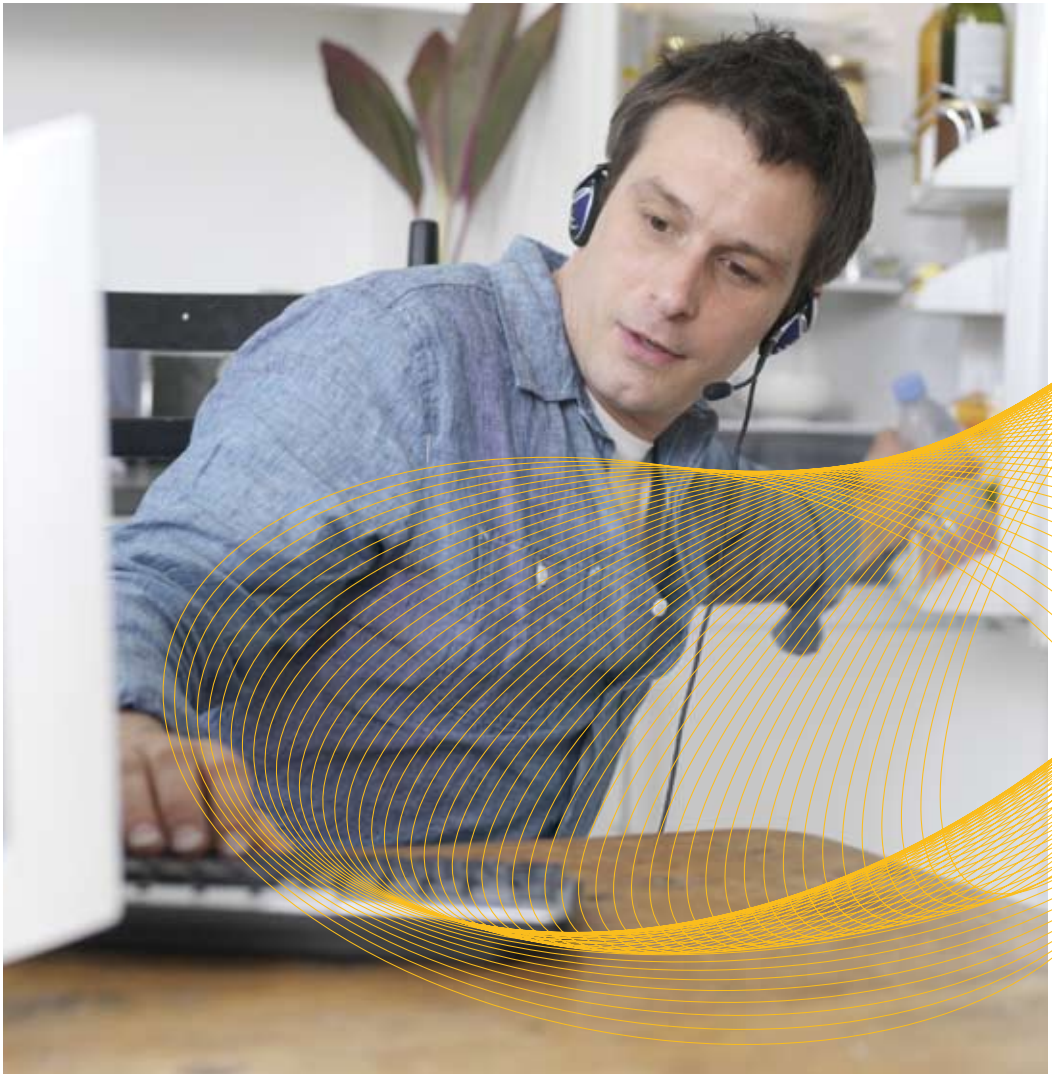
SUSTAINABLE ENERGY IRELAND

Your Guide to Electricity in the Home



1. Introduction

Who is Sustainable Energy Ireland?

Sustainable Energy Ireland (SEI) is Ireland's national energy agency whose mission is to promote and assist the development of sustainable energy. SEI's activities can be divided into two main areas:

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

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

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

Sustainable Energy Ireland is funded by the Irish Government under the National Development Plan 2007-2013, with programmes part financed by the European Union.

Did you know…

- Energy use is responsible for two-thirds of Ireland's greenhouse gas emissions.
- Irish homes use around a quarter of all energy used in the country – that's even more than industry.
- The average home consumes 21% more electricity than it did in 1990 and is responsible for emitting on average 8.2 tonnes of CO_2, approximately 5 tonnes from fuel use such as oil, gas or coal for heating and 3.2 tonnes arising from electricity use. This compares to the average family car which is responsible for approximately 4 tonnes of CO_2 emissions.
- The average penetration of electrical appliances in Irish households has doubled in the last twenty years.

2. Electricity Use in the Home

The use of electricity in the home accounts for approximately one third of the total electricity use in Ireland. While electricity makes our lives more comfortable and convenient, it is becoming increasingly important that we recognise how many things we do in a typical day that adds to our consumption of electricity. Take a look through the following list of appliances used in a typical home and see how many you have, sometimes more than one of them? Is it essential that we have all of these appliances and that we use them all the time? Could we be using them more efficiently?

- ☐ Fridge
- ☐ Freezer
- ☐ Washing machine
- ☐ Tumble dryer
- ☐ Dishwasher
- ☐ Cooker
- ☐ Microwave
- ☐ Kettle
- ☐ Toaster
- ☐ Sandwich maker
- ☐ Juicer
- ☐ Food Processor
- ☐ Grilling machine
- ☐ Coffee maker
- ☐ Lights and lamps
- ☐ Fan/Electric heater
- ☐ Electric blanket
- ☐ Electric shower
- ☐ Hairdrying equipment
- ☐ Mobile phone charger
- ☐ TV
- ☐ Satellite box
- ☐ DVD Player / Recorder
- ☐ Hi-Fi
- ☐ Games console
- ☐ CD Player
- ☐ Computer (PC)
- ☐ Digital camera
- ☐ Answering machine

☑ Tick all the appliances you own

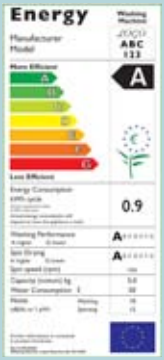


3. Appliances

Your Choice – Energy Labelling

Electrical appliances use a lot less electricity than they did 20 years ago. This can be attributed to the fact that manufacturers have made technological developments that meet the demands of an increasingly discerning market who are better informed by energy labelling. But even today there can be substantial differences in energy consumption between different models. Even small reductions in the amount of electricity consumed daily can add up to significant savings over the lifetime of the appliance which could be as long as 10-15 years.

Energy labelling of appliances was first introduced in Ireland in 1995 under EU legislation. The legislation currently covers washers, dryers, combination washer dryers, fridges, freezers, fridge-freezers, dishwashers, ovens and air conditioners as well as lighting.



Appliances are labelled to indicate energy consumption and are rated from A-G, with A being the most efficient. Energy efficient appliances will save you money on your energy bill and are less harmful to the environment.

Energy labelling of appliances helps you to make a more informed choice when buying an appliance by allowing you to easily compare the energy consumption of different models. In addition, other performance information allows you to choose the best appliance for your individual needs. The more we choose energy efficient products, the more competitive the market becomes for those products. And so the more that manufacturers are inclined to produce high efficiency products. In this way, exercising your purchasing power and making the smart choice can have a real and significant impact – not only on your own energy bills but also on the types of appliances we will have in the future.

The next time you're buying an appliance, take a good **look at the energy label and choose the most efficient one you can.**

In some instances, the indicative range on labels has been adjusted or adapted as a result of either legislative or market led interventions. These include:

- On the basis of the significant improvements in efficiency of refrigeration appliances since the introduction of energy labelling, the EU introduced a Minimum Standards Directive so that all such appliances are now only in the A – C range.
- On foot of a voluntary agreement among the majority of large appliance manufacturers / suppliers in Europe some years back, most washing machines available in retail outlets will fall in the A – D range.

Eco Label
The Eco Label is available to manufacturers on a voluntary basis and gives a much broader indication of the environmental impact of the appliance throughout its complete lifecycle, so called 'cradle to grave', which takes into account manufacture, distribution, use and recyclability. It takes into account the content of hazardous substances and any potential harm or degradation to the natural environment. As much of a products impact is during its manufacture, this can be mitigated by increasing a products durability up to as much as 20 years. If the product has been awarded an Eco Label then the EU's flower symbol will be featured on the compulsory Energy Label.

What can you save?

An 'A' rated appliance will use about 55% of the electricity of a similarly sized appliance with a 'D' rating. Always look for the energy label and purchase 'A' rated appliances where possible, they can save their replacement cost over their lifetime and benefit the environment.

By purchasing an 'A' rated fridge instead of a 'C' rated one, each household could save €14 per annum or collectively €18m nationally, with CO_2 savings of over 85,000 tonnes annually.

Your Usage – Electricity Savings Tips for the Home

After purchasing an appliance, it is important that it is used efficiently to further reduce energy wastage and environmental harm. Most of these tips require no investment whatsoever, just a change in habits.

Washers and Dryers

- The washing cycle selected on a washing machine or dishwasher should have the lowest water temperature required for the items being washed.
- A full load of washing is more energy efficient than two half loads.
- If your washer or dryer has an economy / half load button then use it whenever appropriate.
- Use a cold rinse for your clothes where possible.
- Dry clothes naturally out of doors whenever possible.
- When drying clothes in a dryer, dry heavy articles separately from light pieces and turn the dryer off as soon as the clothes are dry - don't over dry clothes!

Fridge and Freezer

- Don't let frost build up in the freezer compartment as this increases energy consumption. Remember to defrost the inside of your refrigerator and freezer at least every 6 months.
- Make sure they are positioned in a cool place, not next to the cooker or boiler or where possible not in the path of direct sunlight.
- Check that the door seals on the refrigerator and freezer are tight fitting - the seal should hold a euro note in place when the door is closed.
- Don't put warm or hot food straight into the fridge or freezer - let it cool down first.

Cooking

- The oven is expensive to use - try to use it as sparingly and efficiently as possible. Where possible use it for more than just one item and remember you can cook at a higher temperature at the top of the oven, and simultaneously at a lower temperature at the bottom.
- Do not open the oven door to check cooking - every time you do so you lose 20% of the accumulated heat.
- Put lids on pots and turn down the heat when the water starts to boil. The lids not only keep heat in the pot but also reduce condensation in the kitchen.
- At a certain point in cooking, turn off electric rings and use their residual heat.
- Lots of energy saving cooking devices are under used: like slow casseroles, insulated deep fat fryers, microwave ovens and pressure cookers. They can save both energy and time - with better results!
- In a microwave oven, arrange unevenly shaped items with the thickest portion to the outside. Stir or turn the food over to speed up cooking time. Remember a microwave is more efficient than a cooker for reheating food.
- The toaster is more energy efficient than the grill for toasting bread.
- When making tea or coffee, boil only the amount of water required in your kettle (but make sure the heating elements of electric kettles are covered!).
- Be sensible in your approach to using general kitchen appliances eg. iron, food processor or sandwich maker. Make sure to only use at the correct temperature and for the required amount of time.

Home Entertainment and Electronic Equipment

- A television on standby mode can use up to 20% as much electricity as when it is switched on.
- When selecting which television to purchase, once you determine your needs, you should consider the following; plasma televisions are the least energy efficient, followed by conventional sets and then LCD's, which are the most efficient.
- Don't leave equipment on standby; make sure they are fully switched off, e.g. Video, DVD, Playstation, Satellite Box, Hi-Fi, CD Player.
- Configure your computer to "energy saving" mode in which it will automatically change to the state of low consumption when not in use.
- Switching off the screen can save even more than just letting the screen saver run.
- Remember you should turn off your computer whenever you are not going to use it for more than an hour. Turning your computer off at night instead of leaving it on will save on average 25% of its annual energy bill.
- Make sure to unplug your mobile phone and digital camera chargers or turn off the electricity at the socket when equipment has been charged.

Heating and Hot Water

- Ensure your hot water cylinder is properly lagged. A lagging jacket will keep the water hotter for longer and will pay for itself in a matter of months. Factory installed insulation is even more effective.
- When buying a room heater, remember that electric heaters consume electricity at the most expensive charge rate, so try to get a heater with thermostatic control.
- Switch on electric blankets no more than half an hour before you go to bed and switch off just before you get into bed.
- Use the timer on your immersion heater. This should supply you with enough hot water as and when you need it.
- Make sure your hot water cylinder immersion heater thermostat is working correctly – over heating water is not only wasteful but also potentially very dangerous.
- Take a shower rather than a bath. A typical shower uses only one fifth of the energy of a full bath.

What can you save?

By turning appliances, such as TVs, videos, computers and microwaves, off rather than leaving them on standby, you can save an average of €30 per household per annum or €40m nationally, with annual savings of 186,000 tonnes CO_2.

4. Lighting

Natural / Daylight

Before you even consider electric lighting make sure you make maximum use of all available natural sunlight. Daylight provides a healthier indoor climate, can provide higher standards of visual comfort and makes for more enjoyable interiors. And that is apart from the energy savings and environmental benefits.

- Rooms should be furnished to allow daylight in, and activities for which daylight or sunlight are essential should be positioned near windows.
- Furniture and other obstacles should not obstruct daylight penetration of the room. Net curtains hamper daylight penetration of a room.
- Paint the surfaces of rooms, including ceilings, with colours of high reflectance to maximise the day lighting opportunities (and also the effectiveness of artificial light). Light colours can reflect up to 80% of incident light while deep / dark colours might reflect less than 10% of incident light.
- Dirt on vertical windows can reduce performance by 10% and even more if the dirt is allowed to build up on roof-lights.

Artificial Lighting

Artificial light consumes a lot of energy but worthwhile savings can be made by sensible use of efficient electric lighting. Simply put, lights should remain off as long as there is sufficient daylight and the lighting should be as efficient as possible to meet the household requirements.

Artificial lighting levels should be kept as low as the activity permits. Generally the more intricate the task, the greater the lighting level required. On this basis living rooms and kitchens typically require about twice the lighting level of hallways. Studies need even more. As we get older most of us require more light to perform intricate tasks. Having several independently switched lights in a room allows the appropriate lighting level to be selected to suit the activity.

Use task lighting (e.g. desk or reading lamps) when required for locally high levels of light. A desk located away from a window may need additional artificial lighting while a desk near the window may often have more than sufficient daylight.

Choice

There are many types of lighting available for use in the home today. Lighting choices have improved a lot in recent times and now offers us the following alternatives:

- Traditional incandescent bulbs
- Compact Fluorescent Lamps (CFLs)
- Standard Halogen
- (High efficiency) Dichroic and IRC halogens
- Strip Fluorescent lighting

All light bulbs are now labelled for efficiency in a similar way to kitchen appliance labelling (though generally it is printed directly onto the product packaging) so you can always check how efficient your chosen product is before purchase. The label will also allow you to check on other important lighting information which will help to inform your purchase, including the average rated lamp life. For most people the choice will be between the conventional incandescent and CFLs. And while an individual CFL may be more expensive, they last significantly longer (up to 10 times, or in some cases even more) meaning they actually cost less to purchase in the long run and they use only one fifth of the energy.

In some situations the use of strip fluorescent lighting may be appropriate – if this is the case then be sure to use the 26mm tubes which are 10 -15% more efficient than their 38mm counterparts.

Energy Efficient use of lighting in the home

- Compact Fluorescent Lamps (CFLs) use 80% less electricity and last up to 10 times longer than ordinary light-bulbs – could you install more in your home?
- Dimmers allow you to only use what level of lighting you require at any time and so control the amount of energy you use. Dimmers cannot always be used with CFLs so check the product packaging or manufacturers details before use.
- Movement sensors, time delay switches etc. are all available to improve lighting efficiency, but good manual operation of lighting in the household is always vitally important.
- Always turn off lights when you leave a room.
- Always remember to properly avail of daylight, especially when getting out of bed in the mornings, open the curtains rather than turning on the lights!
- Dirt can reduce lamp efficiency by 20-25%.
- Missing or dead lamps, defective wiring or broken blinds result in poor lighting performance.

What Can You Save?

Replacing 3 x conventional light bulbs with CFLs can save a household up to €37 per annum and €24m nationally, with CO_2 savings of over 115,000 tonnes per year.

Avoiding the Electricity 'Rush Hour' between 5.00pm and 7.00pm

As everyone knows, getting caught in "rush hour" road traffic means your car is not operating efficiently – fuel is wasted and emissions rise because you are stuck in a traffic jam. The same applies to the "rush hour" in electricity use. Between 5.00pm and 7.00pm during wintertime is the "rush hour" for electricity use in Ireland during which demand rises very sharply, by up to 800 megawatts (or one fifth).

Large quantities of electricity cannot be stored and so must be produced when and where the customers require. To meet this peak demand, less efficient power stations have to be brought into operation. These power stations, which are all fossil fuel based, are the most expensive to operate, so the power they generate is dearer for us all as customers and also causes increased CO_2 and other polluting emissions. All of this could be avoided if this particular group of generators did not have to be used as often.

Already many large firms are reducing their demand during this period. And we can all play our part, without any major inconvenience, to help avoid the need for these power stations to be switched on.

- Try delaying switching on your washing machine or dishwasher for a couple of hours until after the 'rush hour'. These are high usage appliances and so this could produce significant savings, flattening the "peak" in demand for power.
- Other energy efficient practices become even more important during the rush hour. Make sure you turn off lights in unoccupied rooms. And make sure appliances such as TVs, videos and PCs are fully off rather than left on standby.

Taking these steps will save you some money off your electricity bill, contribute to avoiding the unnecessary use of large quantities of imported fossil fuels, and help reduce the unnecessary emission of CO_2 and other pollutants. Ultimately it will also help to slow down increases to our electricity bills.

5. Electricity in Ireland

Electricity Generation and Fuel Mix

Electricity may be very clean at the point of use but there are considerable greenhouse gases and other polluting emissions associated with its production at conventional power stations. Approximately 60% of the energy used in electricity generation is ultimately wasted through generation plant and transmission line losses. That is to say that for every five units of fossil fuel energy used in electricity generation only two units of electrical energy are available to us for end use. This goes some of the way to explain why electricity commands a premium in terms of price. Indeed one third of all energy used in Ireland every year is used in electricity generation.

In Ireland approximately 93% of electricity is generated through the combustion of fossil fuels such as oil, gas and coal which results in substantial amounts of carbon dioxide (CO_2) being emitted into the atmosphere. CO_2 is a so called greenhouse gas, which contributes to climate change or global warming, as it is sometimes known and we are seeing increasing evidence both nationally and globally of the devastating effects of climate change through the increased frequency and severity of extreme weather events.

The electricity generators are also continuously endeavouring to improve the efficiency of their generating plant and in certain instances to use renewable fuel sources within conventional power plants.

Increasingly, however, electricity is being generated from renewable and carbon free sources such as wind energy and hydro energy. Within the Governments *Green Paper: Towards a Sustainable Energy Future* published in Autumn 2006, there are ambitious targets set to have 30% of all electricity consumption from renewable resources by the year 2020.

power of one
energy efficiency for Ireland

Power of One – Energy Efficiency for Ireland
It's easy to become overwhelmed when we look at "The Big Picture". Global warming, climate change and fuel shortages can make us all feel powerless. They're pretty big threats, and it's understandable if our knee-jerk response is:

But What Can I Do?

The answer, actually, is:

Quite A Lot

That's where the idea of the **Power of One** comes in. If each of us becomes aware of our own power when it comes to energy efficiency, and use it properly, we can collectively make a big difference. To ourselves, to our pockets, and to the environment. By taking individual responsibility and changing our behaviour in small ways every day, we'll help save energy while we save money too.

All we have to do is recognise our power, and use it.
That's what the **Power of One** is all about.

For more information check out **www.powerofone.ie**

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