Building a new home

Renewable energy combined with energy efficiency offers a viable method of minimising energy costs and counteracting the causes of climate change.
Different types of renewable energy technologies offer different benefits but they all use non-polluting and effectively limitless energy sources.
Energy efficient features can be easily incorporated into the building design and construction at minimal additional cost.

Domestic renewable energy systems

Wood pellets

What are Wood pellets*?*

Wood pellets are made from sawdust, compressed into uniform diameter pellets to be burned in heating appliances. They are a clean, renewable, standardised fuel and allow for easy handling and storage.

Pellets can be bought in bulk (3 tonne, equivalent to one heating season) and stored in a pellet hopper, similar to the way oil is stored and used. Alternatively, they can be bought in bags of ~15kg and used to refill a room heater. 1 tonne of pellets contains the same amount of energy as 500 litres of oil.

How can Wood pellets *heat my home?*

Rather than simply burning wood in open fires, sophisticated and very cost-effective stoves and boilers are used to burn wood pellets.

Room heater

Room heater (with water heating)

Boiler

These modern boilers employ automatic fuel delivery systems and are as convenient, clean and efficient as an oil or gas boiler for domestic or commercial users. If pellets are bought in bulk, heating costs can be halved compared to using a conventional oil boiler.

Geothermal heatpumps

What are Geothermal heatpumps*?*

Geothermal energy can be accessed to heat homes or other buildings by using a heat pump to convert the low temperature heat in the ground, water or air into high grade heat suitable for heating your home.
There are four basic types of heat pump systems: 1. Air to air, 2. Water Source, 3. Ground Source Vertical, 4. Ground Source Horizontal. The Ground Source Horizontal is the most commonly used type in Irish domestic heating systems.

How can Geothermal heatpumps *heat my home?*

Heating costs can be halved compared to using a conventional oil boiler especially if the system is run on nightsaver electricity. Heatpumps use about one kWh of electricity to generate four kWh of heat.

The efficiency ratio of 1:4 means that the electricity consumed is only one quarter of the energy needed to heat your home.

With a geothermal heatpump, the heat is best distributed around your home using an underfloor heating system or fan-coil radiators. Underfloor systems operate most efficiently but require a lead-in time to heat rooms. Fan-coil radiators require slightly more electricity to operate but can provide instant heat.

Solar thermal panels

What are Solar thermal panels*?*

A typical domestic solar panel installation includes about 4m^2 of solar panels placed on a south facing roof. The solar panels absorb heat and light from the sun, even when it is cloudy, and transfers this heat to your hot water cylinder at about 50degC. An immersion heater may be required to boost hot water above this temperature if required.

How much hot water will a Solar thermal *installation provide*?

A typical installation can provide up to 100% of domestic hot water during the six brighter months of the year, allowing the central heating system for that period to be switched off completely. Over the whole year it is possible to cover about 60% to 70% of your hot-water demand using free solar energy.

Renewable electricity

Some electricity suppliers now supply homes and other buildings with electricity generated from wind farms and other renewable energy sources at a cost equal to or lower than the normal rate.

Alternatively, if you have a suitable site, you can generate your own electricity. A domestic wind turbine of 1kW will have a rotor diameter of less than 2m and will generate up to 30% of your electricity. Solar Photovoltaic panels are often installed in combination with turbines.

Grants for heating systems

Sustainable Energy Ireland, through the Greener Homes Scheme now provides grants to homeowners for renewable energy domestic heating systems.

Energy Efficient Design

There are four key areas in which energy savings can be achieved in new construction and major renovations:

Building Envelope

- Increase insulation in the walls, roof, & floor
- Use double or triple glazed windows with low-E coating and argon filling
- Draughtseal around doors and windows.

Passive Solar Design

Passive solar design involves orienting the building to take advantage of available solar energy while protecting it from temperature extremes:

- Minimise the windows on the north side
- Maximise the windows on the south side
- Locate garage, hallway, utility and bathrooms on the north side to act as thermal buffers
- Orientate Sunroom and habitable areas to the south side to maximise solar gains

Heating and Ventilating

- Improved controls for ventilation, and space & water heating systems
- Air-to-air heat exchangers capture the heat from air being exhausted to the outside and use it to pre-heat fresh air being brought into the building

Lighting and Power

Savings in electricity usage can be achieved by:

- Maximising daylight
- Selecting energy efficient light fixtures
- Selecting energy efficient appliances
- Using automatic switching mechanisms such as timers, motion detectors and light-sensitive detectors

Your local Energy Agency

"The Limerick Clare Energy Agency aims to provide energy solutions for sustainable development in the region. The agency will provide energy services to all economic sectors and the general public, promoting and facilitating efficiency sustainability in the production and consumption of energy".

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Save on Energy Costs

Renewable Energy Systems & Energy Efficient Design

- Save 30% to 50% on heating & electricity costs
- Improved comfort and healthier homes
- Reduced greenhouse gas emissions

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