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YOUR CARBON REPORT

St Francis Church, Keynsham

Prepared By: Guy Stephens
For the attention of: Martin Burton
31 May 2024



BACKGROUND

This free report has been produced by the West of England Combined Authority as part of our Carbon Surveys scheme, which is funded by the [Green Recovery Fund](#). Following a survey of your business on 16 May 2024, this report estimates your current carbon emissions and identifies steps you could take to decarbonise.

We have used information gained during the survey, as part of your expression of interest and any other information requests to produce this report. If further investigation or more information is needed, then this is highlighted. The improvements that make the most impact are shown first, but we do not recommend any particular options, nor do we guarantee that measures will achieve the savings calculated and stated in this report.

Carbon emissions are calculated using the UK Government [greenhouse gas reporting conversion factors 2023](#) for CO₂ equivalent (CO₂e), and include both direct (scope 1 and 2) and indirect (scope 3) emissions relating to the production and consumption of energy in the UK. Energy costs are calculated using your energy tariffs, where available. This report does not set out the planning consent or building regulations that may be required for any works.

If you would like any more information or have any questions, contact us on 0117 332 1520 or email lowcarbonbusiness@westofengland-ca.gov.uk.

Why are Decarbonisation, Energy Efficiency and Resource Efficiency Important?



The West of England Combined Authority declared a climate emergency in July 2019, alongside our local authority partners. We have committed to net-zero carbon emissions by 2030, contributing towards maintaining global warming at less than 1.5°C above pre-industrial levels.



We are ambitious in supporting a green recovery from COVID-19, building on the positive behaviour changes brought about by the pandemic to help businesses to transition to low carbon approaches, as well as create new businesses and jobs.



Commercial utility costs have increased steeply over the last 2 years and are forecast to increase by 14% on average over the next 15 years. Action to reduce your carbon emissions could also reduce the impact of rising bills on your business overheads and bottom line.



The low carbon economy is predicted to grow by 11% per year up to 2030, creating around one million jobs nationally. This could represent 35,000 new jobs in the West of England by 2030, and 65,000 by 2050.



The water industry accounts for 1% of total UK greenhouse gas emissions. Using and wasting less hot and cold water through more efficient fittings can cut emissions, decarbonise the economy and support the creation of new technologies.



Approximately 80% of environmental impacts are determined at the design stage of a new product. By viewing waste as a design flaw and opting for circular practices we could significantly reduce waste and waste processing, and avoid the sourcing of unused, raw materials.

ABOUT YOUR BUSINESS

Warwick Road, Keynsham, Bristol, BS31 2PW

Business Activity: Church and community events spaces.

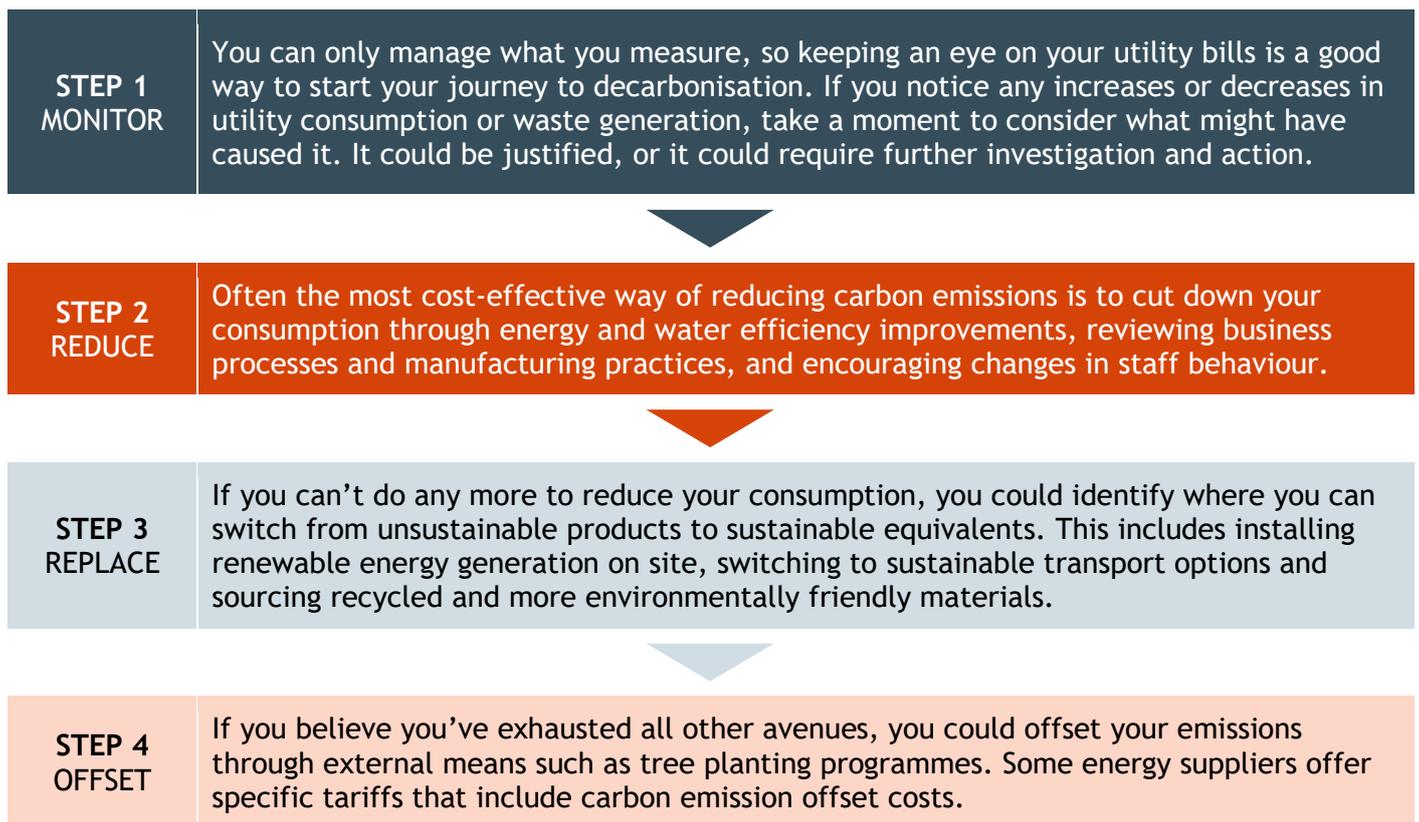
Your Recent Decarbonisation Activities

- You have insulated the roof of the church.
- Secondary glazing has been added to the church.

Your Decarbonisation and Environmental Challenges

- You have a high roof in the church that can make it difficult to heat the space effectively with the existing heating system.
- Your gas boilers feed into the original 1950's single-pipe system and radiators.

DECARBONISATION STEPS TO SUCCESS



YOUR ANNUAL CARBON EMISSIONS

The table below summarises your annual utility consumption and associated carbon emissions. This is based on information that you provided before the survey, which has been analysed to provide an estimate of annual consumption, carbon emissions and cost. The site is served by both gas and electricity:

Utility	Annual Consumption	Annual CO ₂ e Emissions	Annual Cost
Grid Electricity	5,596 kWh	1.6 tCO ₂ e	£3,158
Natural Gas	34,476 kWh	7.3 tCO ₂ e	£4,547
Total	40,072 kWh	8.9 tCO₂e	£7,705

YOUR CARBON REDUCTION OPTIONS

Based on our survey and the information you have provided, we have identified the following potential ways in which you could save energy and carbon in your business, which are sorted in order of the greatest carbon impact:

Recommendation		Estimated Annual Consumption Saving	Estimated Annual CO ₂ e Saving	Estimated Annual Cost Saving	
	Solar Photovoltaic Panels	19.2kWp	16,708 kWh (299%)	4.6 tCO ₂ e	£9,432
		5.6kWp	5,258 kWh (94%)	1.4 tCO ₂ e	£2,968
	Radiant Heating		11,378 kWh (28%)	2.1 tCO ₂ e	-£1,034
	LED Lighting		2,053 kWh (37%)	0.6 tCO ₂ e	£1,159

Solar Photovoltaic Panels

During the survey we found that the roof of your business has the potential for solar panels to be installed. Solar photovoltaic (PV) panels capture sunlight and convert it to electricity which you can use in your business or export to the national grid. This can offset part of your electricity bill and reduce the carbon emissions of your electricity consumption.

You have a 3-phase electricity supply to your business; therefore, you could install 11kWp of solar panels with minimal permissions from the distribution network operator. You have received two quotes that suggest a small (5.6kWp) or large (19.2kWp) option. The smaller array would cover a lot of your current electricity demand, however you may want to consider a larger array if you were to also increase the amount of electric heating in the church. The quoted 19.2kWp array will require you to obtain permission to ensure there is enough capacity for you to connect to the grid.

The Smart Export Guarantee (SEG), which provides a payment from energy companies for any PV electricity you export to the grid, is available to apply for. For more information [take a look at Ofgem's webpages on the SEG.](#)

The energy and carbon savings are based on 5.6kWp of PV panels installed on your southeast pitch and a 19.2kWp system that covers your southeast and northeast pitch. Savings also use European data on levels of sunlight in your location. Energy and carbon savings assume that 100% of the electricity generated is used on site.

Radiant Heating Panels

Your church is currently heated by gas boilers that feed radiators around the whole building. You have a high roof in the main church that can make it difficult to heat the space effectively with the existing heating system because the warm air tends to rise towards the roof.

Electric radiant heating (also known as infrared heating) may be more appropriate for heating a large space like the main church, as it heats objects such as people as opposed to the air. It can provide general heating to the space, but also spot heating can be implemented depending on how spaces are used throughout the day.

The energy and carbon savings have been calculated using the quote provided and assumes an 80% reduction in energy by switching from heating the air to radiant heating in the main church building.

LED Lighting

You already have LED fittings in places but the rest of your lighting is a mix of T8 fluorescent tubes, halogen spotlights, incandescent and some compact fluorescent tubes.

Equivalent LED fittings are available that are likely to reduce your lighting energy consumption by between 60% and 90%. Your maintenance and replacement costs are also reduced as LED lights tend to last around 50,000 hours, compared to 1,000 hours for halogen and 15,000 hours for fluorescent.

The energy and carbon savings calculated are based on replacing 15 fluorescent tubes, 10 halogen bulbs and 10 incandescent lamps in the church, and 5 compact fluorescent tubes with equivalent LED fittings. You would need to arrange a survey with a lighting contractor to obtain a detailed quote for LED lighting appropriate to your business' needs.

For more information, take a look at the [Energy Saving Trust's guide on lighting.](#)

FURTHER RECOMMENDATIONS

The recommendations below have been identified, but energy and carbon savings have not been calculated because:

- they are a behavioural measure, so savings are difficult to quantify;
- it is not possible to calculate a saving without more detailed or specialist investigation; and/or
- the measure does not achieve a direct energy and carbon saving for the business.

Heating Control Settings

Turn TRVs down: Your radiators have thermostatic radiator valves (TRVs) that can be manually adjusted to switch the radiator on and off depending on the temperature in the room. During the survey we saw that some radiators had been left on maximum settings.

Most TRVs have set points from 0 to 5. Setting the radiator to 3 will regulate the room temperature at approximately 21°C. Once set to the desired temperature, TRVs should not require any manual adjustment to keep a comfortable room temperature and increasing the setting will not heat a space up any faster.

We recommend that any staff are trained on how to use the heating controls and brief instructions placed in logical locations, such as near the TRVs. You could also install smart or timed TRVs which could be set to automatically switch on and off during opening hours to minimise energy usage.

Reduce Boiler Flow Temperatures: During the site visit we noticed that the flow temperature dials on your boilers were set high for central heating and hot water, despite it being a mild day outside.

Reducing your boilers' flow temperature could increase their efficiency by allowing them to operate in condensing mode. It can also extend the life of your boiler by reducing how hard it has to work and avoids overheating on milder days because the radiators are not as hot. We suggest turning your boiler's central heating flow temperature down to 55°C or less to improve its efficiency and reduce gas usage. You may wish to discuss reducing the flow temperature with your boiler installer and the correct dial positions to achieve this.

Read the [Carbon Trust's heating, ventilation and air conditioning guide](#) for more information.

Bike Rack

Your church is easily accessible from Keynsham city centre and is used by the wider community. You could install a bike rack to encourage visitors to cycle to your premises and reduce the amount of car users.

You may be entitled to free cycle stands through this [Life Cycle UK scheme](#).

Encourage More Recycling

You could make recycle bins easier to find and add clearer labelling to them. You could also make general waste bins harder to find and more effort to reach. Reducing the number of general waste bins and locating them in the kitchen only, can make people think more about what they can recycle. It can also encourage people to think twice about creating the waste in the first place.

FURTHER INFORMATION

Bath Clean Air Zone - About the zone, charges and support - <https://beta.bathnes.gov.uk/bath-clean-air-zone>

Bristol Clean Air Zone - About the future zone and support - <https://www.bristol.gov.uk/streets-travel/bristol-caz>

Business West - Trading to Net Zero resources - <https://www.businesswest.co.uk/trading-to-net-zero>

CIGA - Cavity Insulation Guarantee Agency including advice and installer directory - <https://ciga.co.uk/>

Energy Saving Trust - Advice and guidance on home and business energy efficiency and sustainability - <https://www.energysavingtrust.org.uk/>

Energy Technology List - List of approved energy and water saving products that qualify for Enhanced Capital Allowances - <https://www.gov.uk/guidance/energy-technology-list>

FENSA - Approved installers of windows and doors - <https://www.fensa.org.uk/>

Microgeneration Certification Scheme (MCS) - Approved products and installers of renewable energy - <https://mcs-certified.com/>

National Grid - Advice on connecting energy generation such as solar PV to the grid - <https://connections.nationalgrid.co.uk/get-connected/>

Planning Portal - UK Government - <https://www.planningportal.co.uk/>

Smart Export Guarantee (Ofgem) - Scheme that pays small-scale low carbon generators such as solar PV for electricity exported to the National Grid - <https://www.ofgem.gov.uk/environmental-programmes/smart-export-guarantee-seg/about-smart-export-guarantee-seg>

SWIGA - Solid Wall Insulation Guarantee Agency including advice and installer directory - <http://www.swiga.co.uk/>

Water Regulations Advisory Scheme (WRAS) - Approved plumbers and water products - <https://www.wras.co.uk/>

MORE SUPPORT FOR YOUR BUSINESS



Green Business Support - Whatever stage your business is at, we can help you find the right support to take the next step in your sustainability journey.

<https://www.westofengland-ca.gov.uk/growth-hub/green-business-support/>



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<https://www.skillsconnect.org.uk/>



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<https://travelwest.info/for-businesses>



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<https://www.goodemploymentcharter.co.uk/>