GREENER LIFE ON CAMPUS TRAINING RESOURCE

START

Aber GREEN

HEATING & HOT WATER

RENEWABLE TECHNOLOGIES

HOME ENERGY EFFICIENCY

BEING GREEN ON CAMPUS

TENANT INFORMATION

E-CHAMPS SUPPORT & INFO

HOW TO USE THIS RESOURCE

This resource has been designed to allow you to work through it at your own pace and, although it is hosted on PowerPoint, it is much more interactive than a standard presentation!

Each slide has links that will take you through the sections, allowing you to move through sections in the order you wish (and even skip some altogether if you want to). To quickly access a section simply click on it on the homepage!

Clicking a box that looks like this will give you more information on that subject

Clicking an image like this will take you back to the beginning of the section you are on

Clicking the AberGreen logo will take you back to the homepage

Clicking here will take you back to the previous page you were on

Clicking here will take you on to the next page of this section – **click here to move on now!**

ABOUT US

AberGreen is a community-led sustainability education project at the Aberdeen University Students' Association (AUSA). The aim of to project running between 2018-2020 is to help the uni community reduce its carbon footprint through fun, interactive skills-building events, whilst building on the strong sense of community in Aberdeen.

We are funded by the Scottish Government's Climate Challenge Fund (CCF) which provides grants and support for community-led organisations to tackle climate change by running projects that reduce local carbon emissions.

Special thanks goes to the CCF for funding the development of this resource which we hope will support our aims and provide YOU with invaluable information and support to live a lower carbon life whilst at university and beyond

PARTNERS

AUSA AberGreen is grateful to the Climate Challenge Fund and those who supported the development of this resource. Click on their logos to find out more about them!

ABERDEEN UNIVERSITY STUDENTS' ASSOCIATION

AUSA is a student-led organisation, there to support, empower and represent students during their University experience

Climate Challenge Fund

PART OF THE Keep Scotland Beautiful CHARITY

The Scottish Government's Climate Challenge Fund (CCF) provides grants and support for community-led organisations to tackle climate change by running projects that reduce local carbon emissions.

Greener Scotland Scottish Government

Greener Scotland, provided by the Scottish Government, is your one-stop website for greener living. They encourage and help households reduce their energy use, food waste and transport emissions.

scarf

SUPPORT • INSPIRE • DEVELOP • IMPACT

Scarf is a vibrant and value-driven social enterprise based in Aberdeen. For decades Scarf has delivered quality services promoting energy efficiency and sustainability to householders, communities and businesses

Special thanks goes to the Estates Department of the University of Aberdeen for supporting this project.

Aber GREEN

WELCOME

Thank you for showing interest in AberGreen's Energy Efficiency Resource! The aim of this training is to help YOU (students, staff members and the local community) save money while reducing your carbon footprint.

This is important because your own carbon footprint contributes to global warming, which is the increase in temperature of the Earth's atmosphere and causes devastating extreme weather patterns.

Global warming will have an impact on all of us. Yes, even in Scotland where it is expected that we will have much drier summers and much wetter winters in the future and this means higher chances of droughts and flooding which can hugely damage our lives and infrastructure.

Obviously everybody can do their bit individually to reduce their carbon footprint but, as a community led organisation, AUSA wants us to tackle local carbon emissions together which is more fun but, more importantly, will have a much bigger impact!

We hope you will find valuable advice in the following slides that can really make a difference to the world and your life!

WHY BOTHER?

“Changes in the Earth's weather, including changes in temperature, wind patterns and rainfall, especially the increase in the temperature of the Earth's atmosphere that is caused by the increase of particular gases, especially carbon dioxide.”

Oxford Dictionary, Definition of Climate Change

Climate change impacts all of us and we need collective action to tackle it. In Spring 2019 the UK Parliament declared a national climate emergency, along with the Scottish and Welsh administrations. Although at the time of writing this resource there is no internationally agreed definition for *climate emergency*, the newly accepted terminology represent a call for immediate action, and serves as a warning for all.

Everyone can do their bit individually, but doing things as a community whilst at university makes it more fun and will have a bigger impact!

Scotland is expected to have more extreme weather events, such as less rainfall in the summers, and wetter winters. This means higher chances of flooding which damages infrastructure.

This resource helps you tackle the climate crisis through reducing local carbon emissions together!

Aber GREEN

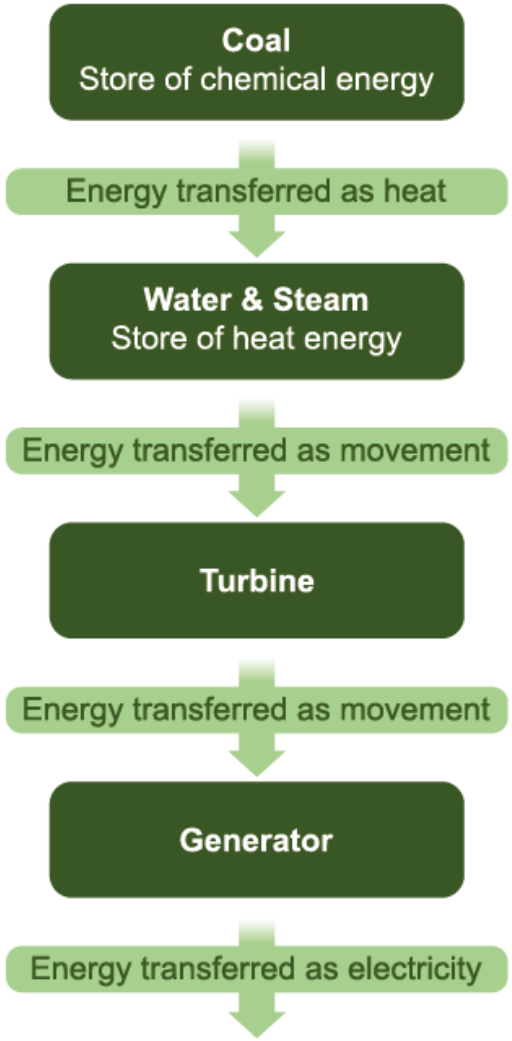
WHAT ARE FOSSIL FUELS?

A fossil fuel (coal, crude oil and gas) is a finite, non-renewable source of fuel. Coal was formed from the organic remains of trees and other plant material and crude oil and gas were formed from dead marine organisms.

They took a long time to form and we are using them up much faster than they can be replaced. This means that once they are used up, that's it!

An example of how a fossil fuel produces energy is highlighted in the image on the left. This process produces greenhouse gases, which are damaging to the environment.

This is why we need to start being more efficient in our energy use and start looking for more renewable sources.

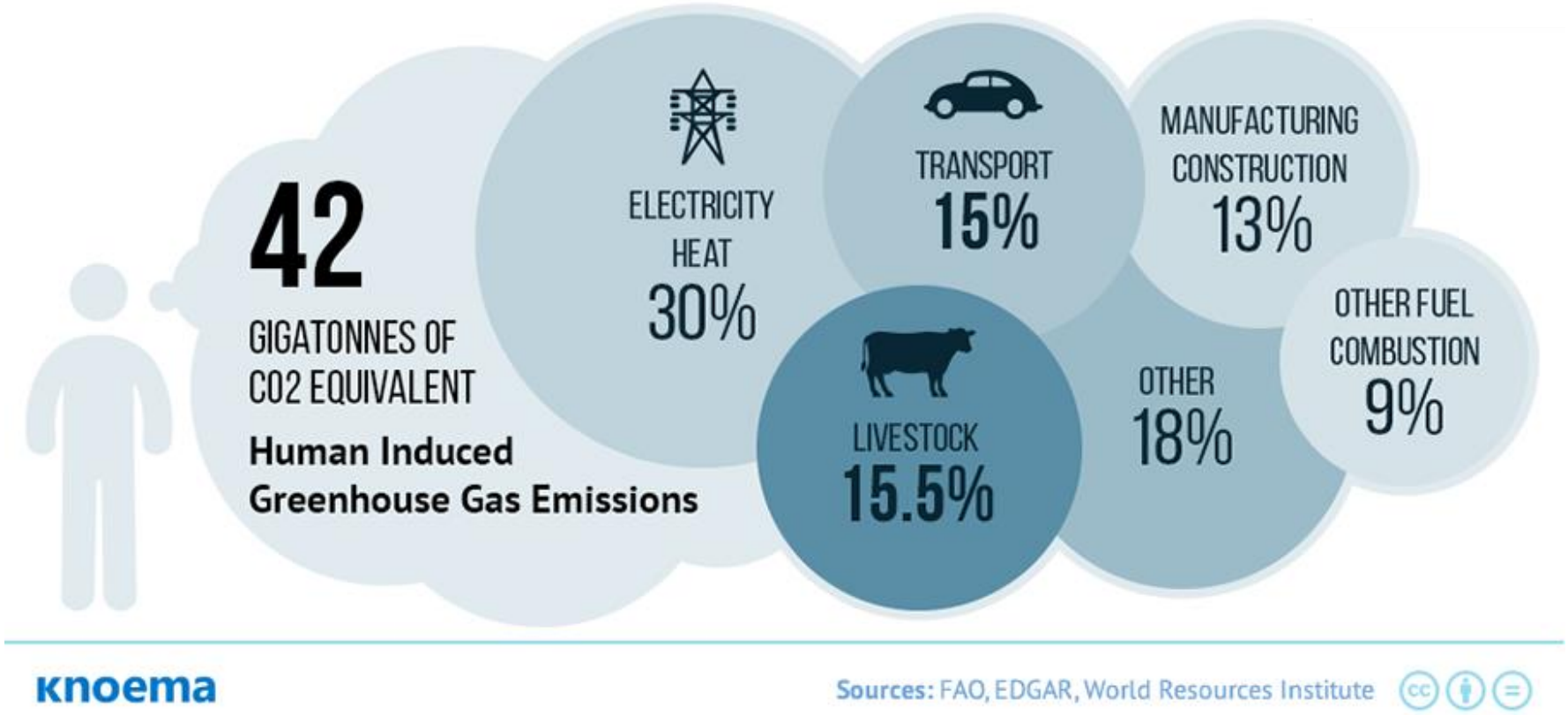


WHAT IS A CARBON FOOTPRINT?

A carbon footprint refers to the amount of greenhouse gas emission (primarily CO2) produced from the activities carried out by a person, group or organisation which require the consumption of fossil fuels.

Aber GREEN

GREENHOUSE GAS EMISSIONS BY SECTORS



EVERYDAY CARBON EMISSIONS

Everything we do during the day has a direct or indirect impact on our environment. Think about all the natural resources (most of which will be finite that you need in order to live the life you do.

Think of a typical day:

8:00 - Wake up: where did your bed come from? What house are in you?

8:10 – Shower & brush teeth: how much water are you using, what is heating your water? What toothbrush and toothpaste are you using?

8:20 – Get dressed: who made your clothes? What materials are used? How far did they travel to get to you? How easy is it for them to break down after you've used and discarded them?

8:30 – Breakfast: is your food locally sourced, in season, and organic? If not, how far did have to travel to get here? How was it packaged? What foods are you having? Are they carbon intensive to process?

8:45 – Travel: how do you get to work or university? Do you take a car/taxi or ride the bus? Could you choose a lower carbon mode of transport?

9:00 - Work/School: what kind of building are you in? How is it heated? And is it well-insulated? Does it use renewables? Have you got access to controlling the temperature of the radiators?

12:00 – Lunch: did you bring your own? Are using reusable cutlery and cups? What do you have on your plate? At the University, if you're using the biodegradable cutlery and boxes, did you remember to discard it in to the food compost bins?

17:00 – Home: how do you spend your free time? What gadgets have you got and how do you charge them?

Aber GREEN

CUT YOUR BILLS

It isn't all about global warming, however, as the cost and carbon emissions relating to energy use also have other social and economical impacts.

Energy bills are another example of the importance of sustainability. They can often be the second biggest housing cost after rent, and can be prone to large increases in price. However, with some simple changes to habits and behaviours you can cut your bills while keeping yourself and your home cosy. You'll find out more about this as you progress through this resource!

The diagram below shows the breakdown in energy use for an average household and shows you where the biggest savings can be made!

In addition, did you know that household carbon emissions account for approximately 17% of total emissions in Scotland? We would like to help you in using less energy so that together we slow down climate change and protect our natural environment.

ALLEVIATING FUEL POVERTY

One of the biggest societal impacts relating to energy use in Scotland is fuel poverty.

A household is defined as being in fuel poverty if they have to spend more than 10% of their income on fuel use, and in 2017 almost 25% of households (613,000) in Scotland were in fuel poverty.

Fuel poverty affects health, both physical and mental, wellbeing and prosperity, and has also been linked to reduced educational attainment.

Living in a continually cold home can lead to mould growth and dampness, which can impact health, and let’s face it, doesn’t look very nice.

Becoming more efficient and lowering bills goes a long way to alleviating fuel poverty!

AM I REALLY GOING TO BE ABLE TO REDUCE MY CARBON FOOTPRINT AFTER DOING A SHORT TRAINING COURSE?

The simple answer is yes, you will.

The course is designed for you to gain basic energy awareness, support you in cutting your bills and lowering your carbon footprint.

After completing these modules you should be able to start on a journey towards a lower energy lifestyle. And if you come across any complex issues, the experts at Scarf who helped us put this training together can always lend a hand

The HEAT and HES teams (more about them in the training) also offer free advice and support to you, offering in-depth advice on subjects such as funding, fuel-debt, and physical measures such as insulation, heating systems and renewable technologies.

Do the Earth and your bank account a favour! Save today – survive tomorrow!

LET’S GO!

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HEATING & HOT WATER

Focusing on different types of central and hot water heating, this section will give you the knowledge needed to identify different heating types and how to use them.

BEING GREEN ON CAMPUS

Whether it's in the library, lab or the HUB, this section will give you the knowledge needed to be as green as possible.

RENEWABLE TECHNOLOGIES

Focusing on different types renewable technologies, this section will give you the knowledge needed to identify the different types and their ideal conditions.

TENANT INFORMATION

Knowing your rights and responsibilities as a tenant, as well as who to contact when you need support is vital. This section will detail how to find out this information.

HOME ENERGY EFFICIENCY

From no cost to capital cost measures, this section will give you knowledge needed to reduce your households energy usage.

E-CHAMPS SUPPORT & INFO

If you are an AberGreen Energy Ambassador this section will highlight the processes and procedures for a successful home visit.

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SECTION 1

HEATING & HOT WATER SYSTEMS

Focusing on different types of central and hot water heating, this section will give you the knowledge needed to identify different heating types and how to use them.

You may want to use the knowledge you gain in this section during your next flat hunt to check what type of heating your potential new home has!

‘WET’ CENTRAL HEATING	ELECTRIC STORAGE HEATING	STANDALONE ROOM HEATERS	DISTRICT HEATING	IMERSION HEATERS
LEARN MORE	LEARN MORE	LEARN MORE	LEARN MORE	LEARN MORE

SECTION 1

WET CENTRAL HEATING SYSTEMS

WHAT ARE THEY?

LEARN MORE

HOW DO THEY WORK?

COMBINATION

LEARN MORE

CONVENTIONAL

LEARN MORE

WHAT CAN FUEL THEM

LEARN MORE

SECTION 1

WET CENTRAL HEATING SYSTEMS

What Are They?

Gas or oil central heating are ‘wet systems’ which means heat is carried around the home by water.

This water is heated in a boiler and travels around pipes to radiators (pictured) or underfloor pipework, which give out heat to the rooms they are in.

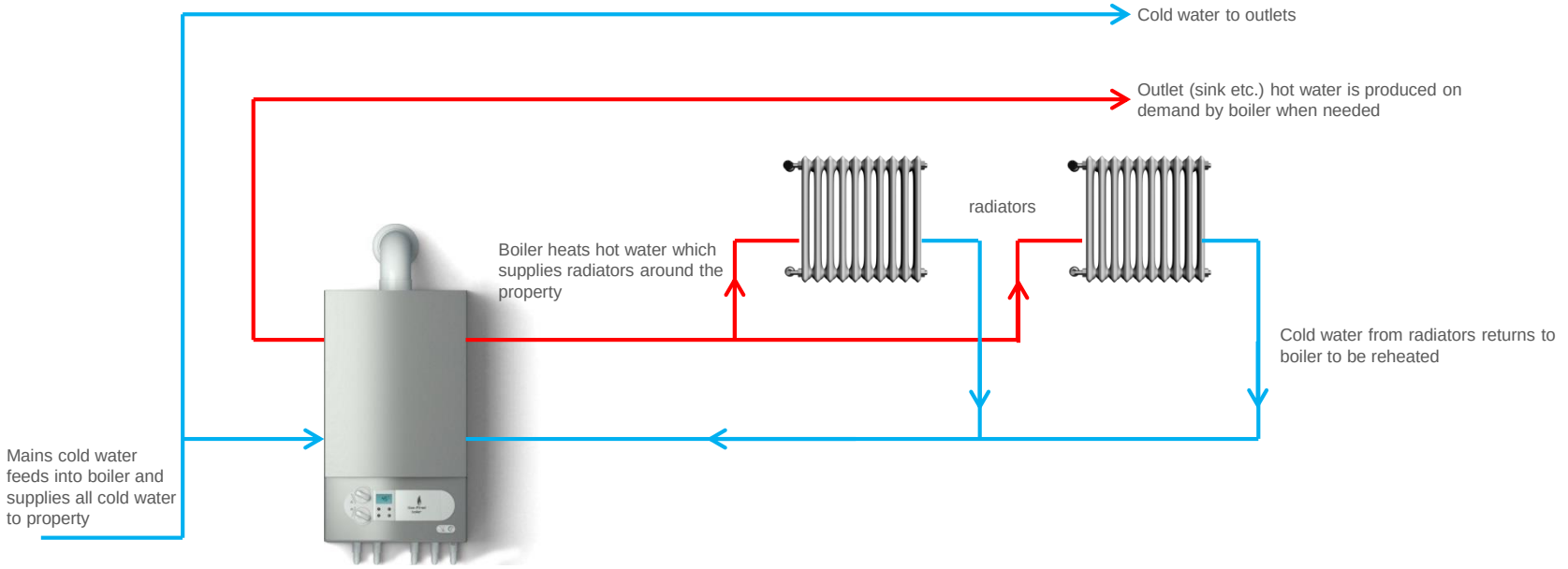
The boiler can also be used to provide heat to domestic hot water.

SECTION 1

WET CENTRAL HEATING SYSTEMS

How Do They Work?

Combination Boiler

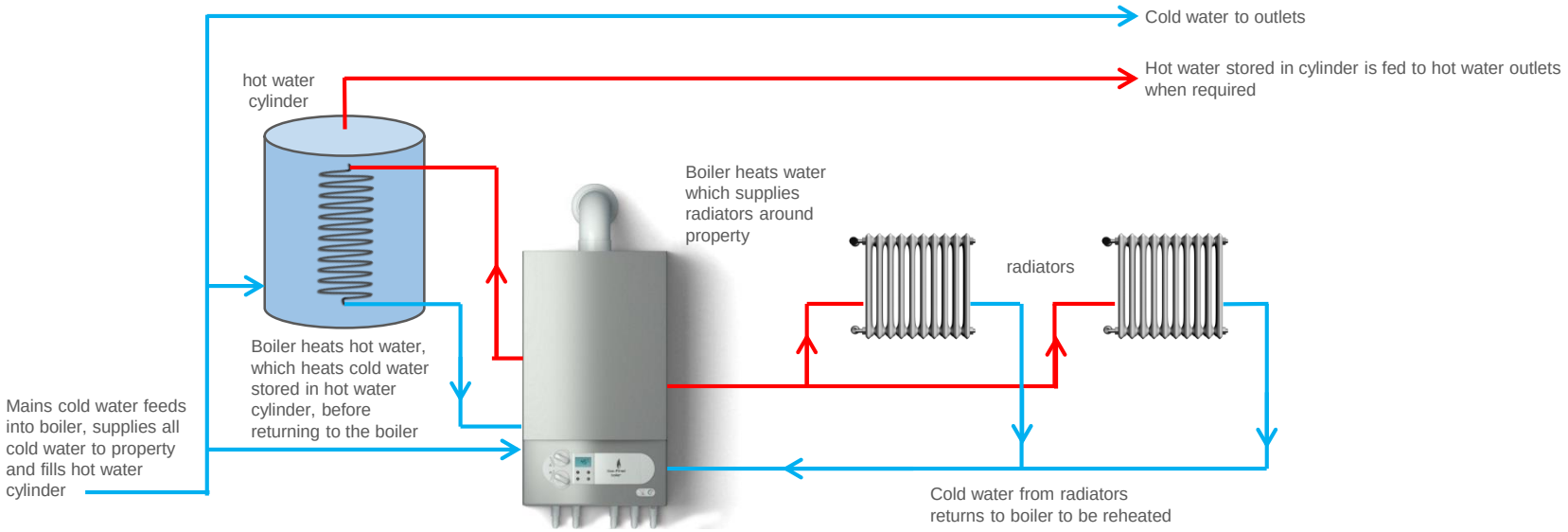


SECTION 1

WET CENTRAL HEATING SYSTEMS

How Do They Work?

Conventional Boiler



SECTION 1

WET CENTRAL HEATING SYSTEMS

What Can Fuel Them?

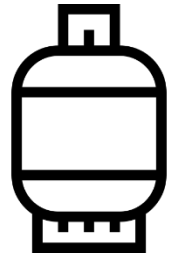
Mains Gas

LEARN MORE

Oil

LEARN MORE

LPG



LEARN MORE

SECTION 1

WET CENTRAL HEATING SYSTEMS

What Can Fuel Them?

Mains Gas

Gas is the most commonly used fuel for wet central heating systems, it is relatively cheap and widely available, especially in urban areas.

This will be the most common fuel for wet central heating systems in Aberdeen and is considerably cheaper to run than electric heating. It's also a greener way of heating your home compared to electric heating!

SECTION 1

WET CENTRAL HEATING SYSTEMS

What Can Fuel Them?

Oil

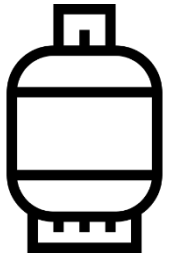
For those not connected to the gas grid, oil is a common source of fuel for boilers. It is stored in tanks on the property and delivered by road.

SECTION 1

WET CENTRAL HEATING SYSTEMS

What Can Fuel Them?

LPG



Like oil, liquefied petroleum gas (LPG) is delivered to and stored on property. It tends to be more expensive than oil but, unlike oil, can be also be used to fuel ovens, hobs and gas fires.

SECTION 1

ELECTRIC STORAGE HEATING

WHAT ARE THEY?

LEARN MORE

HOW DO THEY WORK?

LEARN MORE

WHICH TARIFFS ARE SUITABLE?

LEARN MORE

SECTION 1

ELECTRIC STORAGE HEATING

What Are They?

Storage heaters are electric heaters that store thermal energy by heating internal ceramic bricks during the night. This heat can then be released, when needed, throughout the day.

Because electricity is typically a more expensive fuel than gas and oil, storage heaters are commonly installed in properties where there is no gas connection and there is no room to store oil or LPG on the property, like high rise blocks. It is vital, therefore, that an electricity tariff which offers cheaper electricity at night is used alongside storage heaters to keep bills manageable.

TOP TIP: When you're on your next flat hunt, you may want to check what type of heating your new potential home has!

SECTION 1

ELECTRIC STORAGE HEATING

How Do They Work?

Internal insulated clay or ceramic bricks are heated overnight by electric elements

A boost control can be used to provide extra heat if bricks run out during the day

Heat is released by the bricks, when needed, during the day to heat the home

SECTION 1

ELECTRIC STORAGE HEATING

Which Tariffs Are Suitable?

ECONOMY 7	ECONOMY 10	TOTAL HEATING TOTAL CONTROL
LEARN MORE	LEARN MORE	LEARN MORE

You'll find out more about different types of energy tariffs, payment methods and how to switch suppliers in Section 3. If you want to jump there now, click here.

SECTION 1

ELECTRIC STORAGE HEATING

Economy 7

Economy 7 tariffs are required for homes with an Economy 7 meter.

These meters track day and night use of electricity separately, so that a different kWh rate can be offered via an economy 7 tariff - a bit like peak and off-peak phone calls.

It's called Economy 7 because you get cheaper electricity for 7 hours each night.

This cheaper rate tends to be used to charge storage heaters and heat water in a dual immersion heater that can then be used during the day at little to no cost.

SECTION 1

ELECTRIC STORAGE HEATING

Economy 10

Like Economy 7, Economy 10 tariffs also offer discounted electricity periods. In total 10 off-peak hours are offered and broken down into different time periods, depending on area and supplier.

In Scotland the most likely off-peak hours would be:

- three hours in the afternoon (e.g. 1pm – 4pm)
- four in the evening (e.g. 8pm – midnight)
- three in the early morning.(e.g. 4am – 7am)

This allows cheaper charging of storage heaters and hot water through an immersion heater throughout the night but with the added benefit of cheaper rates during the day and evening to run other electrical appliances. However, it may be more expensive if storage heaters are older and require a full seven hours to fully charge them.

SECTION 1

ELECTRIC STORAGE HEATING

Total Heating Total Control

Total Heating Total Control (THTC) is a space and water heating tariff from Scottish Hydro Electric and offers two rates – an off-peak and an on-peak rate.

All space heating (including storage and panel heaters) and water heating (including electric showers) are charged at the off peak rate 24 hours a day.

Everything else (such as lights and plug in appliances) are charged at the higher rate.

With THTC the charge period for storage heaters is related to the weather. The colder it is the longer they will be automatically charged for, with a minimum of five hours in warmer weather and a maximum of 12 hours in colder weather.

SECTION 1

STANDALONE ROOM HEATERS

WHAT ARE THEY?

LEARN MORE

WHAT ARE THE DIFFERENT TYPES?

LEARN MORE

CAN THEY PROVIDE CENTRAL HEATING?

LEARN MORE

Aber GREEN

SECTION 1

STANDALONE ROOM HEATERS

What Are They?

Standalone room heaters are heaters that provide heat to a single area or room but are not connected to a central heating system.

They can be powered by electricity or another burnable fuel (more on the types of heater here) but are usually electric because an exhaust is needed for heaters that burn fuel.

The two most common types are convection heaters (where they blow air over a heated element into the room) and infrared heaters (where the heat is transferred through radiant heating by a very hot wire).

SECTION 1

STANDALONE ROOM HEATERS

What Are The Different Types?

Halogen

LEARN MORE

Oil Filled

LEARN MORE

Fan

LEARN MORE

Solid Fuel

LEARN MORE

SECTION 1

STANDALONE ROOM HEATERS

What Are The Different Types?

Halogen

A halogen heater produces heat by using halogen elements enclosed in lamps or bulbs to provide a direct source of radiant heat.

They are plugged into the mains of a property and run on electricity.

SECTION 1

STANDALONE ROOM HEATERS

What Are The Different Types?

Oil Filled

An oil filled radiator is a common form of convection heating. Although filled with oil, it is electrically heated and the oil is used as a heat reservoir and not as a fuel.

When switched on, a heating element at the bottom of the radiator heats the oil. The oil then transfers the heat into the metal, which in turn transfers heat into the surroundings.

SECTION 1

STANDALONE ROOM HEATERS

What Are The Different Types?

Fan

A fan heater is a heater that uses a fan to pass air over a heated element. This heats up the air, which then leaves the heater and warms the surrounding area. They are almost always powered using a property's electricity supply.

They heat a space at a faster rate than heaters without a fan but have the disadvantage of creating audible noise.

SECTION 1

STANDALONE ROOM HEATERS

What Are The Different Types?

Solid Fuel

Solid fuel room heaters provide heat to a room by burning fuels like coal wood or peat.

They can be either ‘open’ or ‘closed’. An example of an open system would be a coal fire and an example of a closed system would be a wood burning stove.

Both types give out heat directly to the room by burning fuel but a closed system tends to be more efficient as there is a higher degree of control over the air being drawn into it from the room.

SECTION 1

STANDALONE ROOM HEATERS

Can They Provide Central Heating?

It is uncommon but solid fuel room heaters can be used to provide central heating to a property.

This would be achieved by installing a boiler behind the heater and would work much in the same way as a conventional boiler.

The solid fuel room heater would heat water within a radiator system and in a hot water cylinder.

This does mean, however, that the heater needs to be burning fuel to provide the rest of the property with heat.

SECTION 1

DISTRICT HEATING

WHAT IS DISTRICT HEATING?

LEARN MORE

HOW DOES IT WORK?

LEARN MORE

WHAT ARE THE ADVANTAGES?

LEARN MORE

Aber GREEN

SECTION 1

DISTRICT HEATING

What Is District Heating?

District heating is a system for distributing heat generated in a centralised location for residential and commercial heating requirements such as space heating and water heating.

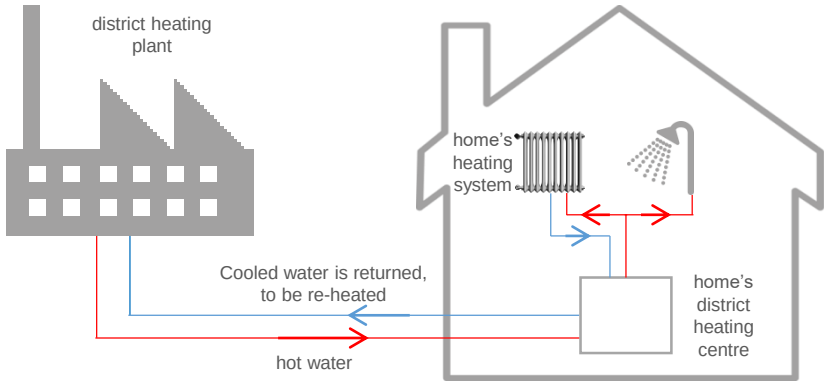
The heat is often obtained from a cogeneration plant burning fossil fuels but increasingly also biomass amongst others.

In Aberdeen, Aberdeen Heat & Power have developed various district heating plants around the city – including Hazelhead and Seaton. The plants use a system called combined heat and power (CHP) where the plants generate electricity for sale whilst making use of the waste heat generated in this process to provide space and water heating to the local area.

SECTION 1

DISTRICT HEATING

How Does It Work?



In a district heating system a heating plant produces hot water and then distributes this hot water to properties throughout the network through underground insulated pipes.

Once this water has been utilised by the properties for heating and hot water it returns to the plant to be reheated and recirculated throughout the network.

SECTION 1

DISTRICT HEATING

What Are The Advantages?

There are a few clear advantages of using district heating.

Firstly, it allows for a broad range of energy sources to be used to provide heat, including both fuels and flows working together in some cases, which increases reliability and efficiency.

District heating also helps manage the supply and demand of heat and avoids unnecessary production while still meeting the needs of users.

There is also reduced labour and maintenance costs associated to district heating. Having one plant provide the heat for 100 properties instead of 100 boilers means less maintenance is required.

Finally, district heating systems can be future proofed to allow a relatively easy switch to a renewable source of energy when the landscape allows for it.

SECTION 1

IMMERSION HEATERS

WHAT ARE THEY?

LEARN MORE

HOW DO THEY WORK?

LEARN MORE

SECTION 1

IMMERSION HEATERS

What Are They?

An immersion heater is an electric water heater that sits inside a hot-water cylinder and provides heat to domestic hot water.

They can be easily switched on and off and can be used as a property's primary source of water heating, or as a back up heater for conventional boiler systems.

SECTION 1

IMMERSION HEATERS

How Do They Work?

An immersion heater uses one (single) or two (twin) elements, much like in a kettle, inside a water tank to heat domestic hot water.

Single and twin immersion heaters work in similar ways but with a few differences.

SINGLE

LEARN MORE

TWIN

LEARN MORE

SECTION 1

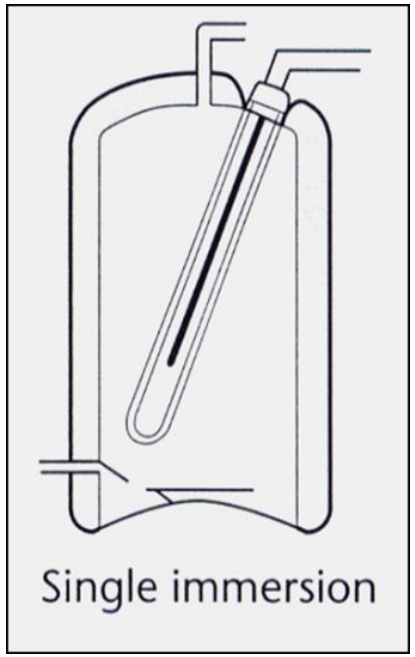
IMMERSION HEATERS

Single Immersion Heater

An element projects into the hot water cylinder and is heated by an electric current to provide a boost within the tank to cope with demands.

This is commonly controlled by a boost button on a boilers programmer and can be switched on and off as required.

A single immersion heater is most commonly used within a conventional boiler system and provides a quick top up of hot water to a property when there is a high demand.



SECTION 1

IMMERSION HEATERS

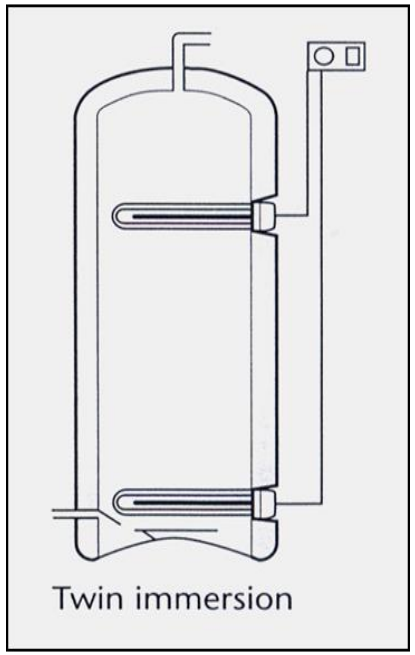
Twin Immersion Heater

One element projects into the bottom of the tank and one projects into the top.

The element at the bottom heats the whole tank whereas the element at the top will provide a ‘boost’ of hot water, when needed.

This works because hot water rises; therefore the whole tank would be heated before an inbuilt thermostat turns off the bottom element.

A twin immersion heater is most commonly used within a storage heater system with the bottom element working overnight to take advantage of a cheaper night tariff to provide hot water for the property for the next day.



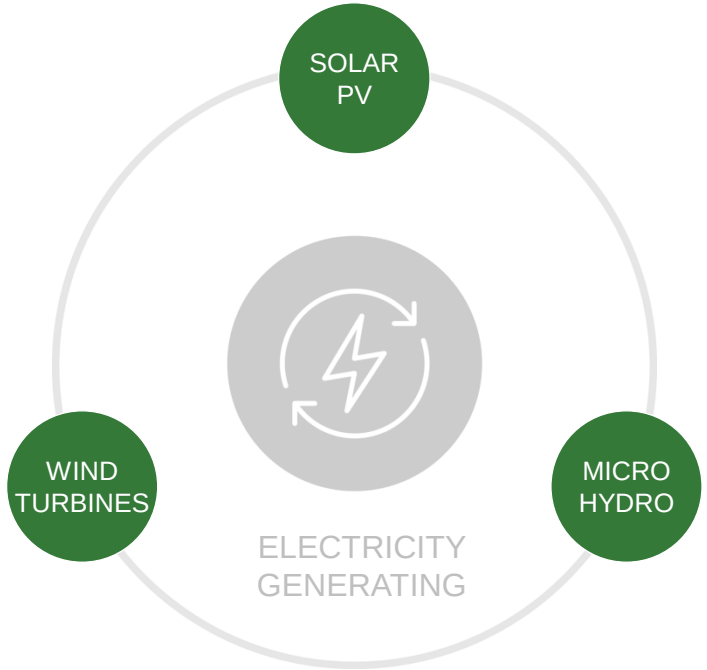
Twin immersion

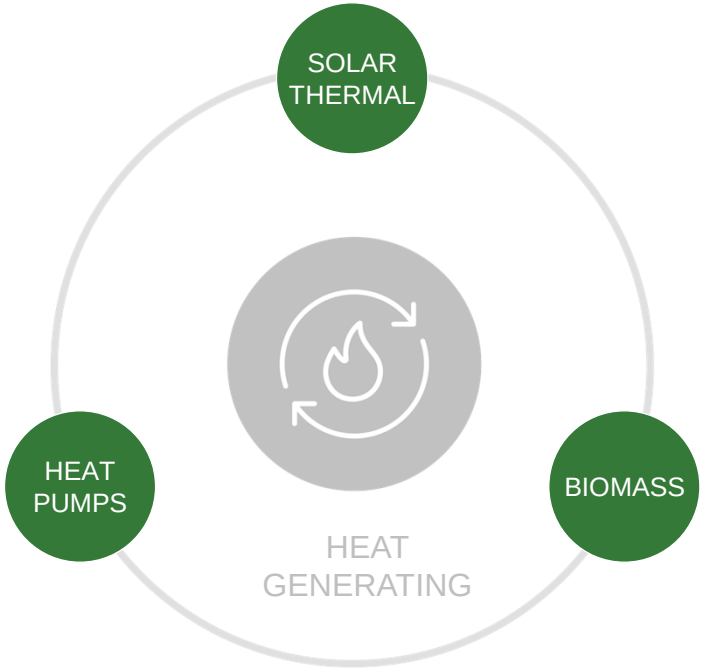
SECTION 2

RENEWABLE TECHNOLOGIES

Although renewable technology is rarely installed in rented accommodation it is still beneficial to learn more about the different types of technologies available. This may help you in future if you decide to install some in your own home!

Click the buttons below to find out more about each technology and click here for more general information about renewable technologies.





SECTION 2

RENEWABLE TECHNOLOGIES

Renewable technologies can be grouped into two categories, heat generating and electricity generating, and because they are relatively expensive are typically thought of as the end stage in making a property as efficient as possible. This means that they should only be considered if a property has already had all available insulation measures installed, which tend to be much cheaper.

Each technology also has its advantages and disadvantages and therefore there is no scale in which the technologies are ranked on how ‘green’ they are. Instead it depends on multiple factors, including the construction of the property, the climate and how a household uses their energy. In this section you will find out more about the ideal conditions for the different types of renewable technologies.

Finally, the Scottish Government recognises that these technologies are expensive and has different schemes to help householders install them. These can range from interest free loans to payments to the household depending on how much electricity or heat they generate. These schemes changes on a regular basis so to find out about what is available just now, please visit the Energy Saving Trust website.

SECTION 2

SOLAR PHOTOVOLTAICS

HOW DOES IT WORK?

LEARN MORE

IDEAL CONDITIONS

LEARN MORE

Aber GREEN

SECTION 2

SOLAR PHOTOVOLTAICS

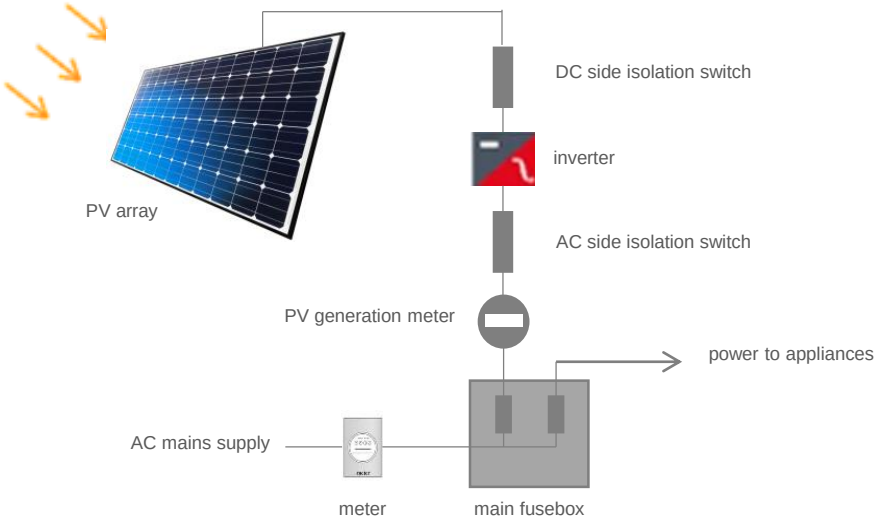
How Does It Work?

Solar PV converts light energy from the sun into electrical energy that can be used within the home.

When light hits the PV array and electric current is generated by the cells in the array.

The electricity generated is direct current (DC) and an inverter then converts this into alternating current (AC) which is compatible with mains electricity in the property.

The array can be fitted onto the roof itself or integrated into tiles or slates on the roof.



SECTION 2

SOLAR PHOTOVOLTAICS

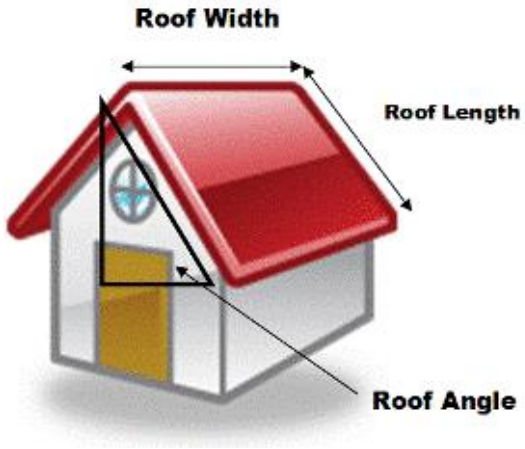
Ideal Conditions

The ideal orientation for solar PV is south but south-west to south-east is also good.

The ideal inclination is between 35º-45º but 20º-60º is still acceptable. This angle also helps with the self-cleaning of the panels.

It is important to ensure panels are not shaded as this can result in a drop off in performance of the panels.

It is also unlikely that solar PV will be capable of catering for all of a households electricity demand so grid electricity is commonly used alongside electricity generated from solar PV.



SECTION 2

WIND TURBINES

HOW DO THEY WORK?

LEARN MORE

IDEAL CONDITIONS

LEARN MORE

SECTION 2

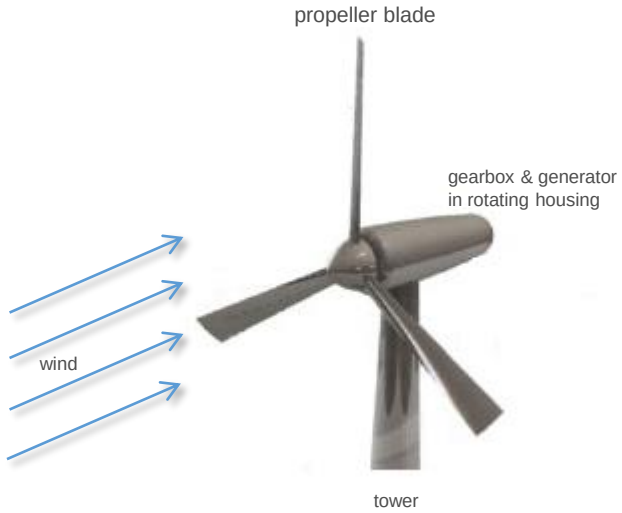
WIND TURBINES

How Do They Work?

A wind turbine converts kinetic energy from the wind into electricity.

When the wind spins the propeller blades a copper coil is turned inside a magnetic field in the housing, which generates an electrical current.

Like solar PV, the electricity is generating in direct current (DC) form, meaning an inverter is needed to convert it into the alternating current (AC) form compatible in homes.



SECTION 2

WIND TURBINES

Ideal Conditions

The vast majority of turbines used in a domestic setting are classed as micro or small turbines (like those pictured) and not the industrial sized turbines you can see in the North Sea!

These can either be free standing or mounted directly onto the top or side of a building.

Wind speed is key to the efficiency of turbines; with at least 5 meters per second needed for a turbine to make a considerable contribution towards the electricity needs of a property.

Often in urban areas the wind speed is too low for a turbine to operate effectively.

wall mounted

free standing

SECTION 2

MICRO-HYDRO

HOW DOES IT WORK?

LEARN MORE

IDEAL CONDITIONS

LEARN MORE

LOCAL EXAMPLE

LEARN MORE

SECTION 2

MICRO-HYDRO

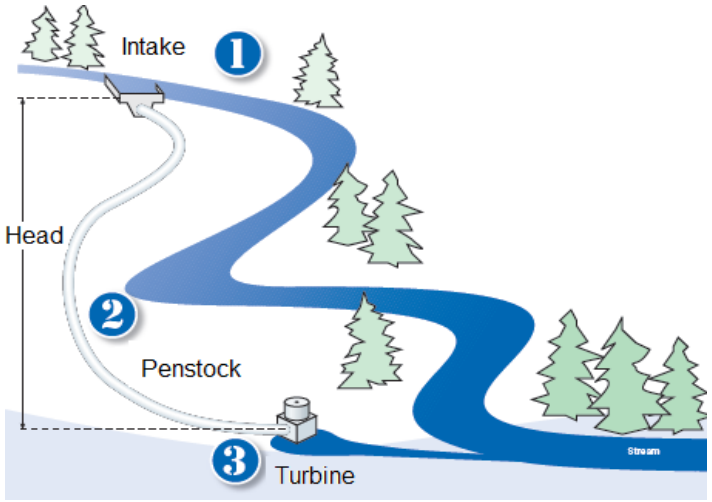
How Does It Work?

A micro-hydro system produces electricity by using kinetic energy from flowing water.

As water flows downwards due to gravity the kinetic energy it carries increases.

This kinetic energy is converted into mechanical energy by turning a turbine in a hydro system which produces electricity in the same way as a wind turbine.

An inverter is required to convert the electricity from AC to DC.



SECTION 2

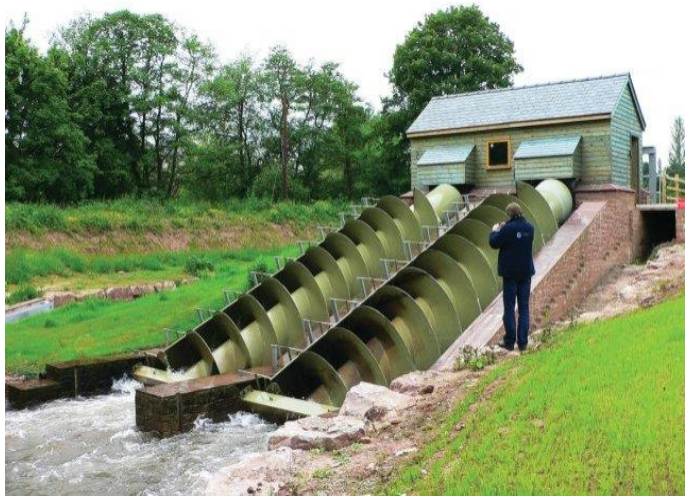
MICRO-HYDRO

Ideal Conditions

A flowing body of water is required for micro hydro systems. This body of water needs have a combination of

- flow – how much water is flowing per second
- head – a difference in height over a short distance

The higher the flow rate and bigger the head, the more electricity can be produced. It is important, however to ensure the water continues to flow at a good rate in summer otherwise electricity production could be limited.

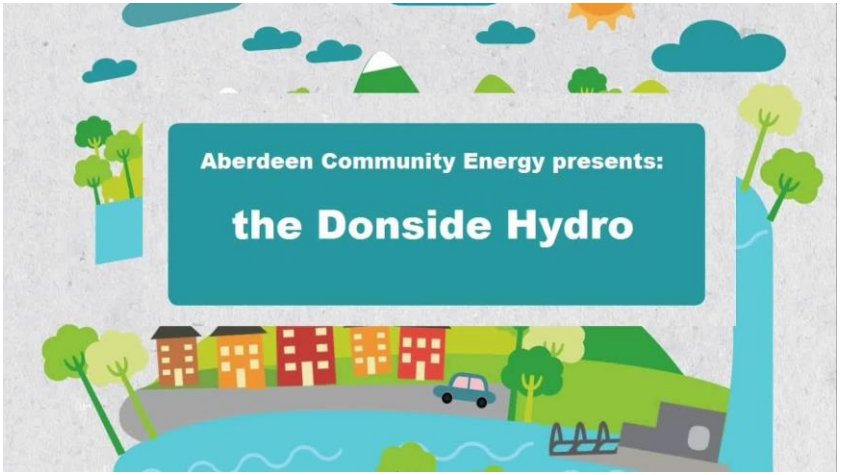


SECTION 2

MICRO-HYDRO

Ideal Conditions

The short video below highlights the Donside Hydro project that was completed in 2016. Play the video by pressing the play button in the bottom right hand corner.



SECTION 2

SOLAR THERMAL

HOW DOES IT WORK?

LEARN MORE

IDEAL CONDITIONS

LEARN MORE

SECTION 2

SOLAR THERMAL

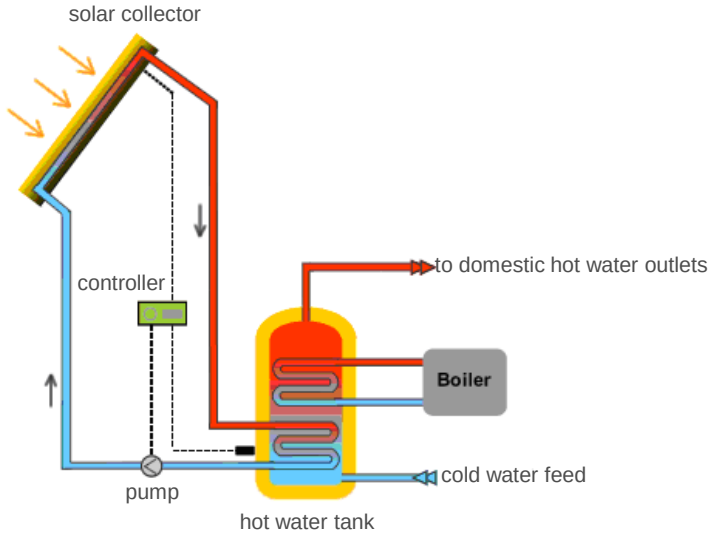
How Does It Work?

In a solar thermal system fluid is pumped through a solar collector where it is heated by the sun.

This heated fluid then passes through a heat exchanger within a hot water cylinder and heats the domestic hot water. The fluid then returns to the solar collector to be reheated and the process begins again.

A secondary hot water heating system – such as a boiler or immersion heater – also heats the domestic hot water to meet demand at night and in cooler weather.

Solar thermal systems can easily be confused with solar PV but are very different systems. One generates hot water and one generates electricity.



SECTION 2

SOLAR THERMAL

Ideal Conditions

For solar thermal to function optimally, around five square meters of unshaded roof space facing east to west, through south, is required.

A larger than normal hot water cylinder is also required to allow room for the solar heating coil and a immersion heater or boiler coil.

This means that systems that do not have a hot water cylinder, like a combination boiler system, would not be compatible with solar thermal systems because there would be no way to store the water heated by the solar thermal system!

SECTION 2

HEAT PUMPS

HOW DO THEY WORK?

LEARN MORE

TYPES OF COLLECTOR

LEARN MORE

SECTION 2

HEAT PUMPS

How Do They Work?

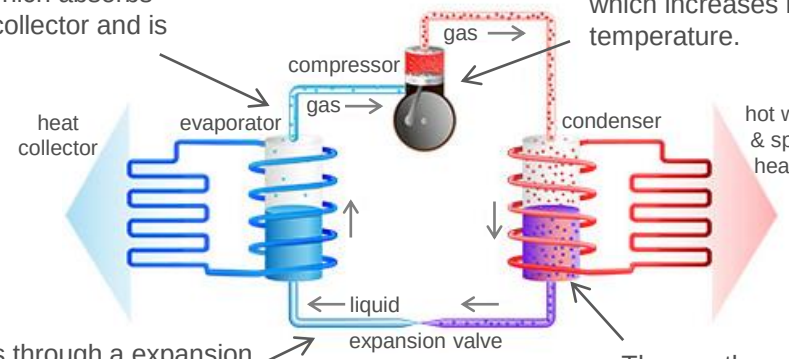
Heat pumps are becoming increasingly common in newly built homes and are also an emerging market for residential properties.

In simple terms, they work in the same was as a fridge only in the opposite direction, producing heat instead of cooling an area down!

The diagram to the right explains how this works in more detail.

An evaporator within the heat pump contains a refrigerant which absorbs low grade heat from a collector and is then boiled into a gas.

The gas is then compressed from low to high pressure which increases its temperature.



Cooler gas then passes through a expansion valve and converted back to low pressure, dropping it's temperature and converting it back into a liquid ready to collect more heat from the collector.

The gas then gives up its in a condenser and this heat is used for domestic hot water and space heating.

SECTION 2

HEAT PUMPS

Types Of Collector

GROUND

LEARN MORE

AIR

LEARN MORE

WATER

LEARN MORE

SECTION 2

HEAT PUMPS

Ground Collector

Ground source heat pumps draw heat from the sun, which is stored in the ground.

Fluid filled horizontal or vertical pipe systems collect the heat and then run over the evaporator.

In a horizontal system the pipes are placed in long trenches and are commonly looped to offer a greater surface area (see image).

In vertical systems, the pipes are inserted down boreholes that can be up to 100m deep.

horizontal system

vertical system

SECTION 2

HEAT PUMPS

Air Collector

Air source heat pumps use a fan to draw outside air over a heat exchanger (the evaporator).

These units can be freestanding or fixed to walls and roofs and work best when south facing.

The efficiency of air source heat pumps can be affected by falling air temperature, with a rapid fall off in performance as the temperature drops.

SECTION 2

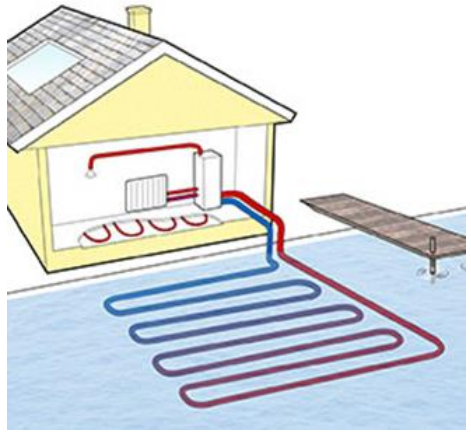
HEAT PUMPS

Water Collector

Water source heat pumps use a series of flexible pipework submerged in a body of water (such as a river, lake or stream).

The fluid in these pipes absorbs the heat from the water and runs over the evaporator.

The heat rate from water is higher than from ground and air, making them more efficient.



SECTION 2

BIOMASS

HOW DOES IT WORK?

LEARN MORE

IDEAL CONDITIONS

LEARN MORE

SECTION 2

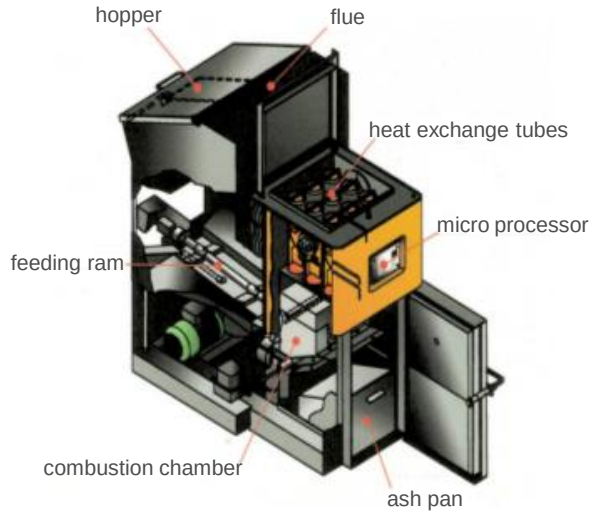
BIOMASS

How Does It Work?

Biomass boilers work almost identically to the combination boiler systems explored earlier - except for the fuel.

The most common fuel for biomass boilers is wood pellets but some systems can also be run by burning waste wood or fire wood.

A hopper feeds the pellets into the boiler which, when burnt, heats the water being piped to radiators around the property.



SECTION 2

BIOMASS

Ideal Conditions

Biomass boilers are much larger than normal gas or oil fuelled boilers, and coupled with the space needed to store wood or pellets, a high space requirement is required in a property to install biomass.

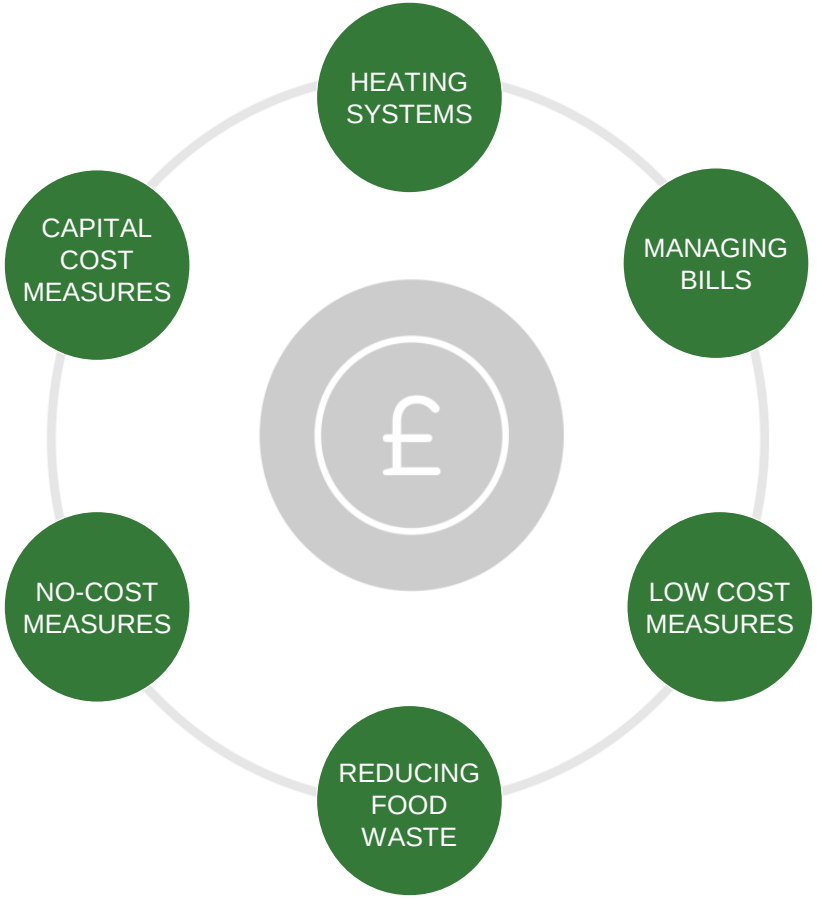
The property would also need to be in an area appropriate for deliveries of fuel.

Due to the fact the boilers need to be cleaned regularly and may need to be hand fed they may not be suitable to those with mobility problems.

biomass wood pellets

SECTION 3

HOME ENERGY EFFICIENCY



SECTION 3

HEATING SYSTEMS

This section will help you understand and be able to correctly use the heating controls on two different types of central heating. Correctly using heating controls allows homes to be kept at a comfortable temperature without wasting fuel and keeping bills relatively low. Use the links below to find out more.

GAS, OIL & LPG BOILERS

LEARN MORE

STORAGE HEATERS

LEARN MORE

SECTION 3

HEATING SYSTEMS

Gas, Oil & LPG Boilers

PROGRAMMER

LEARN MORE

ROOM THERMOSTAT

LEARN MORE

THERMOSTATIC RADIATOR VALVES

LEARN MORE

SECTION 3

HEATING SYSTEMS

Programmer

Utilising a programmer to ensure a boiler is only heating the home when needed can help to keep fuel bills manageable. This ensures fuel isn't wasted when the property is vacant.

It is also important to take into account 'warm up' and 'cool down' times. For example, if the boiler is set to come on a short period of time before needed the home can warm up to the required temperature at the correct time. Conversely, the boiler should be set to shut off a short period before the house is vacated as the property will still retain heat for some time after the heating is switched off.

SECTION 3

HEATING SYSTEMS

Room Thermostat

A room thermostat prevents properties from getting warmer than necessary. It turns the heating on until the room reaches a set temperature and then off until the temperature drops below the set temperature. This can be set at the same temperature all year round as the room thermostat will heat the property to the required temperature regardless of the weather.

The ideal temperature for a thermostat is typically between 18^{o}C and 21^{o}C and a simple saving of around £85/year can be made by turning it down by just one degree.

SECTION 3

HEATING SYSTEMS

Thermostatic Radiator Valves

Thermostatic radiator valves (TRVs) work by controlling the rate at which hot water flows through a radiator and hence controls the level of heat in each room – a lower setting uses less energy and will save fuel and money.

They can also be used to turn the radiator completely on or off. This allows the heating of rooms that are in use and avoids wasting fuel heating spare or unused rooms. Adding TRVs to a system that doesn't already have them can save up to £50/year.

It's important to note that turning up a TRV will not heat a room quicker, it will only heat it to a higher temperature!

SECTION 3

HEATING SYSTEMS

STORAGE HEATERS

INPUT

LEARN MORE

OUTPUT

LEARN MORE

TIMER

LEARN MORE

SECTION 3

HEATING SYSTEMS

Input Control

The input control determines how much electricity the heater will take from the grid during the coming night, and hence how much stored heat will be available the following day.

It should be turned up at night to charge the storage heaters using the lower night tariff and then turned off during the day so they do not charge using the higher day tariff rate.

SECTION 3

HEATING SYSTEMS

Output Control

The output control determines how much heat is given out by a storage heater (as long as there is stored heat available).

It should be turned off at night, when charging, so no heat is given out when not needed and to ensure heat is retained in the heaters for the coming day. During the day the output control should then be turned up and down as required to heat the property.

SECTION 3

HEATING SYSTEMS

Timer Control

Utilising a timer switch to ensure storage heater are only heating the home when needed can help to keep fuel bills manageable. This ensures stored heat in the heaters is not wasted. This is done by moving the hands or dials on the timer switch and sometimes you may have to push in the purple levers to set the timer. If you are unsure of how to work your timer, speak to one of the AberGreen E-Champs!

It is also important to take into account ‘warm up’ and ‘cool down’ times. For example, if the timer is set for the storage heaters to come on a short period of time before needed the home can warm up to the required temperature at the correct time. Conversely, the timer should be set to shut off a short period before the house is vacated as the property will still retain heat for some time after the heating is switched off.

SECTION 3

MANAGING BILLS

The sections below will help you manage and reduce your energy bills once you have your tenancy secured and if you're the person responsible for paying energy bills.

Are you considering a move or deciding to live on you own? Not sure what to look out for in terms of securing a more sustainable tenancy? Click the link on the right to access our useful house move guide.

AberGreen Home Move Guide

BILLS EXPLAINED

LEARN MORE

BILLING METHODS

LEARN MORE

SETTING UP BILLS

LEARN MORE

SWITCHING SUPPLIERS

LEARN MORE

EXAMPLE BILL

LEARN MORE

SECTION 3

MANAGING BILLS

Bills Explained

Energy bills contain a lot of information but, in simple terms, are a record of how much energy has been used in a property and how much this energy has cost the household. Further on you'll see a detailed explanation of what information an energy bill contains

Each supplier has their own different tariffs (how much is paid per unit of energy) and, therefore, bills can vary greatly between suppliers, even if the same amount of energy was to be used.

Some suppliers also offer discounts depending on which tariff is used. No one tariff is cheapest and instead depends on the circumstances of a household.

We have put together a spreadsheet to help you track your energy usage and how much it's costing you. Click here to download this sheet. Make sure to click next to progress to the following slides and find out more about how to save money on your bills!

Aber GREEN

SECTION 3

MANAGING BILLS

AberGreen Energy Monitoring

Download AberGreen's Energy Monitoring spreadsheet by clicking the link on the right.

This spreadsheet is easy to use and will allow you to track your energy usage each month. Firstly, you must input the details of your energy tariff in the 'Tariff Details' tab. The information for this can be found on your latest bill.

You can then simply input a meter reading from your electricity meter and, if you have one, your gas meter in either the 'Two Rate Meter Reads' or 'One Rate Meter Read' tabs.

AberGreen Energy Monitoring

Note, the first reading you put in, will not provide a consumption for that period, as it is your first, initial reading.

In order to work out which tab you should input the data on you can check your electricity bill. It will advise if you are on a one rate meter or a two rate meter. A two rate meter will have a button you can press to find two different meter readings whereas a one rate meter will simply display one reading.

SECTION 3

MANAGING BILLS

Billing Methods

DIRECT DEBIT	PRE-PAYMENT	FLEXIPLAN	QUARTERLY
LEARN MORE	LEARN MORE	LEARN MORE	LEARN MORE

SECTION 3

MANAGING BILLS

Direct Debit

With a direct debit, the supplier will set up an amount that comes out of the account holder's bank every month to cover the cost of energy. This amount will be the same each month, making it easier to budget.

It is usually an estimate to begin with and is then amended to better represent actual energy usage, usually after around a year and most suppliers will offer discounts on your plan if this is your chosen method of payment.

When living in shared accommodation and on a tight budget, setting up a direct debit can help you and your flatmates easily split costs. By keeping an eye on your bills and checking your balance, you'll be able to determine whether you're in debit or credit. This is particularly important when your tenancy is coming to an end so the account holder can notify all of you sharing the accommodation if you're due money back from the provider of if you need to pay up.

DIRECT Debit

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SECTION 3

MANAGING BILLS

Pre-Payment

With a pre-payment plan energy is paid for upfront using a top-up card or key that is then inserted into a special meter.

As energy is used in the property the credit on the card or key will deplete.

The card or key can be topped up with credit online or at various locations, such as:

- Shops with PayPoint signs
- Shops with Payzone signs
- Post offices

SECTION 3

MANAGING BILLS

FlexiPlan

A FlexiPlan bill must be settled every three months but allows payment towards the bill to be made in advance at any point through a PayPoint outlet.

The remainder of the bill must be paid when sent to the household.

This allows for flexibility in how much is paid and when and can be good for households who may have inconsistent working hours, such as a zero hour contract.

SECTION 3

MANAGING BILLS

Quarterly

With quarterly billing the supplier will bill the household every three months for the energy that has been used over that period.

This payment can be made online, over the phone or in the bank by cash or cheque.

If you're new to handling accounts with energy suppliers, knowing your tariff and how to read your electricity and gas meters will be particularly important in helping you estimate and forecast, so when the bills come you're not getting a shock!

Check out our Energy Monitoring spreadsheet here where you can calculate your usage and work out future payments!

SECTION 3

MANAGING BILLS

Setting Up Bills

When moving into a new home, one of the first things you'll need to do is find out which company currently provides your electricity and, if applicable, gas. If you cannot get this information from your agency or landlord then you can call the UK Power Meter Point Administration Service on 0345 026 2554 to find out who provides your electricity and the Meter Number Helpline on 0870 608 1524 for gas.

You will then need to contact the supplier(s) to notify them that you are the new tenant responsible for the property and provide them with up to date meter readings. Failure to do this can lead to you potentially being charged for the previous tenants' energy use.

You do not need to stick with this supplier, however, and can shop around to find out who can offer you the best deal. Find out how later in this section!

You should also follow the same procedure when moving out of a property. Phoning your supplier will allow you to close your account and ensure you are not overcharged. After doing this it is good practice to email photos of your meter readings to your letting agency or landlord to ensure you have evidence if any disputes arise in future.

SECTION 3

MANAGING BILLS

Switching Suppliers

Did you know that you can easily switch suppliers and save lots of money on your bills?

It's easy to do and it is recommended that households compare their supplier and tariff every few months to ensure they aren't overpaying for energy. The best way to do this is to use an online comparison website, such as uSwitch.

The key pieces of information required to do this are:

- current supplier
- current tariff
- current meter readings
- how bills are currently paid

Switching suppliers at the start of a private tenancy will be a quick and easy process, and it is always recommended that you compare the company that supplies the energy for the property you're renting with other ones on the market soon after you move in. Be mindful, however, once your account is set up you may be subject to early exit fee charges if in a few months' time you find a better deal.

If you're renting through a landlord and your bills are included in your rent, this option may not be available to you.

SECTION 3

MANAGING BILLS

Example Bill

Click the letters on the example bill to the right to find out what information is available on a standard bill.

1 of 4

sse Southern Electric

southern-electric.co.uk

Mon-Fri 8am-8pm Sat 8am-2pm
0345 071 9710

Customer_Na
Postal_Address_Line_
Posta
Postal_Addre
POSTAL_A

K

Here's your electricity statement

For the period: 17 September 2016 to 24 March 2017
Dated: 28 March 2017

Your electricity account number:
000Cu stome

Your previous statement

You owed us	£145.54
Your payments, thank you	£465.00 credit
Balance after your payments	**£319.46 credit**

Your actual reading

	9	2	4	1	7

We've based your statement on the above actual meter reading.

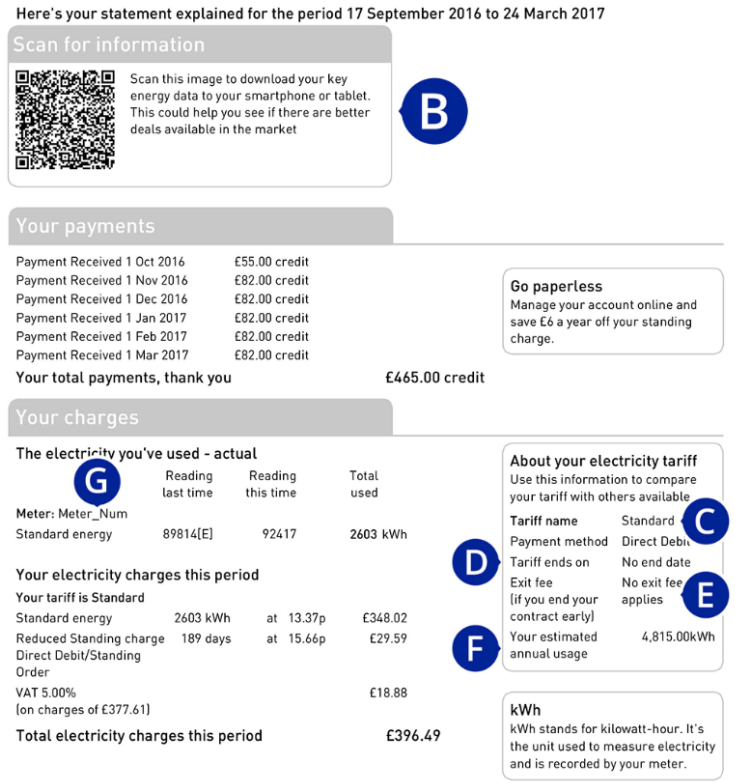
This statement

Electricity charges	£396.49
Total charges this statement	**£396.49**

We've explained your statement in detail over the page...

The balance you owe us is £77.03 A

As you're spreading the cost over the year, we'll carry forward the £77.03 you owe to your next statement. But if you'd like to make a payment to reduce this balance, please call us.



Here's your statement explained for the period 17 September 2016 to 24 March 2017

Scan for information

Scan this image to download your key energy data to your smartphone or tablet. This could help you see if there are better deals available in the market B

Your payments

Payment Received 1 Oct 2016	£55.00 credit
Payment Received 1 Nov 2016	£82.00 credit
Payment Received 1 Dec 2016	£82.00 credit
Payment Received 1 Jan 2017	£82.00 credit
Payment Received 1 Feb 2017	£82.00 credit
Payment Received 1 Mar 2017	£82.00 credit
Your total payments, thank you	**£465.00 credit**

Go paperless
Manage your account online and save £6 a year off your standing charge.

Your charges

The electricity you've used - actual G

	Reading last time	Reading this time	Total used
Meter: Meter_Num			
Standard energy	89814[E]	92417	2603 kWh

Your electricity charges this period

Your tariff is Standard

Standard energy	2603 kWh	at	13.37p	£348.02
Reduced Standing charge Direct Debit/Standing Order	189 days	at	15.66p	£29.59
VAT 5.00% (on charges of £377.61)				£18.88
Total electricity charges this period				**£396.49**

About your electricity tariff
Use this information to compare your tariff with others available

Tariff name	Standard C
Payment method	Direct Debit
Tariff ends on	No end date
Exit fee (if you end your contract early)	No exit fee applies E
Your estimated annual usage	4,815.00kWh F

D

kWh
kWh stands for kilowatt-hour. It's the unit used to measure electricity and is recorded by your meter.

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SECTION 3

MANAGING BILLS

Example Bill

A: This is your balance. This informs you whether you are in credit (meaning you have overpaid and the supplier owes you money) or debit (you owe your supplier money). Supplying regular meter readings helps keep this balance as accurate as possible.

Some people find it good practice to accrue credit during the summer months in order to assist them in paying winter bills, which are typically higher.

1 of 4

sse Southern Electric

southern-electric.co.uk

Mon-Fri 8am-8pm Sat 8am-2pm
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Customer_Na
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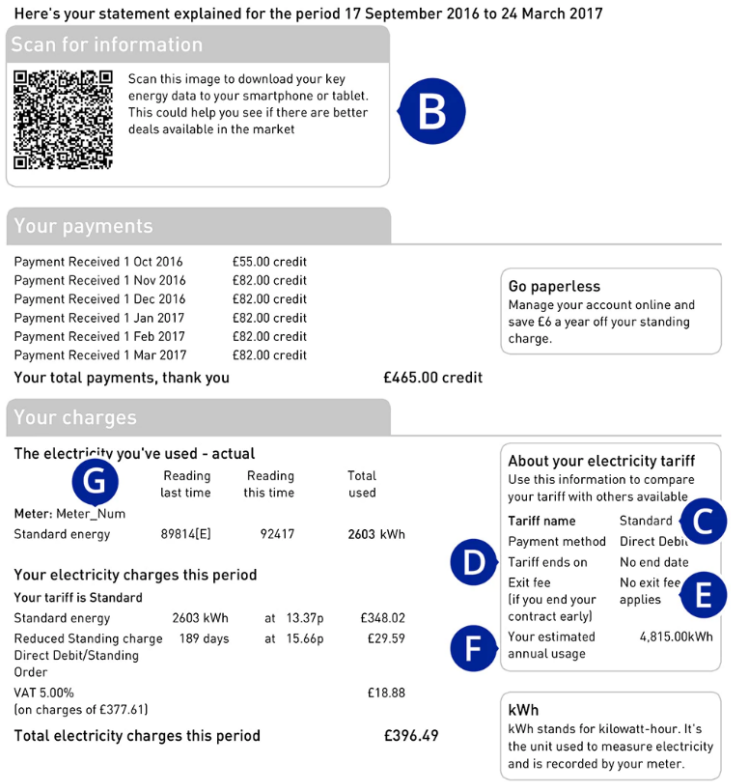

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D

kWh
kWh stands for kilowatt-hour. It's the unit used to measure electricity and is recorded by your meter.

Aber GREEN

SECTION 3

MANAGING BILLS

Example Bill

B: This is an example QR code you would find on your bill. This code will be unique to you and contains information about your tariff and usage. Some switching apps can scan this code, compare your current bill and inform you if there are cheaper deals you could switch to.

1 of 4

sse Southern Electric

southern-electric.co.uk

Mon-Fri 8am-8pm Sat 8am-2pm
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Customer_Na
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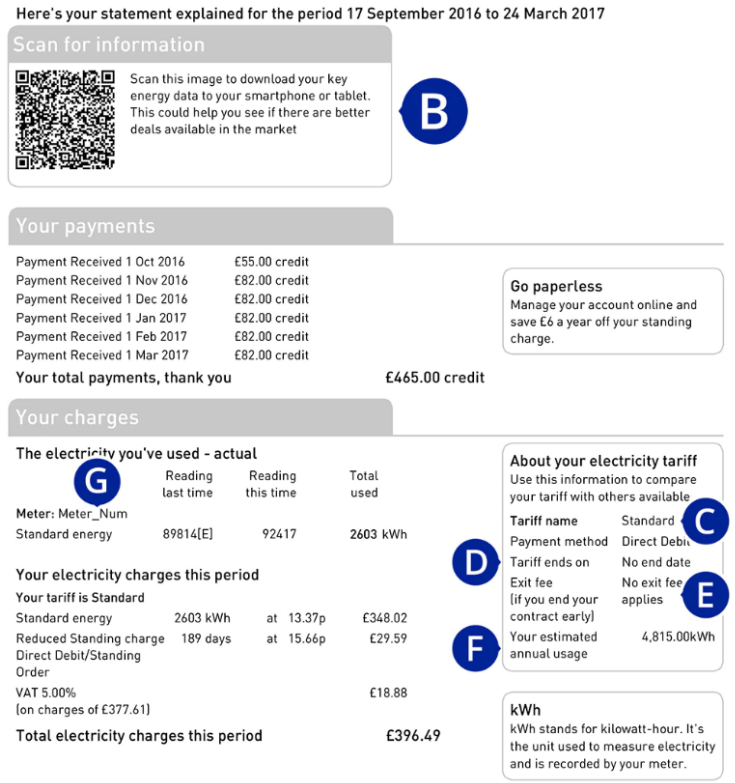

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Your electricity charges this period

Your tariff is Standard

Standard energy	2603 kWh	at	13.37p	£348.02
Reduced Standing charge Direct Debit/Standing Order	189 days	at	15.66p	£29.59
VAT 5.00% (on charges of £377.61)				£18.88
Total electricity charges this period				**£396.49**

About your electricity tariff
Use this information to compare your tariff with others available

Tariff name	Standard C
Payment method	Direct Debit
Tariff ends on	No end date
Exit fee (if you end your contract early)	No exit fee applies E
Your estimated annual usage	4,815.00kWh F

D

kWh
kWh stands for kilowatt-hour. It's the unit used to measure electricity and is recorded by your meter.

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SECTION 3

MANAGING BILLS

Example Bill

C: This is your tariff name. It lets you know which of your supplier's tariffs you are currently on.

1 of 4

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Here's your electricity statement

For the period: 17 September 2016 to 24 March 2017
Dated: 28 March 2017

Your electricity account number:
000Cu stome

Your previous statement

You owed us	£145.54
Your payments, thank you	£465.00 credit
Balance after your payments	**£319.46 credit**

Your actual reading

	9	2	4	1	7

We've based your statement on the above actual meter reading.

This statement

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Total charges this statement	**£396.49**

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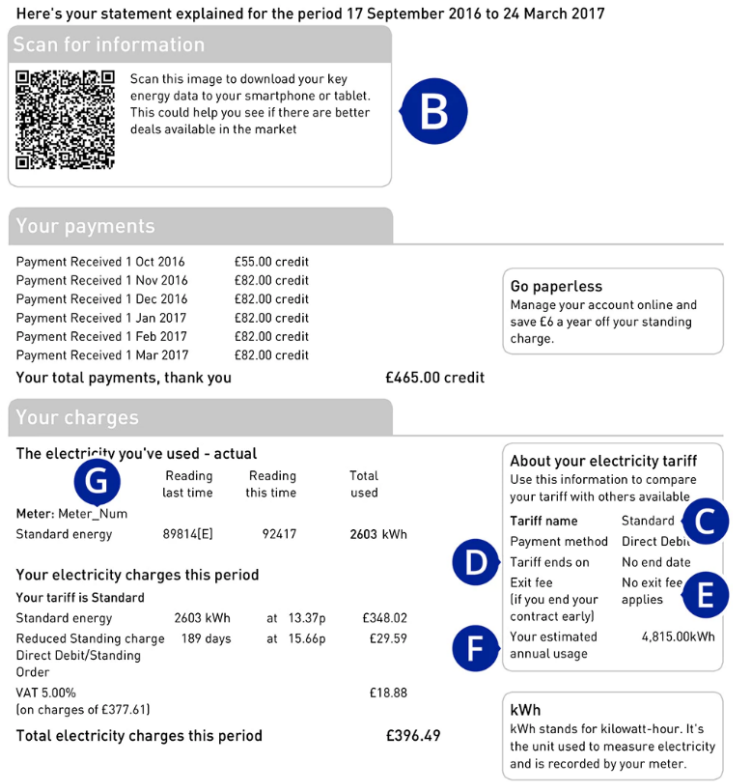

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Go paperless
Manage your account online and save £6 a year off your standing charge.

Your charges

The electricity you've used - actual

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Meter: Meter_Num			
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Your electricity charges this period

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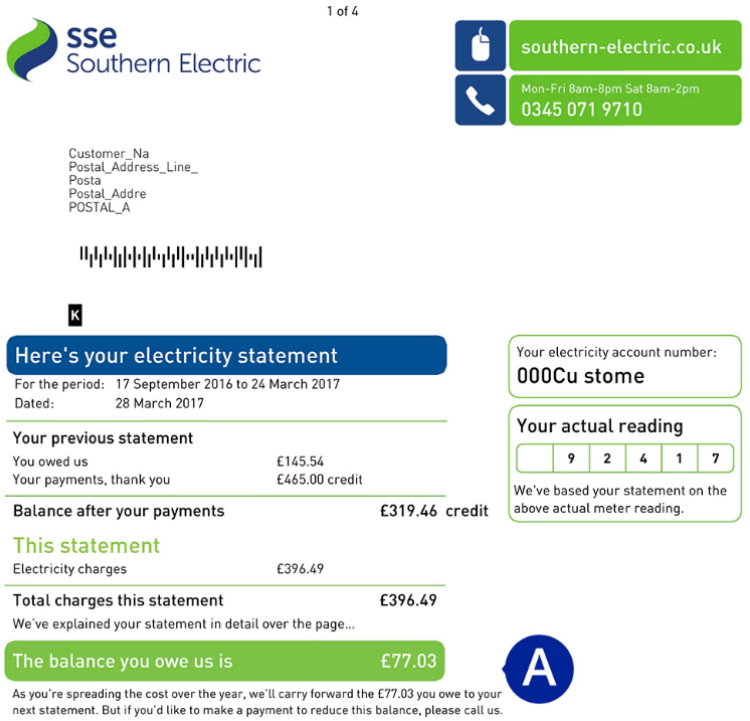
SECTION 3

MANAGING BILLS

Example Bill

D: This is the date your current tariff will end. After this date you will be rolled onto a tariff chosen by your supplier, which could cost you more. If you switch from a tariff before your current plan ends you may need to pay an exit fee.

It's important to keep an eye on your end date as rolling onto a generic contract with your supplier may not be the cheapest tariff available to you!



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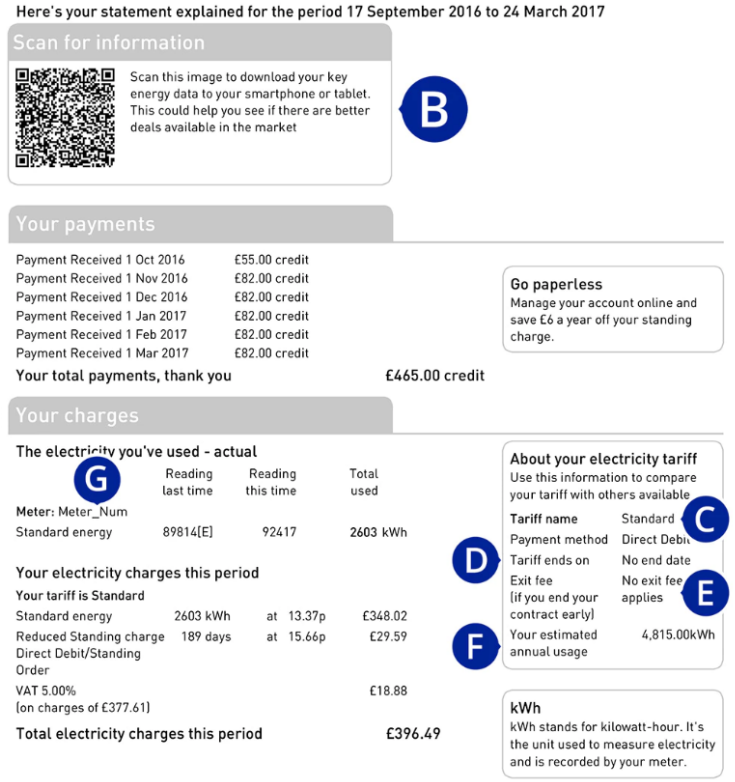

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Your charges

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Meter: Meter_Num			
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Tariff ends on	No end date
Exit fee (if you end your contract early)	No exit fee applies E
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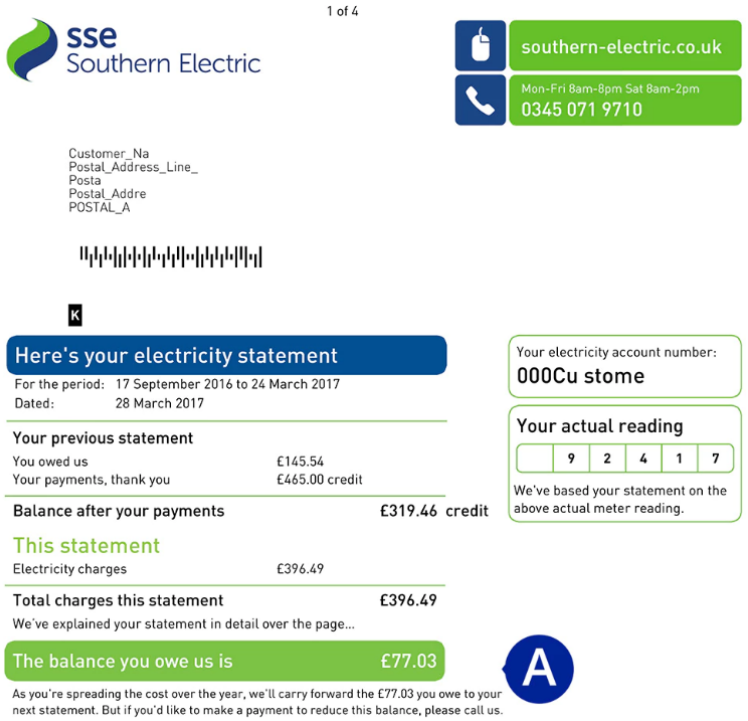
SECTION 3

MANAGING BILLS

Example Bill

E: This informs you of how much it will cost you to exit your current plan before the end date. If you switch from 49 days before your plan's end date, you won't be charged exit fees.



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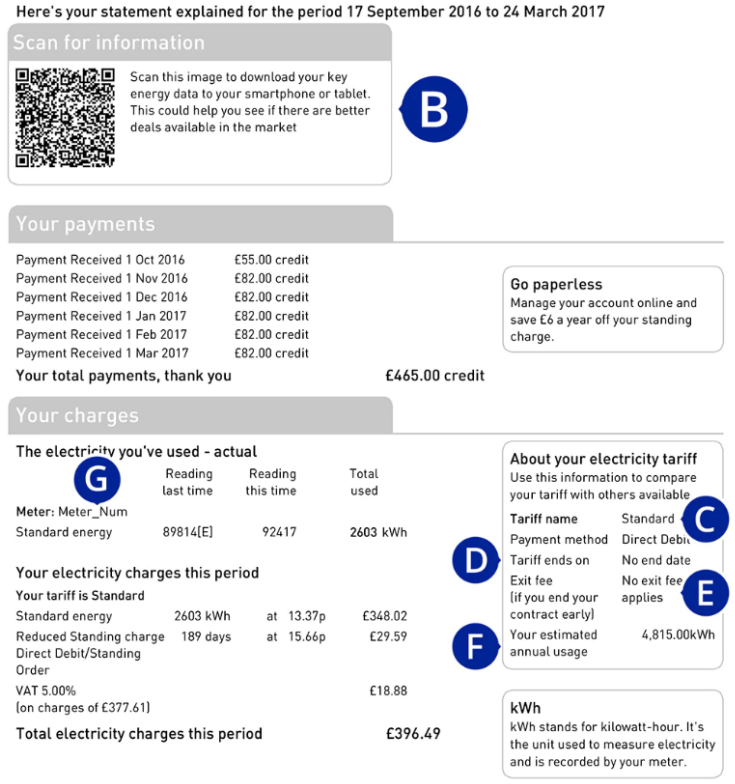

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Payment method	Direct Debit
Tariff ends on	No end date
Exit fee (if you end your contract early)	No exit fee applies E
Your estimated annual usage	4,815.00kWh F

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G D

SECTION 3

MANAGING BILLS

Example Bill

F: This is your annual usage in kilowatt hours. This is usually estimated based on previous meter readings. Switching services can use this figure to calculate how much you would pay for the next 12 months on different plans.

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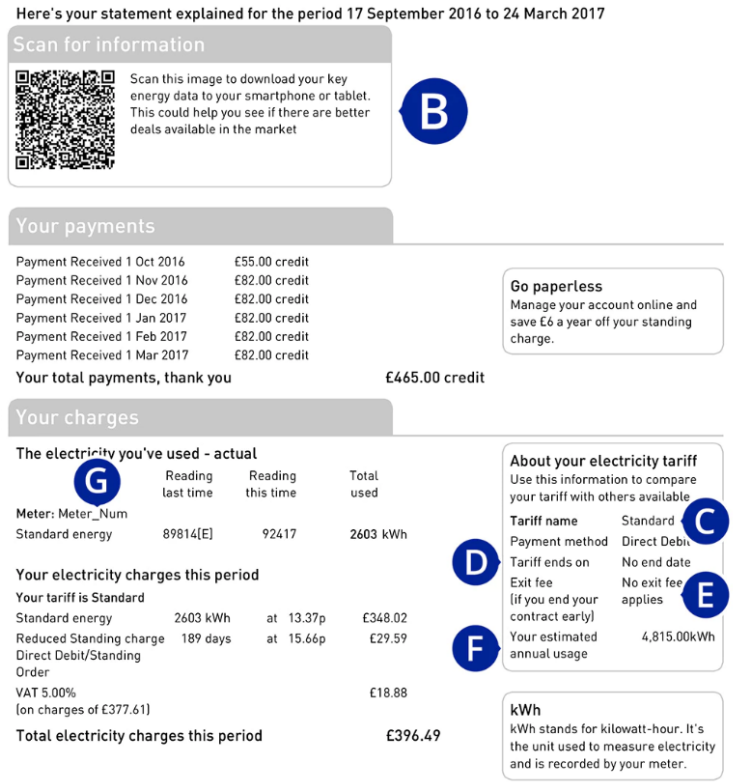

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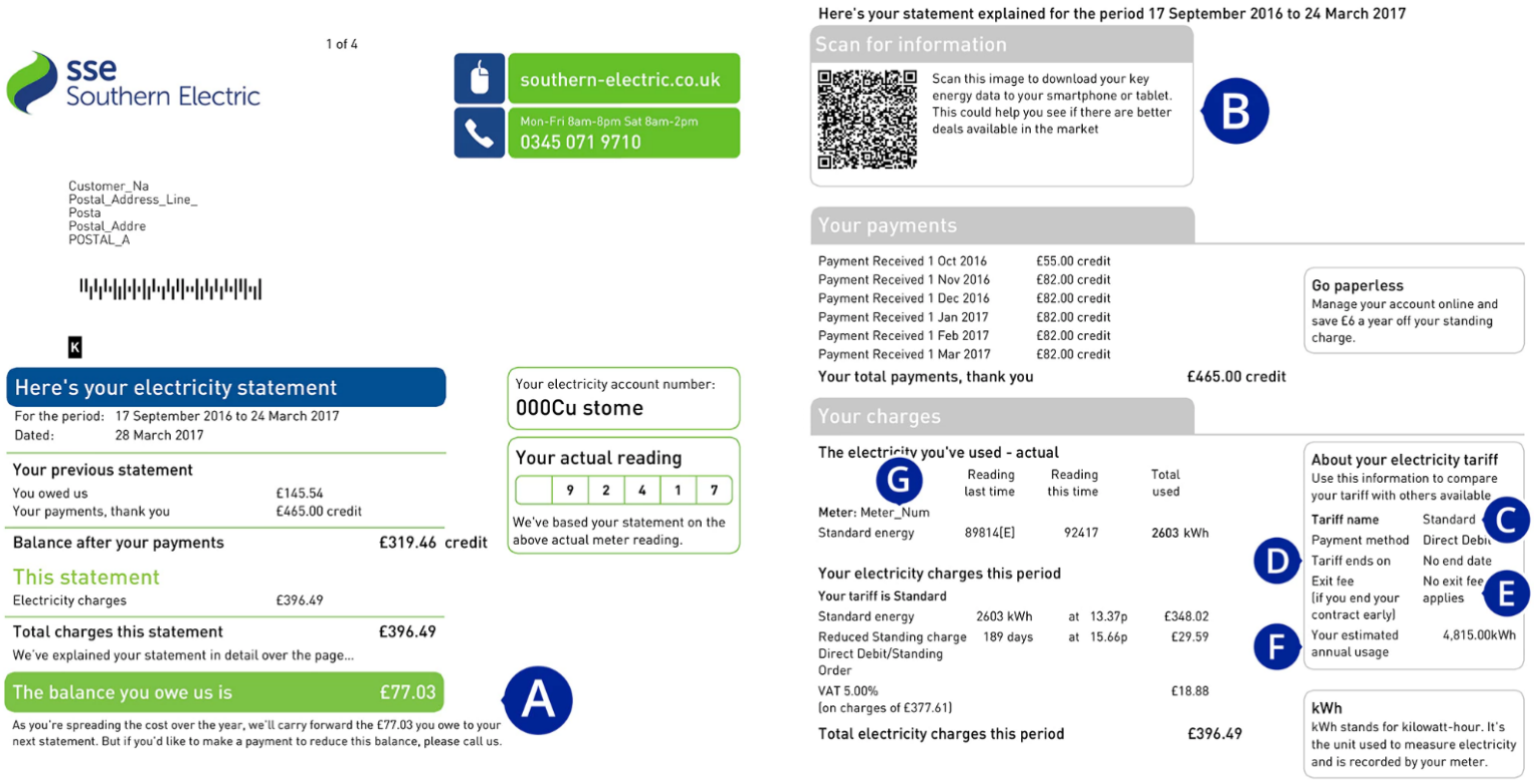
SECTION 3

MANAGING BILLS

Example Bill

G: Your electricity supply number (MPAN) and gas supply number (MPRN) are displayed within the usage section of your bill. These numbers are needed when switching supplier.



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Your estimated annual usage	4,815.00kWh F

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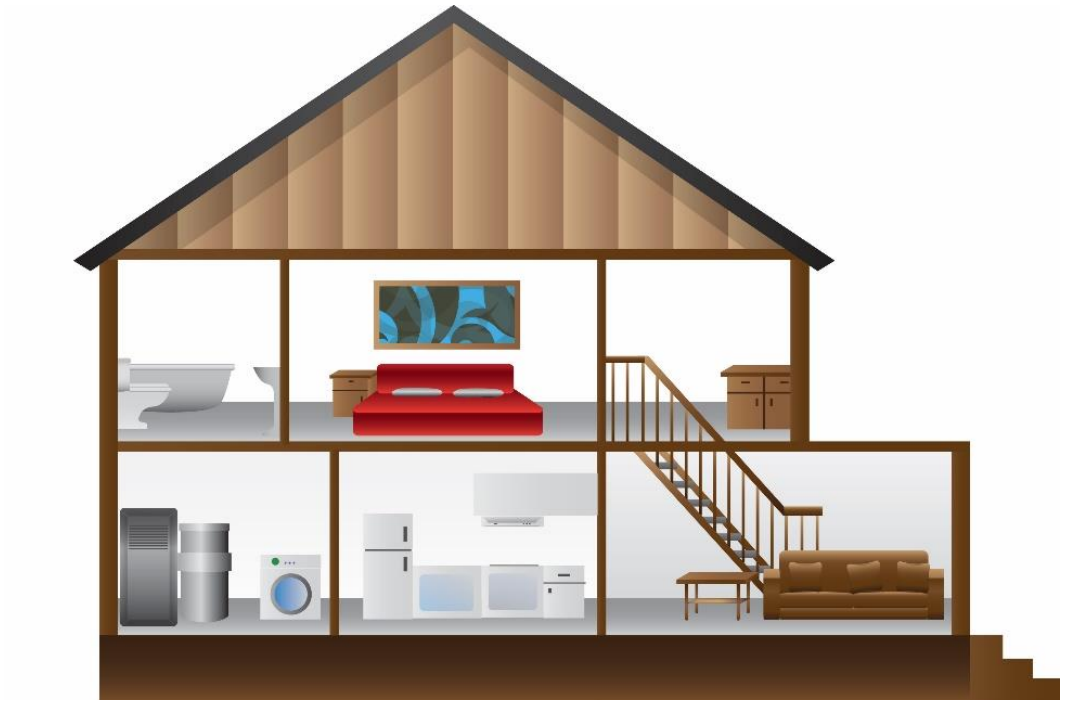
SECTION 3

NO COST MEASURES

Household bills can be greatly reduced by members of the household changing their behaviour when it comes to energy usage. A more in-depth list can be found on the Energy Saving Trust website.

Click the rooms in the house to the right to explore some of these tips.



SECTION 3

NO COST MEASURES

Bedroom

- Avoiding charging phones and tablets all night (they only need a few hours) helps save electricity and reduces bills – utilising a timer switch may help

Top tip: why not switch to charging your gadgets and devices in the morning when you're getting ready or when you're studying during the day? Leaving devices plugged in over night is not only a fire risk, it is also wasteful

- Turning lights off when leaving a room reduces electricity usage and can save up to £13/year across the household

Top tip: speak to your flatmates about running a challenge and reward those who always remember to switch the lights off! Or better yet, start a penny jar for those who forget about it!

- Drawing curtains at night keeps heat in and opening them in the morning allows heat gain from the sun, meaning less heating is needed

Top tip: invest into a new set of lined curtains for your bedroom and living room to help you conserve heat! Charity shops often have cheep and cheerful selections to choose from. Consider the measurements so as not to block your radiators!

SECTION 3

NO COST MEASURES

Kitchen

- Filling a basin of hot water, rather than leaving the tap running, reduces the amount of water being heated and can save a household up to £30/year

Top tip: grab a cheap basin from a local shop, or better yet, rake through the Swap Shop where you may find somebody else's pre-loved one!

Myth Buster: using a dishwasher doesn't always use more energy and water than washing by hand, especially if you leave the water running whilst handwashing.

- Overfilling a kettle can be costly – only filling it as much as needed can save a household up to £7/year on electricity bills

Top tip: £7/year may not seem as much, but the little things add up! Why boil a full kettle when you only need enough for a cuppa?!

- Reducing the number of times a dishwasher is running each week by making sure it's as full as possible helps reduce electricity bills

Top tip: get organised, and speak to those who you share your home with to fill the dishwasher every time you turn it on! Selecting the eco programme will not always save electricity but it will help conserve water.

Myth Buster: no need to prewash your dishes before putting them into the dishwasher. Just scrape your food off the plates into the compost bin before loading them.

SECTION 3

NO COST MEASURES

Living Room

- Tablets use around 70% less power than laptops and making the switch can help reduce electricity bills

Top tip: even if you're using a tablet, remember not to leave them charging overnight to save electricity! Using a device such as the Roku box or Amazon fire stick instead of a games console when watching Netflix, Amazon Prime, or on demand TV uses a lot less energy!

- Leaving appliances, like TVs and games consoles, on standby is costly – turning them off at the wall instead can save a household up to £30/year

Top tip: make sure all appliances are turned off by the wall when you're out of the house/not using them. Or pick up a cheap plug timer so you don't have to think about it!

- Closing internal doors when heating a room stops heat escaping and means less fuel is used by the heating system, lowering bills.

Top tip: no need to heat your bedroom if you're spending your evening in the communal areas!

SECTION 3

NO COST MEASURES

Utility Room

- Drying clothes outside or on a clothes horse instead of using a tumble dryer can save a household up to £29/year on electricity bills

Top tip: getting a handle on drying your clothes when living in halls can be difficult. Think about investing in a clothes horse with your flatmates, or a smaller radiator drying rack when you have to do small loads of washing. Tumble dryers use a lot of electricity and they're not a necessity.

- Setting a washing machine to wash at 30°C rather than higher temperatures uses around 40% less electricity.

Top tip: did you know that your eco setting won't necessary reduce your electricity usage but helps save water?

- Making sure a washing machine is full before using it reduces the number of times it's running – cutting down by just once cycle a week can save £5/year

Top tip: planning ahead for your week will help time your laundry, ensure you've got the clean clothes you need and make you less wasteful.

SECTION 3

NO COST MEASURES

Bathroom

- Showering instead of bathing means less water is being heated and can help to reduce energy bills.

Top tip: did you know that cutting your shower time back to 4 minutes can help conserve water, save energy and is a healthy way of keeping clean?

- Spending one minute less in the shower each day can save a household £10/year per person

Top tip: shower timers can be handy to work out how long you're in for and may be a fun challenge to try

- Opening windows instead of turning on an extractor fan is an easy way of reducing electricity usage

Top tip: it's important that you try and reduce the condensation by properly ventilating wet rooms. If your bathroom doesn't have a window, keep the fan on during your shower, and a few minutes after you finished if there is a lot of steam.

SECTION 3

LOW COST MEASURES

In this section we have highlighted a short list of energy saving measures you can access for a small cost. Using these measures in the home will help reduce your carbon footprint and save you money throughout the year!

RADIATOR REFLECTOR PANELS	AERATED SHOWER HEADS	DRAUGHT PROOFING	LOW ENERGY LIGHTING	HOT WATER TANK INSULATION	TIMER PLUGS
LEARN MORE	LEARN MORE	LEARN MORE	LEARN MORE	LEARN MORE	LEARN MORE

SECTION 3

LOW COST MEASURES

Radiator Reflector Panels

Radiator reflector panels are cheap to buy and easy to install.

They are fitted behind radiators on external walls and, instead of letting the heat escape out of a property, they reflect the heat inwards into the room. They can be picked up from and major home improvement store.

They can help save up to £15 each year.

SECTION 3

LOW COST MEASURES

Aerated Shower Heads

An aerated shower head restricts the flow of water from a shower and mixes it with air.

This means less water is used but still feels like it is coming out at the same rate as a normal shower, saving fuel as less water is being heated. This could save a household up to £80 per year.

They are not compatible with electric showers, however.

If you're going for cost savings, you can pick up one of these as cheap as £10 and there are plenty of resources available on the internet around how to fit these. If you're living in rented accommodation, as long as you keep the original shower head to put back when you vacate, you wouldn't even necessarily need to seek permission from your landlord/agency.

SECTION 3

LOW COST MEASURES

Draught-Proofing

Almost all homes will lose some heat through draughts around doors, windows, gaps around the floor, or through the chimney.

Draught proofing can help eliminate this loss of heat.

It can be done professionally or by householders and can save up to £35 per year on energy bills.

Alternatively, you can get creative and create your own draught excluder simply by using fabric and stuffing material! Simply measure the length of your window/door frame and decide on your desired width to create a DIY cushioned excluder.

SECTION 3

LOW COST MEASURES

Low Energy Lighting

Energy saving lightbulbs are becoming much more common in households today with traditional incandescent bulbs being taken off the market.

On average, energy saving lightbulbs last a lot longer than traditional bulb and can therefore save a lot of money over their lifespan, even if they are slightly more expensive to purchase.

By replacing all older bulbs with energy saving lightbulbs a household could save up to £35 per year.

SECTION 3

LOW COST MEASURES

Hot Water Tank Insulation

Nearly all hot water tanks in the UK have some insulation but many could benefit from additional insulation. This keeps the water in the tank hotter for longer and means less energy is needed to reheat the water.

By insulating an uninsulated hot water tank, a household could save up to £135 per year.

If there is already some insulation the saving would be around £35 per year.

Cylinder jackets are relatively cheap and can be picked up from most major home improvement stores. Depending on the type of house you live in, access to your hot water tank may not be easy. If you're in rented accommodation, speak to your landlord about fitting one of these first!

SECTION 3

LOW COST MEASURES

Timer Plugs

A timer plug, or switch, is simply a mechanism that controls the on and off timings of electrical appliances and devices in the home.

They are simple to use, simply select the time you wish for an appliance to turn off completely and then plug the appliance into the timer and plug the timer into the wall socket.

This is especially good for appliances like televisions which may commonly be left on standby!

SECTION 3

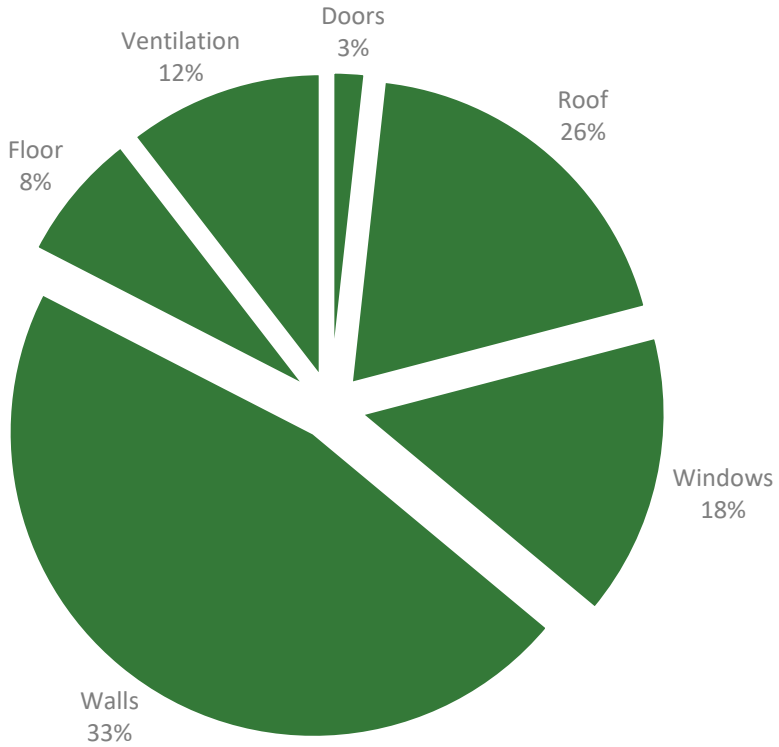
CAPITAL COST MEASURES

Uninsulated homes lose heat through a variety means and measures can be installed to stop this. These measures are more expensive than the low cost measures covered earlier in this section and are therefore classed as capital cost measures.

They are things those of you who are homeowners will want to consider. It is still beneficial to read on for those of you who are renting, as in future you may decide to install some of these measures in your own home!

The pie chart on the right shows the typical heat loss rates for a typical 3 bedroom semi-detached home.

Click each segment to explore ways of eliminating this heat loss.



SECTION 3

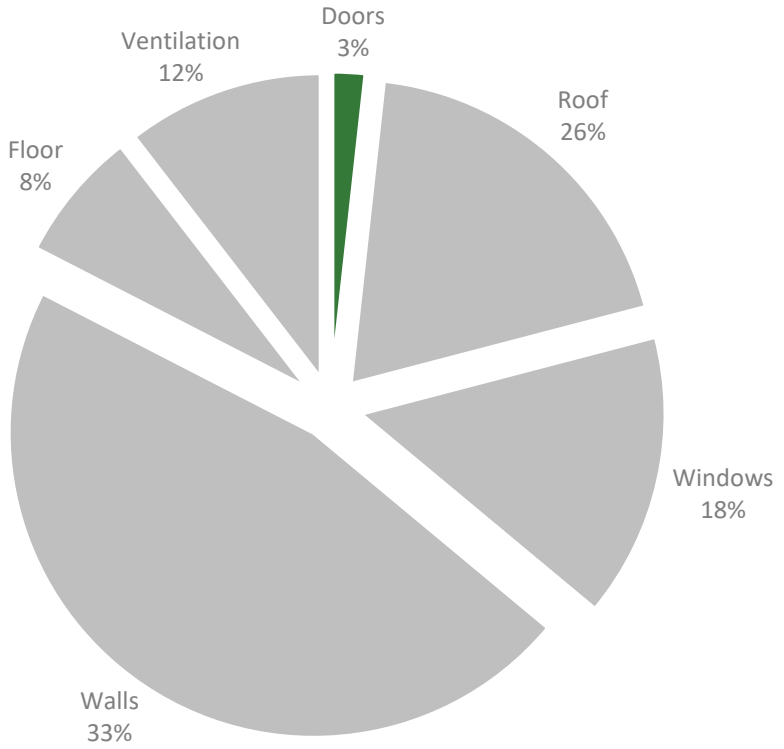
CAPITAL COST MEASURES

Doors – 3%

As seen previously, draught proofing is the best way to eliminate heat loss through doors.

This could be by replacing seals around the door, covering keyholes or fitting a letterbox cover.

A higher cost measure would be replacing the door itself with an insulated energy efficient door but, because the heat loss for a property is lowest through doors, it may be worthwhile spending money elsewhere.



SECTION 3

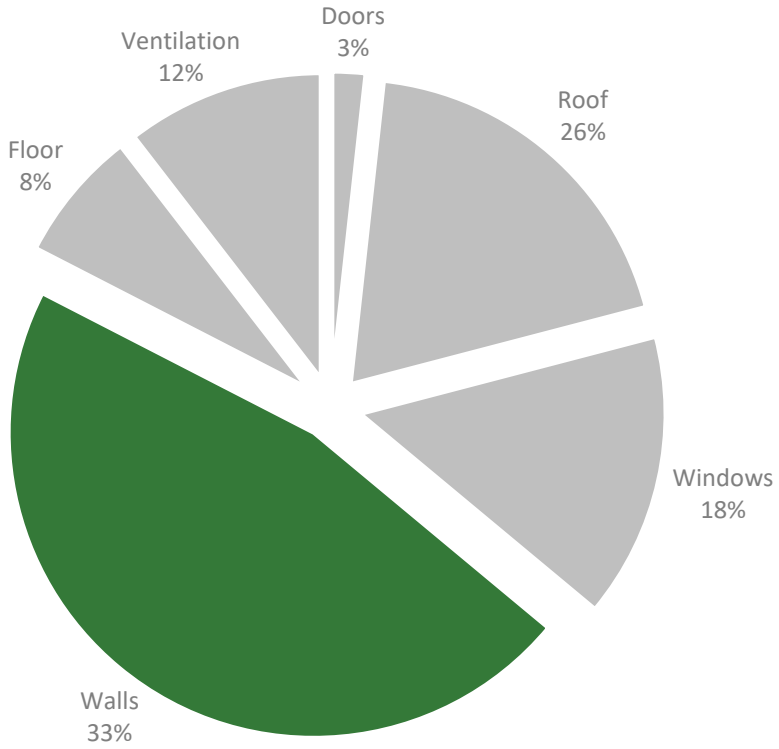
CAPITAL COST MEASURES

Walls – 33%

Newer properties will tend to have had insulation installed when built but in older properties the majority of heat is lost through the walls, so it is an important area to consider insulating. The build of the property depends on the type of insulation that would be suitable.

In a **cavity wall** built property (made up of two walls with a gap in between) cavity wall insulation can be installed by drilling into the cavity and pumping insulation in. This can save up to £155 per year.

In a **solid wall** built property (made up of solid walls with no cavity) solid wall insulation can be installed by placing insulated boards on the external walls, either internally or externally. This is more expensive than cavity wall insulation but can save up to £260 per year.



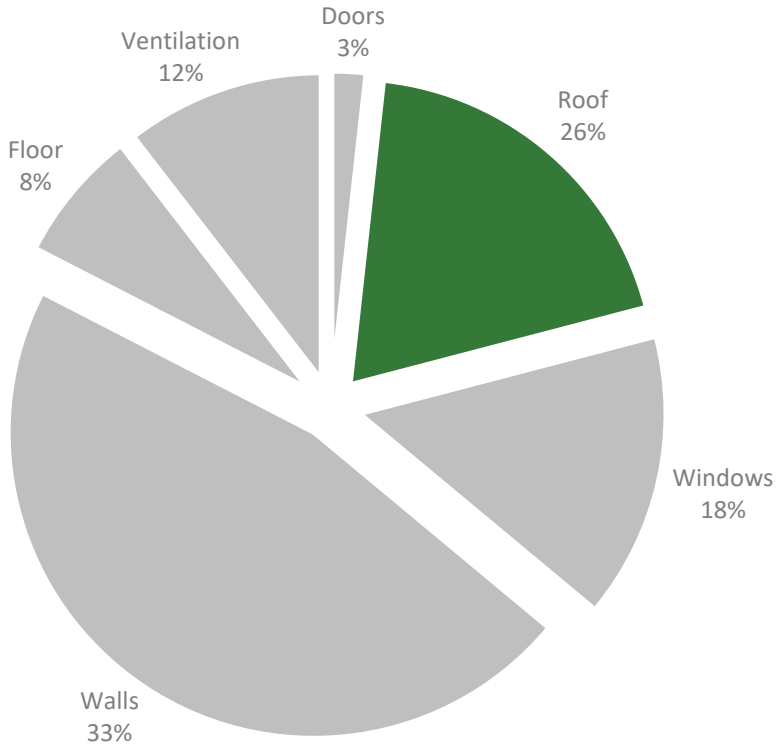
SECTION 3

CAPITAL COST MEASURES

Roof – 26%

Insulating a loft, attic or flat roof is a simple and effective wat to reduce heat loss through the roof of a property. For loft spaces this involves layering rolls of insulation along the loft floor and can save up to £140 per year – this can even be done by householders. Flat roofs are commonly insulated by placing a layer of insulation boards on top of the roof with a weatherproof layer on top of the insulation.

If a property has a room in a converted loft space it can be insulated by insulating the roof itself. This is typically done by fixing insulation boards between the roof rafters which are then covered by plasterboard. This can save up to £160 per year but is more expensive and requires a professional to carry out the work.



SECTION 3

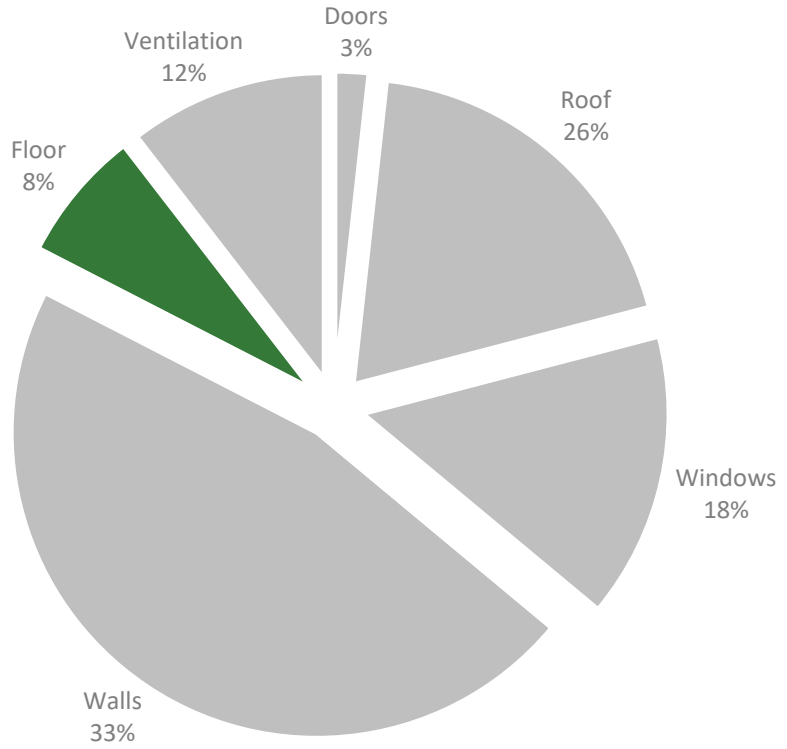
CAPITAL COST MEASURES

Floor – 8%

The floor of a property can be insulated in two ways, depending on the floor construction. Suspended timber insulation is installed when there is a space underneath the floorboards in a property. If there is access underneath the insulation is layered between the joists, supported by netting. If there is no access the floorboards may need to be lifted.

If there is no space under the floor in a property then solid floor insulation would be installed. This would involve placing rigid insulation foam on top of the solid floor and then placing flooring on top.

Both methods can help save up to £55 per year.



SECTION 3

CAPITAL COST MEASURES

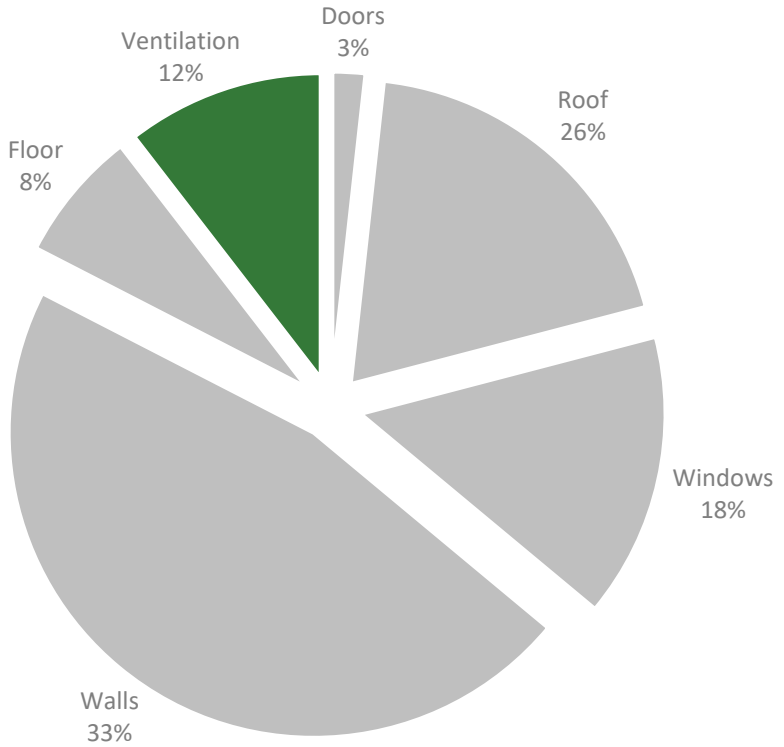
Ventilation – 12%

All properties need some form of ventilation to ensure there is no build up of damp or condensation but too much ventilation can lead to a draughty and cold home.

To ensure the home is kept warm draught proofing should be installed around the home. Some common sources of draughts are:

- around windows
- around doors
- between floorboards
- around loft hatches

By installing measures like draught proofing strips around windows and doors and fitting carpets whilst using extractor fans and trickle vents a home can be kept well ventilated but warm.



SECTION 3

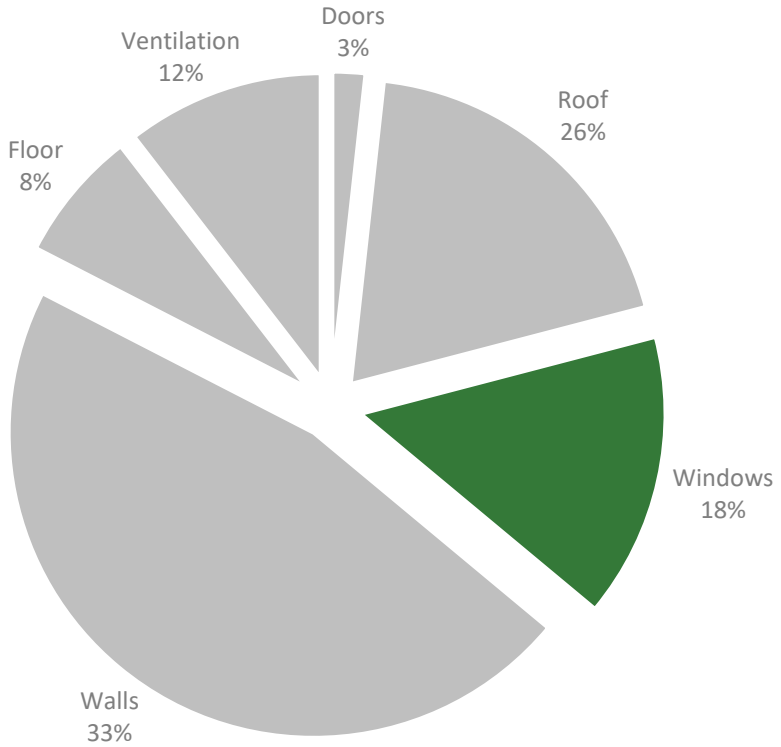
CAPITAL COST MEASURES

Windows – 18%

The best way to reduce heat loss through windows is to install double glazed windows, especially on north facing walls. This can save a property up to £110 per year on bills. Double glazed windows have two sheets of glass with a gap between them containing air or gas which acts as a insulating barrier.

If a property already has double glazing, however, it may not be cost effective to replace the windows and resealing or draught proofing them may be a better alternative. It is also rarely worthwhile to install triple glazing if a property already has double glazing unless for soundproofing purposes.

If double glazing is not suitable for a property – for example, in a listed building – secondary glazing can be installed. This is where a secondary pane of glass is fitted onto the existing window. This won't be as effective as double glazing but will be cheaper to fit, and will still save energy.



SECTION 3

REDUCING FOOD WASTE

WHY REDUCE FOOD WASTE?

LEARN MORE

HOW TO REDUCE FOOD WASTE

LEARN MORE

SECTION 3

REDUCING FOOD WASTE

Why Should We Reduce Food Waste?

In simple terms, reducing food waste helps to slow down global warming and deforestation whilst also keeping money in your pocket! It also helps to reduce the amount of unnecessary packaging waste and with only a few small changes you can help make a big difference!

Studies have shown that using up everything you buy could save a household around £40 per month and doing it is a lot easier than you think.

Turning food into rubbish can also make a huge difference to the world around us. When food is sent to landfill it gives off methane gas, which is 25 times more damaging than CO_2. And that's just the food itself – all the production, distribution, storing and cooking of food also uses energy, fuel and water and by wasting that food you are wasting that energy!

There are two main reasons why we throw away good food; we prepare too much or don't use it in time. The most wasted foods are fresh fruit and vegetables, drinks and bakery items.

Roughly 40% of global food waste happens in kitchens do look at the other sections to see how you can help reduce your food waste!

SECTION 3

REDUCING FOOD WASTE

How To Reduce Food Waste

The links below highlight easy ways to ensure you are using up as much of your food as possible. For more handy hints and tips and recipes for using up leftovers, check out Love Food Hate Waste Scotland.

DATE LABELS	PERFECT PORTIONS	FRIDGES & FREEZERS	SMART SHOPPING	RECYCLING WASTE
LEARN MORE	LEARN MORE	LEARN MORE	LEARN MORE	LEARN MORE

SECTION 3

REDUCING FOOD WASTE

Date Labels

Before clicking each date label, have a think about what you think each of them mean.

Being aware of what each one means can help you make the most of the food you buy!

USE BY

LEARN MORE

BEST BEFORE

LEARN MORE

SELL BY

LEARN MORE

DISPLAY UNTIL

LEARN MORE

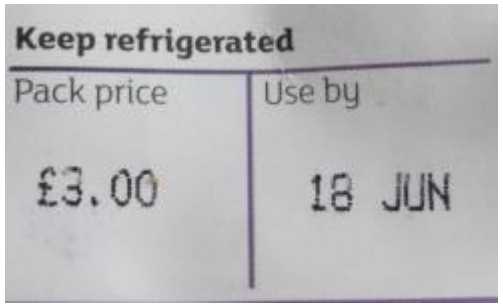
SECTION 3

REDUCING FOOD WASTE

Date Labels

Use By

Food can be eaten up to the end of the ‘use by’ date, but not after – even if it looks and smells fine.



USE BY

LEARN MORE

BEST BEFORE

LEARN MORE

SELL BY

LEARN MORE

DISPLAY UNTIL

LEARN MORE

SECTION 3

REDUCING FOOD WASTE

Date Labels

Best Before

These dates refer to quality rather than food safety. When the date is passed, the food won't be unsafe but might begin to lose its flavour and texture. One exception is eggs – never eat eggs after the 'best before' date.

USE BY

LEARN MORE

BEST BEFORE

LEARN MORE

SELL BY

LEARN MORE

DISPLAY UNTIL

LEARN MORE

Aber GREEN

SECTION 3

REDUCING FOOD WASTE

Date Labels

Sell By

This date refers to the last day the shop staff can display an item for sale. You can ignore this date if there is a use by date.
If the item does not have a best before or use by date, it is recommended to carry out smell, touch and taste checks if the sell by date has passed.

USE BY

LEARN MORE

BEST BEFORE

LEARN MORE

SELL BY

LEARN MORE

DISPLAY UNTIL

LEARN MORE

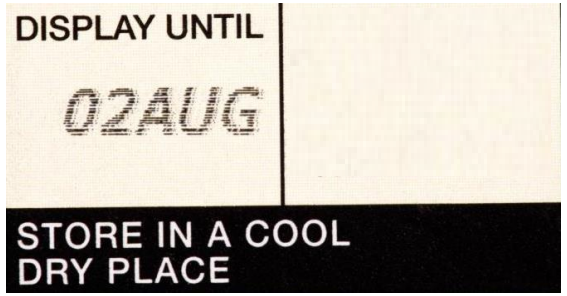
SECTION 3

REDUCING FOOD WASTE

Date Labels

Display Until

You can usually ignore these dates as they are for shop staff only.



USE BY

LEARN MORE

BEST BEFORE

LEARN MORE

SELL BY

LEARN MORE

DISPLAY UNTIL

LEARN MORE

SECTION 3

REDUCING FOOD WASTE

Perfect Portions

Overgenerous portioning is one of the main reasons food is leftover and thrown away – we cook far too much!

Click the foods to the right to find out what the average perfect portion of each is and how you can measure this easily. Remember, if you do cook too much you can always freeze it!

Rice

LEARN MORE

Chicken

LEARN MORE

Spaghetti

LEARN MORE

SECTION 3

REDUCING FOOD WASTE

Perfect Portions

Rice

Perfect portion size = **75g**

How to measure:

Use a mug. One adult portion of rice is about a quarter of an average mug. If you tend to use more, mark an old mug with a permanent marker and fill it up to this point each time you're cooking rice!

Rice

LEARN MORE

Chicken

LEARN MORE

Spaghetti

LEARN MORE

SECTION 3

REDUCING FOOD WASTE

Perfect Portions

Chicken

Perfect portion size = **140g** (uncooked)

How to measure:

Use your hand. 140g of chicken is roughly the size of your palm.

Rice

LEARN MORE

Chicken

LEARN MORE

Spaghetti

LEARN MORE

SECTION 3

REDUCING FOOD WASTE

Perfect Portions

Spaghetti

Perfect portion size = **60g**

How to measure:

Use a bottle. In the absence of a spaghetti measurer, you can use a water bottle to measure the perfect amount of spaghetti. Start filling an empty bottle with spaghetti and once you cant fit anymore through the top of the bottle, you have one portion!

If you would like to find some more low-carbon recipes, please check out our low-carbon cookbook here!

Rice

LEARN MORE

Chicken

LEARN MORE

Spaghetti

LEARN MORE

SECTION 3

REDUCING FOOD WASTE

Fridges and freezers are great ways of keeping food fresher for longer but are not always used to their full potential. Use the links below to find out some useful tips!

FRIDGE

LEARN MORE

FREEZER

LEARN MORE

SECTION 3

REDUCING FOOD WASTE

Use Your Fridge

The handy guide on the right gives you an idea about where is best to keep different types of food you will store in your fridge. We've also included some handy tips below!

- Never put hot food in a fridge, it will warm it up and use more energy to cool back down
- Defrosting food in your freezer acts like an ice pack, meaning less energy is required by the fridge for a while!
- Clean the back of your fridge, thick dust on the coils can reduce a fridge's efficiency by 25%
- Don't put uncovered liquids in the fridge, this raises the humidity inside
- If the fridge is half full or less consider filling it with bottles of water as this will help it run more efficiently
- Clean and thaw your fridge regularly
- Don't put open cans of food in the fridge, this can lead to contamination so put them in a sealed plastic container instead
- Keep your fridge below 5ºC, each additional degree above this used 6% more electricity

SECTION 3

REDUCING FOOD WASTE

Use Your Freezer

You can freeze almost any food and utilising your freezer is a great way to avoid food waste, whether that is freezing food before its use by date or freezing leftovers.

When freezing food before it's use by date, around 60% of people think that food needs to be frozen on the day it is purchased but in reality food can be frozen at any time before the date on the label, even if the packaging says freeze on day of purchase.

When defrosting food, it should ideally be done overnight in the fridge and used within 24 hours after defrosting. You must never refreeze thawed food without cooking it first. For example, if you defrosted raw chicken you could not refreeze it raw but if it were cooked, you could!

To find out what can and can't be frozen, and for some handy tips, have a look on the Love Food Hate Waste website!

SECTION 3

REDUCING FOOD WASTE

Smart Shopping

You might not think it but a simple shopping list could save you money and time!

Many people don’t make a shopping list before heading to the supermarket but if you do it will save you time in the aisles and will reduce duplicate items in your kitchen. How many times have you rushed off to the shops uncertain if you already have enough milk, rice or potatoes?

Planning your meals for a week is a good way to put your shopping list together, simply note down what you already have and what you need to buy. Remember to stick to this list, however, and try to eliminate impulse purchases – most of the time you don’t need them and they’re just a waste of money!

For a template shopping list and other handy hints and tips, including which foods are most carbon friendly, you can download AberGreen’s Food Waste Diary by clicking the link on the right.

PDF

AberGreen Food Waste Diary

SECTION 3

REDUCING FOOD WASTE

Recycling Food Waste

Even though we try to avoid it, some food waste is unavoidable. This could be because food isn't used or it is inedible (some vegetable peels, bones, tea bags etc.).

However, rather than sending this food to landfill where it can cause harmful gases to be released, it should be placed in an organic waste bin where it can then be recycled into compost.

In Aberdeen City, these bins will either be next to your communal refuse bins if you live in a flat or a brown wheelie bin if you live in a house. To collect this waste in your home you can pick up a free food caddy (pictured) from Aberdeen City Council. These come with free compostable bags which allow easy transporting of your food waste to your compostable bin! These bags can be restocked by visiting a public library or the council building.

If you would like your own, you can pick up bin liners and caddies from AUSA Reception.

SECTION 4

BEING GREEN ON CAMPUS

Being sustainable doesn’t stop at home. Whether you’re commuting to lectures or using services on campus there are many ways you can reduce your carbon footprint.

Click the links below to find out more about how you can do your part!

ENERGY EFFICIENCY

LEARN MORE

SUSTAINABLE TRANSPORT

LEARN MORE

RECYCLING

LEARN MORE

LABORATORY EFFICIENCY

LEARN MORE

SECTION 4

ENERGY EFFICIENCY

Being energy efficient on campus is as easy as being energy efficient at home and if everyone is on board then huge reductions in carbon emissions can be made to help the environment.

Use the links below to see where you can do your part on campus and see how big the savings can get!

LIGHTING

LEARN MORE

COMPUTERS

LEARN MORE

PRINTING

LEARN MORE

WATER

LEARN MORE

FOOD

LEARN MORE

SECTION 4

ENERGY EFFICIENCY

Turn Off Lights

Switching off a single fluorescent tube light that is normally left on during the day saves 79kg of CO_2 over a year!

That's the amount of CO_2 produced from driving from Aberdeen to Dundee **four times**!

Do your bit and turn off lights on campus when they aren't needed.

SECTION 4

ENERGY EFFICIENCY

Turn Off Monitors

Turning off one PC monitor that's usually left on during evenings and weekend saves 1kg of CO_2 per year.

Okay, that's not a huge saving – it equates to annual savings of less than 50p.

But what if everybody on campus turned off their monitor after use? Overall, the CO_2 impact of leaving PC monitors switched on is huge!

Do your part and turn off your monitor when you leave a computer on campus!

SECTION 4

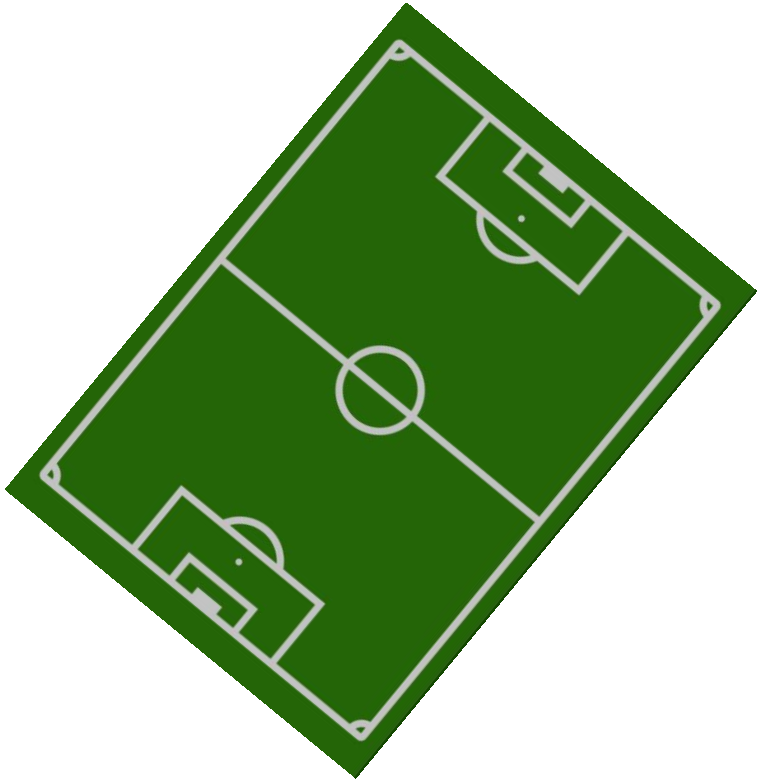
ENERGY EFFICIENCY

Only Print When You Need To

If one person can print just 40 fewer sheets of paper each week then it can save 2,080 sheets of paper each year.

That’s enough paper to reach end-to-end across the entire length of the pitch at Pittodrie... **nearly 6 times**!

So, when it comes to printing on campus, make sure you only print what you need!



SECTION 4

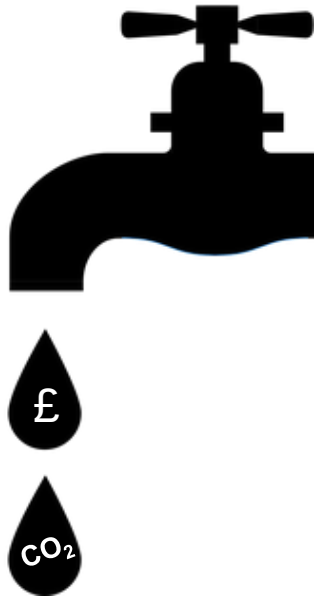
ENERGY EFFICIENCY

Preserve Water

Not turning off taps when you aren't using them wastes a huge amount of Scotland's water and that goes for dripping taps too.

One dripping tap wastes enough water in one year to fill over 3,000 soft drink bottles.

And you may not know it, but purifying the water for use in our homes and on campus uses a huge amount of energy! So next time you see a dripping tap, make sure you report it.



SECTION 4

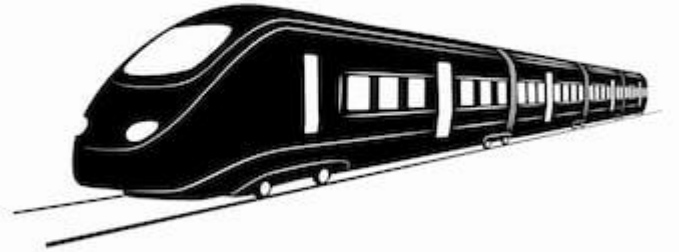
ENERGY EFFICIENCY

Minimise Food Waste

Eliminating avoidable food waste in 50 meals per day saves a huge 8,792kg of CO_2 emissions a year and there are a lot more than 50 people eating on campus every day!

8,792kg of CO_2 is enough emissions to fill more than 11 Scotrail trains!

So next time you order food on campus, make sure you really need everything you're buying or consider taking away your leftovers to eat later!



SECTION 4

SUSTAINABLE TRANSPORT

Transport accounts for over 25% of Scotland's total greenhouse gas emissions and almost half (44%) of these emissions are accounted for by domestic transport. In addition to this, internal combustion engine vehicles emit tiny invisible particulates that, when breathed in, lodge deep within the lungs and brain and can cause a multitude of health problems including; asthma, heart disease and strokes. Transport is also a big expenditure, making up around 15% of an average households annual spending.

Utilising sustainable transport helps to reduce your carbon footprints and save money whilst also helping to reduce Scotland's greenhouse gas emissions and improving air quality.

Use the links below to find out how you can be more sustainable in your transport in and around campus.

TRANSPORT HIERARCHY

LEARN MORE

WALKING

LEARN MORE

CYCLING

LEARN MORE

ELECTRIC VEHICLES

LEARN MORE

PUBLIC TRANSPORT

LEARN MORE

SECTION 4

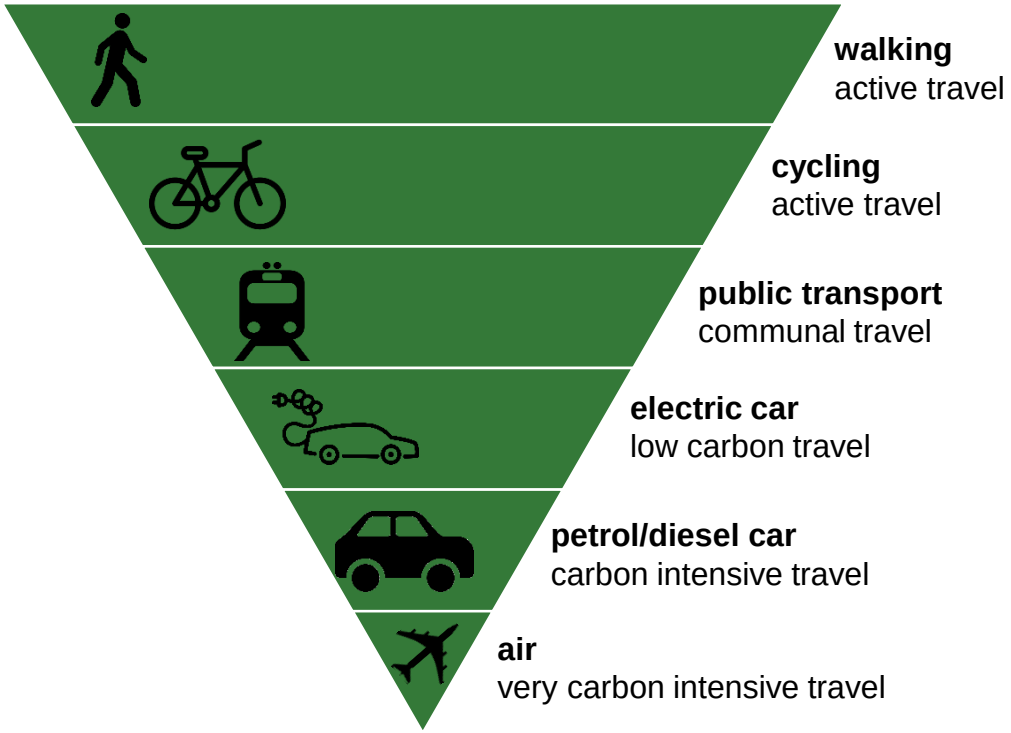
SUSTAINABLE TRANSPORT

Transport Hierarchy

The diagram to the right highlights the carbon intensity of different transport options. At the top is the greenest form of transport with the bottom representing the most carbon intensive travel.

Aiming to utilise transport options nearer the top of the diagram as much as possible for shorter journeys and public transport for longer journeys will go a long way to reducing your carbon footprint.

Using the car a little as possible will also help as in some cases driving alone in a inefficient car can be more carbon intensive than flying!



SECTION 4

SUSTAINABLE TRANSPORT

Walking

Walking is the cheapest and greenest way to travel. With 1 in 5 journeys in Scotland being under 1 km, it is a mode of transport suitable for the majority of people on a regular basis.

On top of being cost efficient and reducing carbon emissions, walking also has health and societal benefits. It counts towards the recommended 2.5 hours of exercise per week and eases congestion in built up areas!

Have you thought about setting up a walking group with your friends/ colleagues or joining an existing one? Look up Paths for All who organising a regular walks, which can help you explore different parts of the city and help get you more active!

Walkit.com, an urban walking route planner, is an excellent tool to plan journeys by foot and also has a range of themed walks; such as historical and architectural walks, to choose from.

SECTION 4

SUSTAINABLE TRANSPORT

Cycling is a cheap and green way to travel. With half of journeys in Scotland being under 5 km and 1 in 3 households having access to a bike, cycling is a viable alternative to a lot of journeys for many people.

It is also a great way to get active and reach your 2.5 hours of exercise per week. In addition it helps to ease congestion in built up areas and studies have shown that cyclists are exposed to 5 times less pollutions than drivers on the same route.

GET INTO CYCLING

LEARN MORE

BIKE MAINTENANCE

LEARN MORE

EBIKES

LEARN MORE

Aber GREEN

SECTION 4

SUSTAINABLE TRANSPORT

Get Into Cycling

There are many ways to get into cycling on campus. There is a welcoming cycling community on campus.

- Check out the sports clubs' listings on AUSA's website to see which one you might fancy joining
- Drop by the beCyCle workshop on the High Street of campus for advice, to rent or repair a bike
- Visit the Edinburgh Bike Coop on George street for advice, bikes and accessories or use of the workshop
- Contact AUSA for further guidance on any current projects running.

If you aren't comfortable cycling on the busy roads of Aberdeen or travel on the left side is new to you, Cycling Scotland provide safety sessions free of charge where you can learn handy hints and tips.

AUSA and the University often make use of Cycling Scotland services, so keep an eye out for events on campus and in the community!

Click here to watch a 30 minute video with top tips for cycling safely.

SECTION 4

SUSTAINABLE TRANSPORT

Get Into Cycling – Top Tips for Safe Cycling

Click the image below to watch our cycling safety training video delivered by Cycling Scotland and get more confident in your knowledge on how to be safe on two wheels in Aberdeen!

SECTION 4

SUSTAINABLE TRANSPORT

Bike Maintenance

There are a few places in Aberdeen where you can get help with bike maintenance to ensure your bike is kept safe to ride.

BeCycle have weekly sessions in their community workshop on campus where you can repair your own bike for free!

The Edinburgh Bicycle Coop on George Street also offer advice and use of their workshop, where you can maintain your bike.

For some handy dos and don’ts when it comes to maintaining your bike, click here.

SECTION 4

SUSTAINABLE TRANSPORT

Cycling Repair & Safety

Do

- Clean and oil your chain regularly, especially in bad weather
- Check your tyre pressure; the recommended levels will be indicated on the tyre
- Fit mudguards in wet and muddy conditions
- Spraying silicone aerosol will stop mud sticking to your bike
- Carry a puncture repair kit with you when you ride, you never know when you might need it

Don't

- Ignore your tyre pressure; you're more likely to get a puncture
- Put pedals in dry or too tight – use plenty of grease and a protective washer
- Have your seat at the wrong height; only your toes should be able to touch the ground
- Overtighten fragile bolts; this can cause damage to the bolts and your bike
- Ignore wear limits on your rims; this could cause your breaks to not work correctly and cause injury

SECTION 4

SUSTAINABLE TRANSPORT

The popularity of pedal assisted electric bikes (ebikes for short) has been gropwing year on year. They are a good alternative to a normal bike especially if your route includes hills, is more than 5 miles long or if you need an extra boost on the road!

Use the links below to find out more about ebikes and how they could work for you!

WHAT IS AN EBIKE?

LEARN MORE

EBIKE BENEFITS

LEARN MORE

EBIKE FUNDING

LEARN MORE

SECTION 4

SUSTAINABLE TRANSPORT

What Is An eBike?

An ebike is a pedal assisted electric bike and their popularity has been growing year on year.

When you cycle an ebike, like you would a regular bike, a sensor notices the movement of the pedals and turns on a motor which assists the cyclist. This motor is powered by an on board battery which can be removed and recharged. The motor helps cyclists reach higher speeds and climb inclines with less effort than a regular bike.

This means that both the ebike and rider are both working together!

Legally, however, the motor has to stop assisting the rider when the speed reaches 15.5 mph.

SECTION 4

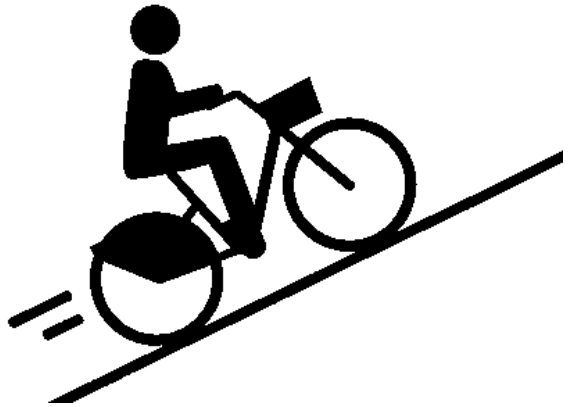
SUSTAINABLE TRANSPORT

eBike Benefits

eBikes are an excellent way to get exercise for people who may not be able to cycle a regular bike. They make steep inclines much more manageable and can help turn a difficult cycle into an easy one!

The lower effort needed to cycle an ebike means it can be a great option for people who may wish to cycle but don't have showering facilities at their end destination. Who wants to turn up at a lecture sweaty?

Finally, the motor assistance is also helpful to those who need to carry extra weight (such as children or shopping) as it makes cycling much more manageable!



SECTION 4

SUSTAINABLE TRANSPORT

eBike Funding

Home Energy Scotland currently offer interest-free loans to customers who want to buy an ebike. This scheme is funded by Transport Scotland (an agency of the Scottish Government) and allows a household to borrow up to £6,000 to purchase up to two ebikes. This loan has a repayment period of 4 years and full terms and conditions can be found here.

If you're unsure of whether an ebike is right for you, Home Energy Scotland also offer free short term trials of ebikes for up to 3 weeks. They'll even drop it off to you! To arrange a short term trial simply give them a call on 0808 808 2282.

SECTION 4

SUSTAINABLE TRANSPORT

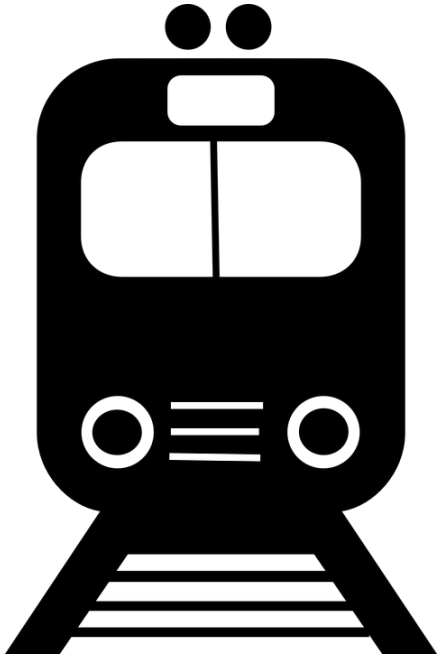
Public Transport

The lowest emitting vehicle types in Scotland are national coaches and rail. Even local buses are more efficient per passenger than a passenger car. This makes public transport an efficient alternative for journeys that cannot be completed by walking or cycling.

An added benefit to public transport is that you only pay for the journeys you take unlike a car which requires road tax, insurance and maintenance costs.

Public transport also helps to ease congestion and reduce carbon emissions as the more people travelling this way means less cars on the road.

Traveline Scotland, Scotland's public transport information service, is an excellent tool to help you plan journeys using public transport. Accessible online, by telephone and through their app, you can use it to find the best routes, download up-to-date timetables and calculate the carbon emissions of your planned journey.



SECTION 4

SUSTAINABLE TRANSPORT

Electric Vehicles

Electric vehicles (Evs) are on the increase in Scotland and it's often because the public are spotting opportunities to save money and reduce emissions by going electric.

Use the links below to find out more about EVs and how they can reduce our carbon footprints.

PURE ELECTRIC	PLUG-IN HYBRID	CHARGING	HOW GREEN ARE THEY?	BENEFITS
LEARN MORE	LEARN MORE	LEARN MORE	LEARN MORE	LEARN MORE

SECTION 4

SUSTAINABLE TRANSPORT

Pure Electric Vehicles

A pure electric vehicle is a vehicle powered solely by a battery which is charged from mains electricity.

Currently, electric cars have a range in excess of 80 miles before they need recharged but newer models are capable of travelling much further.

Like conventional motoring, driving style, speed and air conditioning or heating use can reduce the range of electric vehicles.

Current models include Nissan Leaf (pictured), BMW i3 and Renault Zoe.

SECTION 4

SUSTAINABLE TRANSPORT

Plug-In Hybrid Electric Vehicles

A plug-in hybrid electric vehicle (PHEV) is a vehicle with both a plug in battery and an internal combustion engine powered by petrol or diesel.

Typical PHEVs have a pure-electric range (distance that can be travelled on batter power alone) of around 30 miles. The benefit of these vehicles, however, is that once the battery is depleted, journeys can still continue in hybrid mode. This gives a range in excess of 300 miles.

Current models include Mitsubishi Outlander (pictured), Audi e-tron and Volkswagen Golf GTE.

SECTION 4

SUSTAINABLE TRANSPORT

Electric Vehicle Charging

Electric vehicles can be charged using a 3-pin wall socket but it is a lot quicker, and safer, to use a specially designed charge-point. Click on each of the variations below to discover more about each of the different types.

LEARN MORE

LEARN MORE

LEARN MORE

Aber GREEN

SECTION 4

SUSTAINABLE TRANSPORT

Domestic Charge Point

Charging at home is often the most convenient way to recharge an electric vehicle.

Most home chargers are wall mounted and rated at either 3 kW or 7 kW. A 3 kW charger will fully charge an electric vehicle in around 8 hours with a 7 kW fully charging one in around half this time. 7 kW chargers are more expensive than the slower 3 kW option.

Many plug-in car manufacturers have deals or partnerships with charge-point suppliers, and in some cases provide a free home charge point as part of a new car purchase. In Scotland there is also a grant available to owners of electric vehicles towards the installation of a home charge point. This can be accessed by calling Home Energy Scotland on 0808 808 2282.

One disadvantage to home charging is that in most cases, it requires off-street parking, meaning it can be difficult for people without a driveway or garage to charge an electric vehicle at home.

SECTION 4

SUSTAINABLE TRANSPORT

Fast Public Charge Point

There are over 900 publically available charge points in Scotland and the vast majority of these are ‘fast’ charge points and generally resemble the image on the right.

These charge points are most commonly rated at 22 kW, which will fully charge a vehicle in around 2 hours, however some older models are rated at 7 kW which will fully charge a vehicle in around 5 hours.

You will commonly find these charge points in car parks and city centres, meaning you can plug your car in, go shopping, and return to a fully charged car. Finding these charge points is simple - ChargePlace Scotland provides a simple and easy way for electric vehicle drivers in Scotland to find nearby charge points, through their website and dedicated app.

Another huge advantage of public charge points is that they are mainly free to use across Scotland, meaning that it is possible to run an electric car for free!

SECTION 4

SUSTAINABLE TRANSPORT

Rapid Public Charge Point

The quickest way to charge an electric vehicle is by utilising ‘rapid’ public charge points. Pictured on the right, ‘rapid’ chargers are big units and are mainly found at strategic points around Scotland’s trunk road network.

Capable of charging in both AC (43 kW) and DC (50 kW), a rapid charger can charge a vehicle from 0% to 80% charge in 30 to 60 minutes, depending on the capacity of the vehicles battery.

These charge points would most commonly be used when travelling longer distances in an electric vehicle where the destination could not be reached with a fully charged battery.

Like the ‘fast’ public charge points, ‘rapid’ chargers in Scotland are commonly free to use.

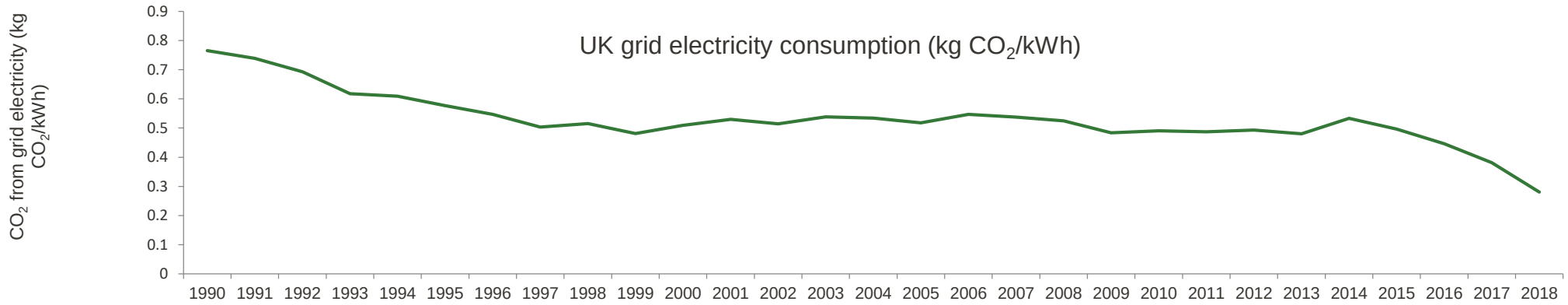
SECTION 4

SUSTAINABLE TRANSPORT

How Green are EVs?

One question that is frequently asked about electric vehicles is just how green are they? They run on grid electricity which is powered, in part, by the burning of carbon of carbon to create electrical energy so there must be carbon emissions attributed to electric vehicles?

The simple answer is yes, there is. However, Scotland's grid is becoming less and less reliant on fossil fuels and utilising more renewable sources, like wind power. As Scotland's grid becomes greener and greener so do electric vehicles charging on that grid. The graph below shows how the carbon intensity of Scotland's grid has decreased from 1990, with a 25% improvement from 2017 to 2018!



SECTION 4

SUSTAINABLE TRANSPORT

Electric Vehicle Benefits

The benefits of electric vehicles fall into three categories. Click each one below to find out more.

PRACTICAL

LEARN MORE

FINANCIAL

LEARN MORE

ENVIRONMENTAL

LEARN MORE

SECTION 4

SUSTAINABLE TRANSPORT

Practical Benefits

- Range options to fit requirements (up to 300 miles per charge)
- Variable charging times, at home overnight for day to day running and rapid charging for longer distances
- Easy to drive – no engine in electric vehicles mean there are no gears needed, meaning electric vehicles are all fully automatic with only two pedals
- No engine also means less noise, leading to a quieter and more relaxing driving experience
- An electric vehicle has less moving parts than a regular vehicle, meaning the car is off the road less because there are less parts that can break
- Batteries come with an extended warranty, meaning you are covered longer than a regular car

Aber GREEN

SECTION 4

SUSTAINABLE TRANSPORT

Financial Benefits

- 100 miles in an electric vehicle costs around £3 (free if utilising public charging) compared to £12-18 for a petrol or diesel vehicle
- Petrol and diesel prices are increasing at a much faster rate (13p/litre increase between Jan 2017 and Jan 2018) than electricity
- Pure electric vehicles are exempt from Vehicle Excise Duty (Road Tax) with Plug-In Hybrid Vehicles benefitting from a reduced rate
- The lower number of moving parts in an electric vehicle means significantly lower (70% saving) maintenance costs

SECTION 4

SUSTAINABLE TRANSPORT

Environmental Benefits

- Zero tailpipe CO2 emissions when driving a pure-electric vehicle or plug-in hybrid on pure-electric mode, which helps to combat global warming
- There are no tailpipe particulates emitted when driving a pure-electric vehicle or plug-in hybrid on pure-electric mode, which helps to improve local air quality and helps reduce air quality related illnesses
- Pure electric vehicles are exempt from Vehicle Excise Duty (Road Tax) with Plug-In Hybrid Vehicles benefitting from a reduced rate
- The lower number of moving parts in an electric vehicle means significantly lower (70% saving) maintenance costs
- Electric vehicles help to reduce noise pollution in urban areas which, according to the World Health Organisation, is the second greatest environmental threat to public health, after air pollution

Aber GREEN

SECTION 4

RECYCLING

WHY RECYCLE?

LEARN MORE

WASTE HIERARCHY

LEARN MORE

TOP TIPS

LEARN MORE

Aber GREEN

SECTION 4

RECYCLING

Why Recycle?

The University produces over 1.5 thousand tonnes of waste every year. This ranges from office and domestic waste to confidential paper and hazardous chemicals.

The University is committed to achieving the Scottish Governments goal of a 70% recycling rate by 2025 and to achieving zero waste to landfill.

By changing our attitude to waste, from seeing it as a problem to get rid of to seeing it as a valuable resource, we can reduce the waste we produce and maximise the value we get from the things we use.

The way the University collects and processes waste has a big impact on our waste targets but a lot of responsibility rests with each member of the University community. By reducing waste at source, reusing where possible and actively recycling we can meet and exceed our targets and play our part in protecting the environment.

Aber GREEN

SECTION 4

RECYCLING

Waste Hierarchy

The waste hierarchy is the process we need to follow when producing and disposing of waste. You should always start at the top and work your way down – landfill is a last resort!

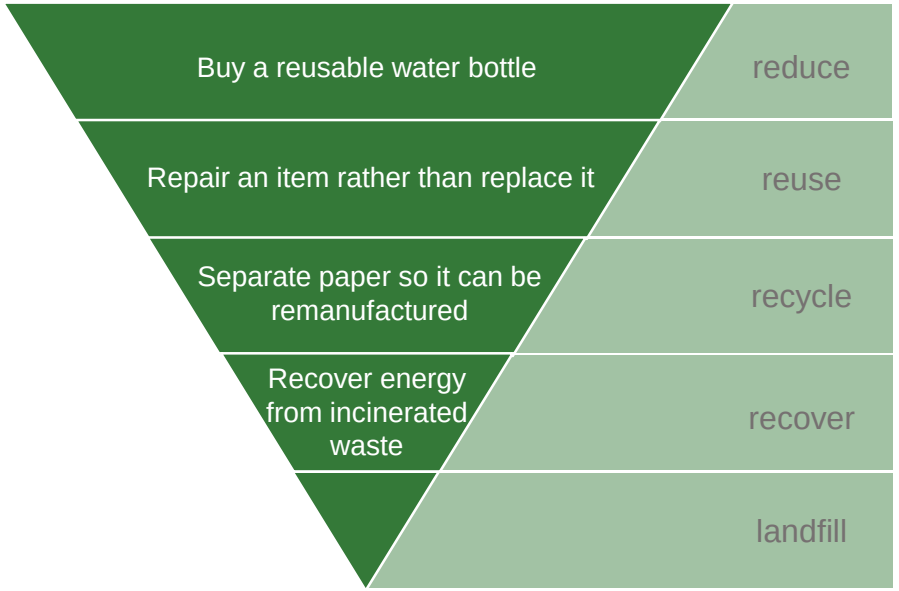
Reduce: Avoid waste being generated in the first place.

Reuse: This can involve repairing or reusing items in their original form.

Recycle: Segregate and collect waste of different types so that it can be recycled into a new product.

Recover: Gain a benefit from the waste.

Dispose: Destroy or bury the waste.



SECTION 4

RECYCLING

Top Tips

- Think creatively and question if you need the resources you do. If you need new books, clothes or household items, have you thought about checking if Book Ends or Swap Shop have these? What about other charity shops nearby?
- Think about the waste you produce every day and make small changes. Could you use a reusable coffee cup or water bottle to avoid disposables?
- Always sort any waste you do generate into the correct bins. Paper, card, plastics, metal and glass are all easily recyclable. If your waste can't be recycled, is there another use for it?
- Think digital! Music, maps and movies can all be downloaded or streamed. This avoids physical copies having to be produced that will eventually end up as waste.
- What do you do with unwanted clothes and items? Why not bring them into the Swap Shop for the use of somebody else?
- Avoid food waste be planning meals and controlling portion sizes. Click here to (re)visit the food waste reduction section.

SECTION 4

LABORATORY EFFICIENCY

Many useful energy efficiency hints and tips covered throughout the resource are easily transferrable to when you're in the lab. You can still turn off lights when they're not needed; use timers for equipment that doesn't need to be left on all night and turning down the heating before opening a window will always be an option too!

However, there are extra areas in the lab where you can save energy. Use the links below to find out how. We also recommend taking regular energy walkabouts around your lab, to ensure you and others are using the space efficiently. Always do this with your supervisor and/or a member of the lab staff to ensure best practices are followed. You can download a Laboratory Energy Walkthrough Checklist by clicking here.

The following tips and energy audit were specifically developed for University of Aberdeen staff and students. Please note that recommendations and practice will differ at each intuition.

WATER

LEARN MORE

FUME CUPBOARDS

LEARN MORE

REFRIGERATED STORAGE

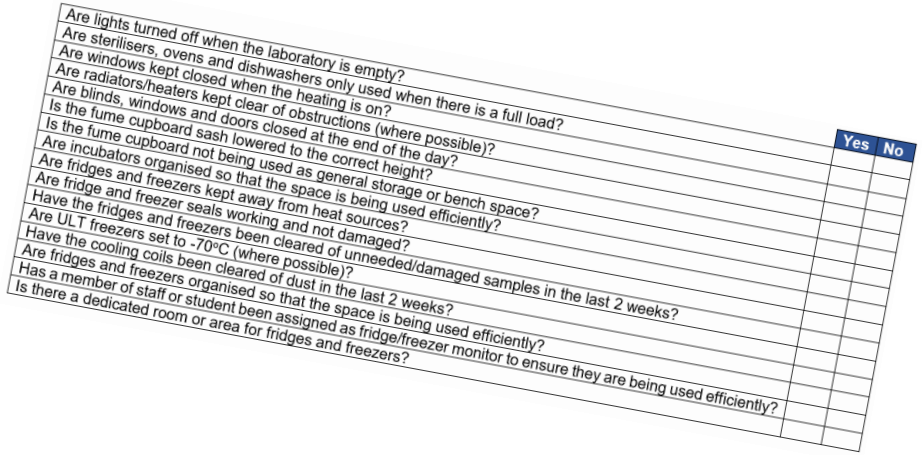
LEARN MORE

SECTION 4

LABORATORY EFFICIENCY

Laboratory Energy Walkaround Checklist

We recommend taking regular energy walkabouts around your lab, to ensure you and others are using the space efficiently. Always do this with your supervisor and/or a member of the lab staff to ensure best practices are followed. The link to the right will allow you to download a Lab Energy Walkaround Checklist to help.



	Yes	No
Are lights turned off when the laboratory is empty?		
Are sterilisers, ovens and dishwashers only used when there is a full load?		
Are windows kept closed when the heating is on?		
Are radiators/heaters kept clear of obstructions (where possible)?		
Are blinds, windows and doors closed at the end of the day?		
Is the fume cupboard sash lowered to the correct height?		
Is the fume cupboard not being used as general storage or bench space?		
Are incubators organised so that the space is being used efficiently?		
Are fridges and freezers kept away from heat sources?		
Are fridge and freezer seals working and not damaged?		
Have the fridges and freezers been cleared of unneeded/damaged samples in the last 2 weeks?		
Are ULT freezers set to -70°C (where possible)?		
Have the cooling coils been cleared of dust in the last 2 weeks?		
Are fridges and freezers organised so that the space is being used efficiently?		
Has a member of staff or student been assigned as fridge/freezer monitor to ensure they are being used efficiently?		
Is there a dedicated room or area for fridges and freezers?		

Lab Walkaround Checklist

Aber GREEN

SECTION 4

LABORATORY EFFICIENCY

Water

Scientific laboratories use a **lot** of water. However, there are still many ways to reduce the amount needed.

A lot of it is similar to what you would do at home like turning off taps when they're not needed and using a basin to wash up rather than a running tap

However, there are other ways you can save water within the lab. If you are using a fluid tank, for example, you could filter and then reuse the tank water rather than filling it up with more water.

A lot of labs have also invested in water recycling units which saves up to 20,563m^3 water every year!

Are there any other ways of saving water in the lab that you can think of?

SECTION 4

LABORATORY EFFICIENCY

Fume Cupboards

Fume cupboards are an important part of the lab but there are many ways to save energy when using them.

Firstly, try and store chemicals in a cupboard that is already in use. Reducing the number of cupboards that needs to be on reduces the energy being used.

You should also make adequate preparations to equipment before you begin an experiment to ensure the fume cupboard is only on for when you really require it.

Finally, always ensure the sash is lowered as far as possible. Doing this can reduce the energy demand of a fume cupboard by 40%!

SECTION 4

LABORATORY EFFICIENCY

Refrigerated Storage

Again, hints and tips for fridges and freezers at home (covered in Section 3) are easily transferrable to those in the lab.

Ensuring a machine is full before using another one can help reduce energy use. This can be monitored and some equipment can be turned off or removed if not needed.

Cleaning the coils at the back and bottom of equipment also helps reduce their energy use as dust can reduce their effectiveness by 20%.

Finally, laboratory freezers can reach temperatures of -80^{o}C, however most experiments only need to be kept at -70^{o}C so consider turning the temperature up, if you can.

SECTION 5

TENANT INFORMATION

This section focuses on issues that may arise in your rented property and how to solve them! It also includes a section on useful items you can buy to make your home as efficient as possible.

CONDENSATION, DAMP & MOULD

LEARN MORE

RIGHTS & RESPONSIBILITIES

LEARN MORE

ECO HOUSE TOOLKIT

LEARN MORE

USEFUL CONTACTS

LEARN MORE

SECTION 5

PREVENTING CONDENSATION, DAMP & MOULD

Condensation is the most common form of damp that can appear in a home. It occurs when warm air meets a colder surface, such as a wall or window. Left untreated condensation can lead to mould growth which can be harmful to people and properties. Use the links below to find out more about how you can identify condensation and how to avoid it.

IDENTIFYING CONDENSATION

LEARN MORE

PREVENTING CONDENSATION

LEARN MORE

USEFUL TIPS

LEARN MORE

OTHER CAUSES OF DAMP

LEARN MORE

SECTION 5

PREVENTING CONDENSATION, DAMP & MOULD

Identifying Condensation

Unless rooms are sufficiently heated and ventilated there is a good chance condensation will occur. Luckily, however, condensation is easy to find and if your home is suffering from it you will quickly see the signs. The most common of these include:

- Damp or wet walls and windows (see image)
- Peeling wallpaper
- Mould growth
- Musty smell on clothes in wardrobes

If you do see mould growth in a property it can be cleaned by using a mixture of water and bleach or purchasing special anti-mould sprays. However, if the root cause of the mould (most likely build up of condensation and lack of ventilation) is not eliminated, then there is a good chance it will grow back.

SECTION 5

PREVENTING CONDENSATION, DAMP & MOULD

Preventing Condensation

WASHING & DRYING CLOTHES

LEARN MORE

KITCHEN

LEARN MORE

FURNITURE

LEARN MORE

SECTION 5

PREVENTING CONDENSATION, DAMP & MOULD

Washing & Drying Clothes

Drying clothes indoors is one cause of condensation. Clothes should be dried outdoors as much as possible but if they have to be dried indoors they should be placed in a bathroom on a clothes horse with the door closed and window open or extractor fan on. Wet clothes should never be placed on radiators because this causes lots of moisture to be released into the air.

Hang clothes on a drying rack separated to allow for better air circulation and quicker drying.

Washing machines and tumble driers should be properly vented and the condensate should be regularly emptied to ensure no blockages that could cause excess moisture to be released. (Check the manual of your devices for how to do this, or do a quick internet search if you're unsure).
The room containing your washing machine or drier should be closed when in use, with a window open or extractor fan on.

If you have a lot of clothes drying ensure to open the window even if it's for 10 minutes (even with the heating on). It's important to let the moisture out in order to avoid condensation.

SECTION 5

PREVENTING CONDENSATION, DAMP & MOULD

Kitchen

Kitchen fans (extractor or cooker hood) should be used whenever cooking or boiling the kettle with the door closed. If you do not have either of these a window should be open for at least 10 minutes after you finish cooking to ensure all the moisture has gone.

Covering pots and pans when cooking will also help to reduce the moisture being released into the air. This also helps with your energy efficiency because it will help cook foods quicker! If you are boiling water it is also good practice to only boil what you need as this reduces the moisture that can be released and uses less energy.

It is also good practice to wipe down any cold surfaces in the kitchen after cooking to avoid a build up of condensation.

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SECTION 5

PREVENTING CONDENSATION, DAMP & MOULD

Furniture

Furniture should be kept away from external walls (walls that have no rooms on the other side) as much as possible. If this is not possible then a gap of at least 50mm should be kept between furniture and external walls.

Wardrobes and cupboards should also not be overfilled. This results in a lack of ventilation which can result in mould due to a lack of air circulating freely inside.

It can be useful to add dehumidifiers to cupboards and drawers containing clothes as this will help prevent any condensation occurring in these areas. They are cheap and can be purchased at a local DIY store. Alternatively, you could create your own, using cat litter, as it helps absorb moisture and helps keep areas must free.

SECTION 5

PREVENTING CONDENSATION, DAMP & MOULD

Useful Tips

- Internal doors should be kept open when sleeping to allow air to circulate around a property
- Trickle vents on windows should be used (see image on the right) and if these are not present then windows should be opened on a regular basis
- Fish tanks should be kept covered to prevent excess moisture being released into the room
- Paraffin or bottled gas heater use should be avoided indoors
- Ventilators and extractor fans should never be blocked and wet rooms should be well ventilated
- Avoid excessive use of air purifiers and diffusers as they release a lot of moisture into the air
- The use of steam mops for cleaning laminate flooring should be limited and ensure windows are open when doing so
- Your property should be sufficiently heated in order to avoid any damp issues
- If you have a real Christmas tree be aware of its position and ventilating the room as the moisture from the tree will lead to condensation build up.

SECTION 5

PREVENTING CONDENSATION, DAMP & MOULD

Other Causes of Damp

Condensation is not the only cause of damp. It can also come from:

- Leaking pipes, waste pipes or overflows
- Roof leaks where a slate or tile is missing
- Blocked gutters or leaking through a cracked pipe
- Rising damp due to a defective or missing damp course (a barrier that is designed to prevent moisture rising up inside the walls)

When looking for a new place to rent it is worthwhile looking out for any signs of damp that could be caused by the problems above.

SECTION 5

YOUR RIGHTS & RESPONSIBILITIES

As a tenant you have many rights. However, you also have responsibilities. It is important to be aware of all of these to ensure your time at University isn't disrupted due to disputes over your rented property. Click the links below to find out more about these rights and responsibilities.

Please note, this is not an all inclusive resource and if you encounter any problems regarding your property or landlord you should contact Citizens Advice Scotland for information.

AUSA also offer advice and support around housing. The AUSA housing guide full of useful tips and tricks is regularly updated. To access this file, please visit the website at ausa.org.uk or contact a member of staff for further information.

RIGHTS

LEARN MORE

RESPONSIBILITES

LEARN MORE

VIEWING GUIDE

LEARN MORE

SECTION 5

YOUR RIGHTS & RESPONSIBILITIES

Your Rights

The Scottish Government's Private Housing (Tenancies) Act 2016 is there to protect you as the tenant and also your landlord.

If you are a private tenant, it is your landlord's responsibility to ensure that the property you are renting is in good repair, water-tight and mould free when you move in. The property will have to meet certain standards and must be safe to live in. This means the landlord/agency will regularly check the gas connection, fit and maintain smoke and carbon monoxide alarms, and ensure any appliances in the property (cooker, microwave etc.) are safe to use.

If any issues arise during your tenancy, such as appliances not working properly or a boiler breaks down, then your landlord should sort this for you as a priority.

However, if you feel your landlord or letting agency may not be adhering to their duties then you should seek advice. The AUSA Advice team will be able to help with guidance.

SECTION 5

YOUR RIGHTS & RESPONSIBILITIES

Your Responsibilities

As a tenant, you also have a few responsibilities.

Household bills are one of these responsibilities (unless included in your rent). Make sure to pay these in full and on time. It could be a good idea to refer back to the section on energy bills to make sure you are getting the best deal!

You are also expected to keep the property in good repair. The guide on preventing damp and condensation should help with some of these duties, but if there is any damage caused, do let the landlord know. It is your responsibility to maintain the condition of the property in which you received it by adapting the positive behaviours this module speaks about in earlier sections.

Finally, you should also make sure that your rent is paid on time. If you find you are struggling financially, the Student Advice and Support Office at the University of Aberdeen may be able to help.

SECTION 5

YOUR RIGHTS & RESPONSIBILITIES

The links below highlight areas you may want to look out for when viewing a potential new home. It seems like there is a lot to check and asking questions can be intimidating. However, carrying out research ahead of renting a property can help prevent problems that may arise when beginning your tenancy. You can download this guide for your next viewing in the managing bills section.

GENERAL

LEARN MORE

HEATING

LEARN MORE

INFRASTRUCTURE

LEARN MORE

ELECTRICITY

LEARN MORE

SECTION 5

YOUR RIGHTS & RESPONSIBILITIES

General

- Are there any signs of mould or damp?
- What is the EPC rating of the property? An A rated property is very efficient and a G rated property is very inefficient.
- Are there portable heaters in any of the rooms? This may indicate that the central heating is not heating the property sufficiently and could lead to higher fuel bills.
- Are there any dehumidifiers? This could indicate that there isn't enough air flow in the property, meaning it could be susceptible to damp and condensation.
- What type of electricity and gas meters does the property have? Pre-payment meters may mean you won't get the best energy tariffs and could face high bills.

SECTION 5

YOUR RIGHTS & RESPONSIBILITIES

Heating

- What type of central heating does the property have? Gas heating is better for the environment (and your bank account) than electric heating.
- If there is a boiler, how old is it? Older boilers are much more inefficient and will cost you more. It's also good to check if the boiler has been maintained on a regular basis otherwise you may have problems with it further down the line.
- If there is a hot water tank, is it insulated? An insulated hot water tank will reduce your energy bills.
- If there are any exposed hot water pipes, are they insulated? Again, this will reduce your energy bills.
- What type of controls are there for the central heating? Check out Section 1 of this resource to find out what the best controls are for each heating type.

SECTION 5

YOUR RIGHTS & RESPONSIBILITIES

Infrastructure

- Are the windows single or double glazed? Double glazed windows are much more efficient and can reduce draughts and save you money on energy bills.
- Do the window seals look satisfactory? Damaged seals can cause draughts which can make your home cold and uncomfortable in winter.
- How does the property feel when you enter it? Is it cold or warm? A cold property could highlight potential draughts and may not be very efficient.
- If there is a loft, is it insulated? Over a quarter of a properties heat loss goes through an uninsulated roof. Loft insulation will save you money on energy bills
- Does the bathroom have a working extractor fan? If not, this could cause issues with damp and condensation further down the line.

SECTION 5

YOUR RIGHTS & RESPONSIBILITIES

Electricity

- Is the electricity meter a pay-as-you-go meter? A pay-as-you-go meter may restrict the energy tariffs you could get.
- Are the light fixtures LEDs or energy efficient models? Older bulbs will cost you more in the long run. If a property already has energy efficient lightbulbs your bills will be cheaper.
- Is the shower an electric shower? Electric showers can be more expensive to run than those that come straight from a hot water tank on combination boiler.
- What are the energy ratings of any equipment included in the property? Higher ratings mean they are more efficient and will cost you less to run.

SECTION 5

ECO HOUSE TOOLKIT

The devices below are good examples of devices that may be of benefit to you when moving into a new home. Although they will cost you money to begin with they will help save you money in the long term and you will be able to take them with you if you move into another property. This list is not exhaustive, is there anything else you can think of?

Sustainable Shopping List

You can download our Sustainable Home Shopping List by using the link to the right.

RADIATOR REFLECTOR PANELS	LOW ENERGY LIGHTING	ECO KETTLE	EXTENSION CABLES	SHOWER TIMER	ENERGY MONITOR
LEARN MORE	LEARN MORE	LEARN MORE	LEARN MORE	LEARN MORE	LEARN MORE

SECTION 5

ECO HOUSE TOOLKIT

Radiator Reflector Panels

Radiator reflector panels are cheap to buy and easy to install.

They are fitted behind radiators on external walls and, instead of letting the heat escape out of a property, they reflect the heat inwards into the room. They can be picked up from and major home improvement store.

You can also make your own be covering cardboard in foil and placing it behind your radiator. Homemade reflectors are not as efficient as professionally made ones, however.

They can help save up to £15 each year.

SECTION 5

ECO HOUSE TOOLKIT

Low Energy Lighting

Energy saving lightbulbs are becoming much more common in households today with traditional incandescent bulbs being taken off the market.

On average, energy saving lightbulbs last a lot longer than traditional bulb and can therefore save a lot of money over their lifespan, even if they are slightly more expensive to purchase.

By replacing all older bulbs with energy saving lightbulbs a household could save up to £35 per year.

SECTION 5

ECO HOUSE TOOLKIT

Eco Kettle

Judging the right amount of water to put in your kettle to boil can be difficult and boiling too much each time wastes electricity and increases your fuel bills.

An eco kettle is the solution to that. They have two reservoirs of water in them (one that sores water and one that boils it) and this allows you to chose exactly how many cups you want to boil each time by using controls on the kettle. They can also be insulated so that any unwanted water you boil is kept hot for a longer period, meaning less energy is needed to boil it next time.

Some eco kettles also have temperature gauges on them so you can choose how hot you want the water to be – you don't need boiling water for a cuppa and heating to a lower temperature uses less energy!

SECTION 5

ECO HOUSE TOOLKIT

Extension Cables

Extension cables are a necessary evil in most homes. They help by allowing more appliances to be plugged into an area with only a few sockets and are most commonly used for behind televisions. However, a regular extension cable means that if you are using one appliance all the others that are plugged into that extension will be on standby unless you unplug them. This wastes electricity and increases your energy bills.

Investing in an extension cable with individual switches helps eliminate wasted electricity. Simply turn on the switches for the appliances you are using and the rest of the unused appliances will still be off!

SECTION 5

ECO HOUSE TOOLKIT

Shower Timer

Spending just one minute less in the shower each day will help save you up to £7 a year on your energy bills, per person. However, timing how long you are in the shower for can be difficult.

Scottish Water advise that four minutes is the ideal time to spend in the shower and purchasing a four minute timer to stick onto the wall of your shower will help you keep track of how long you are spending in it.

They are cheap and can be picked up online or in DIY stores.

SECTION 5

ECO HOUSE TOOLKIT

Energy Monitor

An energy monitor is made up of three units, a screen to show you how much energy you are using in your home, sensor units that clip round your electricity and gas meters and a transmitter that sends information from the sensors to the screen.

The monitor itself won't save you money but it will give you an idea of where you can. By helping you understand how much energy you are using, which appliances are most costly and how much you could save by turning certain items off, it allows you to change your behaviour in order to only use the energy that you really need. Some energy monitors even allow you to track your usage through an app!

However, a smart meter does the same job so don't buy an energy monitor if you already have a smart meter!

SECTION 5

USEFUL CONTACTS

Useful Contacts

AUSA Advice Centre
AUSA Students' Union
Elphinstone Road
Aberdeen
AB24 3TU
01224 274200

Shelter
36 Upperkirkgate
Aberdeen
AB10 1BA
01224 522851

Citizens Advice Scotland
41 Union Street
Aberdeen
AB11 5BN
01224 569750

The Aberdeen Law Project
The Aberdeen Law Project c/o School of Law
Taylor Building
The University of Aberdeen
AB24 3UB
01224 272434

SECTION 6

SUPPORT & INFO FOR E-CHAMPS

The following section will provide you with guidance on how to conduct a visit, a handy list of resources and other advice. Click the links below to find out how to conduct a successful visit.

After completing the E-Champ training, you will be responsible for promoting the project and conducting energy audits around Hillhead, offering residents advice on saving energy as well as promoting competitions and energy saving sessions. This will only take a few hours per week and a rota system will be used. When out and about you will have:

- AberGreen leaflets and flyers
- AberGreen Enery Audit sheets
- QR code for residents to sing up for visits

PRE-VISIT | DURING VISIT | POST VISIT

FURTHER SUPPORT

SECTION 6

SUPPORT & INFO FOR E-CHAMPS

PRE-VISIT | DURING VISIT | POST VISIT

Pre-Visit

Before visiting a property it is important that you look over your training notes and refer to the E-Champ training resources. Make sure you're prepared and have the following on you:

Energy Walkabout Audit sheet
Pen
AberGreen ID
AberGreen hoodie
Top Tips sheet
Promotional materials
AberGreen Action Plan document

It is also good practice to send an email to the person you are visiting shortly before the visit (i.e.: the day before) to remind them and make sure it isn't a wasted trip! If you have any questions, please ask the AberGreen coordinator and check the AberGreen E-Champ Facebook group for updates.

DURING VISIT

SECTION 6

SUPPORT & INFO FOR E-CHAMPS

PRE-VISIT | DURING VISIT | POST VISIT

During Visit

INTRODUCE YOURSELF

LEARN MORE

COMPLETE ENERGY AUDIT

LEARN MORE

INVITE QUESTIONS

LEARN MORE

POST VISIT

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Introduce Yourself

Begin the visit by explaining the following:

Who you are – AberGreen E-Champ

What you're there to do – provide practical advice on optimising and reducing the household's energy use

Explain the structure of the visit (including how long you're expecting to be there), what questions will be asked and why you are asking them, and who the information will be passed to.

Tell the tenants what further support is available if you can't answer a question and what actions you will be taking.

ENERGY AUDIT

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Complete Energy Audit

Explain to the householder what the audit is and you're doing it to help reduce the household's carbon footprint and energy costs.

Ask the householder where they would like to start the audit (bedroom, kitchen etc.) and then walk round the property with the householder completing the audit. Try to make it as informative and friendly as possible and don't worry if you need to spend extra time in one or two rooms!

Whilst you're going through the audit sheet give the householder hints and tips on how they can reduce their energy use. If you monetise the savings they are more likely to pay attention!

Use a bit of humour and go with the flow, be flexible, see how things progress during your visit. For example, you may need to spend a bit more time in one room rather than another.

INVITE QUESTIONS

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Invite Questions

Invite the householder to ask any questions they may have surrounding the content of the visit and answer the questions if you can. If you know of an on-campus service or an event that may benefit them, why not let them know?

However, if you are unsure of an answer reassure the householder that you will refer them to the coordinator for an answer.

Ask if they know of anyone else that may benefit from the service and promote the energy saving sessions.

Finally, don't promise you'll get anything fixed or completed for the householder, simply inform them that your findings will be communicated to the AberGreen team who will aim to support, where possible.

When you're finished with the audit, it's important to let the householder know what will happen after your visit and check if they have any final questions.

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Post-Visit

Once you have left the property, drop off your completed Energy Walkabout sheet to the AUSA Reception and let them know that it's for the AberGreen Coordinator. Please make sure you do this within 3 days of completing your visit.

You can then check the E-Champ Facebook group for updates on the next available visits and sign up for one if you're free!

Your findings from the completed Energy Walkabout sheet will then be evaluated by the AberGreen coordinator. They will then act upon any appropriate recommendations and refer them to the relevant department within the University.

SECTION 6

SUPPORT & INFO FOR E-CHAMPS

Further Support

Congratulations! You are now well on your way to becoming a fully fledged AberGreen E-Champ!
The organisations below can help and support you with any questions you may have.

HOME ENERGY SCOTLAND

Home Energy Scotland (HES) is funded by the Scottish Government, managed by the Energy Saving Trust and delivered by Scarf.

HES provides free and impartial advice on energy efficiency, renewables and transport, and facilitates access grants and funding

scarf
SUPPORT • INSPIRE • DEVELOP • IMPACT

Scarf is a social enterprise based in Aberdeen and operating throughout the north east of Scotland.

For decades Scarf has delivered quality services promoting energy efficiency and sustainability to householders, communities and businesses.

HEAT

The Home Energy Advice Team (HEAT) is delivered by Scarf, funded and supported by local authorities in the North East.

HEAT offers in-home, in-depth advice and advocacy to householders, helping them lower bills and enjoy a warm, dry home.

Aber GREEN