as standard?
- What is the pellet storage capacity of the stove and how long can it operate with one refill under normal conditions?
- What kind of wood pellets (quality and size) have to be used with the stove?
- What is the availability and cost of wood pellets in my area?
- What maintenance tasks have to be performed by a professional and how regularly?
- What is the range of annual costs (fuel and maintenance) under average conditions?
- How often do I have to empty the ash pan?
- Does the dealer have spare parts available?

Costs and payment

- Does the quotation cover all the costs associated with the installation of the stove (stove, flue, installation, delivery, floor protection)?
- What are the financing options and payment terms?

After-sales services

- What does the manufacturers' or suppliers' guarantee cover?
- Is an annual service contract available from the supplier?
- How does the dealer provide emergency service work if required?

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A Buyers' Guide to Solar Heating Systems

SUSTAINABLE ENERGY IRELAND

Renewable Energy Information Office

Installing a solar thermal hot water system is not such a difficult process. However, it is not a do-it-yourself job for most people. There are important decisions to make and a few rules to apply to ensure that your solar heating system, including system size and design, are to your satisfaction and meet your requirements.

It is vital to look for a high quality product when choosing your solar collector. All products registered by SEI under the Greener Homes Scheme have met minimum quality requirements in terms of efficiency and safety. In addition, we suggest that you select a collector that has a quality mark, e.g. the European Solar Keymark label, which shows a further commitment to quality from the manufacturer.

We advise that you ask your supplier to recommend an installer as reputable suppliers will generally only deal with experienced qualified installers.

Please visit www.sei.ie/greenerhomes for lists of solar heating system suppliers and installers. We highly recommend that you shop around and view a fully operating system before you make your final decision in order to get the best product and the best value for your money.

Questions to ask your supplier and installer

SEI REIO has compiled a list of questions you should ask suppliers and installers before making a purchase. It is in your best interest to make sure you are satisfied that all your questions are answered.

Equipment

- Is the product on SEI's list of registered products? (Remember, if it is not listed you will not receive a grant under the Greener Homes Scheme).
- Is the solar collector certified by the European Solar Keymark or similar quality mark?
- Are all the flashing and fixing components for the panels provided?
- Do all the materials used conform to the solar system manufacturer's specifications?
- Is the cylinder sufficiently insulated (minimum 50mm factory fitted insulation recommended), and how many ^{o}C of temperature will typically be lost from the cylinder over a 24 hour period if hot water is not used?
- Is the solar storage tank specifically designed to operate correctly with your solar system?
- Is the system protected against overheating, freezing and excessive pressure?
- Will the pipe work be insulated to a good standard?
- How do the controls work and are they suitable for my requirements?
- Will the control system keep a record of the energy supplied to the hot water system (useful to check performance)?
- Is water circulation in the solar system provided by a mains electricity powered pump, a small photovoltaic panel, or is it a natural circulation (thermosiphon) system?

Sizing and design

- Will the system be designed to be exempt from planning permission requirements?
- How are your hot water requirements calculated and how is the solar system sized?
- Is the solar hot water cylinder appropriately sized (Minimum cylinder size of 180 litres, and 50 litres per m2 of collector aperture area)?
- What is the performance rating of the solar collectors under expected operating conditions (e.g. in kWh per metre square of collector area per year?)
- What percentage of your hot water requirement will be typically provided by the solar system?

- Will the location of the solar panels (orientation, tilt, visual aspect, avoidance of shading) be appropriate?
- Will the solar system be installed according to the manufacturer's installation instructions?
- Will there be any disruption of the building structure or fabric required to install the system?
- How is back-up heating going to be provided?
- Will the storage temperature be regulated to avoid health risks such as legionella (recommended storage temperature is usually 60^{o}C)?
- Will a thermal mixing valve be fitted to reduce the risk of scalding?
- What type of solar thermal system would the supplier recommend for the dwelling in question. Flat plate or evacuated tube?
- How will the solar system affect the Building Energy Rating (BER) of the dwelling (where required)? See http://www.epbd.ie for more information.

Installation and commissioning

- Does the supplier offer delivery, installation, commissioning and after sales service?
- What is the training or accreditation of the installers involved in the installation?
- Which trade associations' do the installers belong to?
- How many systems has the installer installed; are local references available?
- How much of the installation will be sub-contracted?
- Who is ultimately responsible for what segments of work?
- How long will the installation take?
- Who is responsible for commissioning the system?
- What are the procedures and tests carried out when commissioning the system?
- Who is responsible for making good disruption to walls / ceilings etc. necessary during the installation of the system?

Operation and maintenance

- Is full documentation, including an operation manual, provided with the system (in English)?
- What maintenance tasks have to be performed by a professional and how regularly?
- Does the supplier have spare parts available?

Costs and payment

- Does the quotation cover all the costs associated with the installation of the solar heating system (collectors, storage tank, pipes and fittings, controller, delivery, installation, commissioning)?
- What is the range of annual cost and energy savings under average conditions?
- Is electricity for operation of the water circulation pump included in the savings calculation?
- What are the financing options or payment terms?
- Are there any additional costs?

After-sales services

- What is the guarantee on labour and parts for each component of the system?
- Is an annual service contract available from the supplier?
- Is full documentation, including the user's manual, provided?
- How does the dealer provide emergency service work if required?

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A Buyers' Guide to Renewable Heat Pumps

SUSTAINABLE ENERGY IRELAND

Renewable Energy Information Office

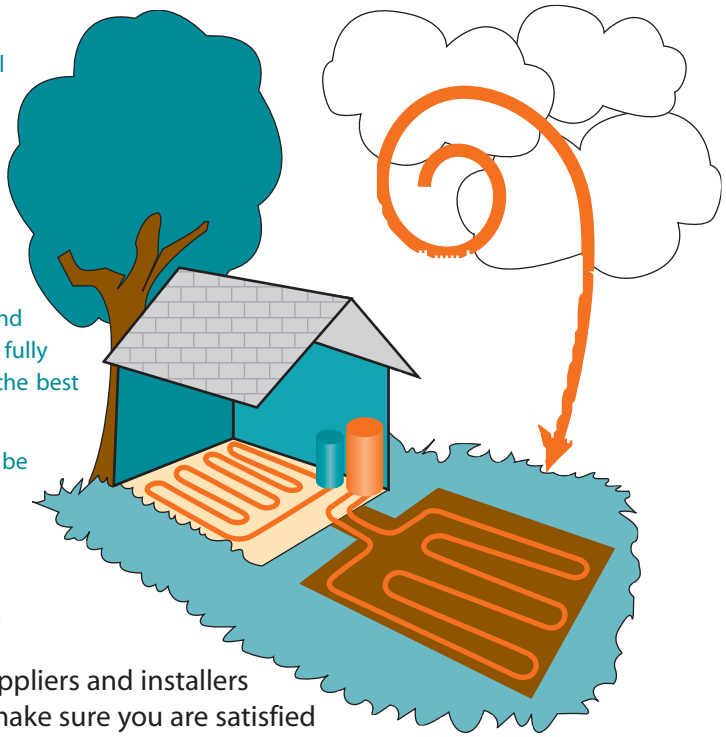
Installing a renewable heat pump is not such a difficult process. However, there are important decisions to make and a few rules to apply to ensure that your heat pump system will be to your satisfaction and meet your requirements.

It is vital to look for high quality when choosing your heat pump. All products registered by SEI under the Greener Homes Scheme have met strict quality requirements in terms of efficiency (Coefficient of Performance) and safety (CE marking).

We advise that you ask your supplier to recommend an installer as reputable suppliers will generally only deal with experienced and qualified installers.

Please visit www.sei.ie/greenerhomes for lists of heat pump suppliers and installers. We highly recommend that you shop around and view a fully operating system before you make your final decision in order to get the best product and the best value for your money.

Before installing a heat pump it is recommended that your home should be adequately insulated to ensure cost effective and efficient operation of the heat pump system.



Questions to ask your supplier and installer

SEI REIO has compiled a list of questions you should ask suppliers and installers before making your purchase. It is in your best interest to make sure you are satisfied that all your questions are answered.

Equipment

- Is the heat pump on SEI's list of registered products? (Remember, if it is not listed you will not be eligible for a grant under the Greener Homes Scheme).
- Is the heat pump certified by a non compulsory quality label, e.g. DACH Label?
- What basic options exist, e.g. air source vs. ground source, in conjunction with under floor heating Vs. radiators.
- What is the efficiency (coefficient of performance) under normal operating conditions (usually 3 to 5 depending on heat pump type : Air to water, brine to water, water to water)?
- What is the noise level of the system during operation?
- Does the refrigerant used conform to EU and national legislation (R22 is banned from 01/01/04)?
- What kind of controls does the system have, e.g. time and temperature regulation, weather compensation?
- How will the heat pump interact with other heating systems (if applicable)?
- Do all the system components and materials used conform to the heat pump manufacturer's specifications?

Sizing and design

- How are your space heating and hot water requirements calculated and how is the heat pump system sized?
- Is the current heat distribution system suitable for a heat pump system (Note : Not all radiator systems are suited to heat pumps?
- Is the heat pump system's capacity sufficient to meet the maximum heat loss of the house? Is an additional heating system required?
- Is the ground loop (or other heat source) sized and designed to ensure best performance by the heat pump system?
- Is the heat pump system configured according to the manufacturer's specifications?
- Will the heat pump system take care of your domestic hot water needs?
- Are there any special requirements regarding electrical connection, e.g. 3 Phase connection?

- How much space is required for the heat pump system?
- Are there any restrictions on landscaping in the case of a ground source heat pump?
- How will the heat pump system affect the Building Energy Rating (BER) of the dwelling (where required)? See http://www.epbd.ie for more information.
- What is the estimate of annual electricity consumption?

Installation and commissioning

- Does the dealer offer delivery, installation, commissioning and after sales service?
- What is the training or accreditation of the contractors involved in the installation?
- To which trade associations do the contractors belong?
- How many years has the contractor been in business?
- How many systems has the dealer installed? Are local references available?
- How much of the installation will be sub-contracted?
- Who is ultimately responsible for what segments of work?
- How long will the installation take?
- Is there provision for appropriate access to the heat pump, manifolds, etc. for maintenance purposes?
- What is the commissioning procedure and who signs off on the heat pump installation?
- Who is responsible for making good disruption to walls / ceilings etc. necessary during the installation of the system?
- Is there a contract detailing the above information? (If not, see www.sei.ie/greenerhomes for a model contract)

Operation and maintenance

- Is full documentation, including an operation manual, provided with the system (in English)?
- What maintenance tasks have to be performed by a professional and how regularly?
- How does the control system work and who is going to train the user to operate it in order to achieve optimum operational efficiency of the system?
- Does the dealer have spare parts available?
- What is the range of annual operating costs (electricity and maintenance) under typical conditions?
- Is there a site plan, piping and wiring diagram?

Costs and payment

- Does the quotation cover all the costs associated with the installation of the heat pump system (heat pump, heat collector, heat distribution, controls)?
- Is there any additional cost above those quoted to complete the installation?
- What are the financing options or payment terms?

After-sales services

- What is the guarantee on parts (for each major component in the system) and labour?
- Is an annual service contract available from the supplier?
- How does the dealer provide emergency service work if required?

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A Buyer's Guide to Low-Energy and Passive Houses

SUSTAINABLE ENERGY IRELAND
Renewable Energy Information Office

Buying or building a house is one of the most important decisions in your life. It will have huge implications on your finances and your well-being. By ensuring that your future house achieves the highest energy, health and comfort standards, you are taking a big step in the right direction. This buyer's guide will help answer most of your questions and give you some suggestions which should help you to make the right choices.

What is a low-energy house?

A low-energy house is one that has been designed and built to the highest level of comfort while having the minimum energy requirement for heating, lighting, etc. This can be achieved with a high level of thermal insulation, an air-tight shell, a controlled fresh air ventilation system and responsive heating controls. A low energy house also maximises the use of free solar gains through good design and uses renewable energy for heating through solar panels, wood heating or a heat pump.

What is a passive house?

A passive house is a super low-energy house. The same principles are applied, only pushed to a degree where there is no need for a conventional central heating system. A passive house requires about 4 times less energy for heating than a house built to Irish building regulations. For more information on passive houses, please visit our website (www.sei.ie/reio.htm).

What are the benefits of living in a low-energy house?

- Excellent insulation and air-tightness. This means better comfort (no cold walls or windows, no drafts);
- Controlled ventilation. This results in outstanding fresh air quality, protection against respiratory problems and avoidance of damp and mouldy conditions;
- Being able to ventilate without opening the windows. This also eliminates unwanted noise and reduces the risk of intrusion;
- Protect your house against rising energy prices;
- High energy performance generally goes hand in hand with good quality construction;
- Reducing your energy consumption helps the environment.

As an investor, what will I gain from it?

- Low-energy houses are easier to sell or rent;
- Gain a competitive edge by pitching your product as high-quality and eco-friendly;
- Better acoustic protection allows you to enhance the potential of noise sensitive areas for development;
- High comfort and low-energy bills mean tenants stay longer;
- Higher levels of client satisfaction mean more referrals and more business.

Do I need professional assistance to achieve a low-energy building?

We strongly recommend that you find a design team, i.e. an architect or an engineer to assist you with your project. Their role will be to:

- Work on your brief and propose one or several design concepts;
- Develop the chosen concept into a detailed design including the specifications for the building and its services;
- Carry out the tendering process and manage the construction process;
- Manage the commissioning and hand-over process.

When choosing your design team, ensure that the professionals involved have the appropriate qualifications, a proven track-record in the area of sustainable energy design (ask for customer references) and that they subscribe to the codes of practice of the relevant trade associations.

What brief should I give to my design team for a low-energy house or a passive house?

The Heat Energy Rating of your house is a key indicator of its overall energy performance. It is a measure of how much heat is required from the heating appliances to maintain comfortable conditions and produce hot water, expressed kWh/m^2/year of living area. By January 2009, all houses sold or rented will be rated for their energy performance according to this type of indicator.

We recommend you adopt one of the following European Standards as a target Heat Energy Rating and include it in the brief for your design team:

	Heat Energy Rating	Annual energy bill (euro/year) (*)
Low-Energy House	42 kWh/m^2/year	Oil: 640 euro/year Pellets: 280 euro/year
Passive House	30 kWh/m^2/year	Oil: 430 euro Pellets: 200 euro

(*) Heating bill at a cost of 0.5 euro/litre of oil and 180 euro/tonne for wood pellets for a 150 m^2 house.
See our heating cost comparison tool in the reference section of our website.

What kind of site should I be looking for?

Try and find a site which meets as many of the following conditions as possible:

- It is south facing;
- It is not overshadowed by neighbouring buildings or plantations;
- It is sheltered from prevailing and northern winds by terrain, walls or vegetation;
- The location minimises dependence on car transport;
- It has the potential to accommodate the use of renewable energy materials sourced locally.

How can design and specification options be checked to see if our target will be met?

We recommend that your design team carries out a computerised analysis to measure the effect of the various design and specification options on the Heat Energy Rating of the building. This analysis should be based on the methodology of the European Standard EN 832.
SEI-REIO is happy to recommend suitable tools to carry out this analysis. If you are buying an existing house, you should either require strong evidence of its Heat Energy Rating from the seller or require an energy audit from your own engineer.

Is air tightness compatible with good indoor air quality?

Different strategies can be applied to maintain a good level of fresh air renewal without excessive heat losses. In a low-energy or a passive house, a controlled ventilation system with heat recovery is recommended. Such systems can also be fitted with a heat pump system to produce hot water from the heat recovered.

Does my house have to look like a bunker to be energy efficient?

No, a low-energy house doesn't need to look any different from any other house; neither does it preclude architectural creativity. However, a compact building with a simple shell form is less conducive to heat losses through its external walls.

What about the sustainabilty of the building components themselves?

The negative environmental impact of energy use in Irish buildings causes up to 10 times more pollution than the materials used to construct them. However, the sustainability of the building components is an aspect that should not be neglected. Important considerations include:

- the energy required during their production cycle (from mining to delivering them to your site);
- the associated greenhouse gas emissions;
- the use of natural resources to manufacture them;
- the air pollutants generated during their manufacture as well as during the life of the building;
- the wastes generated during their manufacture and after their life-time.

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PASSIVE Solar Design

SUSTAINABLE ENERGY IRELAND

Renewable Energy Information Office

Solar Homes Catch the Sun

Are you planning a new house?

Discover how you can apply solar architecture principles to:

- ***keep your heating bills to a minimum***
- ***enjoy the comfort of a warm and cosy house***
- ***create a healthy and ecological living environment for you and your family***

RENEWABLE ENERGY FOR EUROPE

Campaign for take-off

Revolutionary Standards in Comfort and Energy Efficiency

Solar architecture relies on simple and sensible principles to:

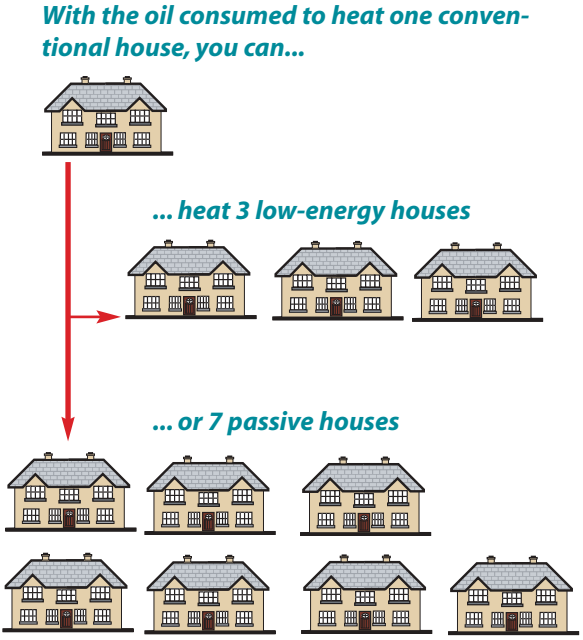
- minimise heat losses from your house
- maximise free solar energy input during the winter
- provide adequate ventilation and daylighting
- use renewable energy to heat your house cost-effectively

These principles, which will be detailed in the following sections, can be applied to various degrees of effectiveness to reduce the heating demand of your house.

GOOD Insulate your house according to current BUILDING REGULATIONS and use solar energy gains to cover at least 20% of your heating requirement.

VERY GOOD Adopt a LOW-ENERGY HOUSE strategy and reduce your heating requirement by 60% compared to a conventional new house.

EXCELLENT Go a step further with the PASSIVE-HOUSE standards and reduce your heating requirement to the point where no central heating is required.



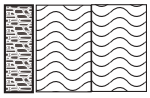
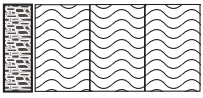
The benefits of living in a "low-energy" house or a "passive" house in terms of energy efficiency and heating bills are obvious. But it goes a lot further:

THERMAL COMFORT	Highly insulated external envelope means no more cold surface walls, windows and ceilings
HEALTH AND HYGIENE	Controlled ventilation means good air quality and no condensation and dampness problems
HIGHER PROPERTY VALUE	High quality construction and the promise of low running costs mean better sale or renting value

Step One: Keep the Heat In

The first objective of an energy efficient home is to reduce heat losses. Like a polar bear, protect your house with a thick layer of insulation in the roof, walls and floor, as well as highly insulating windows. This is your best guarantee against expensive heating bills and a cold house.

These graphics compare the insulation thickness required for a wall to achieve:

CURRENT BUILDING REGULATIONS	LOW-ENERGY STANDARD	PASSIVE-HOUSE STANDARD
		
10 cm U value = 0.27	15-20 cm U value = 0.20-0.15	25-30 cm U value = 0.10-0.13

The U value of a fabric is a measure of its insulating property and is expressed in W/m^2,K.

It is also important to seal your house in order to avoid nasty draughts and unwanted air leaks. Windows and doors should close tightly, there should be no cracks in the walls and ceilings, tubing for electrical wires and water pipes should be sealed, etc.

Avoid heat loss through the masonry by applying a continuous insulation layer around the building

Masonry

Insulation

Other ways of reducing heat losses include:

Keep Northern Windows smaller

NORTH

SOUTH

Locate non or less heated rooms on the north side of the house as buffer zones

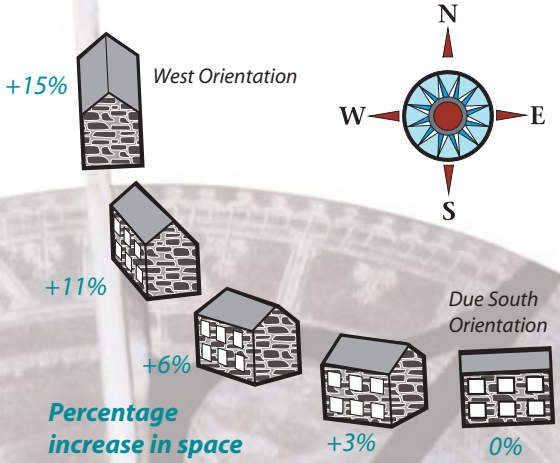
Conservatories or sunspaces provide shelter for the house and its inhabitants while allowing sunlight in

Hedges and trees provide shelter from cold winds

Step 2: Let the Sun Shine In

The second objective of solar architecture is to let the sun shine into your house to bring in natural light and free heat. This is best achieved by giving your house a southerly orientation and locating larger windows on the south façade.

Daylighting is another important principle of solar architecture. Windows open your house to natural light, brightening your interior and providing good visual comfort. They also bring a connection with your environment and let you enjoy the view when inside.



Percentage increase in space heating demand with deviations from a mainly due south window orientation.

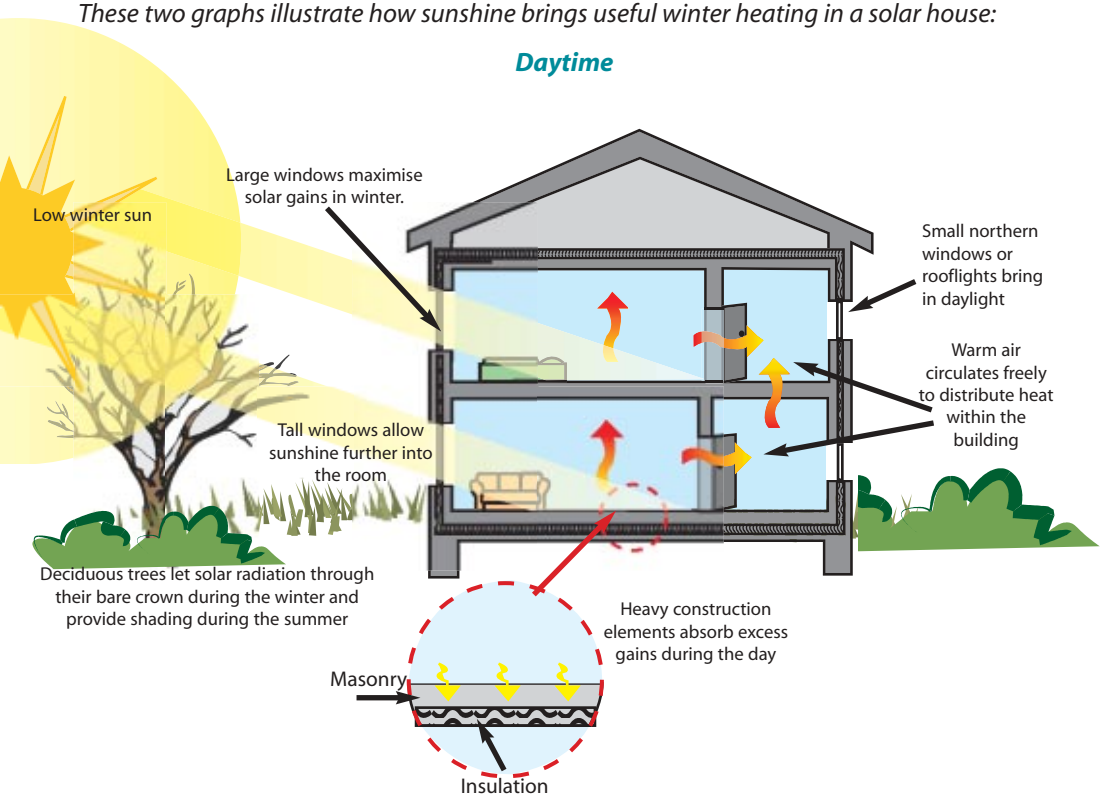
Good windows have a high insulating value to minimise heat losses (U value <2.0 W/m^{2}K) and a high degree of transparency (≥65%) to maximise solar gains.

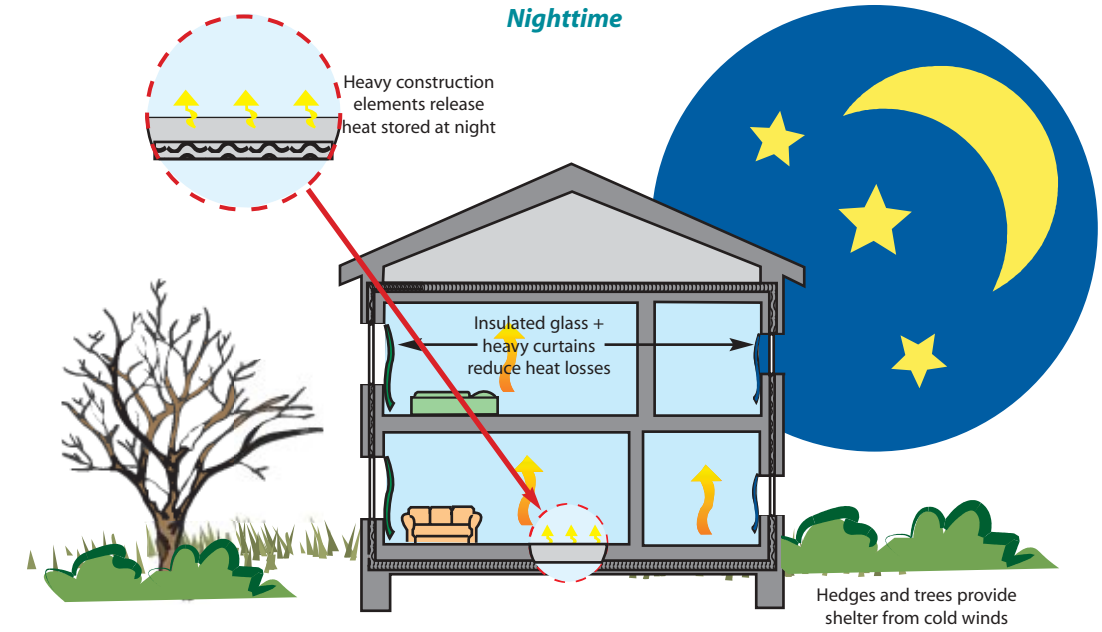
During the summer, two simple rules can be applied to avoid overheating:

- generally, opening windows should be sufficient to dissipate excess heat in the house. Ventilation at night will be particularly effective at cooling down the house's masonry
- avoid excess heat gains from the sun by shading windows with blinds (external preferably), eves, roof projection or overhangs, and deciduous trees

South façade of a house in Doolin, Co. Clare

These two graphs illustrate how sunshine brings useful winter heating in a solar house:





Step 3: Give Yourself a Breath of Fresh Air

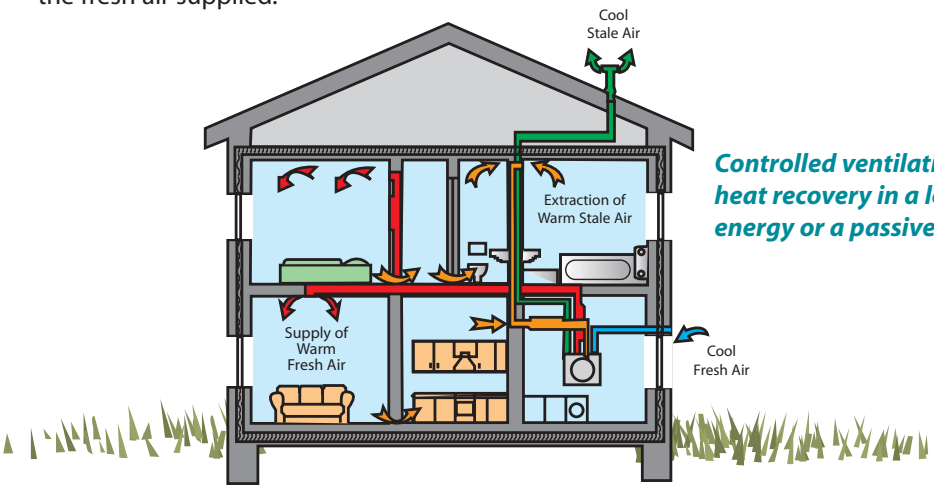
Adequate ventilation is important to ensure a constant supply of clean and fresh air in your house, as well as removing moist air to prevent condensation and the proliferation of mould and dust mites. In a highly sealed and insulated house, it is particularly important to ensure that the indoor air is replaced regularly without leading to excessive heat losses (i.e. without opening windows).

In a low-energy or a passive house, a controlled ventilation system with heat recovery is recommended. In such a system, fresh outside air is supplied through ducts to living rooms while exhaust air is extracted from wet rooms and ducted outside. The heat content of the exhaust air (warmer) is recovered to pre-heat the incoming fresh air.

The advantages of a heat recovery ventilation system are:

- automatically controlled supply of fresh air
- 80% of the heat content of the exhaust air is recovered and supplied with the fresh air
- can be fitted with filters to remove dusts and pollen inducing allergies and asthma
- windows can be kept safely closed to avoid noise disturbance and risks of intrusion

A heat pump system can also be fitted on the heat recovery system to extract heat from the exhaust air, which can then be used to produce hot water and/or pre-heat the fresh air supplied.



Controlled ventilation with heat recovery in a low-energy or a passive house

Step 4: The 100% Solar House

In a solar house, the heating requirement is reduced so much that it is very easy to provide the remaining heat demand from a renewable energy source. A heat pump or wood heating system would provide your space heating without any difficulty, and a solar water heater your hot water. As heating equipment can be downsized considerably (by at least twice compared to a conventional house), the initial investment will be much lower as well. All in all, you will have the benefit of a very economical heating system totally pollution free (and carbon tax free!). For further information on renewable heating systems, please read our additional leaflets on heat pumps, solar heating and wood heating.

A Profitable and Sustainable Investment

Market research in Europe has demonstrated that, on average, low-energy and passive houses cost only 6 to 8% more to build than conventional houses. But that is not the whole picture! What future house owners should be looking at is the actual yearly running costs of their house (mortgage and heating). In low-energy and passive houses, the much lower heating bill more than compensates for the slight increase in mortgage repayment. Plus houses of such a high specification have a much better resale value than standard houses.

From the building developer's point of view, adopting a low energy strategy will pay for itself. House buyers or tenants are more and more aware of the importance of energy efficiency and are willing to pay extra for a guarantee of comfort and low running cost. In a rented low-energy or passive house, the high comfort and low heating bill mean that tenants will want to stay longer. This reduces maintenance costs of the house, administrative hassle and expenses for the owner.

SUSTAINABLE ENERGY IRELAND

Renewable Energy Information Office

Sustainable Energy Ireland's Renewable Energy Information Office, one of Europe's leading renewable energy agencies, provides expert, independent information and advice on the development of all renewable energy technologies, including solar energy.

For further information on passive solar design and other solar technologies:

- download REIO's factsheets on www.sei.ie/reio.htm

- order REIO's Solar CD-ROM by email, fax or phone

Contact:
Sustainable Energy Ireland,
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e renewables@reio.ie
w www.sei.ie/reio.htm

NDP NATIONAL DEVELOPMENT PLAN

EUROPEAN UNION STRUCTURAL FUNDS

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

What are wood pellets?

Pellets are a clean, dry fuel made from a mixture of sawdust and wood shavings. Pellets are a high energy, smoke free fuel. Unlike other solid fuels, they are easy to handle and create almost no ash. Pellets are available in bags of 10 to 15 kilograms, at a cost of 2 to 4 euro per bag.

Quality pellets are essential to ensure trouble-free operation of your stove and clean combustion. Only buy pellets with a quality mark and a complete fuel analysis printed on the bags.

Environmentally friendly

Wood pellets are a renewable source of energy and do not contribute to climate change. The carbon dioxide that is released when pellets are burned is equal to the amount the tree consumed when it was growing.

Wood pellets are manufactured with wood from sustainable forests.

WOOD Pellet Stoves

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

Pellets, the natural choice

Everyone loves a wood fire, it really turns a house into a home. But open fires and old-fashioned stoves can be polluting, inefficient and inconvenient.

Modern wood pellet stoves offer the warmth and comfort of wood heating but are highly efficient, clean burning and totally automatic, saving you time and money.

Easy and clean to use

To light the pellet stove, all you need to do is fill the integrated pellet container and the stove does the rest for up to 30 hours continuously.

Automatic fuel supply and a thermostat means you can relax and enjoy the comfort of pellet heating at the switch of a button. Automatic ignition means that lighting the fire is hassle free.

Modern pellet stoves are self cleaning so you can forget the daily cleaning chore of traditional solid fuel stoves. The ash pan needs to be emptied no more than once a month.

Safety

Pellet stoves are far safer than traditional stoves. While the traditional stove's body radiates the heat to the room, the pellet stove ventilates only the warm air into the room and does not heat up itself. Good stoves are equipped with a number of safety features against power failure and overheating problems.

Wide range of designs

Wood pellet stoves combine great functionality with the latest designs. They fit in easily with modern and traditional interiors in your home, apartment or office.

Pellet stoves can either be free standing or fireplace inserts.

Wood pellet stoves are also available with a back boiler to feed into your central heating

Phone home for remote control heating

A simple control panel on the appliance or on an adjacent wall allows you to set the temperature required in the room. The latest innovation allows remote control by mobile phone. By simply making a short call on your way home, you can return to a warm living room.

Buying and installing a pellet stove

Quality is of paramount importance when choosing a pellet stove and sourcing pellets.

The Renewable Energy Information Office maintains a list of suppliers using pellets and stoves of certified quality. This list is available from our website: www.sei.ie/reio.htm or can be ordered with a sample of pellets from our call centre: 023 42193.

When installing your pellet stove, make sure to follow the manufacturer's instructions with regard to connecting it to an adequate chimney and making provision for fresh air supply to the stove.

Solar Water Heating

Bring the benefits of solar energy to your house and family.

SAVINGS

Replace increasingly expensive fossil fuels with free energy from the sun.

QUALITY

Invest now in an altogether more efficient water heating system that will last you over 20 years!

VALUES

A solar water heater will increase the value of your house.

ENVIRONMENT

Show that you care for the environment by contributing directly to the fight against climate change.

COMFORT

Enjoy the comfort of plenty of hot water at a very low cost.

Invest now for a brighter future!

SOLAR Water Heaters

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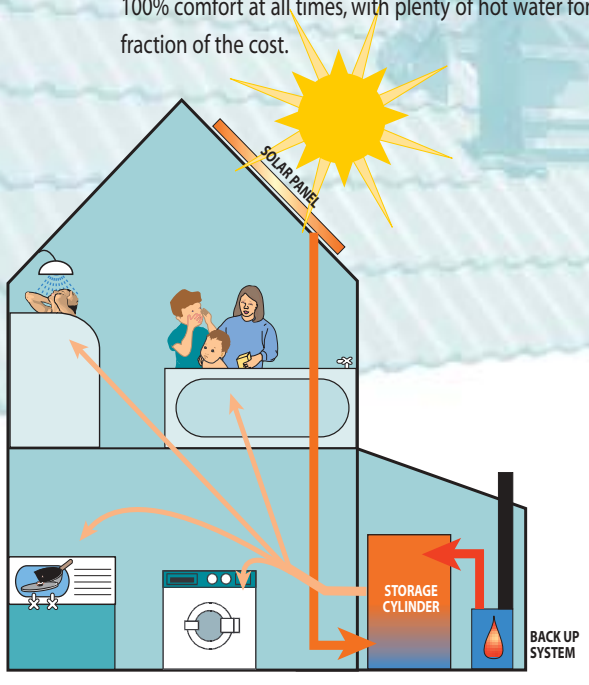
Hot water from the sun, in Ireland?

Believe it or not, one square metre on your roof receives the equivalent of more than 100 litres of oil in free solar energy per year. As a matter of fact, this is more than in Paris.

A solar water heater produces hot water by transforming sunlight into heat through its solar panels. That heat is then stored in a large hot water cylinder so that it is available when you need it. A control system ensures the regulation and safety of the whole equipment. Simple, efficient and reliable!

Ok. But what if the sun is not shining?

No problem. A solar water heater not only converts direct sunlight but also indirect sunlight into heat, so it works even when the sky is overcast. True, there will be less solar heat available during the winter, but a back-up heater will boost the water temperature. The result is 100% comfort at all times, with plenty of hot water for a fraction of the cost.



Is my house suitable?

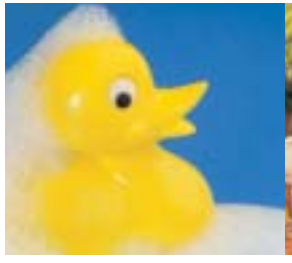
A solar water heater can suit most situations. All you need is:

- space to put the solar panels (generally on the roof) and room for the storage cylinder in your utility room or hot press.
- access to the sun for the panels (orientated between south-east and south-west) and no over-shadowing by trees or other buildings.

What kind of system do I need?

There is a good selection of solar water heaters available on the Irish market. They are all built on the same principle, with varying degrees of sophistication and price.

If you are building a new house or replacing your hot water system, the extra cost of a solar water heater can be as low as 1000 Euro compared to a conventional system.



The table below gives a few pointers in terms of size and cost of the equipment:

NUMBER OF PEOPLE IN THE HOUSEHOLD	AREA OF SOLAR PANELS	VOLUME OF THE SOLAR STORAGE CYLINDER	INDICATIVE COST OF EQUIPMENT
2 - 3	3 - 4 m^2	150 - 200 litres	€ 2,500 - 3,000
4 - 5	4 - 6 m^2	200 - 300 litres	€ 3,000 - 4,000
6 - 7	6 - 8 m^2	300 - 400 litres	€ 4,000 - 5,000

Installation may take one to three days for a skilled installer.

What to do next?

Quality is of paramount importance when choosing a solar water heater and an installer.

REIO's recommendations:

• Only opt for a solar heating system with a recognised certificate of quality and performance.

• Your system should be designed by a professional to meet your specific requirements and fit in with your central heating system.

• Your supplier should recommend an installer with the proper training and experience in this field.

• Make sure your system has been thoroughly checked and commissioned before signing off the installation.

For further information, download the following documents from REIO's website:

• our full brochure and our buyers' guide on solar water heating;

• a list of suppliers of certified solar water heaters in Ireland.

Renewable Heat Pumps

Bring the benefits of a heat pump to your house and family.

On top of 70% lower heating bills, heat pumps have the following advantages:

- high reliability and longevity (on average lasting over 20 years)
- little or no on-going maintenance (no boiler cleaning, no chimney sweeping, etc.)
- the healthiness and comfort of low temperature heating systems
- a real contribution to a better environment

What to do next?

Quality is of paramount importance when choosing a heat pump system and an installer.

REIO's recommendations:

• Only opt for a heat pump with a recognised certificate of quality and performance.

• Your heat pump and its heat source (ground or water collector) should be designed by a professional to meet the heating requirement of your house.

• Your supplier should recommend an installer with the proper training and experience in this field.

• Make sure your system has been thoroughly checked and commissioned before signing off the installation.

For further information, download the following documents from REIO's website:

- our full brochures and buyers' guide on renewable heat pumps;
- a list of suppliers of certified heat pumps in Ireland.

Renewable HEAT PUMPS

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Free heat from the garden?

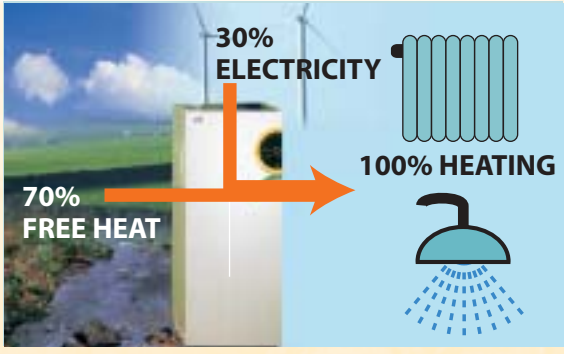
Heat is widely available in the ground, air and water around your house. These natural sources of heat are constantly replenished by the sun, wind and rain. A heat pump system will harness these free and renewable energy sources for heating your house and supplying hot water at a very low cost. The role of the heat pump is to 'pump up' heat from a low temperature source, for example the ground under your lawn and release it at a higher temperature into your central heating system.

Ok. But why is it so economical?

Because at least 70% of your heat will come from a free source. For every unit of electricity used to drive the heat pump, 3 to 5 units of useful heat will be generated. Manufacturers generally refer to the ratio between the useful heat produced and the electricity used as the coefficient of performance. With an overall energy efficiency in excess of 400%, compared to 70%-85% efficiency for a good oil or gas boiler, no wonder a heat pump is so economical.

And good for the environment...

When driven with conventional electricity, a heat pump system emits 40% less CO_2 emissions than a boiler. That's a great contribution to the fight against climate change. But if you can operate your heat pump with green electricity (e.g. from wind farms) then your central heating system becomes 100% renewable and totally free of greenhouse gases emissions.



Fine. Will it fit my house?

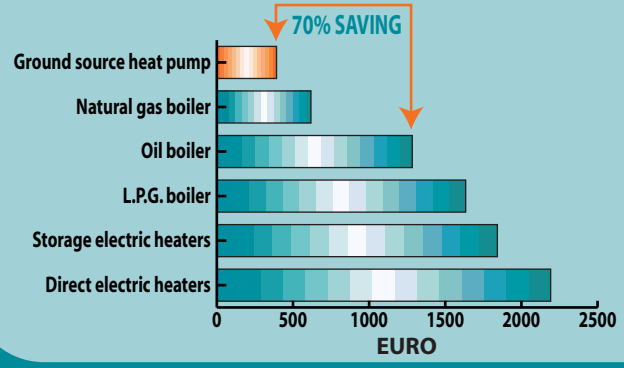
If you are building a new house, you are in the best position to do it. You can cover the extra cost with your mortgage and finance the installation at a low cost. Make sure your house is well insulated and opt for a heat distribution system operating at a low temperature (e.g. underfloor heating or fan coils). This ensures optimal performance of your heat pump. The heat pump itself requires little room and will fit neatly into your utility room or hot press.

A heat pump system can also be fitted into an existing central heating system. It can provide all the heat required on its own if the characteristics of the existing heat distribution system allow it. If not, it can be operated in conjunction with the existing boiler, which will act as a back-up system when the heating demand is high.

So, is it really worth it?

Absolutely. While they are more expensive initially to install compared to a conventional oil system, their frugality in electricity will save you €20,000 over its lifetime.

The graph below shows the annual heating cost of a 180m² house with different types of heating systems, including a ground source heat pump.



Greener Homes Scheme
Phase III

(Existing Dwellings)

Application Guide

Version 3.0

IMPORTANT NOTICE

It is the responsibility of each applicant to the Greener Homes Scheme to ensure that they have read, and fully understand, this Application Guide and the Home Owner Application Form before submitting a signed application form. Failure to fully adhere to the provisions of this Application Guide and the Application Form will result in application refusal, grant revocation or payment request refusal, depending on the particular status and stage of the grant. SEI accepts no liability or responsibility, whether for breach of contract, negligence or otherwise, in respect of any claim or cause of action arising out of, or in relation to, any equipment, product, work, system or installation in respect of which grant approval was given by SEI.

This Application Guide will be revised periodically. Call the Helpline 1850 734 734 or check the SEI website (www.sei.ie/greenerhomes) to ensure that you have the latest version.

Table of Contents

1 Description of Scheme

The Greener Homes Scheme Phase III (the "Scheme") provides assistance to homeowners who intend to purchase a new renewable energy heating system for existing homes. The scheme is administered by Sustainable Energy Ireland ("SEI") and aims to increase the use of renewable energy and sustainable energy technologies in Irish homes.

1.1 Using Renewable Energy for Heating

We, in Ireland are heavily reliant on fossil fuels which are a limited resource, cause emissions that are harmful to the environment and can be subject to volatility of price and availability. The Irish Government wishes to reduce this reliance and move towards making greater use of our renewable energy resources. This diversification can be good for the economy because of the longer term availability and constancy of supply and good for the environment through the reduced emissions of Carbon Dioxide (CO_2).

The main sources of renewable energy in Ireland are the sun (solar energy), the wind, moving water (hydropower, wave and tidal energy), geothermal (heat below the earths surface) and biomass (wood, certain wastes and energy crops). One of the main benefits of using renewable energy is that it reduces emissions of carbon dioxide. Ireland has an abundance of several of these resources and their effective development and use will reduce emissions of harmful greenhouse gases and our reliance on imported fossil fuels.

Homeowners can play their part by choosing a renewable heating system (solar, biomass or heat pump based) that meets their particular needs in terms of heat demand, budget and environmental considerations. Doing so will help Ireland move down a path towards more sustainable energy use, ultimately benefiting the environment.

1.2 Will a renewable energy heating system save me money?

Where a renewable energy technology uses a "free" energy source like sun shine, you no longer have to worry about fuel prices increasing. On the other hand heat pumps require electricity to operate and biomass equipment requires a wood based fuel – so both of these remain vulnerable to fuel / energy price fluctuations.

The guaranteed way to reduce your energy bills is to only generate as much heat as you require, at the time you want it, and to maximise the value of that heat by preserving it within your home. We strongly advise anyone planning to invest in a renewable heat system to investigate all methods of increasing the overall energy efficiency of their homes. Effective wall and attic insulation, good time and temperature controls of your heating and high performance windows will all reduce the heat required to have a warm and comfortable home. Purchasing household electrical equipment with an 'A' energy rating e.g. fridges, freezers, washing machines and light bulbs* reduces electricity consumption. This approach will have a significant impact on your energy bills and will also protect you from any price variation in your primary fuel source.

1.3 Why offer a grant?

Renewable energy heating systems are new technologies which, while proven and highly popular overseas, have yet to become widespread in Ireland. The Irish Government, through SEI, wishes to encourage people to "green" their homes by contributing to the initial investment cost of installing a renewable energy heating system. The government believes that this will help ensure a faster uptake of renewable heating systems which will underpin the development of a long term market, while enabling homeowners to play their part in reducing carbon dioxide emissions.

[*More details of these options are available in a range of SEI Home Energy Guides listed in Appendix C of this Guide].

2 Scheme Objectives

The objectives of the Scheme are:

- To increase the number of households in Ireland that use renewable energy;
- To guide consumers towards discerning choices of Renewable Energy Heating;
- To ensure that the market for the products, services and fuels continues to develop in a robust manner;
- To decrease our reliance on imports of fossil fuels;
- To benefit the environment by reducing the emissions of harmful carbon dioxide

3 Who Can Avail of the Scheme?

The Scheme is open to the following applicants:

- Individuals who are homeowners
- Installing eligible products (see **Section 4** below and Registered Product List) either a new
  - wood chip/pellet boiler or stove w/back-boiler or standalone stove
  - wood gasification boiler
  - solar thermal
  - heat pump based heating system
- Using installers who are registered with SEI (the "Registered Installer List" available on request or on line at www.sei.ie/greenerhomes).
- Individuals intending to retrofit or install a new renewable energy heating system in their **existing** home.

4 What Products are Eligible?

The grants will be provided to homeowners who invest in new renewable energy based heating systems in the following categories:

Solar Heating
- Solar hot water system and / or
- Solar space heating system

Heat Pumps
- Horizontal ground collector
- Vertical ground collector
- Water (well) to water
- Air source

Wood Chip or Pellet Stoves – with or without integral boiler
Wood Chip or Pellet Boilers – with bulk fuel storage installed
Wood Gasification Boiler

An application **MUST INCLUDE** the SEI Product ID found on the Registered Product List. Applications made without the SEI Product ID will be returned to applicant as incomplete. The SEI Registered Product List is available on request or online at www.sei.ie/greenerhomes .

Further details on each of the technologies above are contained in Appendix B to this guide. More detailed technical descriptions and Buyers Guides for the specific products are available on request or online at www.sei.ie/greenerhomes

4.1 Biomass System Requirements

Bulk Fuel Storage: All biomass boiler installations shall require the provision of bulk fuel storage. It shall be required to meet local building and fire regulations. The ONORM M7137 Standard http://on-norm.at/ecom/ shall be used as a guideline for DIY bulk storage units. Bulk storage capacity shall be able to store a minimum of 3 tonnes of wood pellets (80% of a typical houses' requirement for one year).

Buffer Heat Store: It is a recommendation that a buffer or accumulator tank be incorporated as part of domestic wood pellet / chip boiler system installations where appropriate. A buffer or accumulator cylinder in a domestic biomass heating installation is a primary heat storage/distribution cylinder, which is heated by the boiler to a set temperature and can store the resulting high temperature water for long system standstill periods, until heating or hot water is required. A buffer / accumulator reduces the on/off cycling of wood boilers by "smoothing" the heat output to the dwelling. The buffer or accumulator capacity should be calculated in accordance with your manufacturer's recommendations. A rough guideline for establishing the volume of the buffer is available from EN303-5 and from the REIA training manual and is in the region of 55 to 65 L/kW of the rated boiler size.

The use of a buffer / accumulator is noteworthy in the following situations:

- Where the boiler does not have full modulation capabilities: the use of a buffer will smooth the heat output to the dwelling.
- In situations where the boiler is not capable of supplying the full heat demand of the house, a buffer tank will allow the boiler to run for longer at optimum efficiency extracting maximum potential from the boiler and fuel.

4.2 Wood Gasification Boiler Requirements

A buffer store (accumulator) will be installed in conjunction with your wood gasification boiler to ensure the efficient operation of your boiler. Buffer stores are important heat storage devices, especially for wood gasification boilers. These boilers can only be operated efficiently when combined with an accumulator since controlled operation at part load is more difficult. A buffer or accumulator cylinder in a domestic biomass heating installation is a primary heat storage/distribution device, which is heated by the boiler to a set temperature and can store the resulting high temperature water for long system standstill periods, until heating or hot water is required. The buffer or accumulator capacity should be calculated in accordance with your manufacturer's recommendations. A rough guideline for establishing the volume of the buffer is available from EN303-5 and from the REIA training manual and is in the region of 55 to 65 L/kW of the rated boiler size.

4.3 Solar Thermal System Requirements

The maximum aperture area supported is 6m^2 for both flat plate and evacuated tube panels. The following recommendations are made regarding the sizing of the hot water cylinder based on maximum cylinder temperature;

- At 60°C use a minimum of 70 litres per m^2.
- At 85°C use a minimum of 50 litres per m^2.

4.4 Heat Pump System Requirements

When installing a heat pump into an existing dwelling it is critical to ensure that the building is **sufficiently insulated** and the **existing heating system is surveyed** for compatibility. In many cases the dwelling's fabric will need to be upgraded to ensure efficient operation and thus optimal electricity cost. It is recommended to try and achieve insulation levels as close to "new build" requirements, where possible and practical. Recommended values for average elemental U-value for insulation would be:

- Roofs 0.16 W/m^{2}K
- Walls 0.27 W/m^{2}K
- Ground Floors 0.25 W/m^{2}K
- Exposed Floors 0.25 W/m^{2}K
- External doors windows/roof-lights: 2.0 W/m^{2}K

For more information in regard to achieving good insulation levels, please consult the relevant SEI publications, in particular the following: What is a U-value, the Detailed Guide to Insulating Your Home and Renovating and Older Home .

The existing heating system should be surveyed by your installer as not all radiators are suitable for use with heat pumps. In new build it is common for heatpumps to be used in conjunction with Underfloor Heating, however this may not be practical in existing buildings, due to the need for

high levels of insulation (U-values = 0.15 W/m^2/K) and the likely requirement to replace / renovate the existing floor. An alternative to consider is low temperature radiators, which are particularly suited to heatpumps.

ESB Networks are now requiring that a soft starter be incorporated in heat pump installations in houses. Please contact ESB Networks before you apply to ensure that a sufficient electricity connection can be provided.

5 What Level of Funding is Available?

The levels of grant support available for each technology are as follows:

Technology Maximum Grant	
Biomass - Boiler	€2,500
Biomass - Stove	€800
Biomass - Stove w/ Integral Back Boiler	€1,400
Heat Pump – Vertical Ground	€3,500
Heat Pump – Horizontal Ground	€2,500
Heat Pump - Water to water	€2,500
Heat Pump - Air Source	€2,000
Solar - Flat Plate	€250/ m^2 (to max. of 6m^2)
Solar - Evacuated Tube	€300/ m^2 (to max. of 6m^2)
Wood Gasification Boiler	€2,000

Please note only one grant will be provided per dwelling under Phase III and where a dwelling had an installation funded under Phase I or Phase II, that dwelling will not be eligible for further grant aid under the Scheme.

6 Installers

Applicants must use installers who have registered with SEI and that installer must be registered at the time of application **and** at time of system commissioning. Applicants who wish to install a wood gasification boiler must use an installer that is registered on the **Wood Gasification Boiler Registered Installer List**. Installers wishing to register under Phase III of the Scheme are required to achieve accredited qualifications in their relevant technology. Verification of an installer's qualifications is a matter for each applicant. Please see the Appendix D for the terms and conditions for installers to register under the scheme.

NOTE: An application **MUST INCLUDE** Installer ID found on the Registered List of Installers. Applications made without the SEI Installer ID will be returned to applicant as incomplete. The Registered Installer Lists are available on request or online at www.sei.ie/greenerhomes .

7 Approval Criteria

The following conditions will apply in the approval of grant applications and all conditions must be met in advance of any approval of a grant.

1. Applicant must be the homeowner and must have full possession of the property where the system is to be installed
2. Applicant must fully complete the Greener Homes Application Form (the "Application Form") with information valid at time of application
3. Applicant must supply bank account and sort code details to facilitate electronic payment of the grant. (Please note that currently we cannot process EBS and Credit Union accounts)
4. Applicant must agree to be bound by the Terms and Conditions of the Scheme (see **Section 11** below)
5. Product must be listed, at the date of application, on the Registered Product List (available on request or online at www.sei.ie/greenerhomes)
6. Installer must be listed, at the date of application **and** on the date of system commissioning, on the Registered Installer List
7. SEI must still have adequate funding available to it pursuant to the relevant phase of the Scheme in order to be able to approve the relevant application.

8 Application and Approval Procedure

Application should be made on the Scheme Application Form (available on request or online at www.sei.ie/greenerhomes) and sent to:

Greener Homes Scheme
Sustainable Energy Ireland
Glasnevin
Dublin 9

Once a completed application form has been received it will be considered for approval by SEI against the above Approval Criteria (see **Section 7** above). Please allow a minimum of twenty one days for processing of your application. If approved, a Letter of Offer will be issued to the applicant. The offer will only be validated upon the applicant indicating the applicant's acceptance of offer by returning a signed copy of the Letter of Offer to SEI, which must be received within 30 days of date of issue.

The grant offer remains valid for 12 months from the date of issue of the Letter of Offer. The offer will automatically lapse after this date if a valid request for payment form (RFP) with all appropriate supporting documentation has not been received by SEI.

9 Payment Procedure

Upon completion of the installation, and payment having been made in respect of the supply and installation of the equipment, the applicant must make a formal request to SEI for payment comprising the following:

1. Completed Request for Payment Form (which will be issued with the Letter of Offer at time of grant approval)
2. Invoice and receipt of payment to installer separately detailing full cost of equipment and installation* (in instances where the total amount paid is less than the grant approved then the lesser amount will be paid)
3. Completed Standard Commissioning Report signed by the registered installer

***Note**: If equipment was purchased separately, please provide separate invoices and receipts for payment of full equipment cost and installation charges.

Once all documentation is in order and acceptable, and, if selected, a satisfactory inspection completed (see **Section 10**), the grant will be paid electronically to the applicant's bank account and an accompanying letter notifying payment will be sent to the applicant. SEI will endeavour to make payment within eight weeks of receipt of completed and acceptable payment

documentation. However applicants should be aware that the timing of payments is subject to the availability of funds to SEI in any calendar year.

10 Installation Inspections

All completed installations may be the subject of verification and/or technical inspections. Properties may be the subject of a sampling process and homeowners will be notified by SEI prior to the inspection.

In the case of **Verification Inspections** the inspection will precede payment of the grant. This inspection will be scheduled at the earliest possible opportunity by SEI's appointed inspector in consultation with the homeowner. Grant payment will be made upon satisfactory receipt of the verification inspection report from the inspector.

Technical Inspections on the other hand will take place once installation is completed, and will be scheduled for an appropriate time thereafter, and will not delay payment. The report of the inspector will be used by SEI in order to inform ongoing development of quality assurance within the Scheme.

11 Terms and Conditions of the Scheme

1. The Application Guide, Application Form and Terms and Conditions are those published on the SEI website on the date of submitting the application. However, SEI may, if required by law and without incurring any liability, vary, revise or supplement the Terms and Conditions of the Scheme after the applicant's submission of an application and these revised or supplemented Terms and Conditions may apply to the application unless the applicant chooses to withdraw its application.
2. The applicant's agreement with SEI in the event of a Letter of Offer being signed will comprise the Terms and Conditions, the Application Guide (including its Appendices), the Applicant Declaration in the Application Form and the rest of the Application Form. The applicant shall comply with and agrees to be bound by the provisions of these documents. In the event of any conflict arising between these documents the order of precedence shall be:
   (i) the Terms and Conditions of the Scheme;
   (ii) the Applicant Declaration in the Application Form;
   (iii) the rest of the Application Guide less the Terms and Conditions of the Scheme; and
   (iv) the rest of the Application Form less the Terms and Conditions of the Scheme and less the Applicant Declaration.
3. The applicant must ensure that he/she completes and submits, to the extent applicable, the latest version of the Application Form (see www.sei.ie/greenerhomes for the latest version)
4. The applicant must be the owner of an existing home, located in the Republic of Ireland, in respect of which the grant application is made (not applicable to mobile homes, caravans, houseboats or other temporary dwellings). Only existing dwellings are supported.
   - An existing dwelling has been occupied for a minimum of one year
   - An existing dwelling has an existing heating system
   - SEI's QA programme involves site visits at which time the stated age of the house can be verified
   - The installing engineer is required to vouch for the age of the house at time of commissioning
5. The applicant must install a new product identified in the product types and listed on the Registered Product List (see **Section 4** of the Application Guide).
6. The applicant must engage an installer listed on the Registered Installer List (see **Section 6** of the Application Guide).
7. Approval of the grant only becomes valid upon receipt by SEI of the issued Letter of Offer signed by the applicant indicating his/her acceptance.
8. The applicant must secure approval from SEI before assuming he/she will receive the grant. SEI reserves the right to reject/approve applications for grants under the Scheme
9. The applicant must ensure grant approval is received before proceeding with any product purchase or installation work;
10. The grant, once approved, is only payable in respect of the type of product and installer identified in the Application Form and referenced in the Letter of Offer.
11. The timing of payment to approved applicants is subject to the funding allocated to the Scheme / programme in a particular calendar year, in accordance with public financial procedures. Where all other conditions are met, payment will be made by SEI on a "first come, first served" basis. Where funding is exhausted in a particular calendar year, payment to remaining applicants will be deferred until such time as further funds are available. Deferred payments will receive priority, if and when those funds become available.
12. Should his/her property be selected as part of a sample inspection process, the applicant must make his/her home available for verification and/or technical inspection. The applicant consents to the results of such inspections being published by SEI and made available to the public in whatever media SEI may, at its discretion, choose. The applicant must also be prepared to participate in follow-up research

(telephone or postal questionnaire) as may be commissioned by SEI to establish the Scheme's impacts and achievements. The applicant acknowledges that SEI will have to provide certain contact details to third party contractors in relation to these matters.

13. The applicant must obtain all necessary consents, permissions and statutory approvals and have authority to install the technology in his/her home.
14. SEI accepts no liability or responsibility, whether for breach of contract, negligence or otherwise, in respect of any dispute, claim or cause of action arising out of, or in relation to, any product (or its suitability), equipment (or its suitability), work, system, service, specification, standard, installation or the qualification or performance of the installer in respect of which grant approval or payment was given by SEI. No undertaking, guarantee, assurance or other warranty, express or implied, is given by SEI, or any of its agents or servants, in respect of the cost, quality, efficiency and/or benefit of any work, equipment, product, service or installation provided under the Scheme. The fact of registration on the Registered Product List or the Registered Installer List for the Scheme does not infer any warranty or endorsement of that product or installer by SEI.
15. The information provided herein and on SEI's website is provided solely for the purpose of providing assistance to the public, and is not intended to warrant or guarantee the quality of the product and/or the installation chosen by the grant applicant.
16. In the event of any breach of these Terms and Conditions of the Scheme or the other documents referred to in section 2 above by the applicant and where the applicant has received payment pursuant to the Scheme, SEI shall, amongst its remedies against the applicant, be entitled to demand the complete repayment of the grant payment and the applicant agrees to comply with any such demand within one month of the date of the letter from SEI containing such demand.
17. The applicant shall follow the SEI complaints procedure in relation to any disputes between the applicant and SEI concerning any matter in connection with the Scheme.

12 Useful Contacts

Scheme Administrator

Adeline Carpenter
Greener Homes Scheme
Sustainable Energy Ireland
Glasnevin
Dublin 9

Phone 1850 734 734
Fax 01 808 2013
Email greenerhomes@sei.ie

This document together with the necessary forms may be downloaded from SEI's website www.sei.ie/greenerhomes

13 Appendix A – Practical Guidelines for Buyers

A decision to install a renewable energy heating system involves a major investment. This is a new technology area and you should ensure that you are fully informed and proceed carefully to ensure that you get a system that truly meets your requirements and expectations.

Whether you have only just begun to consider a renewable energy heating system, or even if you are nearly settled on your preferred system, these basic guidelines represent good practice in the selection of the system. Ultimately the decision rests with you the customer and the basis for the installation of the system should be recorded in some form of written contract between you and your chosen installer.

The installation of certain products may constitute 'works' or 'development' within the meaning of planning legislation and/or building regulations. You should ensure that you have relevant, permissions, consents and approvals in place before works commence. Your installer is required to comply with Irish building regulations and technical regulations some of which are available for consideration on the Department of the Environment's website (at www.environ.ie).

More detailed guidance on particular systems is available in the technology specific Buyers Guides available on request (e-mail: greenerhomes@sei.ie or Lo Call 1850 734 734) or on line at www.sei.ie/greenerhomes

Choosing Your System

You need to be fully confident that the system you select will meet the heating needs of your home in an efficient and effective manner and is within your budget. The design of that system is best done by an appropriately skilled or experienced installer.

Getting the Best Option

Shop around. Before settling on any one product type, or installer, get at least two quotes for the equipment and installation, more if desired, and compare the offerings. You might also ask for quotes on likely running costs in terms of cost per unit of energy delivered. If you have decided on a particular product/system, but remain uncertain about the installer, then contact the manufacturer/supplier directly and ask them if they can recommend an installer to you.

Check References

While comparing the quotes that you have received, and before you make any final decision, request the prospective installers to provide reference homes where they have installed your chosen system or similar systems. Contact the references supplied (again try for two or more):

- ask if the job came in on time and on price
- confirm that they are fully satisfied with the system
- check that it is operating correctly
- check that they are satisfied with the standard of workmanship of the installer
- see if there were any issues during or since installation and whether they were resolved to the client's satisfaction
- ask about the scope and quality of their after sales service.

It will always be worth visiting one of these homes to see the product in operation and to satisfy you of the workmanship firsthand.

Formalise the Relationship

As stated, the contract for the purchase and installation of the product will be between you the customer and your chosen installer (and possibly the supplier). This is best done through the use of a written contract that records the following aspects of the agreement:

- obligations of the installer / supplier in the installation of the product
- your duties in terms of facilitating the installation
- payment terms and milestones
- obligation of installer / supplier to effect and maintain appropriate levels of professional liability insurance such as contractor's all risk insurance or professional indemnity insurance from the date of commencing installation works until the end of a period of 6 years from the date of completion of the installation
- agreed terms for dispute resolution should problems arise before, during or after the installation has been completed

In short, the decision is with you, the customer. The contract is between you and the installer. The warranty and aftercare responsibility of the product and installation should rest with the installer and /or the supplier/manufacturer as appropriate.

SEI Can Help

SEI has a range of support information to assist you in your decision, including the following:

Product Overviews

– Give you the buyer, details as to how the technology works and what it can be expected to deliver

Product Buyers Guides

– These provide more detailed guidance on a range of questions you should ask your installer to address satisfactorily before you come to any decision

Registered Product Lists

– Lists of products which have been identified to us for the Scheme (see **Section 4** above)

Registered Installer Lists

– Lists of installers who are currently on the Registered Installer List (see **Section 6** above)

A Model Contract

– A model written contract which may, depending on your circumstances, be suitable to use as a basis for agreeing a contract with your chosen installer/supplier, or as a template for you to assess your chosen installer's/supplier's own terms and conditions. However, should you remain uncertain, you may wish to seek legal advice in the formalising of the contract.

The above information and resources are all available online at www.sei.ie/greenerhomes

The above Information is supplied as advice only in order to assist grant applicants in their decision and in an effort to ensure that the grant applicant gets the most appropriate technology supplied and fitted in a professional manner.

14 Appendix B – Technology Descriptions

14.1 Solar

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 or a source of hot water for central heating for the building. 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 contribute to space heating demand. The cost of a professionally installed solar system for heating hot water can vary greatly. If you are considering investing in this technology you should do sufficient research to ensure that you are getting the best system for your needs and value for your money.

Location - The optimum location for solar panel collectors for all year round energy collection is roughly south facing and at a tilt angle of 30°- 45° to the horizontal (however angles between 15° and 60° are also acceptable). It is also important that the collectors are positioned so there are no shadows on them during the middle of the day. Shading can be from the collectors themselves, or from trees, chimneys, part of the building or adjacent buildings.

Cylinder – An appropriately sized cylinder should be chosen for the house. The volume of your solar hot water cylinder is related to the maximum cylinder temperature. It is recommended that at a maximum cylinder temperature of 60°C, 70 litres per square metre of aperture area is supplied and at a maximum cylinder temperature of 80 – 90 °C, 50 litres per square metre of aperture area is supplied. Smaller capacities will limit the benefit from the system and may lead to frequent overheating of the solar circuit. Generally Dual Coil cylinders should be used, having the coils at the top and bottom of the cylinder. The solar collector circuit should be connected to the bottom coil and the auxiliary circuit to the top coil, which will enable the solar system to pre-heat in bad weather. Your installer will be able to help you choose an appropriately sized cylinder.

Thermal Mixing Valve (Anti-Scald Valve) - Best practice calls for the fitting of a thermal mixing (anti-scald) valve. This applies to all hot water systems and not just solar heated water systems. With the current recommendation to store hot water at 60°C to prevent the growth of legionella bacteria it is becoming more of a consideration to install thermal mixing valves. A thermal mixing valve mixes cold and hot water together to ensure the water temperature is safe for people to use.

Controller – After commissioning, a permanent power supply should be provided for the solar controller to ensure circulation in the solar loop.

A solar water heater is composed of:

- A solar collector (flat plate or evacuated tube) which absorbs solar radiation (sunlight) and changes it into heat;
- A pump which transfers the heat from the collector to hot water in a storage tank;
- The storage tank accumulates the hot water produced by solar energy so that it can be stored for use when needed;
- A number of accessories which ensure the regulation and the safety of the system;
- A back-up heater (gas, oil, or wood fuelled boiler, immersion heater or heat pump) which will bring the hot water to the temperature required when there is not enough sunlight to do so (mostly in winter).
- In Ireland, solar collectors alone cannot provide all the hot water for a household's needs throughout the year. Correctly sized they will supply 60% of heat / domestic hot water needs. They are normally installed in conjunction with a conventional back-up heating system.

Planning Permission for Solar Panels

The installation of solar panels in your home is exempt from planning permission up to 12m^2 or 50% of the total roof area as per Statutory Instrument No. 83 of 2007 Planning and Development Regulations http://www.environ.ie/en/Publications/DevelopmentandHousing/Planning/FileDownLoad,1486,en.pdf implemented on the 28th February 2007. Contact you local planning authority if you are unsure of the local planning requirements.

14.2 Heat Pumps

Heat is widely available in the ground, air and water around your house. These natural sources of heat are constantly replenished by the sun, wind and rain. A heat pump system will harness these free and renewable energy sources for heating your house and supplying hot water at a very low cost. The role of the heat pump is to 'pump up' heat from a low temperature source, for example the ground under your lawn and release it at a higher temperature into your central heating system. There are three main types of heat pump available on the market, those that take heat from the ground, from water (rivers or wells) or directly from the air. Ground source heat pumps come in two varieties – vertical bore or horizontal loop.

Existing Dwellings Note

When installing a heat pump into an existing dwelling it is critical to ensure that the building is **sufficiently insulated** and the **existing heating system is surveyed** for compatibility. Many times the dwelling's fabric will need to be upgraded to ensure efficient operation and thus optimal electricity cost. Recommended values of average elemental U-value for insulation would be:

- Roofs: 0.3 W/m^{2}K
- Walls: 0.6 W/m^{2}K
- Ground Floors: 0.6 W/m^{2}K
- Exposed Floors: 0.6 W/m^{2}K
- External doors windows/roof-lights: 2.6 W/m^{2}K

The existing heating system should be surveyed by your installer as not all radiators are suitable for use with heat pumps; it is recommend that Underfloor Heating (with sufficient insulation) or low temperature radiators are used.

Heat pumps are very economical, for every unit of electricity used to power the heat pump, 3 to 4 units of heat are generated. They work best in conjunction with low temperature heat distribution systems e.g. underfloor heating. Because they require electricity to run, they are most cost effective when they can use night rate electricity. This requires a night rate meter. A buffer store is required to maximise efficiency as this allows the heat pump to store heat on a constant basis, releasing it as and when required.

Ground Source Collector - This collector is used in closed loop systems to transfer the heat from the ground to the house. The design and installation of this collector is important and your installer will be able to explain all the relevant aspects of it. It is important not to landscape or plant any trees or shrubs in the vicinity of the collector area as the roots can interfere with the operation of the heat pump. It is important that you take care to note a number of things:

- Your installer will provide a **plan** of the site showing the collector area and depth. This could prevent damage to the collector if any future work or landscaping is carried out on the grounds. In addition photographs of the collector before it is covered up would be helpful with any future work or trouble-shooting of the heat pump system.
- **Collector calculations** – Your supplier/installer will carry out tests on the soil to ensure that the most suitable collector (vertical, horizontal) will be chosen. They will provide a formal set of calculations for the collector design which will aid any future trouble-shooting.

Air-Source Heat Pump - Air/Air heat pumps take the energy from the air and transfer it to a warm air heating system and Air/Water heat pumps take the energy from the air and transfer it to the water in a heating system.

Water –Source Heat Pump - Water source heat pumps work in a similar fashion to ground source systems and transfer the heat from your water source to the house. Water source heat pumps use an open loop collector. Underground water sources such as a well circulate the water through pipework that in turn transfer heat to your house.

A Piping Schematic, Valve Chart and Wiring Diagram– Your installer will provide you with a piping schematic, valve chart and wiring diagram. This will be very useful in helping with any future work or trouble-shooting of the heat pump system.

Under Floor Heating System Design – You should discuss the under floor heating system and any plans for floor coverings with your installer as they affect the heat transfer from the floor and the overall operation of the system. Again, photographs of the under floor piping system during the installation would be helpful with any future trouble-shooting.

NB for the most efficient and economical operation of your system, it is important that your installer is involved (or well informed) in the above 3 points.

14.3 Wood Chip or Pellet Stoves

Everyone loves a wood fire; it really turns a house into a home. But open fires and old-fashioned stoves can be polluting, inefficient (typically only 20-30% efficient) and inconvenient. Modern wood pellet stoves offer the warmth and comfort of wood heating while being highly efficient, clean burning and totally automatic, saving you time and money.

Wood burning systems do emit carbon dioxide. However, as the wood fuel is cultivated, it absorbs the exact same amount of carbon dioxide as is released when burnt. As such it does not add to the carbon dioxide in the atmosphere. An eligible system can be used for heating a single room, hot water or a whole house.

It is important that there is adequate ventilation and that a clean air source is supplied to the stove, as the combustion process uses oxygen (in the same way as any fuel fired appliance). Given that some stoves come equipped with an integral boiler for hot water and heat delivery, it is important that these systems are correctly integrated with the existing hot water system (e.g. cylinder). (See Part J of the Building Regulations for minimum ventilation requirements – go to www.environ.ie).

14.4 Wood Chip or Pellet Boilers

Modern wood chip or pellet boilers offer the warmth and comfort of wood heating while being highly efficient, clean burning and totally automatic, saving you time and money.

Chip or Pellet boilers are lit automatically and continue to operate without manual intervention. Automatic fuel supply and thermostat means you can relax and enjoy the comfort of chip/pellet heating at the switch of a button. Automatic ignition means that lighting the boiler is convenient and easy. Modern chip/pellet boilers are self cleaning so you can forget the daily cleaning chore of traditional solid fuel heating systems. The ash pan needs to be emptied bi-weekly, or less frequently, depending on service.

These systems must comprise the main heating system of the house and can be run on wood chips and/or wood pellets.

Flues: The flue is used for the exhaust of the boiler or stove. It can be installed through a chimney or outside the building. The flue must be installed to current Building Regulations. (Part J – go to www.environ.ie). Some things to look for would be:

- It is above the eaves line by about 1metre or 600mm if coming out near the roof apex.
- It is twin walled and insulated.
- It has a cowl or hood on top to help prevent down draught.
- It should be separated from any combustible material.

Constructional Hearth: A constructional hearth should be placed (see Part J of the current Building Regulations – go to www.environ.ie) under a stove to separate the stove from combustible material and to provide protection from the threat of fire. The constructional hearth could be a metal or a non-combustible plate. The appliance should not be placed close to the edge of a hearth or any combustible material.

Air Supply: A stove or boiler must have a secure air supply for safe operation (see Part J of the current Building Regulations – go to www.environ.ie). This can be either in the form of a controlled dedicated air supply directly to the appliance, or in the form of a permanent ventilation opening to

the room in which the appliance is located. Best practise is to rely upon dedicated ventilation and **not** on air infiltration and/or leakage in the room. The size of the opening depends on the size of the appliance. Your installer should be able to size this correctly. In addition, extractor fans may interfere with the operation of the appliance causing smoke to spill out of the appliance into the room so please consult with your installer.

Thermal Mixing Valve (Anti Scald Valve): See section 14.1

Bulk Fuel Storage: All biomass boiler installations shall require the provision of bulk fuel storage. It shall be required to meet local building and fire regulations. The ONORM M7137 Standard http://on-norm.at/ecom/ shall be used as a guideline for DIY bulk storage units. Bulk fuel storage capacity shall be able to store a minimum of 3 tonnes of wood pellets (80% of a typical houses' requirement for one year).

Buffer Heat Store: It is a recommendation that a buffer or accumulator tank be incorporated as part of domestic wood pellet / chip boiler system installations where appropriate. A buffer or accumulator cylinder in a domestic biomass heating installation is a primary heat storage/distribution cylinder, which is heated by the boiler to a set temperature and can store the resulting high temperature water for long system standstill periods, until heating or hot water is required. A buffer / accumulator reduces the on/off cycling of wood boilers by "smoothing" the heat output to the dwelling. The buffer or accumulator capacity should be calculated in accordance with your manufacturer's recommendations. A rough guideline for establishing the volume of the buffer is available from EN303-5 and from the REIA training manual and is in the region of 55 to 65 L/kW of the rated boiler size.

The use of a buffer / accumulator is noteworthy in the following situations:

- Where the boiler does not have full modulation capabilities: the use of a buffer will smooth the heat output to the dwelling.
- In situations where the boiler is not capable of supplying the full heat demand of the house, a buffer tank will allow the boiler to run for longer at optimum efficiency extracting maximum potential from the boiler and fuel.

Thermostats
Thermostats are used to control the temperature of an area or space. You should consider what the optimum location of the thermostat is; usually it is the living space where you will spend most of your time. It is very worthwhile to have all main rooms "zoned" and fitted with their own thermostat.

Pellets
Quality pellets are essential to ensure clean combustion and trouble-free operation of your appliance. When buying pellets, consumers should consider those that are supplied with a quality mark and with a complete fuel analysis. Often this information will be printed on the packaging.

Pellets can be purchased in bagged or bulk form. For bulk purchases, a dry covered storage area is required. Generally bulk prices are more competitive than those for bags. Wood chips are generally sourced locally. It is important that the fuel used (quality, size, moisture content) is suitable for the appliance; your supplier will provide you with these details.

Poor pellet quality can greatly interfere with the functioning of the heating system. There are various European pellet quality standards currently in operation. Some of the more common standards are:

Austria:	**ÖNORM M1735**
Sweden:	**SS 187120** and **SS 187121**
Germany:	**DIN 51731**
Europe:	**CEN TS 14961**

In Canada and the US the equivalent standard is Premium grade.

14.5 Wood Gasification Boiler

A wood gasification boiler is a central heating boiler which produces its useful heat through combustion of wood gas. This "generator" gas is produced by the thermal transformation of wood fuel i.e. the wood fuel is first converted to gas then the resulting charcoal is then also converted to gas.
A wood gasification boiler differs from a standard wood boiler by way of the combustion process. In a standard wood boiler, direct combustion of the wood fuel takes place, whereas in a wood gasification boiler, combustion of wood-gas takes place following thermal conversion of the wood fuel to gas.

Buffer Heat Store
A buffer store (accumulator) will be installed in conjunction with your wood gasification boiler to ensure the efficient operation of your boiler. Buffer stores are important heat storage devices, especially for wood gasification boilers. These boilers can only be operated efficiently when combined with an accumulator since controlled operation at part load is more difficult. This is due to the nature of the fuel (generally wood logs). Once combustion take place, the fuel will continue to burn irrespective of whether the dwellings heat load is met. Consequently the buffer or accumulator cylinder in a domestic biomass heating installation is the primary heat storage/distribution device, which is heated by the boiler to a set temperature and can store the resulting high temperature water for long system standstill periods, until heating or hot water is required. The buffer or accumulator capacity should be calculated in accordance with your manufacturer's recommendations. A rough guideline for establishing the volume of the buffer is available from EN303-5 and from the REIA training manual and is in the region of 55 to 65 L/kW of the rated boiler size.

Flues
The flue is used for the exhaust of the boiler or stove. It can be installed through a chimney or outside the building. The flue must be installed to current Building Regulations. (Part J – go to **www.environ.ie**). Some things to look for would be:

- It is above the eaves line by about 1metre or 600mm if coming out near the roof apex.
- It is twin walled and insulated.
- It has a cowl or hood on top to help prevent down draught.
- It should be separated from any combustible material.

Constructional Hearth
A constructional hearth should be placed (see Part J of the current Building Regulations – go to www.environ.ie) under a stove to separate the stove from combustible material and to provide protection from the threat of fire. The constructional hearth could be a metal or a non-combustible plate. The appliance should not be placed close to the edge of a hearth or any combustible material.

Air Supply
A stove or boiler must have a secure air supply for safe operation (see Part J of the current Building Regulations – go to www.environ.ie). This can be either in the form of a controlled dedicated air supply directly to the appliance, or in the form of a permanent ventilation opening to the room in which the appliance is located. Best practise is to rely upon dedicated ventilation and **not** on air infiltration and/or leakage in the room. The size of the opening depends on the size of the appliance. Your installer should be able to size this correctly. In addition, extractor fans may interfere with the operation of the appliance causing smoke to spill out of the appliance into the room so please consult with your installer.

Thermal Mixing Valve (Anti Scald Valve): See section 14.1

Thermostats
Thermostats are used to control the temperature of an area or space. You should consider what the optimum location of the thermostat is; usually it is the living space where you will spend most of your time. It is very worthwhile to have all main rooms "zoned" and fitted with their own thermostat.

15 Appendix C – Useful Publications

The following publications from SEI will assist you in your learning and decision making:

Technology descriptions

Solar Water Heaters
Solar Space Heating
Renewable Heat Pumps
Wood Chip or Pellet Stoves
Biomass Boiler

Buyers Guides

Buyers Guides to Solar Water Heaters
Buyers Guides Solar Space Heating
Buyers Guides to Renewable Heat Pumps
Buyers Guides to Wood Chip or Pellet Stoves
Buyers Guides Wood Chip or Pellet Boilers

Consumer Guides on Renewable Energy and Energy Efficiency

Consumer Guideline – Biomass Boilers and Stoves
Consumer Guideline – Solar Thermal Systems
Consumer Guideline – Heat Pump
Consumer Guide to Sustainable Energy
Consumer Guide to Renewable Energy
Passive Solar Design
How to make your Home Energy Efficient
Renovating an Older Home
Building an Energy Efficient Home
Detailed Guide to Home Heating
Detailed Guide to Home Insulation

16 Appendix D – Registered Installer Terms & Conditions

The following are the terms and conditions to register as an installer:

I confirm that I have reviewed and accept the following Terms and Conditions for registration on the Registered Installer List and that I will comply with these Terms and Conditions:

1. I undertake to furnish SEI with a valid tax clearance certificate ("TCC") each year, and I attach a valid TCC for the current year. I accept that failure to furnish SEI with a valid TCC shall result in my removal from the Registered Installer List.

2. I understand that in order to remain eligible under the Scheme I am required to be registered on the Registered Installer List at **all** stages in the installation process relating to installations where I am the nominated installer including grant application, commissioning and sign off of the commissioning report.

3. I declare that I am competent and have the necessary

   □ Training □ Experience

   to enable me to satisfactorily and safely install / commission equipment in the technology areas for which I apply for registration.

4. I have achieved certification from an accredited training course in respect of each of the technology areas for which I am registered (Copy certificate(s) to be supplied).

5. I accept that installations grant aided under the Scheme and which I commission may, for quality control purposes, be inspected by SEI or its authorised agents or contractors and I will assist, by making myself available and/or disclosing any requested information, and co-operate with any such inspector.

6. I fully consent to the results of such inspections being published by SEI or its agents or contractors and made available to the public in whatever media SEI may at its discretion choose.

7. I accept that failure to act on a direction from SEI or its authorised agent or contractor, to remedy a deficit identified as a result of an inspection may result in my removal from the Registered Installer List.

8. I accept that my engaging in fraudulent or inappropriate behaviour in relation to the Scheme will result in my removal from the Registered Installer List. I also accept that any failure by me to comply with these Terms and Conditions may result in SEI removing me from the Registered Installer List.

9. I am aware that SEI may de-register installers where SEI has evidence of repeated failures on the part of installers to deliver quality work or give customer satisfaction.

10.1 I agree that any dispute between me and SEI in relation to any matter in connection with the Scheme shall in the first instance be discussed between us with a view to finding a resolution. I agree that if the discussion between me and SEI fails, the dispute may be referred by either of the parties to an independent mediator, accredited by the Centre for Effective Dispute Resolution and appointed, in the absence of agreement between the parties, by the Chairman (or his or her deputy) of the Irish Commercial Mediation Association. Any mediation shall take place in Dublin, Ireland at a venue chosen by the mediator. The appointed mediator will seek to mediate a resolution of the dispute.

10.2 I agree that if the dispute between myself and SEI is not resolved in accordance with clause 10.1, the dispute may then be referred by either party to arbitration under the Arbitration Rules and Procedures of the Chartered Institute of Arbitrators Irish Branch and, in the absence of agreement, either party can apply to the Chartered Institute of Arbitrators Irish Branch to have such an arbitrator appointed.

11. I accept that, in order to be reinstated to the list after deregistration in accordance with these Terms and Conditions, I may be required by SEI to contribute to the costs of any re-inspections arising out of any rework declarations previously issued by SEI or any of its agents or contractors. Furthermore I accept that I may be required by SEI to contribute to the cost of a number (at SEI's discretion) of inspections carried out on my installations after re-registration.

12. I am aware that SEI intends to require Registered Installers to become members (at the expense of Registered Installers) of a recognised trade association of installers carrying out the type of work envisaged by these Terms and Conditions once such an association is formed.

13. I agree at my expense to attend targeted workshops when requested by SEI.

14. I undertake that the services provided by me pursuant to the Scheme will be carried out in accordance with recognised and accepted practices, acceptable industry standards and any applicable equipment installation guidelines and any relevant national and European laws and guidelines.

15. I accept that the Terms and Conditions for registration on the Registered Installer List may be updated from time to time on the SEI website and these updated Terms and Conditions shall apply to me with immediate effect.

16. I accept that in carrying out services pursuant to the Scheme that I shall not be acting in my capacity as a consumer but that I shall be acting in the course of my business.

Wood Gasification Boiler Declaration

To be filled out by the authorised representative of company or distributor

I declare that _____ (installer) is competent to install and commission wood log gasification boilers (name of boiler)

_____

registered under the Greener Homes Scheme Product List.

I accept that installations grant aided under the Scheme and which the installer above commissions may, for quality control purposes, be inspected by SEI or its authorised agents or contractors and I will assist, by making myself available and/or disclosing any requested information, and co-operate with any such inspector.

I accept that failure to act on a direction from SEI or its authorised agent or contractor, to remedy a deficit identified as a result of an inspection may result in SEI removing the products **and** installers from the Registered Lists.

Name (print): _____

Company (print): _____

Address (print): _____

Contact telephone number (print): _____

Email (print): _____

Signature: _____Date: _____

Greener Homes Scheme
Phase III

(Existing Dwellings)

Homeowner Application Form

Version 3.0

IMPORTANT NOTICE

It is the responsibility of each applicant to the Greener Homes Scheme to ensure that they have read, and fully understand, this Application Form and the Home Owner Application Guide before submitting a signed application form. Failure to fully adhere to the provisions of this Application Form and the Application Guide will result in application refusal, grant revocation or payment request refusal, depending on the particular status and stage of the grant. SEI accepts no liability or responsibility, whether for breach of contract, negligence or otherwise, in respect of any claim or cause of action arising out of, or in relation to, any equipment, product, work, system or installation in respect of which grant approval was given by SEI.

This Application Form will be revised periodically. Call the Helpline 1850 734 734 or check the SEI website (www.sei.ie/greenerhomes) to ensure that you have the latest version.

PLEASE READ CAREFULLY THE APPLICATION GUIDE BEFORE COMPLETING THIS FORM.

Instruction for Completing the Application Form

The assistance of an installer will be required in completing the Application Form.
Please complete the Application Form in **BLOCK CAPITALS** with blue or black pen**.**
Please complete:

- Sections A.1 – A.4 (The Applicant)
- Section B.1 or B.2 or B.3 or B.4 depending on product selected (Technical Details – Proposed Installation)
- Section C (Application Declaration)
- Section D (Terms and Conditions)

Please ensure that you have fully read and accept the terms and conditions contained in section D. Please note that an **incomplete Application Form** may result in a delay in the processing and/or rejection of your application.
All the information requested in the application form is **mandatory** and failure to complete fully will result in the application being returned.

The completed Application Form should be returned to:

Greener Homes Scheme
Sustainable Energy Ireland
Glasnevin
Dublin 9

For further information regarding the Greener Homes Scheme (the "Scheme"):

Web	www.sei.ie/greenerhomes
E-mail	greenerhomes@sei.ie
Phone	1850 734 734

NOTE: Please ensure compliance with the following eligibility criteria when filling out your application form:

- **Grant eligibility commenced with the launch of Phase III of the Scheme on the 22nd July 2008. If any product procurement or work was initiated prior to this date then you are not eligible to apply for a grant. (Product Procurement includes any form of ordering, deposit and/or stage payment as well as product delivery. Work includes any installation relating to the Renewable Heating System being applied for under the Greener Homes Scheme).**
- **No purchase or work should be initiated before receiving a formal Letter of Offer from SEI.**
- **Once approved and a request for payment is made, confirmation of the above, including proof of purchase is a requirement for payment of the grant.**

Section A – The Applicant

Please complete shaded areas with BLOCK CAPITALS and tick boxes where appropriate

A.1 Application

For which technology are you applying: (tick one only):

☐ Biomass ☐ Gasification ☐ Solar Thermal ☐ Heat Pump

☐ This is my first application for this installation address

☐ I have applied before Please enter Previous Ref. Number

Only one grant will be provided per dwelling under Phase III of the Greener Homes Scheme. Where a dwelling had an installation funded under Phase I or Phase II, that dwelling will not be eligible for further grant aid under the Scheme. If you have already received or are in the process of receiving a grant under Phase I or Phase II please do not send in this application form as it will not be accepted.

A.2 Applicant Details

Name	
Address	
Phone	
Mobile	
E-mail	

A.3 Bank details *

Bank Name	
Bank Branch / Address	
Bank Sort Code	- -
Account Holders Name	
Account Number	

*** We are unable to process EBS and Credit Union accounts at this time**.

A.4 Installation Details

Installation Address, if different from above.

Address	

Property Details: Only existing dwellings are supported.

- An existing dwelling has been occupied for a minimum of one year
- An existing dwelling has an existing heating system
- SEI's QA programme involves site visits at which time the stated age of the house can be verified
- The installing engineer is required to vouch for the age of the house at time of commissioning

Building Age (estimated years)	years
(ESB Meter Point Reference Number – top right hand corner on ESB Bill)	

☐ Mid terrace ☐ Detached ☐ Apartment

☐ End terrace ☐ Semi-detached

Property Size:	
Floor Area	m^2
No. of bedrooms	

Fuel Displacement

Primary heating fuel:

☐ Oil ☐ Solid Fuel (Coal / Peat) ☐ Electricity

☐ Gas -LPG ☐ Gas - Natural

Total estimated system cost (incl. product purchase and installation) (including VAT)	
*Anticipated date of Installation Completion (dd/mm/yyyy)	Cannot be less than 21 days from application submission

* Please allow a minimum of **TWENTY ONE DAYS** for processing of your application. Any purchase or installation should not be initiated before receiving a formal Letter of Offer from SEI.

Note: All the information above is **MANDATORY** and failure to complete will result in the return of the application.

Section B – Technical Details - Proposed Installation

Depending on the particular technology selected, **ONE ONLY** of sections B.1, B.2, B.3 or B.4 need be completed.

B.1 Wood Chip or Pellet Stove or Boiler – Proposed Installation

The assistance of an installer will be required in completing Section B.

Installer Details: Applicants must use Installers who have registered with SEI and that Installer must be registered at the time of application **and** at time of system commissioning.

Installer Name		Installer ID	

Note: Application **MUST INCLUDE** Installer ID found on the Registered List of Installers. Applications made without the SEI Installer ID will be returned to applicant as incomplete. See Scheme Application Guide and Registered Installer List.

Intended Purpose (tick one)

☐ Space Heating Only ☐ Space and Hot Water

Product Details:

Registered Product - SEI Product ID			
Product Manufacturer		Product Make	
Product Model		Product Model Number	
Supplier		Rated Heat Output (kW)	

Note: Application **MUST INCLUDE** the SEI Product ID found on the Registered Product List. Applications made without the SEI Product ID will be returned to applicant as incomplete. See Scheme Application Guide and Registered Product List.

Product / System Details:

Please tick **ONE** of the grant options below

Wood Chip or Pellet Boiler	€2,500	☐
Bulk Fuel Storage**	Yes ☐ **(mandatory)**	Capacity: _____
Wood Chip or Pellet Stove	€800	☐
Wood Chip or Pellet Stove with Integral Boiler	€1,400	☐

Buffer Heat Storage Cylinder** **Existing** ☐ **New** ☐ **N/A** ☐ **Size =** _____ **litres**

Intended Fuel Type (tick one)

Wood Chips	☐
Wood Pellets	☐
Both	☐

****See Section 4.1 of the Application Guide**

B.2 Wood Gasification Boiler – Proposed Installation

The assistance of an installer will be required in completing Section B.

Installer Details: Applicants must use Installers who have registered with SEI and that Installer must be registered at the time of application **and** at time of system commissioning.

Installer Name		Installer ID	

Note: Application **MUST INCLUDE** Installer ID found on the **Wood Gasification Boiler Registered List of Installers**. Applications made without the SEI Installer ID will be returned to applicant as incomplete. See Scheme Application Guide and Registered Installer List.

Intended Purpose (tick one)

☐ Space Heating Only ☐ Space and Hot Water

Product Details:

Registered Product - SEI Product ID			
Product Manufacturer		Product Make	
Product Model		Product Model Number	
Supplier		Rated Heat Output (kW)	

Note: Application **MUST INCLUDE** the SEI Product ID found on the **Wood Gasification Boiler Registered Product List**. Applications made without the SEI Product ID will be returned to applicant as incomplete. See Scheme Application Guide and relevant Product List.

Product / System Details:

Wood Gasification Boiler €2,000 ☐

Buffer Heat Storage Cylinder (mandatory) ** **Existing** ☐ **New** ☐ **Size = _____ litres**

Fuel Supply (tick one)

Own Supply ☐

Purchase ☐ Supplier

**** See Section 4.2 of the Application Guide**

B.3 Solar Thermal – Proposed Installation

The assistance of an installer will be required in completing Section B.

Installer Details: Applicants must use Installers who have registered with SEI and that Installer must be registered at the time of application **and** at time of system commissioning.

Installer Name		Installer ID	

Note: Application **MUST INCLUDE** Installer ID. Applications made without the SEI Installer ID will be returned to applicant as incomplete. See Scheme Application Guide and Registered Installer List.

Intended Purpose (tick one)

☐ Space Heating Only ☐ Hot Water Only ☐ Space and Hot Water

Product Details:

Registered Product - SEI Product ID			
Product Manufacturer		Product Make	
Product Model		Product Model Number	
Supplier		Rated Heat Output (kW)	

Note: Application **MUST INCLUDE** the SEI Product ID found on the Registered Product List. Applications made without the SEI Product ID will be returned to applicant as incomplete. See Scheme Application Guide and Registered Product List.

Product / System Details:

Solar Collector Type

☐ Flat Plate €250 / m^2

☐ Evacuated Tube €300 / m^2

SOLAR THERMAL (per m^2; to maximum of 6 m^2)

No. of Collectors/Panels			
Aperture area per panel	m^2		
***Total Aperture area	**m^2**	**Grant Requested**	**€**
Total Surface (Gross) area	m^2	Estimated annual energy yield	kWh

*** The grant is based on the Aperture area of the collector – please consult your supplier if you are unsure.

Hot Water Storage Existing ☐ New ☐ Size = _____ litres

☐ Vented ☐ Un-vented

☐ Single coil ☐ Triple coil

☐ Dual coil ☐ Thermal store

Primary Circuit

☐ Indirect ☐ Direct

☐ Sealed system ☐ Pumped drain-back

☐ Feed & vent ☐ Thermo-siphon

B.4 Heat Pump – Proposed Installation

The assistance of an installer will be required in completing Section B.

Installer Details: Applicants must use Installers who have registered with SEI and that Installer must be registered at the time of application **and** at time of system commissioning.

Installer Name		Installer ID	

Note: Application **MUST INCLUDE** Installer ID found on the Registered List of Installers. Applications made without the SEI Installer ID will be returned to applicant as incomplete. See Scheme Application Guide and Registered Installer List.

Intended Purpose (tick one)

☐ Space Heating Only ☐ Hot Water Only ☐ Space and Hot Water

Product Details:

Registered Product - SEI Product ID			
Product Manufacturer		Product Make	
Product Model		Product Model Number	
Supplier		Design Heat Output (kW)	
Rated Heat Output (kW)		Estimated Electricity Input (kW)	

Note: Application **MUST INCLUDE** the SEI Product ID found on the Registered Product List. Applications made without the SEI Product ID will be returned to applicant as incomplete. See Scheme Application Guide and Registered Product List.

Product / System Details:

Please tick **ONE** of the grant options below		
Heat Pump - Horizontal Ground Collector	€2,500	☐
Heat Pump - Vertical Ground Collector	€3,500	☐
Heat Pump - Water (well) to Water	€2,500	☐
Heat Pump – Air Source	€2,000	☐

Space heating distribution (where applicable)

☐ Under floor ☐ Radiators
☐ Air blowers ☐ Convectors

Section C – Terms and Conditions of the Scheme

1. The Application Guide, Application Form and Terms and Conditions are those published on the SEI website on the date of submitting the application. However, SEI may, if required by law and without incurring any liability, vary, revise or supplement the Terms and Conditions of the Scheme after the applicant's submission of an application and these revised or supplemented Terms and Conditions may apply to the application unless the applicant chooses to withdraw its application.
2. The applicant's agreement with SEI in the event of a Letter of Offer being signed will comprise the Terms and Conditions, the Application Guide (including its Appendices), the Applicant Declaration in the Application Form and the rest of the Application Form. The applicant shall comply with and agrees to be bound by the provisions of these documents. In the event of any conflict arising between these documents the order of precedence shall be:
    a. the Terms and Conditions of the Scheme;
    b. the Applicant Declaration in the Application Form;
    c. the rest of the Application Guide less the Terms and Conditions of the Scheme; and
    d. the rest of the Application Form less the Terms and Conditions of the Scheme and less the Applicant Declaration.
3. The applicant must ensure that he/she completes and submits, to the extent applicable, the latest version of the Application Form (see www.sei.ie/greenerhomes for the latest version)
4. The applicant must be the owner of an existing home, located in the Republic of Ireland, in respect of which the grant application is made (not applicable to mobile homes, caravans, houseboats or other temporary dwellings). Only existing dwellings are supported.
    - An existing dwelling has been occupied for a minimum of one year
    - An existing dwelling has an existing heating system
    - SEI's QA programme involves site visits at which time the stated age of the house can be verified
    - The installing engineer is required to vouch for the age of the house at time of commissioning
5. The applicant must install a new product identified in the product types and listed on the Registered Product List (see **Section 4** of the Application Guide).
6. The applicant must engage an installer listed on the Registered Installer List (see **Section 6** of the Application Guide).
7. Approval of the grant only becomes valid upon receipt by SEI of the issued Letter of Offer signed by the applicant indicating his/her acceptance.
8. The applicant must secure approval from SEI before assuming he/she will receive the grant. SEI reserves the right to reject/approve applications for grants under the Scheme
9. The applicant must ensure grant approval is received before proceeding with any product purchase or installation work;
10. The grant, once approved, is only payable in respect of the type of product and installer identified in the Application Form and referenced in the Letter of Offer.
11. The timing of payment to approved applicants is subject to the funding allocated to the Scheme / programme in a particular calendar year, in accordance with public financial procedures. Where all other conditions are met, payment will be made by SEI on a "first come, first served" basis. Where funding is exhausted in a particular calendar year, payment to remaining applicants will be deferred until such time as further funds are available. Deferred payments will receive priority, if and when those funds become available.
12. Should his/her property be selected as part of a sample inspection process, the applicant must make his/her home available for verification and/or technical inspection. The applicant consents to the results of such inspections being published by SEI and made available to the public in whatever media SEI may, at its discretion, choose. The applicant must also be prepared to participate in follow-up research (telephone or postal questionnaire) as may be commissioned by

SEI to establish the Scheme's impacts and achievements. The applicant acknowledges that SEI will have to provide certain contact details to third party contractors in relation to these matters.

13. The applicant must obtain all necessary consents, permissions and statutory approvals and have authority to install the technology in his/her home.
14. SEI accepts no liability or responsibility, whether for breach of contract, negligence or otherwise, in respect of any dispute, claim or cause of action arising out of, or in relation to, any product (or its suitability), equipment (or its suitability), work, system, service, specification, standard, installation or the qualification or performance of the installer in respect of which grant approval or payment was given by SEI. No undertaking, guarantee, assurance or other warranty, express or implied, is given by SEI, or any of its agents or servants, in respect of the cost, quality, efficiency and/or benefit of any work, equipment, product, service or installation provided under the Scheme. The fact of registration on the Registered Product List or the Registered Installer List for the Scheme does not infer any warranty or endorsement of that product or installer by SEI.
15. The information provided herein and on SEI's website is provided solely for the purpose of providing assistance to the public, and is not intended to warrant or guarantee the quality of the product and/or the installation chosen by the grant applicant.
16. In the event of any breach of these Terms and Conditions of the Scheme or the other documents referred to in section 2 above by the applicant and where the applicant has received payment pursuant to the Scheme, SEI shall, amongst its remedies against the applicant, be entitled to demand the complete repayment of the grant payment and the applicant agrees to comply with any such demand within one month of the date of the letter from SEI containing such demand.
17. The applicant shall follow the SEI complaints procedure in relation to any disputes between the applicant and SEI concerning any matter in connection with the Scheme.

Section D - Applicant Declaration

- Grant approval, indicated through a letter of offer, must be in place before any product is purchased or installation work commenced. If any purchase has been made or works commenced prior to the date of this application then I acknowledge and confirm that this application will be ineligible for support. I confirm that no such purchases or works have occurred prior to the date set out below. Verification checks form part of the Scheme's inspection regime and these will be undertaken in a number of homes. Installers are required to confirm details, including date of installations with a penalty of removal from the List of Registered Installers for invalid declarations.
- I agree and consent to SEI, as data controller, and its agents, storing the information which I provide to SEI on its database. SEI agrees and hereby notifies you that SEI and its agents shall only process personal data about you in accordance with the Data Protection Acts 1988 and 2003. I agree and consent to personal data which I provide being used by SEI or its agents for grant approval and payment purposes and to facilitate the administration of the grant process and the Scheme and for the purposes of liaising with installers and where appropriate inspectors and researchers. This may require my personal data being supplied to and discussed with any other persons or organisations helping to assess and monitor this application including without limitation, SEI's professional advisers and any inspectors and researchers which SEI might engage. These persons will be required to comply with the Data Protection Acts 1988 and 2003. I understand that I may request SEI to grant me access to my personal data which SEI holds.
- I also understand that all of the data collected in the administration of the Scheme will be aggregated by SEI as a means of analysing the overall Scheme effectiveness e.g. in terms of cumulative achievements, market trends, and/or environmental impacts. I understand that the disclosure of this aggregated data will not involve the release of any personal data. My signature on this Application Form is treated as confirmation that SEI and its agents may use the data which I have supplied for the aforementioned purposes.

I have read in full and agree with the Application Form and the Scheme Application Guide including its appendices.
I confirm that the dwelling for which I am applying is an existing dwelling as per the terms and conditions of the Scheme (see point 4).
I have read and agree with the terms and conditions of the Scheme which are set out in section C of this Application Form and also in section 11 of the Application Guide. I certify that the information entered on this Application Form is true, accurate and complete in all respects.

Applicant's Name: (BLOCK CAPITALS PLEASE)	
Applicant's Signature:	
Date:	

SEI may wish to use the information relating to your particular installation for the purposes of a case study, publicity, promotional materials (print and / or web).
Please tick below if you are happy to allow your project details be utilised for these purposes. ☐

The completed Application Form should be returned to:

Greener Homes Scheme
Sustainable Energy Ireland
Glasnevin
Dublin 9