

QUICK WINS TO REDUCE CARBON EMISSIONS

Key considerations, tips, and ideas

North East & Yorkshire Net Zero Hub

Public Sector Estate Decarbonisation Programme



OUR PARTNERS

Hull & East Yorkshire LEP,
North East LEP, South
Yorkshire Mayoral Combined
Authority, Tees Valley
Combined Authority, West
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and York & North Yorkshire LEP

Contents

1	Introduction	2
1.1	Purpose	2
1.2	The Carbon Impact	2
2	Carbon in Business	2
2.1	Background	2
2.2	Small vs. Large Scale	3
3	Energy Saving Measures	3
3.1	Background	3
3.2	Energy Saving and Efficiency	3
4	Heating and Cooling	4
4.1	Heating	4
4.2	Cooling	5
5	Renewable Technology	6
5.1	Solar PV and Thermal	6
5.2	Heat Pumps	6
5.3	Heat Networks	7
6	Summary	7

1 Introduction

1.1 Purpose

This guidance document sets out how an organisation can make impactful change to reduce their carbon emissions through quick simple steps. This guidance has been developed as part of the North-East and Yorkshire Net Zero Hub's Public Sector Estate Decarbonisation programme.

Turner & Townsend are working with the Hub to deliver a suite of training programmes and guidance to build capacity and upskill the public sector to deliver decarbonisation projects in their buildings.

1.2 The Carbon Impact

Fossil fuels, such as carbon dioxide are being released into the atmosphere at a rate that natural processes cannot remove. This process causes heat to be trapped in the Earth's atmosphere, subsequently leading to rising temperatures. The rate at which this is happening is causing immense devastation worldwide.

ATMOSPHERIC CARBON DIOXIDE (1960-2021)

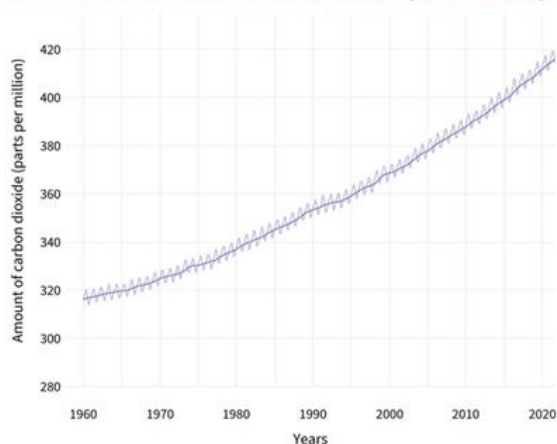


Figure 1: [Mauna Loa Observatory's](#) monthly average carbon dioxide measurements since 1960 in parts per million (ppm).

It is important we recognise how and where we can mitigate carbon production to minimise the impacts of climate change. As seen in Figure 1, the rate of carbon dioxide in the atmosphere has increased exponentially over 80 years. Understanding where carbon comes from and how we can reduce this is fundamental to mitigating the negative effects of climate change.

2 Carbon in Business

2.1 Background

The UK is continuing to reduce its carbon emissions with investment in renewable technologies meaning less reliance on fossil fuels such as coal and gas. Yet, the UK still relies on fossil fuels as the primary source of fuel to heat its buildings.

It's imperative we continue taking steps to reduce our carbon emissions. Adopting new behaviours, while integrating more sustainable practices will minimise the impacts of climate change and thus future-proof our resources.

Adopting carbon saving practices offers a variety of benefits to businesses including:

- Reduced reliance on fossil fuels, thus lowering energy bills and carbon emissions.
- Cost savings from reductions in energy consumption, meaning businesses can invest the money elsewhere into their business.
- Improving businesses' 'green' credentials, leading to brand

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strengthening and increased competitive edge in their respective sector as it increasingly important to be 'green'.

2.2 Small vs. Large Scale

While mitigating climate change requires a worldwide effort and collaborative approach at various scales, small quick wins can make a difference.

Whether it's at an individual level, business level or governmental scale, there are multiple approaches to help make positive lasting change. Each recommendation is a suggestion, and will depend on the resources, budget and stakeholder buy-in your business has.

The recommendations will be inclusive of the energy management hierarchy, as outlined below:

- Energy saving
- Energy efficiency
- Sustainable production

3 Energy Saving Measures

3.1 Background

The first priority for a business is to reduce its energy consumption. Dissecting your energy data is imperative to understand how and where you can make important changes to your usage. This also applies to consumption outside of energy, such as waste and water.

3.2 Energy Saving and Efficiency

3.2.1 Smart Meters

Smart meters provide a display that shows when you are using electricity and gas, how much you are using and how much it costs in real-time. Monitoring and managing your consumption from within your business allows you to see your actions make instant change to your energy usage. This availability of data provides accuracy and efficiency for cost, carbon, and supply. Your bills will be a direct reflection of your use of energy.

When your energy data is recorded, it can be uploaded to an Energy Management Platform to analyse your usage patterns. This can identify unexpected peak usage periods that can be investigated to reduce energy consumption, such as running equipment at night when the building is unoccupied.

How smart meters help to reduce carbon:

- It provides a visual aid to help you understand your business energy usage.
- It informs you of your energy consumption to help you make improvements.
- It helps to identify your carbon emissions by providing regular accurate data for carbon management.
- It improves the efficiency of energy use at its cleanest, ensuring it efficiently meets demand.

According to The Energy Saving Trust, - *"Smart meters help energy network operators balance the grid by providing*

North East & Yorkshire Public Sector Estate Decarbonisation Programme
Heat Decarbonisation Plan – [Participant name]

more information on energy consumption patterns. This directly contributes to tackling the climate emergency, as it means energy suppliers can become far more efficient about how much energy they produce, as they understand more about when we will need it.”

You can be eligible for a smart meter if you align with the following criteria:

- If you rent your business space and pay for energy through a service charge.
- If you rent your space and need to check whether any changes to your meter are allowed within your rental contract.

Installing a smart meter for your business will increase the transparency and understanding of your energy usage within your business. With a developed understanding on where your behaviours are influencing energy patterns, subsequent savings can occur, and subsequent changes can be actioned.

There may be variations between different smart meter suppliers - check your eligibility for a smart meter installation with your supplier. You can be part of the target for all homes and businesses to have a smart meter by 2025. Order online direct from your supplier or at www.smartenergyqgb.org.

3.2.2 Energy Efficiency

Improving the efficiency of our buildings can reduce heating bills by around 20% and reduce our dependency on gas.

Energy efficiency measures include double glazing, cavity wall and external wall insulation, and efficient lighting.

4 Heating and Cooling

4.1 Heating

Heating is usually the largest energy cost in the workplace, adding up to 40% of energy use in a non-domestic building. Preventing heat loss through insulation and blocking draughts can significantly reduce heating costs and loss.

Below is a list of considerations the Energy Saving Trust has outlined that can help you assess the efficiency of your heating mechanisms and practises.

- When were heaters or boilers last serviced?
- Are portable heaters being used by staff?
- Are the heating and air conditioning operating at the same time in the same place?
- Are hot water tanks, boilers and pipes insulated?
- Have you installed heating reflectors?
- Do you have smart heating controls?
- Who is responsible for changing the heating times at different times of the year?
- Are windows open when the heating is on?

According to the Carbon Trust, double or secondary glazed windows will reduce heat loss through windows by up to 50%.

North East & Yorkshire Public Sector Estate Decarbonisation Programme
Heat Decarbonisation Plan – [Participant name]

Insulation is one of the best approaches to help reduce heat loss. The Carbon Trust have found that installing 100-150mm of glass fibre insulation in lofts can reduce heat losses by up to 90% and insulating cavity walls can reduce losses from walls by two thirds.

Follow the following steps to make a difference to your business:

- A recommended temperature for your heating is between 18°C and 21°C.
- Only heat the rooms in use, at the time of day they are in use, to avoid waste heat.
- Ensure controls are not tampered with – if you haven't already done so, identify a member of staff to take responsibility for the controls.
- Keep all the windows and doors closed when the heating is on to avoid any lost heat. Up to 30% of heating costs can be saved by preventing cold air entering a building, controlling this is one of the simplest ways to reduce energy bills.
- Using thermostatic radiator valves (TRVs) allows you to adjust the temperature of individual radiators. This means you can turn them up or down as needed, or off completely when not in use.
- Insulation and glazed windows help secure the heat inside rather than letting it leak outside, ensure you have these measures in place to increase your energy efficiency.

- Consider changing your energy heating supply from gas-fired boilers mains to renewable energy low-carbon options such as heat pumps or solar PV thermal.
- As little as 1°C lower can make considerable saving to your energy consumption and bills. Heating costs increase by around 8% for every 10°C increase. Turning the temperature higher on your thermostat doesn't warm the room up quicker.

4.2 Cooling

As temperatures continue to become more volatile, our summers are becoming increasingly hotter with temperatures already exceeding previous record highs. This means the use of air conditioning will surge, but it needs to be used efficiently to ensure costs are kept minimal alongside low energy usage.

Follow the following steps to make a difference to your business:

- Ensure air conditioning is turned off in meeting rooms when people leave.
- Either open windows or use AC – never both.
- Ensure the AC in IT server rooms is set as recommended by the manufacturer and use cold-aisle separation where possible.
- One of the quickest and cost-effective methods of reducing a building's cooling load is to reduce solar irradiance through

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Heat Decarbonisation Plan – [Participant name]

windows using shading, such as blinds, solar film, curtains, or foliage.

- Ensure that controls for cooling are properly set up so as not to conflict with building heating set points. Set points for heating and cooling should have enough head room so as not to end up in a scenario where both heating and cooling is occurring at the same time.

It's important to combine the aforementioned efficiency measures for optimum results. Improved efficiency measures will reduce costs and the need to heat and cool your building at extreme temperatures because the desired temperature is maintained rather than lost.

5 Renewable Technology

To reduce the reliance on fossil fuels we must transition to renewable technologies that provide clean energy. There are different options to consider, including solar PV, connecting to local heat networks, and installing heat pumps. Alternatively, or additionally, you can change to a renewable energy provider to cut down your fossil fuel consumption.

5.1 Solar PV and Thermal

Solar electricity is generated through solar photovoltaic (PV) technology. Solar PV panels are used to capture the sun's energy, turning it into electricity. They can be installed by any size of business that would like to cut costs, bring in extra revenue, reduce reliance on rising energy prices and

minimise its carbon footprint. The more energy you need to use in your operation, the more your business and the planet will benefit from installing solar panels.

For smaller organisations, solar thermal might be a viable option to meeting your building's demand for domestic hot water. Solar thermal is installed in much the same way as solar PV, however instead of generating electricity, solar thermal harnesses radiation from the sun to provide hot water. Depending on the technology installed, solar thermal is typically sized to provide 60% of a building's demand for hot water. This means that solar thermal will require backup from another source of heating, but the saving on a proportion of hot water demand could be significant.

To assess your business potential for solar energy and to find out more information, follow the link below to see what options are available to your business: www.solarguide.co.uk/solar-panels-business.

5.2 Heat Pumps

Heat pumps offer a long-term cost-effective solution to heating, whereby they move heat from one area to another. The most popular type is the Air Source Heat Pump, which uses a small amount of electrical energy to transfer the ambient heat in the air outside your property and move it inside, where, at a higher temperature it can then be used for under floor heating, radiators or maintaining a supply of hot water. Other types of heat

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pump use the ground or water as a source of

Heat pumps are typically more efficient than traditional boilers and require a lot less electricity than electric heaters. As such, you can benefit from 3-4 times more heat from each kW of electricity supplied heat.

Transitioning to a heat pump has various advantages, through the medium of swapping your oil or gas boiler, or direct electric heating.

- Reduce your energy bills through less reliance on gas and oil as it is typically reliant on electricity.
- The government has recently announced 0% VAT on the installation of heat pumps and biomass boilers, which will last for 5 years, further reducing the cost of installation.
- Heat pumps are significantly more efficient than traditional boilers and use cleaner electricity, so will reduce your home's carbon footprint.
- Installing a heat pump now will get you ahead of the curve for the future of heating, establishing your access to the latest technology and allow you to future proof your building.

For more information on heat pumps in commercial settings, follow the link: www.renewableenergy.hub.co.uk.

5.3 Heat Networks

Heat networks are often found in high density urban areas and typically offer the lowest cost, low carbon heating option.

Heat networks are a communal solution that provides heat to a range of homes and businesses by capturing or generating heat from local sources.

Heat networks distribute heat or cooling from a central source or sources and deliver it to a variety of different customers such as public buildings, shops, offices, hospitals, universities, and homes. By supplying multiple buildings, they avoid the need for individual boilers or electric heaters in every building.

Heat networks are also uniquely able to use local sources of low carbon heat which would otherwise go to waste. This could be from factories, the ground or even from rivers.

It's important to note, not everywhere has access to a heat network. To see if you are near a heat network and are eligible to connect follow the link below to see where they are located across the UK:

www.theade.co.uk/resources/guidance/district-heating-installation-map and to see the various energy heating types across the UK follow the link here: ons.gov.uk/peoplepopulationandcommunity/housing/articles/census2021howhomesareheatedinyourarea/2023-01-05.

6 Summary

There is a variety of different methods you can adopt in your business, whether it's lowering your heating or changing your energy provider. Equally, there are varying scales at which you can lower your carbon emissions, some easier and cheaper than others. Although, they will all

North East & Yorkshire Public Sector Estate Decarbonisation Programme

Heat Decarbonisation Plan – [Participant name]

make some form of difference in the long run. Start today with something you think is achievable and slowly build up to the more complex approaches to make a positive impact on the climate in your business.

