

# Householders be your own energy manager



## Introduction

The aim of this booklet is to assist householders to be their own energy manager. By becoming more energy aware, and understanding how, and where, we use energy at home, we can take steps to change our behaviour and develop more energy-efficient habits. This will reduce the energy we use, save money and in turn benefit the environment.

By following a five step plan, we can reap the rewards of reducing our energy use by up to 20%. And because all these changes involve changing our daily habits at home, the more you commit, the greater the savings you can achieve.

The approach we've adopted here is based on that taken by professional energy managers in large businesses with proven energy saving results. It involves following a set of planned actions: commit, identify, plan, take action, review. Once homeowners have agreed they want to reduce their energy use, they identify what their actual energy use is and set a reduced target figure, they then plan which actions they will take according to our five step plan and carry them out. At the end of the process they review how they did against their set target.



## Why we use energy

We use energy to heat and light our homes and to run our appliances, TVs and computers. The residential sector is one of Ireland's largest energy consumers, accounting for almost 25% of our energy use. We also use energy to run our cars, and personal mobility is a central part of modern life. Here in Ireland, emissions from transport are growing at a faster rate than any other sector. Some energy usage is essential in the modern world, but hopefully this booklet will tell you the many practical ways each of us can save energy and make a difference to climate change.

## Where our energy comes from

Most of the energy we use in Ireland comes from oil, coal, peat and gas. These are called fossil fuels. We burn these fossil fuels in our power stations to produce electricity and we also use the fuels directly to heat our homes and run our cars. Burning fossil fuels releases carbon dioxide (CO<sub>2</sub>) into the atmosphere and is a major contributor to climate change.

Why change our patterns of energy consumption?

- We must ensure we leave sufficient energy reserves for future generations.
- We must act now to minimise the impact our energy use is having on our climate.

To achieve these outcomes, we have to change how we use energy and the types of energy we use.

## Energy and climate change

The earth's climate is not constant. Scientists now agree that a definite link exists between the energy we use and climate change. When we burn fossil fuels to produce energy, we release CO<sub>2</sub>, the main greenhouse gas into the atmosphere. Greenhouse gases act like an insulating blanket, allowing heat from the sun into the atmosphere and trapping it there. Over time, this trapped heat causes the atmosphere to slowly warm up, and this changes the global temperatures, and wind and rainfall patterns worldwide. In other words, it causes climate change. We can already see its impact on shifting weather patterns. Extreme conditions such as floods, droughts and storms are on the increase all around the world and without action these will continue and worsen in the future.

## Sustainable energy

Sustainability means adopting a common-sense approach to living so that we don't waste resources, including energy, or needlessly damage the world around us. It means:

- Using energy more efficiently;
- Using renewable energy alternatives that are less harmful to the environment (wind, sun, oceans and rivers).

Being sustainable in how we use energy isn't just about helping the environment. It offers sound financial and practical benefits:

- It will save you money on your electricity, heating and motoring bills.
- Your home will be more comfortable.
- You will be helping to reduce climate change.

## Behavioural change

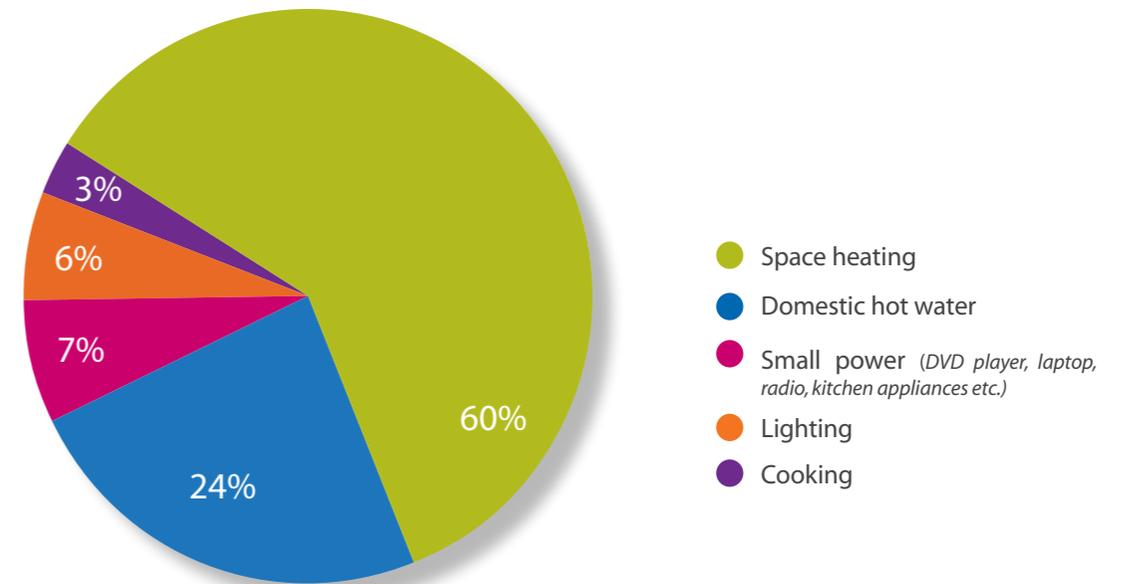
### Save energy at home — being smart

Energy is essential to the comfort of our homes, providing heat and electricity. However, there are lots of ways we can be more efficient in how we use energy, while still meeting all our energy needs.

Some things you can start doing straight away and they won't cost you anything. Others take more time and effort, but by becoming more energy aware at home, you can save money, increase the comfort of your home and help reduce climate change.

It's a good idea to find out how much you spend on energy, and on what. (See the table on page 27). And it's a good idea to set some energy-saving targets, not only will achieving these save you money, they will also help to make your home more comfortable.

### How do we use energy in the home?



## What can I do?

Thinking and acting in an energy-efficient way in the home can reduce domestic energy consumption by 15% or more. You can achieve this by:

- Changing your behaviour and applying simple tips on how you use energy in the home;
- Considering energy efficiency when you make energy-consuming purchases.

In other words, by buying energy-efficient products and by using energy efficiently.

## The five step programme

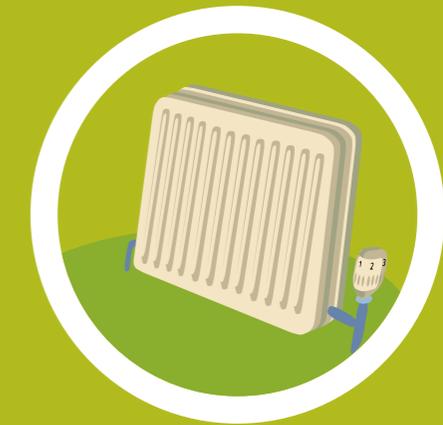
In the following sections, there are a list of tips and recommendations that you can use to reduce your energy consumption with little or no cost. By focusing on the areas that use the most energy in the home, there's greater potential for saving money. The categories we will focus on are:

- Space heating (5 weeks)
- Domestic hot water (4 weeks)
- Small power (3 weeks)
- Lighting (2 weeks)
- Cooking (1 week)
- Transport (for the duration of the whole project)

Space heating and domestic hot water are allocated more time (5 and 4 weeks) because they account for the largest percentage of energy consumption in the home (60% and 24%), and it takes a bit more time to become familiar with how these energy systems work, e.g., how they are controlled, and how to make the most effective adjustments to them to save energy.

Under each of the following energy sections are a list of tips which are organised in order of importance. The first tip in each section is a 'must do' tip. Even if you are unable to try any of the other tips listed — this tip will have a significant impact.

# step 1 Space Heating



The objective here is to learn how to make your home comfortable with the minimum amount of heat, by using the heating systems and the controls that you have, e.g., programmers, timers, thermostats, and radiator valves. Experiment with the following tips and mix and match to see what works for you.

This step will take



**5 weeks**

## Obtaining the ideal room temperature

### Essential tips

- \* Switch the heating system on later in the morning and off earlier in the evening. The best way to find the right balance for your house is to experiment a little, first of all try turning on the central heating 30 minutes before you get up and off 1 hour earlier in the evening.
  - \* Turn the heating in living areas down to 20°C – this could save you 10% off your heating bill. The temperature in hallways and bedrooms should be cooler – ideally 15-18°C. Use temperature cards (available from SEI) in a number of rooms, to prevent overheating and familiarise yourself with what different temperatures feel like.
- If you have a thermostat on your central-heating boiler, experiment to get the lowest setting (some systems may require a plumber). You can reduce it in mild weather, but don't go below 60°C. Typically, the optimum setting is between 70°C and 80°C (i.e. adjust the dial between 'min' & 'max' on gas boilers) — but it really pays to experiment. Make a note of the settings you try, and the results you obtain to control the heat output in response to the weather and indoor temperatures.
  - Use Thermostatic Radiator Valves (TRVs) to adjust heat output from radiators when in rooms in response to your heating needs.

## Zoning

- Use internal doors to maintain heating zones and distribution of heat throughout the main spaces. Close doors to separate heated from unheated areas of your home, and minimise the heated area.
- Turn off radiators in rooms which are not used very often.

## Heating efficiency

- Turn off your heating at night when you're in bed and likewise when you're not there, or if you're going to be away for a few days.
- Open the curtains and blinds in rooms facing south during the day to let in the heat of the sun.
- Use conservatories during sunny winter days to heat the house by opening the doors from them into the house while it's sunny, but by closing them when it's overcast and dark outside.
- Effective use of windows to provide sufficient ventilation without overcooling rooms. Don't leave external doors and windows open unnecessarily.

## Actual Energy Savings

Below are examples of the energy savings made during the Power of One Street campaign which worked with a number of families around the country as they reduced their energy consumption, and who were able to make significant savings by applying the energy tips and by changing their behaviour.

### The Meehan Family

A family of six, living in a detached, cavity wall house, built in 2004.

#### Step 1: Space Heating

- Energy Reduction = 31%
- CO<sub>2</sub> Reduction = 2.2 tonnes
- Cash Saving = €680 per year

### The Horler Family

A family of five, living in a detached, cavity wall house, built in 2004.

#### Step 1: Space Heating

- Energy Reduction = 32%
- CO<sub>2</sub> Reduction = 1.7 tonnes
- Cash Saving = €450 per year

## Some low-cost options to save energy on space heating

### Timer or programmer

Most houses have far too few controls on their space-heating systems. For only a small outlay, you can rectify this easily. Ideally, the space heating and domestic hot-water circuits should be separate. A time clock or programmer will allow the householder to ensure that the boiler will operate to provide heat only when required for various heating periods during different days of the week and also (with suitable motorised valves) allowing separate control of the water heating. This will guarantee that the domestic hot water can be provided in the summer using the boiler even though central heating is not required.

### Room thermostat

By installing a thermostat in an area of the house that is indicative of the general heat conditions required, this will turn the burner off when the temperature in the area rises or falls below the value at which you have set the dial. 18-20°C will be sufficient in most cases.

### Thermostatic Radiator Valve (TRV)

TRVs may be installed instead of the hand-wheel valve. The TRV has a number of settings, which the householder may use to set the desired air temperature for each room. In locations where a high level of heating is required, e.g., living area, the TRV will be set at the top setting. If only background heating is desired, e.g., hallways, then the valve can be fixed at its lowest setting.

### Maintenance

Regular maintenance of your heating system can reduce fuel consumption e.g. maintain the boiler casing and burner, and check for corrosion and airlocks in the radiators.

### Portable heaters

When buying portable heaters, make sure that they are the right size for the rooms they are to heat, and that they have thermostatic controls. Use a space or portable heater instead of the central heater if only one room needs heating.

Grants may be available if you are upgrading your boiler or heating controls.

For more information log on to [www.sei.ie/grants](http://www.sei.ie/grants)

## step 2 Domestic Hot Water



The objective here is to minimise unnecessary heating of hot water for use in sinks, showers, baths and appliances by considering the amount of hot water needed and when it is required and by determining the most efficient use of your central heating systems and immersion heaters.

This step will take



**4 weeks**

### Essential tip

- \* Evaluate your routine of hot-water demand, i.e., when you need hot water and how much you need, and adjust the timer settings. If you use an immersion heater or central heating to heat your water, adjust the length of time they are used per day, i.e., 1 hour in the morning and 2 hours in the evening, depending on your needs.
- If your hot water is being heated by the central-heating boiler and your hot-water cylinder has a thermostat, you should set the thermostat to 65 °C.
- Make sure your immersion thermostat is working correctly. (Have an electrician check this for you.)
- Prioritise use of the shower over a bath. A typical shower uses only 20% of the energy of a full bath.
- Never leave a hot tap running unnecessarily.
- Ensure your hot-water cylinder is properly lagged. A lagging jacket will keep the water hotter for longer.

### Actual Energy Savings

#### The Horler Family

A family of five, living in a detached, cavity wall house, built in 2004.

##### Step 2: Domestic Hot Water

- Energy Reduction = 22%
- CO<sub>2</sub> Reduction = 0.9 tonnes
- Cash Saving = €170 per year

#### The Crowley Family

A family of three, living in a detached bungalow, solid block house, built in the 1970s.

##### Step 2: Domestic Hot Water

- Energy Reduction = 25%
- CO<sub>2</sub> Reduction = 0.49 tonnes
- Cash Saving = €102 per year

### Some low-cost options to save energy on domestic hot water

#### Immersion heater timer

By installing an immersion-heater timer, it allows the householder to set the immersion to come on for the minimum length of time necessary to ensure that you have just enough hot water for washing, bathing and washing up. Usually this means having it come on for a short time in the early morning and evening.

#### Lagging jacket

The hot-water cylinder should always have a lagging jacket to minimise heat loss and to keep the water hotter for longer; it will pay for itself in just 2–3 months. It is better still if the water cylinder has factory-applied insulation.

#### Cylinder thermostat

If the hot water is being heated by the central-heating boiler, you should fit a cylinder thermostat to moderate the temperature of the water.

## step 3 Small Power



The objective here is to build good habits of switching electrical equipment off when not in use and making use of efficiency settings on all electrical appliances e.g., washing machines, fridges, freezers, TVs, PCs, DVDs etc.

This step will take



**3 weeks**

### Washing machines, dishwashers and dryers

#### Essential tip

- \* The cycle selected on a washing machine or dishwasher should have the lowest water temperature required for the items being washed.
- A full load in the washing machine or dishwasher is more energy efficient than two half loads.
- If your washing machine, dishwasher or dryer has an economy button/reduced time-temperature, then use it whenever appropriate.
- Minimise use of the dryer, dry heavy articles separately from light articles.
- Make use of a clothes horse indoors or dry clothes outdoors when possible.

### Fridges and freezers

#### Essential tips

- \* Evaluate and adjust fridge temperature settings, keep the fridge temperature between 2–3°C and the freezer at -15°C.
- \* It is best to always keep the fridge and freezer as full as is reasonably possible.
- Don't let frost build up in the freezer as this increases energy consumption. Defrost the inside of your fridge and freezer at least every 6 months.
- Don't put warm or hot food straight into the fridge or freezer, let it cool down first.
- Don't leave the fridge door open for too long while getting food, for every 10–20 seconds the door is open it takes 45 minutes for the fridge to cool down to its original temperature.

## Home entertainment and electronic equipment

### Essential tip

- \* Appliances on standby can use up to 20% of the energy that they would use if on, so make sure they are fully switched off, e.g., TVs, PCs, DVDs, VCRs, printers, games consoles, satellite boxes/players/recorders and kitchen appliances etc.
- Use one large power strip for your computer, broadband modem, scanner, printer, monitor, and speakers as they can be switched on and off easily at once.
- Configure your PC/laptop, printer and scanner to 'energy saving' mode in which they will automatically change to the state of low energy consumption when not in use.
- Switching off the monitor saves more energy than letting the screensaver run. Animated screensavers can use more energy than the computer itself!
- You should turn off your PC/laptop whenever you are not going to use it for more than an hour.
- Unplug chargers and surge protectors when not in use — monitor when phones/rechargeable batteries are fully recharged.
- Switch off all unnecessary electrical equipment and appliances at night.

## Electric blankets

- Switch on electric blankets no more than 30 minutes before you go to bed and switch it off just before you get into bed.

## Actual Energy Savings

### The Heffernan Family

A family of five, living in a detached, solid wall house, built in the 1970s.

#### Step 3: Small Power

- Energy Reduction = 20%
- CO<sub>2</sub> Reduction = 1.4 tonnes
- Cash Saving = €332 per year

### The Conway Family

A family of four, living in a semi-detached, cavity block house, built in the 1970s.

#### Step 3: Small Power

- Energy Reduction = 35%
- CO<sub>2</sub> Reduction = 1.3 tonnes
- Cash Saving = €248 per year

## Some low-cost options to save energy on small power

### Replacing appliances

When replacing electrical equipment, appliances or electronics, try to choose the most energy-efficient ones. Even small reductions in the amount of electricity consumed daily can add up to a significant saving over their lifetime. Appliances are labelled to indicate energy consumption and are rated from A to G with A being the most efficient. The label helps you to compare how efficient each appliance is. An A-rated appliance will use about 55% of the electricity of a similarly sized appliance with a D rating. The difference in cost of an A-rated appliance compared to a lower rated appliance may be a lot lower than you think (or even zero).

When purchasing a television, consider the following; plasma televisions are the least energy efficient, followed by conventional CRT television sets. LCDs are the most efficient. Newer LED type TVs are even more efficient. Generally, for any particular technology, the larger the screen the greater the energy consumption.

## step 4 Lighting



The objective here is to maximise awareness and behaviour of when and where lights are being used, and to control lighting in response to need whilst making maximum use of daylight.

This step will take



**2 weeks**

### Natural daylight

#### Essential tip

- \* Maximise use of daylight, e.g., hold off switching on lights in the evening until necessary.
- Rooms should be furnished to allow daylight in and activities for which daylight or sunlight is essential should be positioned near windows, e.g. reading.
- Furniture and other obstacles should not obstruct daylight penetration of the room. Net curtains and blinds will reduce daylight penetration of a room.
- Dirt on windows can reduce performance by 10% and even more if the dirt is allowed to build up on skylights.
- Paint the surfaces of rooms, including ceilings, with colours of high reflectance to maximise the daylighting opportunities. Light colours reflect 80% of light while dark colours reflect less than 10%.

### Artificial lighting

#### Essential tip

- \* Switch off lights when rooms are not in use.
- Make use of task lighting wherever possible, e.g., lamps rather than whole room lighting when a small amount of light is required.
- Regularly clean light fittings, reflectors and lampshades.
- Use dimmer switches and multiple light switches effectively and only light the area of the room you are using rather than the whole room.
- Switch off all possible lights at night (if needed select one as a nightlight to be kept on — remember to switch it off during the day)
- Replace failed light bulbs with Compact Fluorescent Lamps (CFLs) when appropriate and take account of things such as shape, size, colour and natural light in a room, before deciding what wattage CFL light bulbs the rooms in your house require (see [www.sei.ie/powerofone](http://www.sei.ie/powerofone)).

## Actual Energy Savings

### The Brennan Family

A family of four, living in a detached, timber frame house, built in 2003.

#### Step 4: Lighting

- Energy Reduction = 34%
- CO<sub>2</sub> Reduction = 0.5 tonnes
- Cash Saving = €110 per year

### The Joyce Family

A family of four, living in a detached, cavity block house, built in 1991.

#### Step 4: Lighting

- Energy Reduction = 32%
- CO<sub>2</sub> Reduction = 0.25 tonnes
- Cash Saving = €50 per year

## Some low-cost options to save energy on lighting

### Energy-efficient light bulbs

When purchasing new light bulbs, choose energy efficient CFLs, for spotlights use Infra Red Coated Halogen Bulbs (IRCs) or use fluorescent tubes for lighting as appropriate.

### Compact Fluorescent Lamps (CFLs)

CFLs use 80% less electricity and last up to 10 times longer than ordinary light bulbs. Start by installing 3 or 4 of these CFLs in those areas where lighting is used for the longest periods, e.g. hall, landing, kitchen and living room.

### Electrical switches

Having several independently switched lights in a room allows the appropriate lighting level to be selected to suit the activity.

## step 5 Cooking



The objective here is to build good habits when planning or organising meals, such as cooking meals together and making best use of your cooking appliances.

This step will take



**1 week**

## Planning

### Essential tip

- \* Aim for one cooking time for everyone's main meal.

- Evaluate/explore cooking enough for more than one meal at once, then storing and reheating.

## The oven

### Essential tip

- \* The oven is expensive to use, try to use it sparingly and as efficiently as possible. Where possible use it for more than one item at a time and remember you can cook at a higher temperature at the top of the oven, and at the same time at a lower temperature at the bottom.

- Do not open the oven door to check cooking too often, every time you do so, you lose 20% of the accumulated heat.
- Don't use the oven to cook a single dish, bake a few items at the same time and freeze them for later if necessary.

## The hob/cooker

### Essential tip

- \* Put lids on pots and turn down the heat when the water starts to boil. The lid not only keeps in the heat but also reduces condensation in the kitchen

- Use pots and pans that cover the whole of the cooker ring.
- At a certain point in cooking, turn off the rings and use their residual heat to finish cooking.

## Small appliances

### Essential tip

- \* When making tea or coffee, only boil as much water as you need in the kettle (make sure that the element of the kettle is covered).

- A slow casserole, pressure cooker, insulated deep-fat fryer or microwave oven will cook food in an energy-efficient way.

- Use a microwave for smaller meal amounts.
- The toaster is more efficient than the grill for toasting bread.
- Use an electric kettle to boil water for cooking instead of using the hob.
- Be careful in your approach to using general kitchen appliances, e.g., iron, food processor or sandwich maker. Make sure to only use at the correct temperature and for the required amount of time.

## Actual Energy Savings

### The Joyce Family

A family of four, living in a detached, cavity wall house, built in 1991.

#### Step 5: Cooking

- Energy Reduction = 15%
- CO<sub>2</sub> Reduction = 0.084 tonnes
- Cash Saving = €19 per year

### The Heffernan Family

A family of five, living in a detached, solid wall house, built in the 1970s.

#### Step 5: Cooking

- Energy Reduction = 9%
- CO<sub>2</sub> Reduction = 0.08 tonnes
- Cash Saving = €18 per year

## Some low-cost options to save energy when cooking

### Electric ovens

Electric ovens are labelled to indicate energy consumption, purchasing the most energy efficient one will save you money on your energy bills.

### Replacing small kitchen appliances

Think energy efficient when buying any household appliance. Slow casseroles, insulated deep fat fryers, microwave ovens, fan convector ovens, and pressure cookers all save energy and time, and give you better, safer results.

# Transport and Efficient Driving



The number of cars on Irish roads has increased by over 50% in the past 10 years. Private car use now accounts for over 40% of home energy use. As a result, transport emissions represent a large proportion of overall polluting emissions (78% of carbon monoxide emissions and 22% of CO<sub>2</sub> emissions). In addition, transport fuels are expensive to import, and they cause their own environmental impacts in extraction, refining and shipping.



This step can be started straight away.

## Think about when you drive

### Essential tip

- \* Avoid using the car for short or unnecessary journeys. Try to walk, cycle or use public transport instead.
- Share car journeys when you can. Organise car pools for regular commuters.
- Try using less congested routes and avoid rush-hour traffic.

## Think about how you drive

### Essential tip

- \* Driving between 65 and 80 km/hr, where safe and practicable, will significantly reduce emissions compared to higher speeds.
- Drive smoothly and efficiently, harsh acceleration and heavy braking can use up to 30% more fuel and can cause increased wear and tear on the vehicle.
- After starting the engine, it is best to drive off immediately. Idling causes pollution and excessive fuel consumption.
- Try switching the engine off when stopped for even short periods, e.g. two minutes or more. It is more economical to switch the engine off and start it again when necessary.
- Reduce unnecessary drag. Removing unused bike racks or roof boxes will save 15-40% fuel consumption.
- Keep cool by using the car's vents, rather than leaving the windows or sun roof open, this will save a further 3-5%.
- Keep tyres inflated to correct pressure and save up to 10% on fuel consumption. Incorrect tyre pressure increases fuel consumption, shortens the life of tyres and is dangerous.
- Use air-conditioning sparingly; running air conditioning continuously increases fuel consumption by 10% or more in city driving.
- Keep your engine regularly maintained and serviced for better fuel economy and lower emissions.

## Think about what you drive

### Essential tip

- \* When buying a car, choose one that meets your requirements and is fuel efficient.
- Check the environmental labelling of cars. Under EU and Irish law, the motor industry must clearly display the fuel economy and CO<sub>2</sub> emissions of new passenger cars. Labels indicate the energy performance of cars on an A to G range, with A being best. Cars registered are now subject to Vehicle Registration Tax (VRT) and annual road tax based on their CO<sub>2</sub> emissions, so the more efficient the car, the lower its VRT and tax.
- To find out how your car rates, check out the 'How Clean is Your Car' section of the SEI website which lists the fuel consumption, CO<sub>2</sub> emissions, and other performance figures of cars from the year 2000 on [www.sei.ie/howcleanisyourcar](http://www.sei.ie/howcleanisyourcar)

## How much energy does your home consume?

Do you know how much you spend on energy in your home? The first step in managing your household energy is to find out how much you do spend. This varies from month to month, so you need to think about energy consumption on a yearly basis. If you are well-organised, you will have a record of all your energy bills (ESB, gas, oil, solid fuel). If not, you need to start gathering the bills. You can always make an estimate of the odd extra bag of coal. In fact, with whatever bills you have to hand, you can make an intelligent estimate of your total energy cost. Here's what to do.

Use the chart (overleaf) to build up as accurate a picture as you can of your energy costs over the year. Use any bills you can find, and make intelligent guesses where necessary. Use the 'comments' space to record any notes about why a particular bill might have been particularly high or low. Was it a cold spell over the past couple of months? Were more people in the house during the period? Did you stay in more?

As you build up an accurate picture for each period, you can amend the estimates you made, so that you will have a more realistic basis on which to plan in future.

### What could you achieve?

We have already suggested that being efficient at home could save you 20% or more in energy costs. So the next step towards really managing your home energy is to set yourselves some targets for the next 12 months. Make it a challenging but achievable figure, and remember you will be most effective if the entire household joins in.

## Reading your Energy Bill

Energy Bill

Account Details:

Account Number: 0000000000XX Date of Issue: 00/00/00  
 Invoice Number: 0000000000XX Other details: 000x000x00

Name of Bill Payer  
 Address here  
 This Road  
 This county

### Details of Bill

1 unit of electricity = 1 kWh = 1000 watts of electricity being used in 1 hour

xx number of days standing charge @ €xxx / day

xx number of units @ €xxx per unit

Payment method: dd

Payment due: 00/00/00

Net cost: xxxxxx

VAT@xx: xxxxxx

Total cost: xxxxxx



one unit of energy will generate	
Instantaneous electrical shower	7 – 10 mins
Immersion water heater	15 – 20 mins
Cooker (1 large ring) / Kettle	20 – 40 mins
Tumble dryer / Toaster (2 slice)	40 – 60 min
Washing machine / Dishwasher	70 – 100 mins
Desktop computer (including monitor)	4 – 6 hours
TV 28"	7 – 9 hours
100 watt ordinary light bulb	10 hours
20watt energy saving (CFL) light bulb	50 hours

(Source: ESB Customer Supply)

## How much do you spend on energy?

Fill in the table below as best you can to calculate your annual energy costs.

Month	Electricity	Mains Gas	Oil	Gas Cylinders	Solid Fuel <small>e.g. Coal, Wood, Peat</small>	Total	Comments
January							
February							
March							
April							
May							
June							
July							
August							
September							
October							
November							
December							
Total							

## What if you're renovating an existing home?

While renovating your home it makes sense to incorporate energy-saving measures which will help to improve comfort levels and save you money in the long run. You can take the following energy-saving measures while renovating your home:

**Draught proofing:** Seal leaky doors and windows, letter-boxes, attic hatches, unused chimneys and gaps around pipes penetrating external walls, floors and ceilings.

**Insulation:** Insulate the walls (pump fill the cavity or dry line the walls) and roof (300mm attic insulation) of your house.

**Double-glazing:** When replacing existing windows, install double-glazing.

**Controls:** When installing or replacing a central heating or hot-water system, divide the systems into separate zones and opt for comprehensive controls.

**Boilers:** When replacing a boiler, consider using the much more efficient condensing oil or gas boilers. If you have storage space, a wood-pellet boiler would be even more environmentally friendly.

**Electrical devices:** When purchasing electrical equipment, appliances or electronics, try to choose the most energy-efficient ones, e.g., A-rated appliances.

**Lighting:** Replace existing light bulbs with CFLs. Install electrical switches so that several independently controlled lights in a room will allow the appropriate lighting level to be selected to suit the activity.

## Or want to build an energy-efficient home?

If you are planning to build a new house make sure you make it energy efficient. It is easier and more economical to incorporate these features when the house is being built rather than later on:

**Site selection:** By selecting a location sheltered from the wind, heat loss from the building can be reduced.

**Building form and orientation:** A compact building form of minimum surface to volume ratio is best for reducing heat loss e.g. a long low building will have greater exposed surface than a two storey square plan building of the same space.

**Energy assessment:** A Building Energy Rating should be used to compare alternatives at the preliminary design stage.

**Insulating the building fabric:** The floor, walls and roof should have plenty of insulation to prevent heat loss and to maintain a comfortable internal environment.

**Ventilation:** Controlled vents should be installed in every room; trickle or slot vents in window-frames can ensure a reasonable amount of fresh air.

**Passive solar features:** If the house is exposed to low altitude winter sun, glazing should be concentrated on the south-facing wall.

**Heating and hot-water systems:** Whatever system you opt for, do ensure that the installed system has comprehensive controls. It is also advisable to divide the heating system into separate zones. Consider condensing boilers, wood-pellet boilers or a geothermal system.

**Open fires:** The installation of a high output back boiler will provide domestic hot water and space heating while increasing efficiency to approximately 40–50%. A closed stove is preferable to an open fire in terms of controlled, efficient heat.

**Electrical devices:** When purchasing electrical equipment, appliances or electronics try to choose the most energy-efficient ones, e.g. A-rated appliances.

**Lighting:** Replace existing light bulbs with CFLs. Install electrical switches so that several independently switched lights in a room will allow the appropriate lighting level to be selected to suit the activity.

## Renewable energy options for the home

Most of the energy we use today is generated by fossil fuels. Not only are they bad for the environment but they will also eventually run out. The sustainable alternative is renewable energy which will never be exhausted. Renewable energy is available to us in many forms which can often be exploited in the home:

- Solar energy (the sun) – for space and water heating
- Geothermal (heat from below the surface of the earth) – heat pumps for space and water heating
- Biomass (woodchip and pellets) – boilers and stoves for space and water heating
- Wind powered turbines (the wind) – for electricity generation
- Hydro electric power (moving water in streams) – for electricity generation

For more detailed brochures for homeowners visit: [www.sei.ie/publications](http://www.sei.ie/publications)



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*SEI is funded by the Irish Government under the National Development Plan with programmes part financed by the European Union.*

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