Holme Valley climate action. Parish Council

Home energy savings

Introduction

According to the UK Committee on Climate Change (CCC), homes produce up to 40% of UK emissions – therefore reducing these is absolutely critical to support the Holme Valley Climate Emergency Action Plan **(and of course the UK mandatory CO_2 target to become Carbon Neutral by 2050 or earlier).**

Meeting the more ambitious **Holme Valley Climate Emergency target to become carbon neutral by 2030** requires a systematic and intensive effort across all areas of our daily lives.

There are many ways we as individuals can contribute to achieving this target but this booklet focuses on how you can help through home energy efficiency.

The good news is that whilst some measures do require a little time and investment, many are relatively easy and low cost and can also provide additional benefits such as a more comfortable household, added value for homeowners, a more attractive rental proposition for landlords as well as lower energy bills and reduced CO_2 emissions.

Good News!

Easy and low cost solutions can lower carbon emissions and your energy bills. They reduce CO_2 too

SO LET'S GET STARTED!

Keeping your home warm

For most households, heating is the most expensive part of the energy bill – on average costing several hundred pounds a year. However your home is heated, some basic steps can provide quick, cost effective improvements. Please also note it's worth investigating as you may also be able to get financial support with some of these options. Check with GOV.UK, Kirklees council, the local home improvement agency, Age UK or check on our website holmevalleyclimateaction.co.uk under the energy page

1

Rectify any draughts or leaks where cold air may enter the building – especially around door frames and windows. This is one of the quickest easiest and cheapest measures and you should reap the financial rewards

2

Over a quarter of home heating may just disperse heat through the roof. So if you have a loft make sure it is properly insulated. Modern recommendations are that homes should have at least 270mm thickness of loft insulation. Older Homes may have little or no insulation so it's worth checking. Upgrading to at least 270mm thickness may cost a few hundred pounds, but you should need to spend less to heat your home, which means more money in your pocket to pay for the inuslation and you reduce carbon emissions, so its good for the environment too. Oh and let's not forget less fuel usage reduces carbon emissions so is good for the environment.

3

Simple measures like using **heavy or thermal lined curtains** will also provide a noticeable benefit. Or maybe consider some simple secondary glazing options. You can find some low-cost options in DIY stores

4

A more advanced (expensive) option is to check the 'air tightness' of the building – this requires specialist support but can identify unnecessary air leakage and cold air 'infiltration'. This is often a pre-cursor to more intensive 'deep-retrofits'

Keeping your home warm

5) After you have fixed the draughts check the positioning and settings of any central **heating thermostats**. Make sure the thermostat itself is not in a draught as this will make it turn the heating on when it doesn't need to.

6) Reducing the temperature setting is one of the quickest and easiest ways to reduce energy costs. Many people find that settings of around 19°C (or even less) quite comfortable once draughts are minimised and insulation is improved.

7) If the heating system does not already have one, consider installing an **intelligent heating controller**. These can provide more accurate and consistent control of the heating system. These typically cost £100 - £200 but the resulting savings on your reduced fuel bills should compensate for the cost within a few years as your fuel bills reduce.

8) Consider a **thermostatic radiator valve** to ensure that each room is correctly heated and some spaces are not being ‘over-heated’.

9) If you have single glazed windows, it is worth trying to upgrade to **double glazing** it can of course be expensive so also consider also consider other DIY solutions such as window film insulation, draft proofing tape and secondary glazing kits, either way you will again notice a difference in your home heating and fuel bills but this more expensive investment will take longer for you to recoup your outlay. **Triple glazed units** are also available but some of the modern double glazed units with specially coated glass may be just as effective.

10) Where feasible, investigate options such as **cavity wall insulation** or even solid wall insulation. Some homes may also benefit from **under floor insulation.** These are specialist jobs and expert advice should be sought.

11) Home heating systems:

a. Currently, gas fired heating is the most common and cost-effective method in the UK but to be effective they should use **high efficiency 'condensing' boilers.** Gas as a fuel is not ideal from a long-term CO2 reduction perspective and gas boilers will be banned in new build homes from 2025 (they will remain on sale for replacement purposes in existing buildings

b. Oil fired heating is often used for 'off grid' homes where a gas supply was impractical. In these cases, there is a strong argument to consider **heat pump technology** (see section on low carbon technologies).

c. Where used, electric heating is significantly more expensive than gas, so it is vital to ensure that the heaters are controlled effectively with temperature and time controls. Wherever possible, buy low carbon electricity.

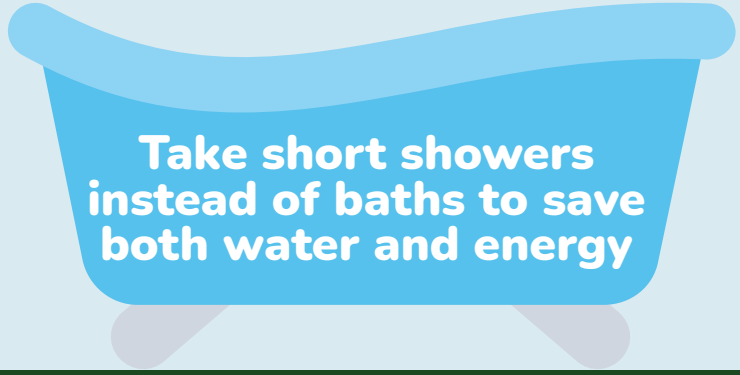
d. In some rare cases, **'biomass' type systems** (usually waste plant or animal material burnt to produce heat or electricity) may be another fuel option. However, the origins of commercially available biomass is sometimes controversial. Also, burning biomass can contribute to air pollution. Only if true 'low carbon' and sustainable 'biomass' is readily available is this option worth considering. It is also important to consider the maintenance requirements of such systems, as they can be very expensive.

Good News!

Easy and low cost solutions can lower carbon emissions and your energy bills. They reduce CO_2 too

Lifestyle changes to avoid waste

Basic measures such as using high efficiency products is important, but other ‘lifestyle’ factors are at least as important and these invariably offer quick wins or instant payback:



Keep fridges & freezers clean& frost free (periodically clean the coils behind the appliances as dust and dirt reduce efficiency)

Fit a water reducing shower head (also saves water and energy)

Is it possible to dry clothes outside rather than using a tumble dryer or use a low cost electric heated airer?

Don't heat & light spaces that don't need it

Saving electricity

Electricity is used in numerous functions across the home so careful consideration of each case is important.

Some key opportunities to consider are:

1) **Lighting** – Old fashioned filament bulbs, halogen and even fluorescent bulbs have now largely been superseded by LED equivalents. Upgrading to **low energy LED bulbs** can save 90% of wasted lighting energy wasted lighting energy. As long as lights are used for at least 2 hours per day, upgrading from old 'incandescent' bulbs to low energy LED bulbs can payback in less than 1 year

LED bulbs are more expensive than incandescent bulbs but should have a very long lifetime. However, they can lose up to 20% of their brightness over time - so always buy good quality bulbs and that will also ensure longevity.

These 'bulbs' are available in different 'colour temperatures' e.g. Warm White, Cold White etc – so check that you get the right version for the room where they will be installed. Bulbs are generally sold now on their light output (lumens) rather than wattage although some supplier mark the equivalent output in W – for example, a 6W LED may be equivalent to a 60W incandescent bulb.

BRIGHTNESS IN LUMENS	220+	400+	700+	900+	1300+
STANDARD	25W	40W	60W	75W	100W
HALOGEN	18W	28W	42W	53W	70W
CF	6W	9W	12W	15W	20W
LED	4W	6W	10W	13W	18W

Did You Know?

- A single 100W incandescent bulb switched on for just two hours a day will cost over £10 per year to run
- In the industry light bulbs are referred to as lamps
- Energy efficient light bulbs are measured in Lumens not watts

Taken from https://www.thelightbulb.co.uk/resources/lumens_watts/

LED bulbs are now available in a large variety of formats so there are generally LED equivalents for most applications.

Note that so called compact fluorescent (CFL) bulbs which were popular a few years ago have now been largely overtaken by LEDs. Compact fluorescents also have a high efficiency but were prone to loss of light output and they are also more difficult to dispose of at the end of life (as with standard fluorescent tubes).

The recommendation is that as **existing bulbs fail, replace these with good quality LED equivalents – and always dispose of old bulbs using the correct recycling method.**

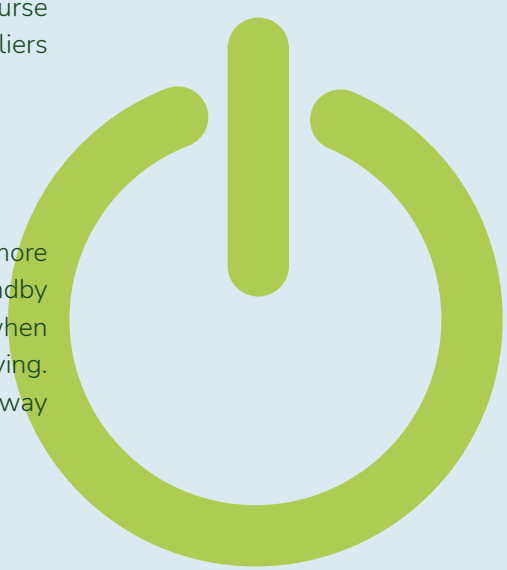
2) **Appliances** – By law, appliances must have an energy efficiency rating thereby helping consumers make appropriate choices. Choosing **high efficiency options (e.g. A+++)** for key appliances such as washing machines, tumble dryers, fridges etc helps to minimise waste.

3) **Cooking** with **microwave ovens or 'slow cookers'** is generally more efficient than using an oven or hob.

Fact or fiction?

1) Smart meters save energy?

No, having a so-called 'smart meter' does not, in itself, save energy. What the smart meter does is provide an instant update of energy consumption so energy users can do something to reduce consumption themselves e.g. by turning things off, like hair straighteners or an iron which really use a lot of energy. They can of course make meter readings easier too. It's also useful to know that some energy suppliers reserve their best tariffs for customers with 'smart meters'.



2) Devices on standby use large amounts of energy?

Over the last 20 years, standby functions have, by law, become much more efficient. A modern device typically costs less than 30p per year during standby (some are much less). Whilst it may be good practice to turn off some devices when not in use (e.g. phone chargers etc), it is unlikely to provide a huge financial saving. Some devices like satellite TV receivers are recommended to be left on anyway - so always check the manufacturers' instructions.

3) Leaving my heating on constantly saves more energy compared to using the timer function?

Generally no! In most cases, it is more efficient to use the timer controls. In some cases, e.g. for houses with excellent insulation and heat retention properties and where the heating setpoint is relatively low, there could be a small benefit especially where systems such as heat pumps are applied (as these take a little longer to heat the space). In most UK homes, using the central heating control and timer functions provides maximum efficiency.

Low carbon solutions

Once the basic energy saving measures are put in place, additional 'low carbon' solutions may be considered:

1) **Solar PV (Photovoltaic)** – Typically using roof mounted (although they can be ground mounted) photovoltaic panels to convert ambient light into electricity. As they need daylight to function, they are normally used to supplement mains electricity connections especially in the temperate UK. It's most cost effective to use the solar energy on-site although some benefit is also received for energy exported onto the mains grid.

Some changes in use may be beneficial so it may be good to plan how you **use your electricity during daylight hours** to maximise the use of the electricity produced e.g. cooking or ironing. Some more sophisticated systems may also incorporate battery storage to store the energy for later use – although this does require an added cost.

New solar PV installations receive minimal subsidies from Government therefore the overall return on investment is not quite so attractive paybacks would typically be around 10 years+. **At the lowest price this works out as a monthly reduction in your bills of £40 per month over 15 years**

Installation needs to be done to a high standard so choose a supplier with care. General maintenance is relatively minimal although the (expensive) power electronic components may need changing after 10 years or so but the **solar panels should last 25 years.** It is always worth checking any planning and insurance requirements before investing in solar panels.

2) **Solar Thermal** – These systems use special glass tubes to heat a fluid by absorbing energy from the ambient light so **they can generate heat from daylight and even when there are overcast skies or they are in the shade of trees or buildings.** Normally these systems are used to supplement other heating systems in the home. The effectiveness of such systems is of course dependent on ambient conditions and as rain reduces the efficiency of heat transfer, they tend to be less useful in the North of England. the grid to 'decarbonise', small domestic scale wind turbines are a much less attractive proposition. The installation and maintenance costs of such systems outweighs the financial benefit.

A better alternative is to invest in community scale wind turbine schemes or just buy 100% renewable energy from mainstream utility providers.

Utility switching websites will detail very competitive renewable energy prices and these can often provide the cheapest option

Low carbon solutions

3) Wind Turbines – Whilst large wind turbines have been instrumental in helping the grid to 'decarbonise', small domestic scale wind turbines may be a less attractive proposition. If you are thinking of buying a wind turbine think it through very carefully as the installation and long term maintenance costs can outweigh the financial benefits. As a general guide, the larger the turbine, the better the financial returns.

A better alternative is to invest in community scale wind turbine schemes or just buy 100% renewable energy from mainstream utility providers.

Utility switching websites will detail very competitive renewable energy prices and these can often provide the cheapest option

Low carbon solutions

4) Heat Pumps – These devices may be thought of as the inverse of refrigerators in that they extract heat from the environment and use that to heat (or cool) homes or businesses. Heat pumps need electricity to operate but the heat output can produce 3 to 4 times the energy input. Heat pumps are available in ratings from a few kiloWatts up to several Megawatts for industrial applications.

There are two basic types of heat pump:

a. Ground Source Heat Pumps (GSHP) – GSHPs extract energy from the ground's underlying geology and groundwater and are typically the most effective heat pumps where physical conditions allow. GSHPs either use wide area coils located a few feet below the ground or deep boreholes - which may be the preferable option where conditions allow.

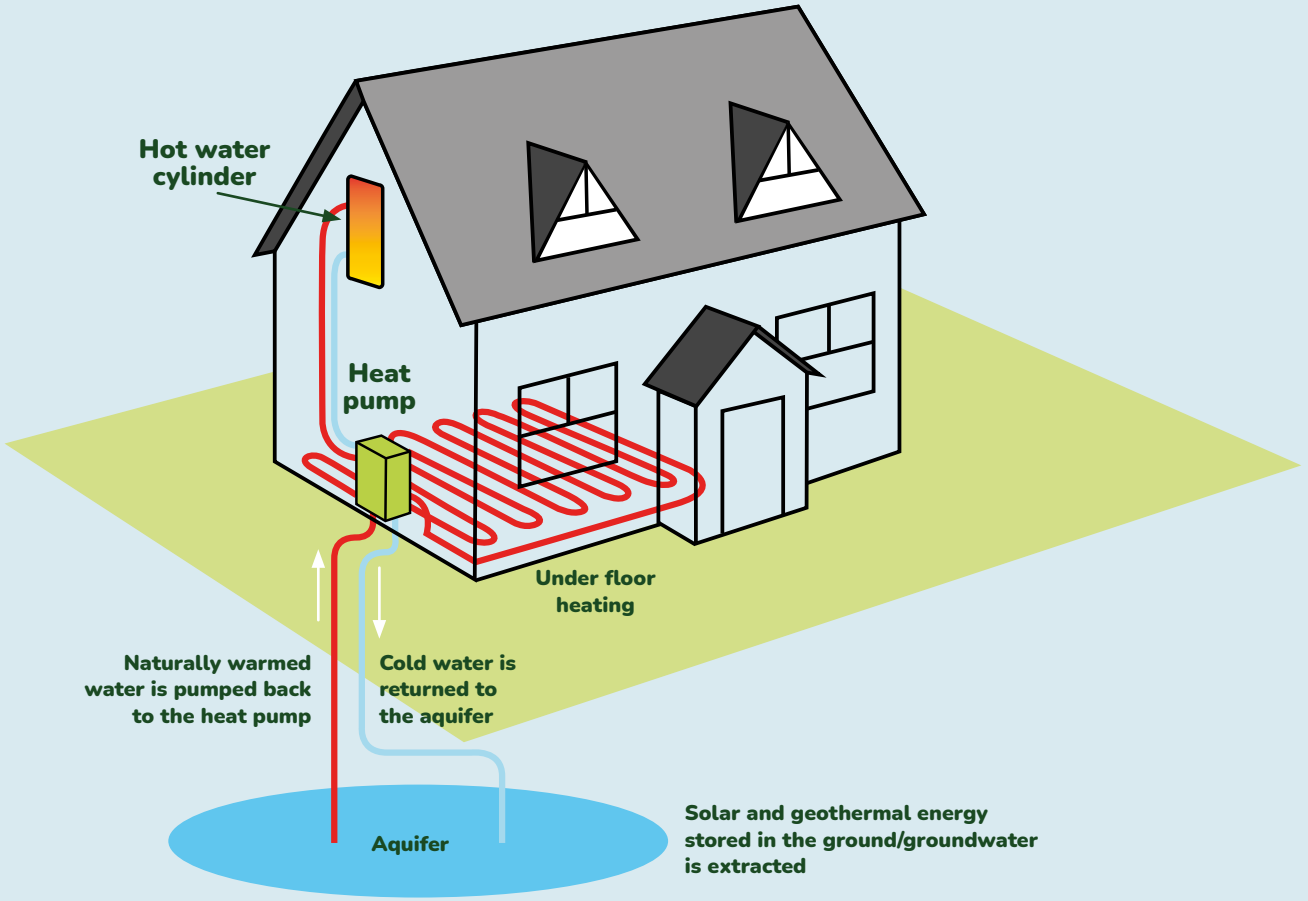
b. Air Source Heat Pumps (ASHP) – ASHPs extract energy from the ambient air and use that to heat (or cool) the target building. ASHP are less effective than GSHP but are lower cost and may be a more practical option in cases where GSHPs are not feasible.

Because gas boilers will be outlawed in new build homes from 2025, it is anticipated that heat pumps may become one of the preferred solutions so as the uptake increases, the costs of such systems should reduce.

Heat pumps require a complete redesign of the heating system as the heat is provided at a lower temperature than a conventional boiler – so often underfloor heating is preferred or alternatively radiators with a much larger surface area.

To achieve a benefit, it is critical that such systems are expertly designed and all the basic energy efficiency measures should be implemented first to minimise the size and cost of the system.

A basic heat pump



Heat pumps systems require a considerable investment (circa £7,000 - £30,000+) and without subsidies, would 'payback' in around 20 years+ although off grid buildings that don't have access to gas and use oil fired heating may offer quicker returns.

Fortunately there are various subsidies available but these change in availability and vary in the amount of assistance offered. Refer to our website for current details **www.holmevalleyclimateaction.co.uk**

Low carbon solutions

5) **Biogas Systems** – So called **'Green Gas'** is low carbon 'biogas' or methane produced from sources such as **waste recycling** or **sewage treatment** and is becoming an increasingly important energy source. As well as being used directly in industry, 'Green gas' is also injected in the mains natural gas supply to **reduce its' overall CO_2 impact.** 'Green gas' is currently a very small proportion of the UK supply although incentives are in place to encourage the further development of more such production and this could offer significant benefits in the future.

6) **Hydrogen Fuelled Boilers** – Most current boilers can potentially already operate on a mix of up to 20% hydrogen / 80% natural gas with no or minimal adjustment. Whilst 100% hydrogen fuelled boilers are not available at the moment, all the key manufacturers have developed prototypes already. Hydrogen is a very difficult substance to distribute but it could offer part of the low carbon landscape in the future.

7) **Passivhaus** - This is a voluntary standard which aims to minimise the overall environmental impact of a dwelling. These homes should require a minimal amount of external heating or cooling to change their internal temperature but this only works if they are built correctly to an exact design and implementation.

As well as lower energy bills, Passivhaus also delivers improved comfort and occupier experience. Such homes should require a minimal amount of external heating or cooling to change their internal temperature but this only works if they have an exacting design and implementation. However, currently, because of the extensive changes required, such 'deep retrofits' are time consuming and expensive.

Did You Know?

So called 'Green Hydrogen' is produced using excess renewable electricity - e.g. when all the wind power being produced is not fully required

email: info@holmevalleyparishcouncil.gov.uk

Mobile Number: 07745 529 225 | **Telephone:** 01484 687460

Click below for:

Website: holmevalleyclimateaction.co.uk/

Twitter: twitter.com/HVClimateAction

YouTube: Click or scan the QR code with your smartphone to see our videos

Holme Valley climate action.
Parish Council