Herefordshire Council

Greenhouse Gas (GHG) Emissions Report

2023-2024

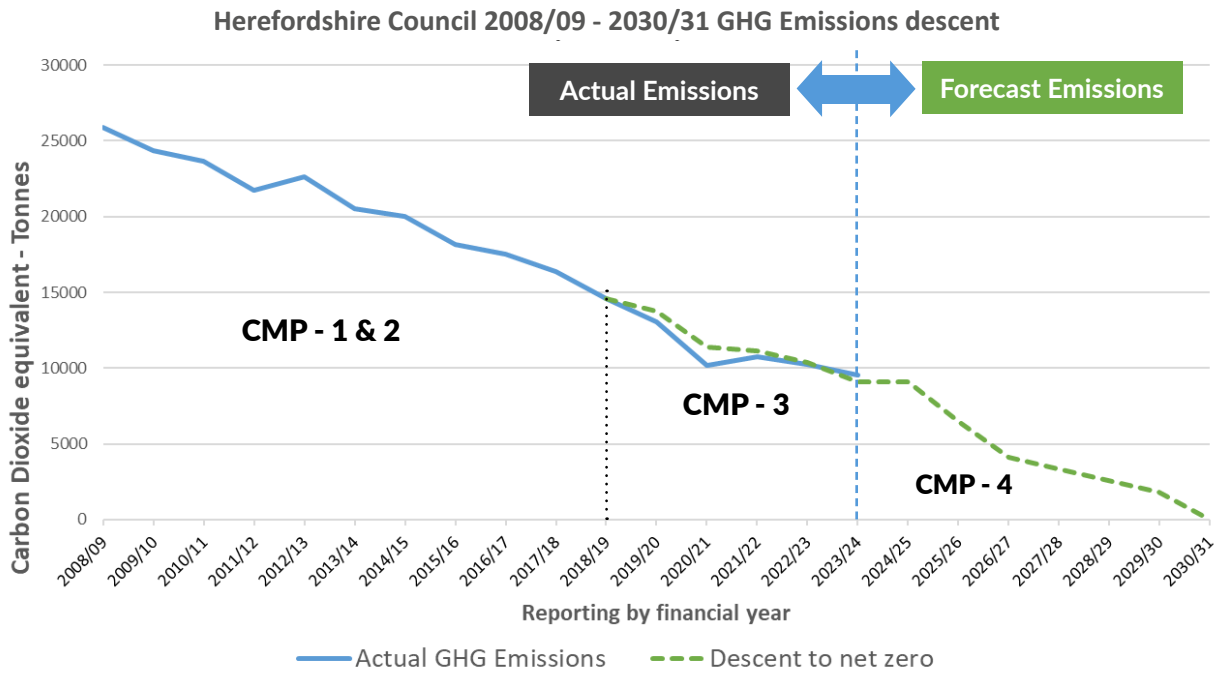
Contents

1. Footprint at a glance

Herefordshire Council	2008-2009 Emissions tCO_2e	2023-2024 Emissions tCO_2e	Emissions change	Reduction %
Scope 1	6,531	2,384	-4,147	-63.5%
Scope 2	8,517	6	-8,511	-99.9%
Scope 3	10,866	7,154	-3,712	-34.2%
Total	**25,914**	**9,545**	**-16,370**	**-63.2%**

Total emissions are now **9,545 tCO_2e.**

This is a decrease of **16,370 tCO_2e** or **63%** since 2008/09 baseline year.



Summary of changes to reporting process for 2023-24

- Staff commuting and homeworking have previously used estimated figures. Data from the staff survey in 2024 was used to refine the estimated figures to improve accuracy.

2. Overview

2.1 What are Greenhouse Gases? (GHGs)

Greenhouse Gases (GHG's) are a range of different gases that all have a measurable impact on atmospheric warming. While carbon is the largest contributor, other gases also have a warming effect. Some of these gases have a warming effect far greater than carbon, but are quantified in terms of the equivalent mass of carbon. Collectively the GHG emissions are quantified in tonnes of carbon dioxide equivalent – tCO_2e.

2.2 Background

This report quantifies the Greenhouse Gas (GHG) emissions produced by Herefordshire Council between 1 April 2023 and 31 March 2024.

It has been produced in accordance with the Greenhouse Gas Protocol (revised edition) and under written guidance from the Department for Environment, Food and Rural Affairs (DEFRA) on how to measure and report greenhouse gas emissions (2009).

The organisational boundary determines which emissions should be included within the report. An Operational Control approach was used to determine this boundary, being those functions over which the Council has some operational control. This includes direct Council operations and those delivered under major contracts.

Emissions figures are produced from a combination of consumption volume multiplied by a conversion factor determined by the type of fuel consumed. All conversion factors used are those produced by the Department for Energy Security and Net Zero (DESNZ) in the 2023 data release. Where applicable, Gross CV (Calorific Value) has been used for fuels. All emissions are measured in tonnes of carbon dioxide equivalent (tCO_2e).

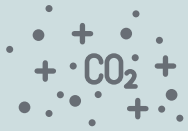
2.3 Objectives

The primary purpose of reporting is to track progress towards stated national and local targets for GHG emissions reduction. Progress is tracked from a fixed baseline and for Herefordshire Council this is 2008/09, the first year GHG emissions were reported.

2.4 Re-calculating the baseline

The reporting process evolves over time in response to both organisational and operational changes within the Council and the availability of data from which to calculate emissions. To maintain a consistent record of progress from the baseline, it is necessary to periodically re-calculate the baseline emissions to include any new emissions sources or any changes in assumptions or estimations upon which past reporting has been based. There have been **no changes** that required re-calculation of the baseline this reporting year.

3. Herefordshire Council: Emissions 2023/24



In order to correctly track emissions sources, the GHG Protocol divides emission sources into Scopes.

Scope 1

These are direct emissions produced by:

- Council owned/controlled mobile combustion sources (e.g. petrol and diesel fuel consumed in buses and cars for transportation purposes)
- Combustion of fuels in stationary sources (e.g. natural gas, burning oil, gas oil and LPG consumed within Herefordshire Council buildings)

Scope 2

These are indirect emissions from the generation of:

- Purchased electricity
- Purchased heat or steam that is consumed in the Council's owned or controlled equipment or operations

Note: Herefordshire Council do not purchase heat or steam. Almost all electricity is 100% REGO backed renewable. Non renewable supplies served some tenanted properties, where HC covers utility costs between tenancies.

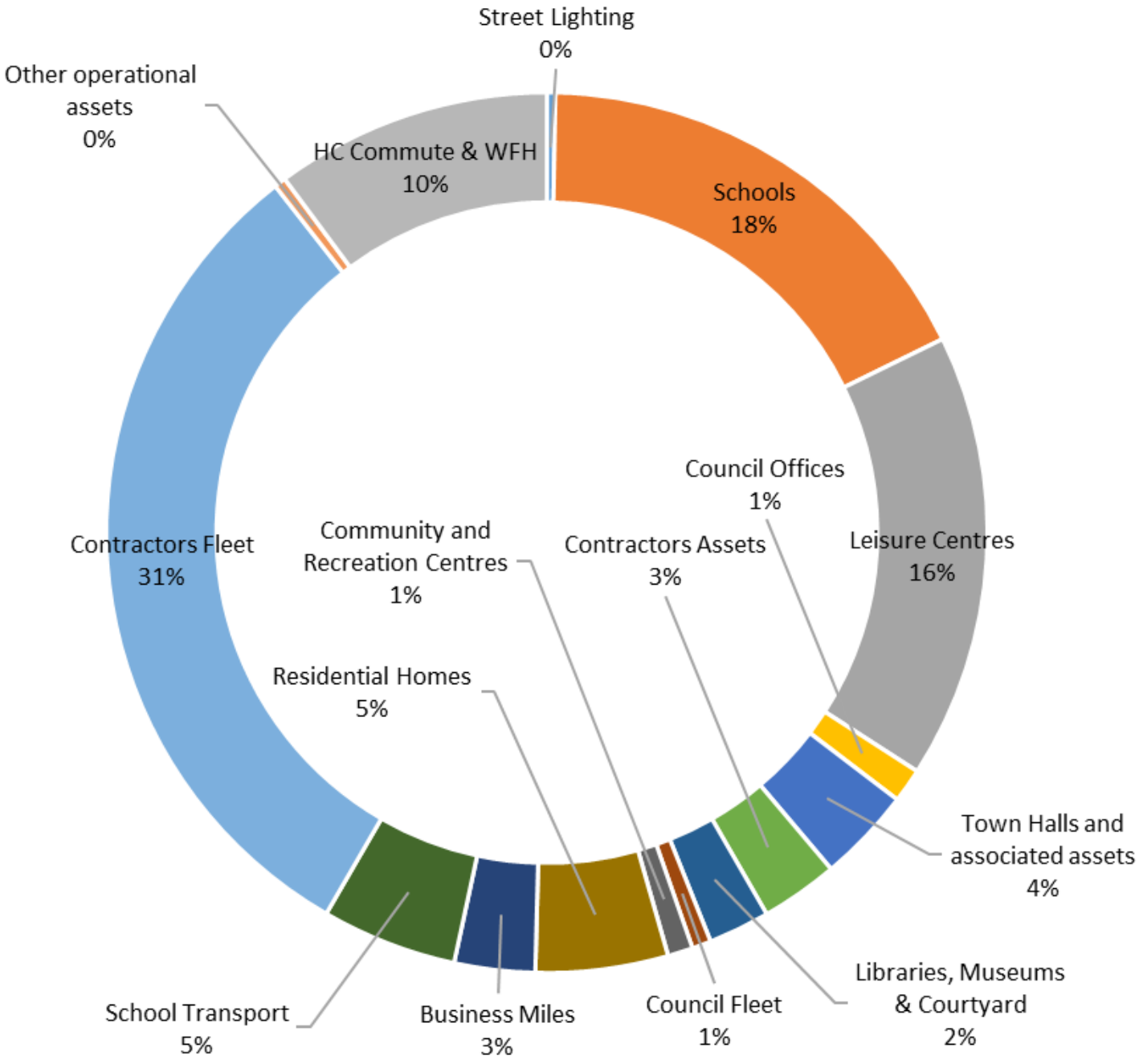
Scope 3

These are indirect emissions that aren't produced directly by the Council but are part of the upstream and downstream value chain. They are the emissions produced by other organisations and individuals delivering functions that are within the Council's operational boundary.

- Business travel (staff mileage for business purposes)
- Staff commuting
- Staff working from home
- Electricity, gas, burning oil and LPG consumption in buildings operated by outsourced services for waste management, highways, leisure, cultural services and residential care homes
- Petrol and diesel consumption by contracted fleet vehicles
- Fleet and staff mileage undertaken by main outsourced contractors on behalf of Herefordshire Council

As well as placing emissions into the three Scopes, Herefordshire Council allocates the emissions to one of 15 categories. These categories aid understanding of the relative quantity of emissions produced by different functions. The categories referring to outsourced services are entirely Scope 3 emissions. For those direct Council services they include emissions from Scopes 1, 2 and 3.

Emissions by type - tCO_2e, % of total



Interpretation of changes from 2022-23

Changes in emissions can be attributed to the following:

Emissions factors

These measure the carbon intensity of fuel and are provided by the UK Government for reporting purposes. They change over time due to various factors. Comparing 22-23 to 23-24, there have been the following changes:

- Carbon intensity for Diesel and petrol vehicles has continued to drop as a consequence of greater overall efficiency.
- The intensity of UK grid electricity increased by 7% from 2022, a reversal of the general trend that has seen the intensity drop steadily in recent years. The increase was due to increase in usage of natural gas and reduced renewable generation. This has had very little impact due to the Councils' renewable energy supply but it does impact on the Transmission and Distribution losses.

An overview of the emissions factors changes is available at:

An overview of the emissions factors changes is available at:
2023 Government greenhouse gas conversion factors for company reporting: Major changes to the Conversion Factors (publishing.service.gov.uk)

Council Offices, Town Halls, libraries and other Council buildings:

Further efforts have been made to reduce energy use through management of the heating and ventilation systems at main Council buildings.

School Transport

With such a wide reaching and complex service, accurate and reliable data is difficult to obtain. The same volume figures have been used in 2023-24 as were supplied in the previous year. Emission change is due to the carbon intensity of fuel.

Council fleet

Review of fleet vehicles for the purposes of the emissions reporting identified that some vehicles had been incorrectly categorised in last years report and have now been allocated to the correct class for emissions reporting. This increase is a reporting correction rather than an actual trend in emissions.

Business miles

The emissions from recorded business mileage has increased and likely reflects changes to homeworking practices and operational demands.

Contractor's Fleet

Significant reductions across the contractors fleet have been achieved. This is a combination of operational demands and the reduction in the diesel fuel emissions factor which is significant for such large volume users. Severn Waste have increased the use of vehicle telematics to improve vehicle and driver performance.

Other operational assets

Electricity purchased remains 100% renewable.

Schools

There has been a significant drop in schools emissions that can be attributed to: energy efficiency measures; installation of solar PV and reduced ventilation requirements.

Commuting and Working from home

A staff survey was completed over summer 2024 and the data used to refine the methodology used to estimate both commuting and homeworking. Homeworking has reduced while the commuting estimate has increased. This has increased the overall emissions estimate. As it is the result of the improved data collection and it is not possible to draw a trend from this reported increase.

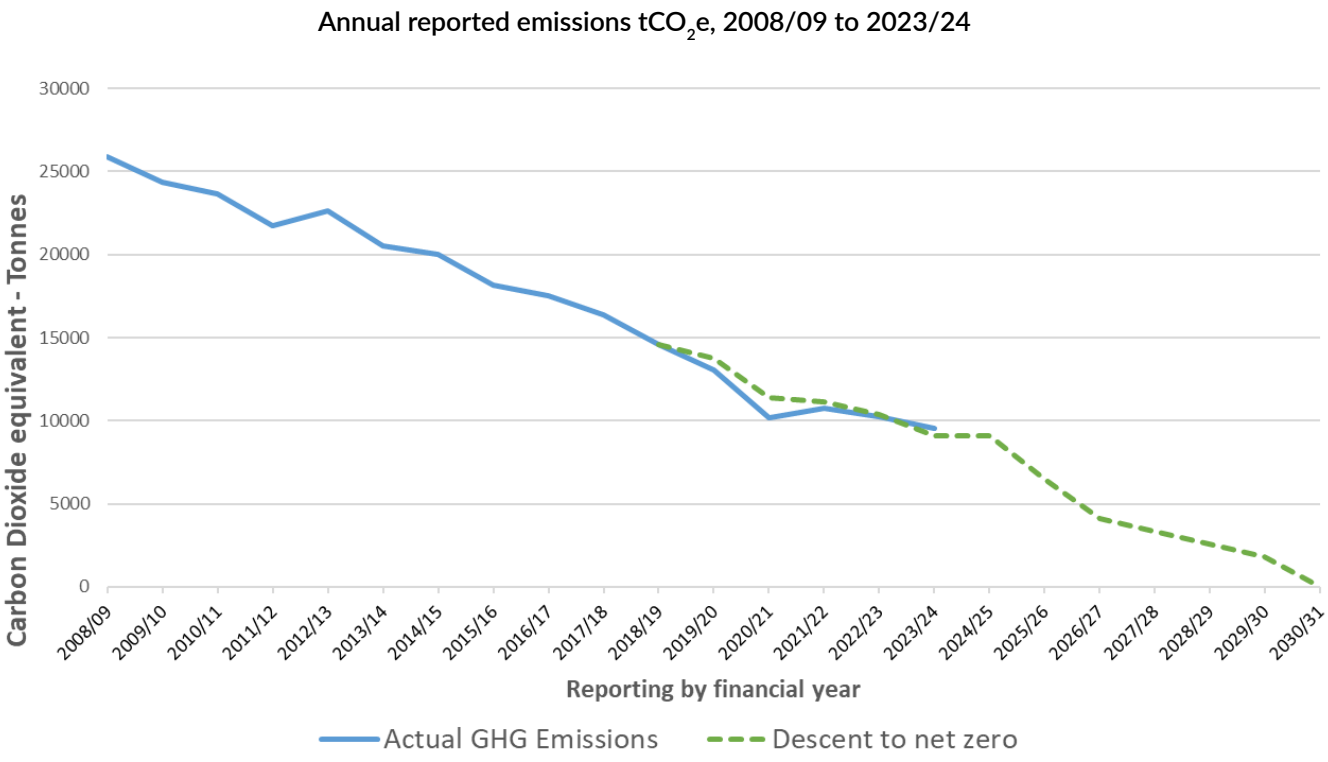
4. Targets

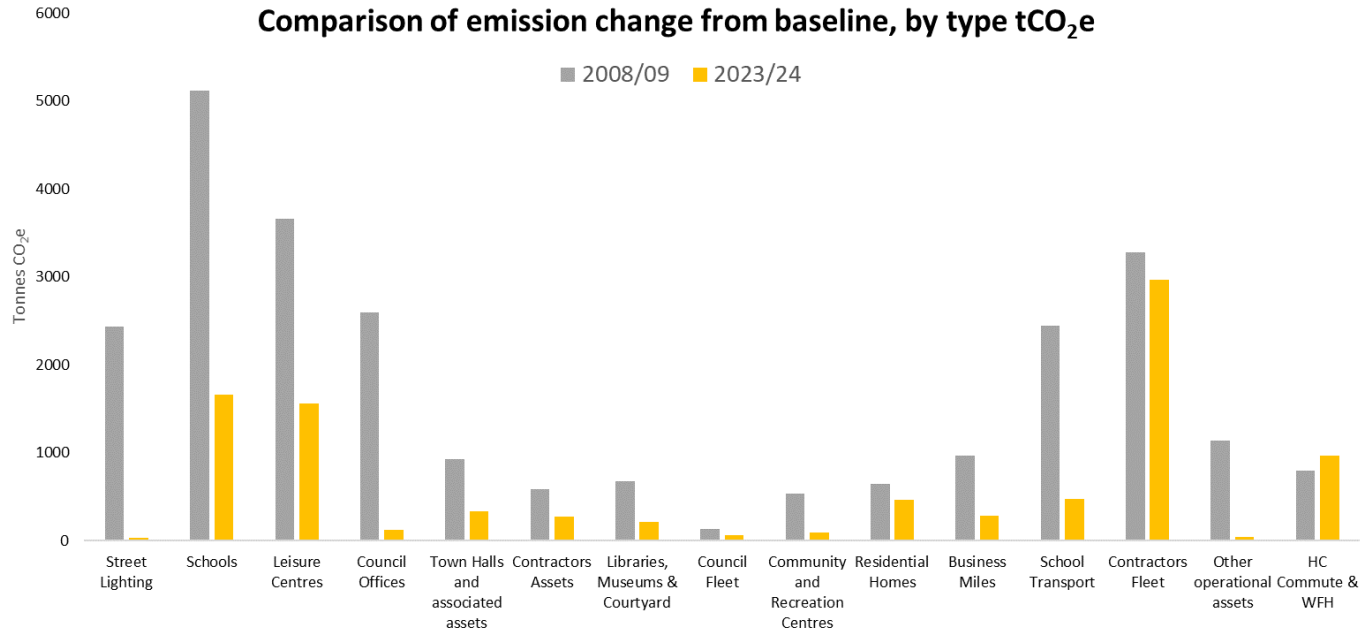
4.1 Recalculation of the baseline

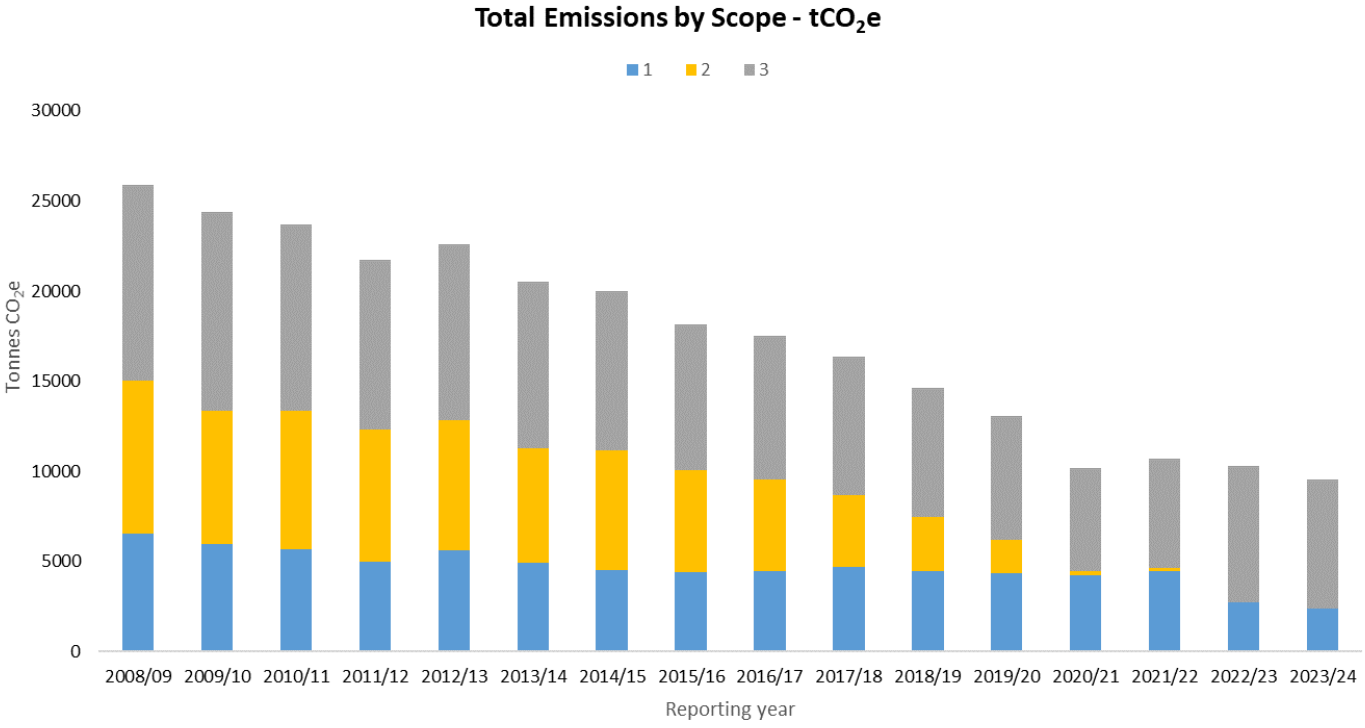
There were no significant changes to the scope of the reporting from the previous year and so a recalculation of the baseline was not required.

4.2 Progress to date – change from 08/09 baseline

Total emissions are now 9,545 t CO_2e. This is a decrease of 16,370 CO_2e or 63%




Comparison of emission change from baseline, by type tCO2e
2008/09
2023/24
Tonnes CO2e
6000
5000
4000
3000
2000
1000
0
Street Lighting
Schools
Leisure Centres
Council Offices
Town Halls and associated assets
Contractors Assets
Libraries, Museums & Courtyard
Council Fleet
Community and Recreation Centres
Residential Homes
Business Miles
School Transport
Contractors Fleet
Other operational assets
HC Commute & WFH


Total Emissions by Scope - tCO2e
1
2
3
Tonnes CO2e
30000
25000
20000
15000
10000
5000
0
2008/09
2009/10
2010/11
2011/12
2012/13
2013/14
2014/15
2015/16
2016/17
2017/18
2018/19
2019/20
2020/21
2021/22
2022/23
2023/24
Reporting year

5. Areas of work

Area of work	CMP-3 Reduction Target -tCO_2e	Saving achieved to date - tCO_2e*	Progress in 2023-24
Renewable Energy 	-1652	-1593	• Council buildings are supplied with 100% renewable electricity
Energy Efficiency Projects 	-563	-706	• Heating and ventilation controls across Council buildings were reviewed to reduce energy demand. While the UK experienced a warmer than average summer**, Herefordshire itself was not significantly warmer than average which limited cooling demand. The winter*** 23-24 was significantly warmer than average and undoubtedly contributed to lower heating demand across the estate, reflected in reduced gas consumption.
Better Ways of Working 	-273	14	• The targets for this area did not include estimates for the emissions from homeworking. At 408 tCO2e this creates a significant challenge to meet the target as originally defined. • The commuting emissions estimate has now been based on staff survey results and that has resulted in a reported increase in emissions. • Both of these are the result of a changed employment market post Covid.
Schools 	-2271	-1,566	• Energy consumption reduced as a response to weather and a full year of solar generation on sites with new installations. • A sunny June will have maximised solar generation and the relatively more cloudy July/August occurred during school holidays. Warm winter temperatures reduced winter gas demand.
Contracts 	-363	-186	• Waste fleet partners reduced diesel consumption through improved use of telematics and driver behaviour.
Partners 	-1753	-1,097	• Significant savings were made in vehicle use for public realm contractors; reduction of gas and electricity use at leisure centres and residential homes, at least partly linked to the warmer winter.
TOTALS	**-6874**	**-5,135**	

* negative figures indicate a reduction in emissions
**Summer: https://www.metoffice.gov.uk/binaries/content/assets/metofficegovuk/pdf/weather/learn-about/uk-past-events/summaries/uk_monthly_climate_summary_summer_2023.pdf
***Winter: https://www.metoffice.gov.uk/binaries/content/assets/metofficegovuk/pdf/weather/learn-about/uk-past-events/summaries/uk_climate_summary_winter_2024.pdf

GHG protocol scopes

Scope 1

- Council owned/controlled mobile combustion sources (e.g. petrol and diesel fuel consumed in buses and cars for transportation purposes)
- Combustion of fuels in stationary sources (e.g. natural gas, burning oil, gas oil and LPG consumed within Herefordshire Council buildings)

Scope 2

- Emissions from the generation of purchased electricity, heat or steam that is consumed in the Council's owned or controlled equipment or operations (e.g. buildings and street lighting)

Scope 3

- Business travel (staff mileage, rail travel by HC staff for business purposes)
- Staff commuting
- Electricity, gas, burning oil and LPG consumption in buildings operated by outsourced services for waste management, highways, leisure, cultural services, education (academies) and residential care homes
- Petrol and diesel consumption by contracted fleet vehicles
- Fleet and staff mileage undertaken by main outsourced contractors on behalf of Herefordshire Council

Notable exclusions (also excluded from previous reporting periods):

- Emissions from Hill and Moor landfill site. Waste emissions are mainly from county residences and businesses which are represented in the county emission figures rather than the Council's.
- Fugitive emissions from air-conditioning systems. Fugitive emissions from intentional or unintentional releases, e.g., leaks or spills of hydrofluorocarbon (HFC) emissions during the use of refrigeration and air conditioning equipment.

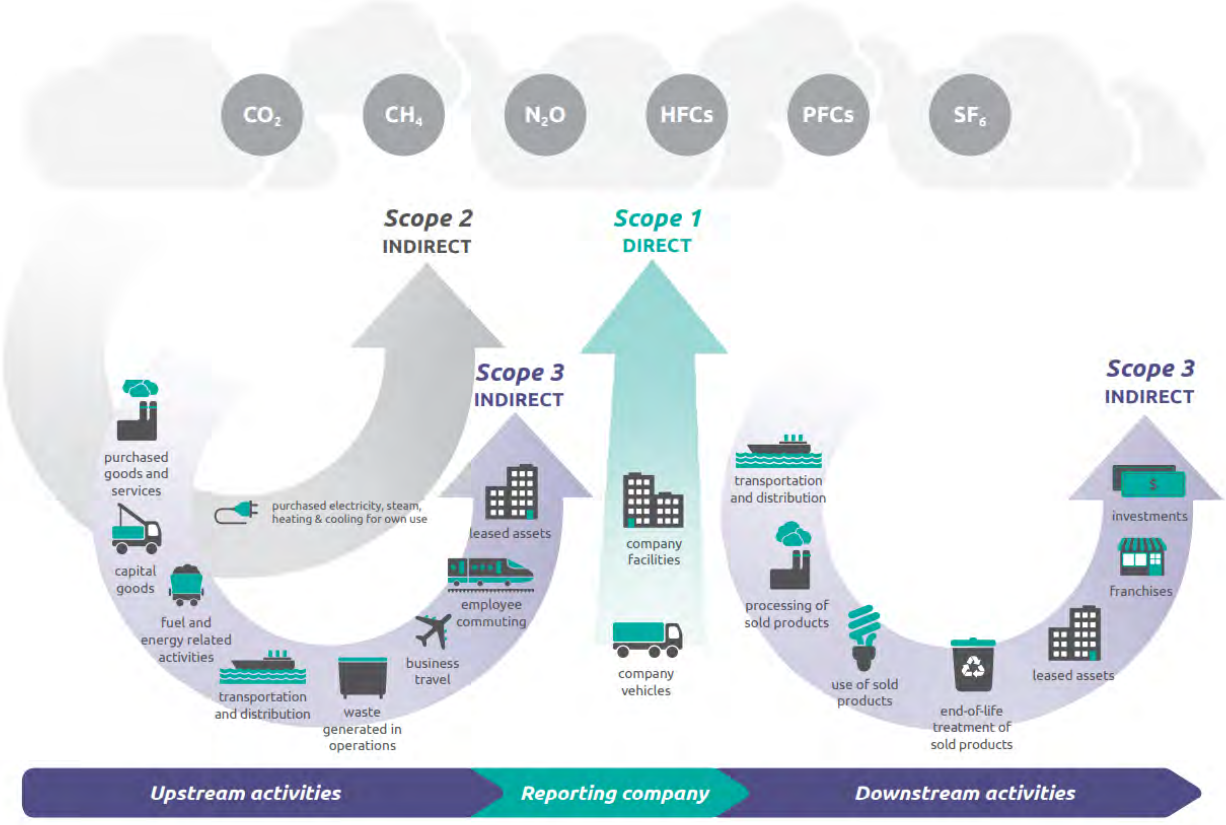


Figure 1: Overview of GHG Protocol scopes and emissions across the value chain
(Source: www.ghgprotocol.org**)**

Appendix I: **Methodology**

Principles of emission reporting

There are five established principles that underpin how GHG emissions should be reported:

Relevance
Ensure the GHG inventory appropriately reflects the GHG emissions of the company and serves the decision-making needs of users – both internal and external to the company.

Completeness
Account for and report on all GHG emission sources and activities within the chosen inventory boundary. Disclose and justify any specific exclusions.

Consistency
Use consistent methodologies to allow for meaningful comparisons of emissions over time. Transparently document any changes to the data, inventory boundary, methods, or any other relevant factors in the time series.

Transparency
Address all relevant issues in a factual and coherent manner, based on a clear audit trail. Disclose any relevant assumptions and make appropriate references to the accounting and calculation methodologies and data sources used.

Accuracy
Ensure that the quantification of GHG emissions is systematically neither over nor under actual emissions, as far as can be judged, and that uncertainties are reduced as far as practicable. Achieve sufficient accuracy to enable users to make decisions with reasonable assurance as to the integrity of the reported information.

ghg-protocol-revised.pdf (ghgprotocol.org)

Appendix II: **Assumptions and Exclusions**

Assumptions

It is necessary to make some assumptions regarding the energy consumption for some emissions sources. Where consumption is recorded directly such as supply through a Council building's electricity meter the data can be considered highly accurate and no assumptions are required. However, there are a number of known emissions sources that cannot be directly measured and so some reasoned, logical assumptions are required to produce an estimate.

Schools – Heating oil: This is not purchased centrally and each school would need to provide delivery information. Historic data that was provided in previous years has been used. This is a very small element of the total emissions.

Commuting/Homeworking division: The proportioned estimate of commuting and homeworking time must be consistent to ensure every staff member is accounted for as doing one or the other on each working day. Based on the results of the Herefordshire Council staff survey conducted in July 2024, staff commute approximately 37% of the working time and 63% homeworking.

Commuting: It is not possible to accurately track the travel habits of every staff member on every day, given the hugely variable nature of travel choices and distances. This estimate was informed with data from the 2024 staff survey.

Weather correction: Annual variances to heating and cooling periods impact on energy consumption. Taking these variances into account is useful for tracking the energy performance of an individual building as annual changes can accounted for and year-to-year comparisons made. This is of limited use in GHG emission reporting as emissions result from the actual measured fuel consumption. Therefore no weather correction has been applied to any building consumption.

Vehicle mileage figures: Readings from the vehicles' odometer are collected annually. Annual mileage figures can be produced by comparing the reading from one year to the next. However, it is not practical to collect the odometer readings for every vehicle precisely 365 days apart. Therefore, the reporting period for individual vehicle mileage across the entire vehicle fleet will vary. This year, data collection for all vehicles was completed before the end of April 2024 and so this variation is limited.

Exclusions

It is essential to be transparent and identify those known sources of GHG emissions that have not been included in the report. In accordance with the Protocol, all Scope 1 and 2 emissions have been recorded. For Scope 3 emissions, there is more flexibility for the reporting organisation to determine which are appropriate to include.

The following Scope 3 emissions sources have been excluded on the basis that it is not yet possible to collect an accurate dataset.

Purchase of goods and services: This includes everything from office supplies and laptops to vehicles and building materials. Emissions factors are provided based on broad categories of goods but a reliable and consistent data collection process for the quantity and type of goods purchased across the entire Council is not yet in place.

Waste emissions: The emissions released directly from the waste itself as it is burnt or processed are not included. Waste produced directly at Council buildings and during operations is not yet quantified and so is excluded. However, emissions from the Councils contractors' operating the waste facilities and refuse collection are included.

Fugitive emissions: This emission source covers a range of synthetic gases commonly used for refrigeration and in air conditioning systems. While these are closed systems, some gas can escape during maintenance and replacement of gas storage. These have not been measured.

Bus, rail, sea and air business miles. Unable to obtain accurate data, this will be pursued for future reporting.

Well-to-Tank WTT emissions: These are the supply chain emissions associated with the extraction, refining, transportation and delivery of fuels and are in addition to the GHG emissions produced when that fuel is burned.

Biogenic factors: Some biogenic elements are present within fossil fuels such as the limited proportion of biodiesel included in regular forecourt filling stations. While this does reduce the emissions factor of that fuel, it does not account for emissions generated in producing the biogenic elements. These are currently excluded.

Working from home – Councillors: The working from home figures include only Council staff, though this does include any agency staff as there is an operational requirement for those staff hours regardless of whether the individual is employed directly or not. However, no figures have been included for the hours worked by Councillors at home. Mileage claimed by Councillors is included with the staff business mileage figures.

Water Supply and Treatment: Emissions factors for water supply and treatment have only recently been included in the DESNZ data. Further work is required to capture an accurate dataset covering all Council supplies.

Appendix III: **Data collection**

The following describes the data collection in terms of the source supplying the data, the units used and any assumptions made for sources that require estimation. A data register records the date and source (individual officer) that provided the data.

Electricity – Supply to buildings and operational assets

Consumption data was retrieved from the West Mercia Energy web portal for Council premises. Monthly data is totalled for each building across the 12 month period and each building placed within a suitable category.

A correction factor of 0 is applied to account for 100% renewable energy. **Units are in kilowatt-hours (kWh).**

Electricity – street lighting

The total of the unmetered supply is entered as a single entry and the emissions factor supplied. Some metered supplies to street furniture is also included with the data obtained via the West Mercia Energy web portal. **Units are in kWh.**

Electricity – Transmission & Distribution Losses

Transmission and Distribution losses are not calculated for each individual supply, but instead on the total electricity supplied for each category. **Units are in kWh.**

Electricity – Herefordshire Council tenants

The Council is responsible for some bill payments for tenanted properties, usually when properties become occupied or vacant. Properties use different suppliers and so cannot be confirmed as supplying 100% renewable electricity. Electricity consumption emissions were calculated at the standard carbon intensity for the UK grid. **Units are in kWh.**

Mains Gas

Data retrieved from the West Mercia Energy web portal for Council premises. Monthly data is totalled for each building across the 12 month period and each building placed within a suitable category. **Units are in kWh.**

Mains Gas – Herefordshire Council Tenants

Consumption data is from suppliers bills and will not necessarily cover the entire 12 month reporting period due to tenant occupation. Units are in kWh.

LPG/Propane

Data for this fuel is provided by West Mercia Energy. Each site is placed into one of the categories. **Units are in KWh.**

Heating Oil

Emissions are estimates based on actual consumption recorded in previous years. Units are in litres.

Herefordshire Council Fleet

Mileage readings are collected from vehicle managers across April/May. Each vehicle is then recorded separately to account for vehicle class (car, van etc) and fuel (diesel, petrol, electricity) and this allows a more accurate emissions conversion factor to be used. Vehicles are then grouped by category.

Electric vehicles that are charged at Council premises have been given a 0.00 emissions factor as the electricity supplied to the vehicle is already recorded in the building's supply meter. This avoids double-counting the energy. Vehicles are sorted by fuel and size category. **Units are in miles.**

Business mileage

All business mileage is recorded for staff expense claims and a data record is provided by Hoople. This includes mileage claimed for cycling and motorcycle use and for mileage claimed by Councillors as well as staff. The unknown vehicle type is used. **Units are in miles.**

Commuting

Commuting is difficult to measure accurately. Distance and potential modes of transport vary between employees and can change regularly due to changes in circumstance and staff turnover. Information on commuting distance, frequency and mode of transport was obtained in the staff survey conducted in July 2024.

When completing the survey, staff members chose the County they commuted from. For Herefordshire, a GIS model was created to determine how far on average staff would travel to and from the Plough Lane office, based on the distribution of housing in the County. For staff commuting from other counties, a fixed distance was chosen for each County to act as an estimated average.

These average distances were applied to the frequency staff indicated they attend an office in person to create an annual mileage. These were then totalled for petrol, diesel, hybrid and electric cars; and for bus and train travel. The survey grouped all hybrid vehicles together and so a flat 50/50 split between hybrid and plug-in hybrid vehicles was used for emissions calculations.

The average vehicle type for each fuel was used and the units are in miles. The national rail and local bus emissions factors and the distances converted from miles to km to use the passenger.km unit.

Working from Home

The UK Government has added a Working from Home figure to the carbon emissions factors. This was based upon research white paper and allows for heating, lighting and appliance use. It produces a carbon figure in hours worked.

As staff were considered to be commuting for 37% of the week, a figure of 63% was applied to the total number of worked staff hours in a year. This is derived from the number of Full-time Equivalent staff x no. of working days x 7.4 hours/day.

However, this assumes that staff are always at home when not in the office and does not account for times when staff are at meetings, site visits and the travel between home and another location. A reduction in the homeworking hours was applied to account for these periods. **Units are in hours.**

Courtyard

The Courtyard produces a detailed set of energy figures each year and these are entered manually and the most suitable carbon emissions factors applied.

Halo

Halo provide electricity and gas consumption data within the leisure centres and a mileage figure for fleet use.

Severn Waste

Severn Waste provide electricity and gas consumption data, vehicle fleet data and total fuel consumption in litres. For service elements shared with Worcestershire County Council, fuel use is proportioned on a 30/70 split between the two Councils.

FCC environment

FCC provide a monthly record of diesel vehicle fuel used during refuse collection.

Shaw

Shaw provided a breakdown of monthly gas and electricity use records for the reporting period, for each site they operate.

Balfour Beatty Living Places (BBLP)

BBLP provide data for fuel use captured as direct bulk fuel purchases, purchases on fuel cards, staff business mileage and electricity and gas supplied to operational premises.

School Transport

The Herefordshire Council School transport team provided details on the journey distances and vehicle types used for school transport. This included part of the Herefordshire Council fleet record for Transport and Access services.

For more information please contact:
Sustainability and Climate Change Team,
Herefordshire Council
email: S&CC@herefordshire.gov.uk