Meeting Net Zero Carbon in Herefordshire

Report to Environment and Sustainability Scrutiny Committee March 2024

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Introduction

In September 2019, the Council confirmed that it would work with strategic partners, residents and local organisations to aspire to achieve carbon neutrality for Herefordshire by 2030.

The Environment and Sustainability Scrutiny Committee requested this report that would:

- Appraise current carbon emissions in Herefordshire and the work required to achieve the goal of net-zero carbon by 2030.
- Scrutinise how the council contributes to the work of the Herefordshire Climate and Nature Partnership Board
- Assess the partnership's achievements to date

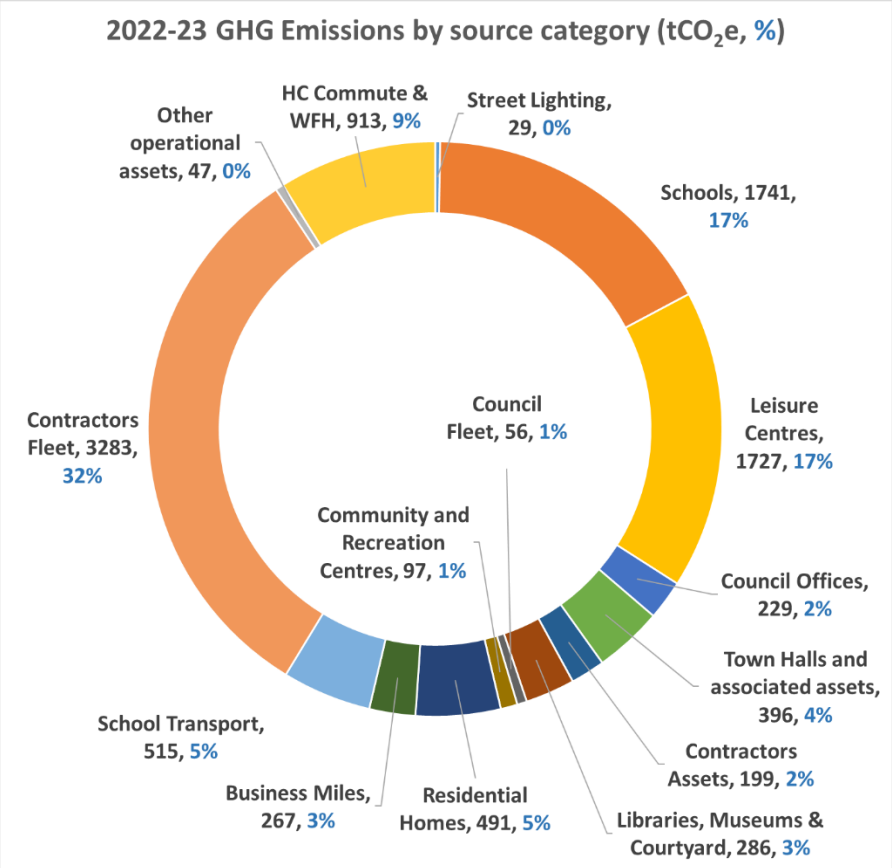
Herefordshire Council's emissions

Herefordshire Council audits and reports on its greenhouse gas emissions. Reporting follows the international standard Greenhouse Gas Protocol. Most Councils within the UK produce similar reports.

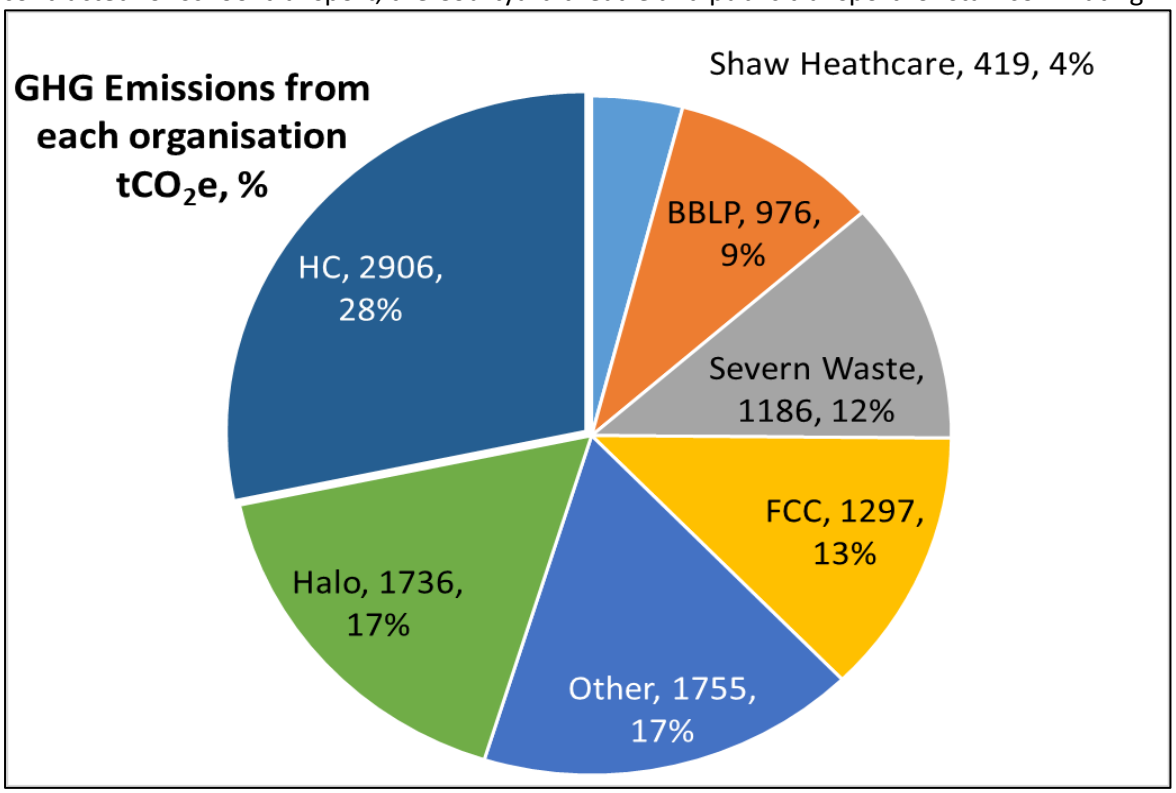
This document provides further analysis of the report, but it is recommended that the published report is read first.

The Council has audited its emissions since 2008/09. This forms the baseline year from which to measure progress. The reporting protocol requires that emissions are reported in terms of the 3 different scopes. These are useful for consistent reporting but do not assist determining which Council operations are producing the emissions and where to focus action and resources.

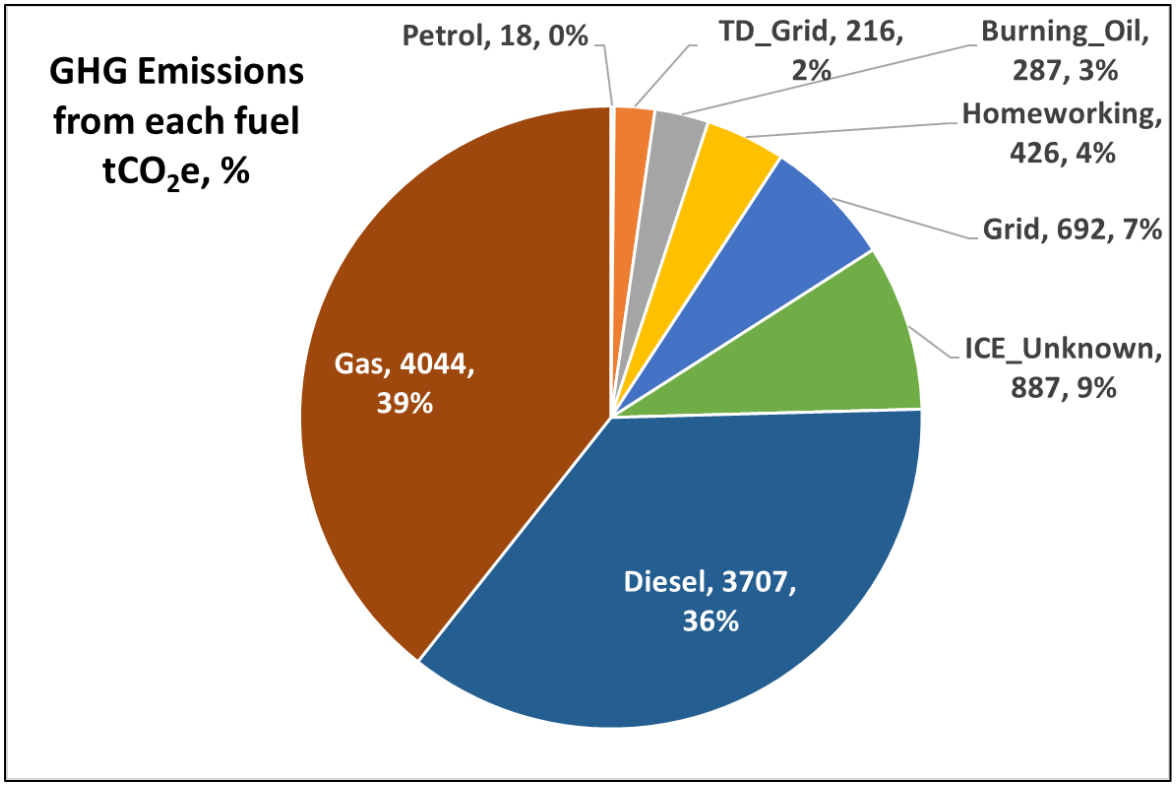
The GHG report 22-23 provides a breakdown into emissions categories that more closely match the Council's operations.



As well as these categories the emissions can attributed to the organisation producing the emissions. This includes the direct emissions from the Council, the Council's partners and the Council staff. The 'Other' category is mostly Council staff, but also includes a number of providers and individuals contracted for school transport, the Courtyard theatre and public transport for staff commuting.



Finally, the emissions can be quantified by the fuel source the produces them. This does help target those fuel sources that produce the most emissions by virtue of being the most emissions intensive, used in the largest quantities, or both.



Fuel sources
Grid: Electricity emissions where the supply is not from a renewable source (partner organisations). Herefordshire Councils renewable electricity supply reduces emissions by 1,666 tCO2e.
TD_Grid: These are the transmission and distribution losses associated with using electricity. They are not covered by the renewable energy supply guarantee.
ICE_Unknown: This is an emission category for fossil fuel (Intern Combustion Engine ICE) vehicles used where a specific vehicle category is not known.
Gas: the includes mains gas and LPG
Homeworking: these emissions are calculated on a staff hour basis but the figure is generated from a mix of electricity and mains gas assumed for all households.

Presenting the data by category, by fuel and by organisation highlights some useful facts on the sources of the Council's emissions.

Emissions by category

The contractor's fleet is the single largest emissions source (32% of emissions)
This includes all of the waste collection, waste transfer and maintenance of the public realm. Emissions are high due to the distances covered, the need to use heavy and specialised vehicles and that those vehicles almost exclusively use diesel.

Schools and leisure centres are the next largest emissions sources (17% of emissions each)
School includes a large number of buildings, numerous large buildings, buildings of different ages and have high occupation. The emissions are reduced by the use of renewable electricity, but the estate still requires significant fossil fuel use for heating. Leisure centres are large buildings with high heat demands, in particular heating swimming pools that also require significant ventilation.

Working from home and commuting (9% of emissions)
This is the first year a working from home figure has been included. This category is a modelled estimate due to the inability to directly measure the household energy use and commuting distance of each individual staff member. The figures show that on average, commuting to work produces greater emissions than homeworking.

Council Offices, Town Halls, museums, and other built assets are relatively small (9%)
The Council operates a large number of buildings but emissions are proportionally low, mostly due to the renewable electricity supplies. There has been significant reductions in these emissions categories from efficiency improvements and the reduction in the number of building assets since 2008/09.

Emissions by fuel type
Diesel and gas produce the most emissions (39% and 36% respectively)
Both fuels produce significant emissions when burned. Further reductions from increased efficiency of boilers and vehicles will be limited. Is it difficult to create operational savings (such as reducing vehicle mileage) without a reduction in service provision. Significant reductions can only be achieved by switching these fuels to electricity and potentially in the future, hydrogen.

Emissions by organisation
Waste collection and disposal produces the most emissions (25%)
FCC and Severn Waste collectively produce a quarter of the Council's emissions. Waste transport and collection is the single activity that produces the most emissions, though this is of course a significant operation. The distances that need to be covered each week, in heavy vehicles, throughout the year result in an intrinsically high energy activity that relies on diesel vehicles.

Emissions not included in the reporting

Accurate reporting requires reliable data. There are further emissions produced by the Council's operations that are not included due to a lack of data. Further details are included in the published report but the likely most significant sources not included are:

Procurement of goods: This included everything from paper and printer ink, to concrete, furniture, IT equipment, vehicle parts, appliances, machines and consumables.
Emissions produced by waste: (rather than the collection and transfer of waste): These are emissions from landfill, energy from waste, or the processing required to recycle materials.
Water and sewerage: Water supplied to Council operations and the foul water disposal. Partial data is available, but it does not include all sites such as schools.

County of Herefordshire Greenhouse Gas Emissions

Carbon dioxide, nitrous oxide and methane

Carbon dioxide, nitrous oxide and methane are all contributors to global warming and are collectively referred to as greenhouse gases (GHGs). The different warming potential of each gas is quantified in terms of an equivalent mass of carbon dioxide and is measured in kilograms or tonnes of carbon dioxide equivalent (CO_2e). The County scale emissions in this report are measured in thousands of tonnes – kt CO_2e.

Previously, UK government estimates for County emissions were for carbon dioxide (CO_2) only. The dataset has recently been expanded to include estimates for nitrous oxide and methane and is now reported in carbon dioxide equivalent (CO_2e). This has significantly increased the estimate of the County's total emissions from figures that have been used in previous reports.

While the phrase 'carbon emissions' is commonly used, it is important to recognise that the data referenced within this report includes all three warming gases and is referred to more accurately as 'greenhouse gas emissions'.

The County estimate dataset

This dataset is produced annually by the Department of Energy Security and Net Zero and is two years in arrears, with the 2023 dataset including data for the period 2005-21. This is a form of territorial estimate for the emissions produced within the County including those goods and services that are ultimately consumed elsewhere. Conversely, the figures do not include emissions from those goods and services produced elsewhere but are consumed within the County, other than for the energy used.

The methodology for producing the dataset is a combination of measurement and estimation. Electricity and gas use can be measured accurately, while emissions from transport and livestock are modelled estimates.

Annual County emissions- key figures

County emissions in 2021 were 1473kt CO_2e. Total GHG emissions from the County have reduced by 29.6% since 2005. The UK as a whole has reduced emissions by 39% since 2005.

Each UK County has a unique pattern of emissions based on its industry, population, area, transport networks and land uses. Direct comparisons cannot be made but for context, the table below shows Herefordshire's emissions with those of a County with comparable population (Telford and Wrekin)

and comparable land area (Angus, Scotland). Compared to the UK average Herefordshire has lower emissions per km^2 but higher emissions per capita.

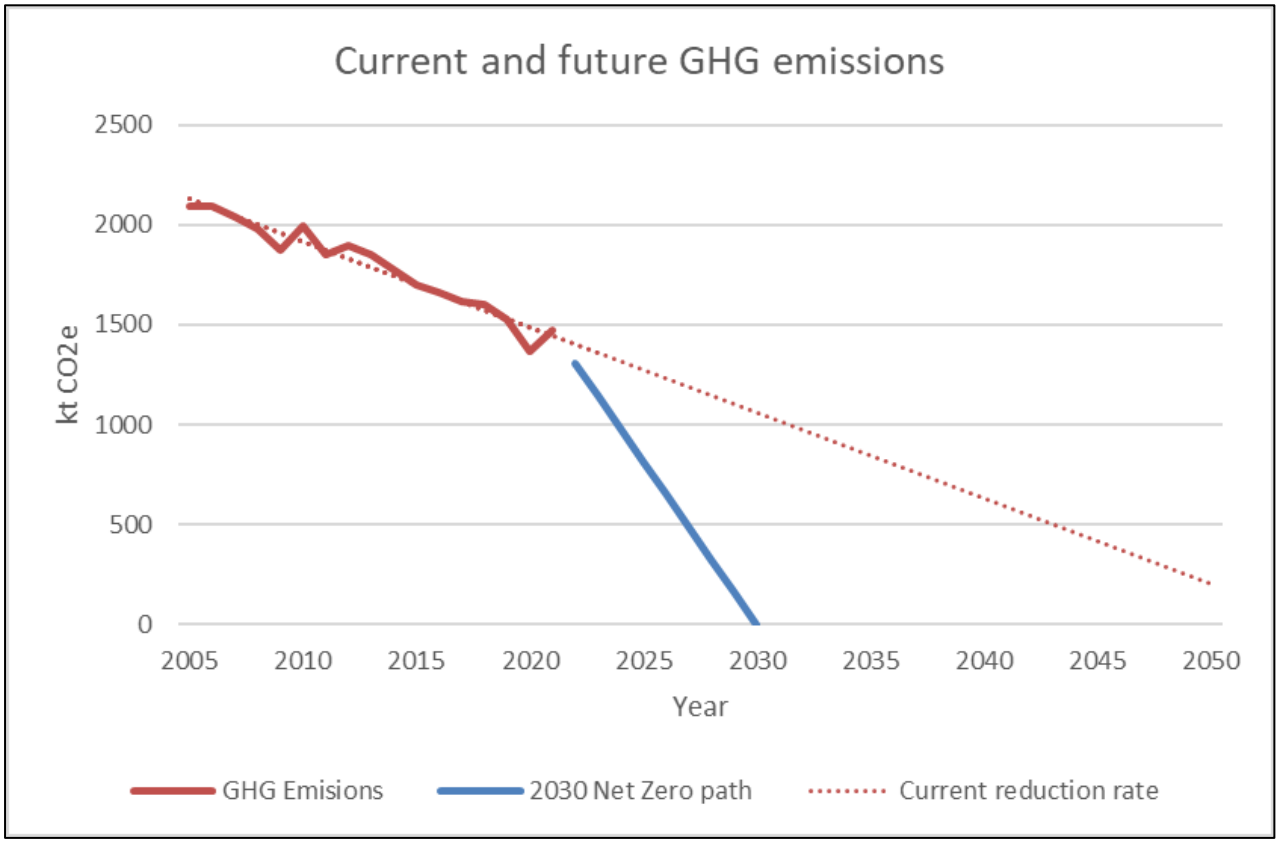
	Emission, 2021 kt CO_2e	Population ('000s, mid-year estimate)	Per Capita Emissions (tCO_2e)	Area (km^2)	Emissions per km^2 (kt CO_2e)
Herefordshire	1473	188	7.9	2,180	0.7
Telford and Wrekin	1003	186	5.4	290	3.5
Angus	1263	116	10.9	2,204	0.6
West Midlands Total	33737	5954	5.7	13,004	2.6
National Total	399,046.1	67,026.3	6.0	248,717.6	1.6

Year	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**
kt CO_2e	2092	2090	2039	1976	1873	1994	1849	1892	1848
Reduction from 2005		0.1%	2.5%	5.5%	10.5%	4.6%	11.6%	9.5%	11.7%

Year		**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**
kt CO_2e		1778	1696	1661	1618	1599	1527	1365	1473
Reduction from 2005		15.0%	18.9%	20.6%	22.6%	23.6%	27.0%	34.8%	29.6%

The emissions in 2020 show a sharp drop due to reduced economic activity during the pandemic.

The current rate of emissions reduction is not rapid enough to meet the net zero target by 2030.



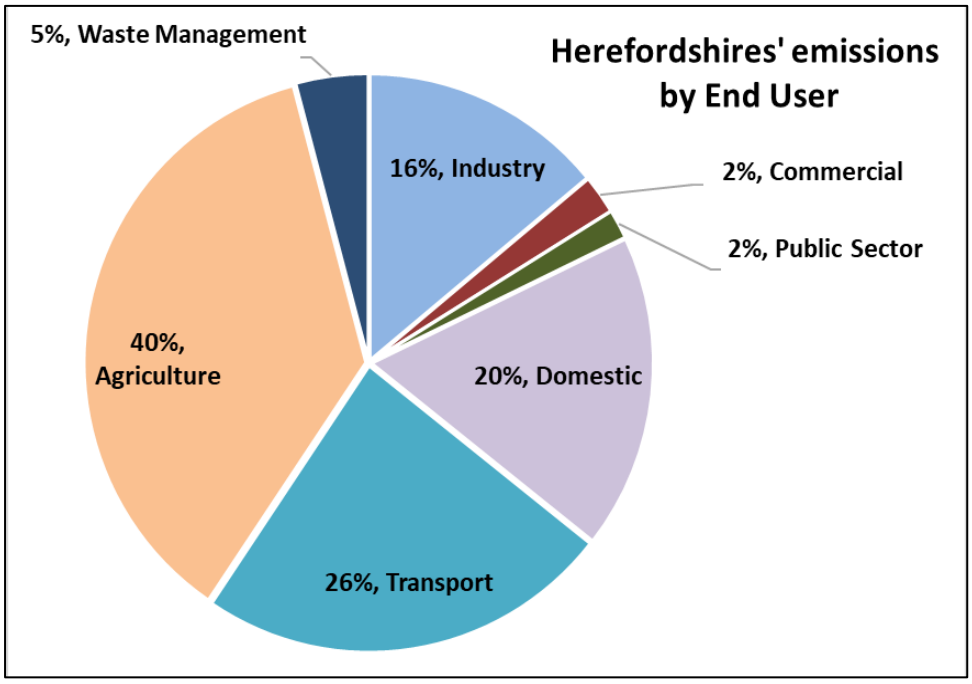
Sources of emissions

The County dataset categorises emissions sources by 'end user'. These end user categories are simple to interpret, though two of the categories warrant clarification:

Agriculture: Includes fuels consumed in buildings and agricultural vehicles, emissions from livestock and from liming and fertiliser application to soils.

Land Use, Land Use Change and Forestry LULUCF: The emissions emitted or absorbed by various land uses. Forest and pasture absorbs CO_2 (carbon sequestration), cultivated and built-up land produce emissions. For Herefordshire, LULUCF is a negative figure - the land use acts as a net emissions sink.

End User	kt CO_2e	County %	UK %
Industry Total	229	16%	21%
Commercial Total	36	2%	4%
Public Sector Total	27	2%	4%
Domestic Total	290	20%	24%
Transport Total	388	26%	28%
Agriculture Total	594	40%	13%
Waste Management Total	68	5%	5%
LULUCF Net Emissions	-160	-11%	0%
Grand Total	**1473**		



Agriculture is the largest emissions source. This can be expected in a rural County with a large number of grazing livestock.

Transport emissions are also proportionally high. This is at least partly due to transport being very dependent on high carbon emitting fuels – petrol and diesel. Limited public transport links and reliance on private car use may also be factors.

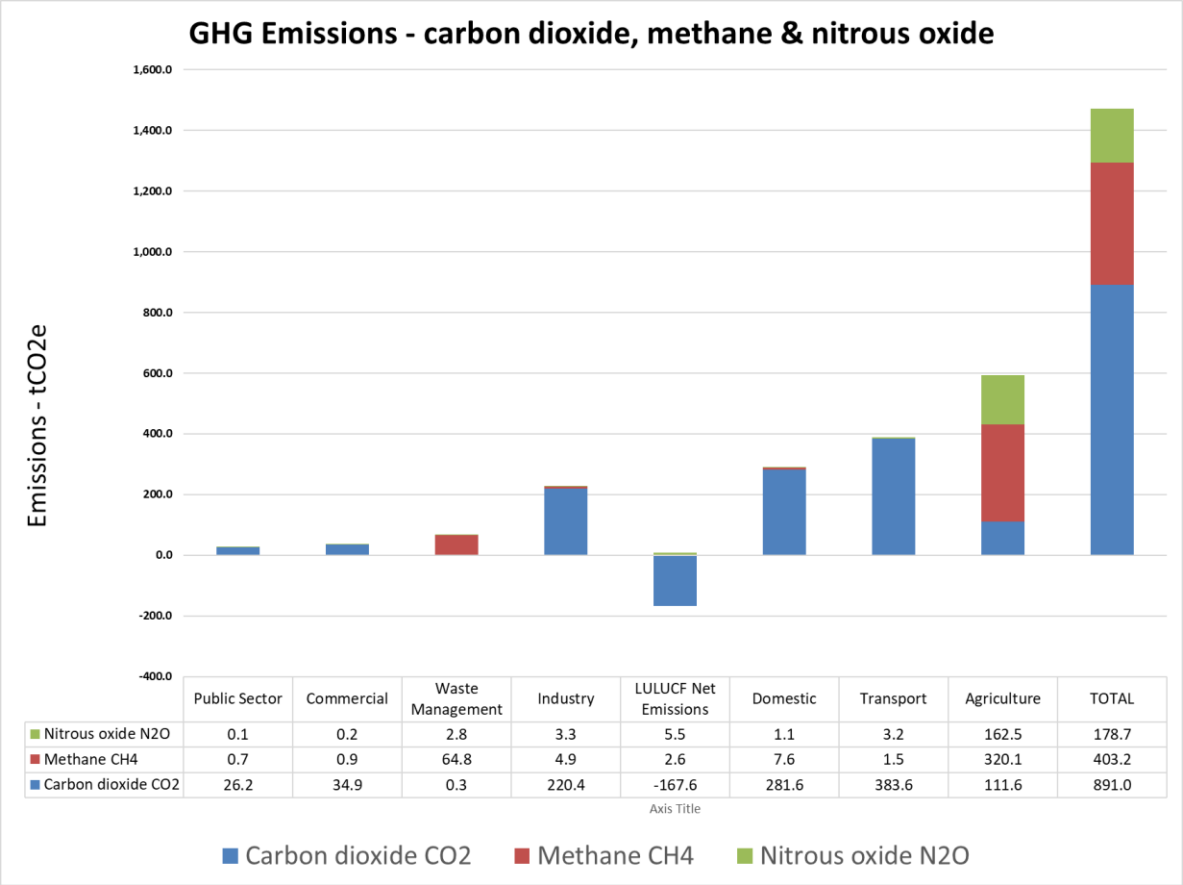
Domestic emissions are also significant. Herefordshire's housing stock is both older and has fewer homes connected to mains gas than the UK average, which results in greater use of oil and LPG.

Breakdown by gas

Carbon dioxide CO_2: Primarily produced from the combustion of fossil fuels. It is a stable gas that will remain in the atmosphere for decades, though it is readily absorbed by plant photosynthesis. Since 2005, CO_2 has reduced by 38.6%.

Nitrous Oxide NO_2: Primarily produced by livestock and nitrogen soil fertiliser. This is also a stable gas and will exist in the atmosphere for over 100 years. This longevity creates significant warming potential. Since 2005, NO_2 has reduced by 5.8%.

Methane CH_4: Primarily produced by livestock and the management of waste. This gas will break down into water vapour and carbon dioxide over time, but both have long-term warming potential. Since 2005, CH_4 has reduced by 10.8%.



	Public Sector	Commercial	Waste Management	Industry	LULUCF Net Emissions	Domestic	Transport	Agriculture	TOTAL
Nitrous oxide N2O	0.1	0.2	2.8	3.3	5.5	1.1	3.2	162.5	178.7
Methane CH4	0.7	0.9	64.8	4.9	2.6	7.6	1.5	320.1	403.2
Carbon dioxide CO2	26.2	34.9	0.3	220.4	-167.6	281.6	383.6	111.6	891.0

Emissions source	**Carbon dioxide CO_2**	**Methane CH_4**	**Nitrous oxide N_2O**	**TOTAL**
Public Sector	26.2	0.7	0.1	27.0
Commercial	34.9	0.9	0.2	36.0
Waste Management	0.3	64.8	2.8	67.9
Industry	220.4	4.9	3.3	228.6
LULUCF Net Emissions	-167.6	2.6	5.5	-159.5
Domestic	281.6	7.6	1.1	290.4
Transport	383.6	1.5	3.2	388.4
Agriculture	111.6	320.1	162.5	594.2
TOTAL	**891.0**	**403.2**	**178.7**	**1,472.9**

Emissions trends by source

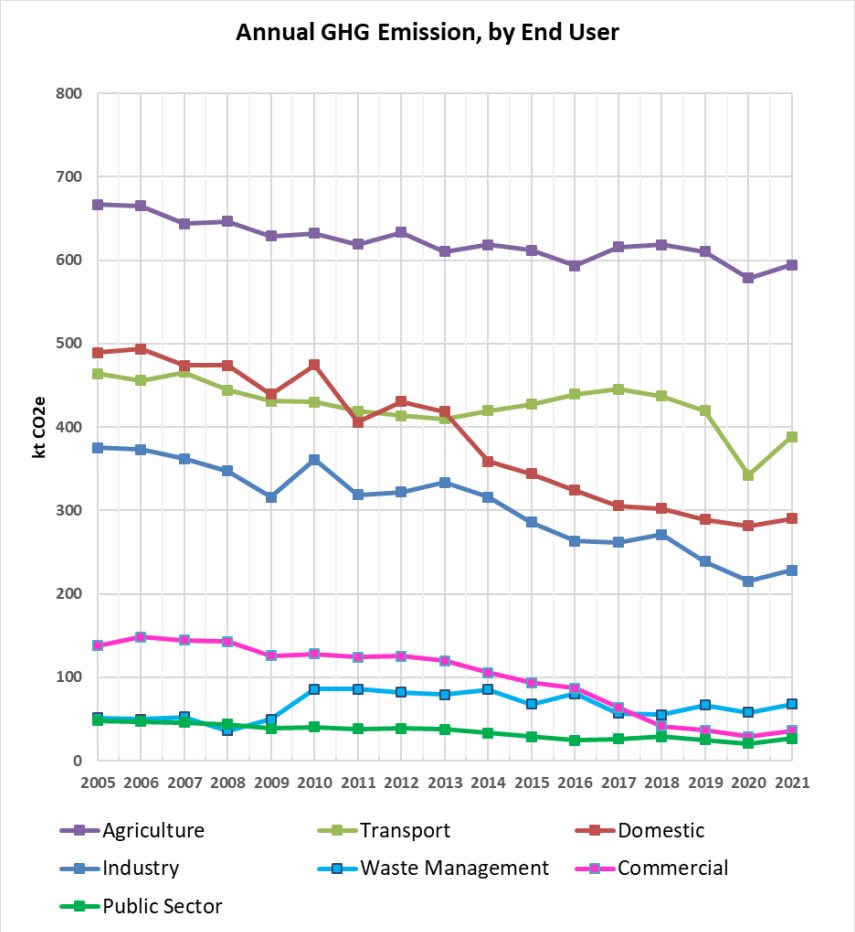
Emission reduction has not been equal and some sectors have been able to achieve emissions reduction more quickly than others. The decarbonisation of UK electricity generation has contributed a significant element of the overall emissions reduction and this is reflected in those categories that use electricity. Those that rely on other fuels, such as transportation, have achieved less emissions reduction.

These estimates do not account for other factors and so changes are not entirely from energy efficiency or a shift to renewable sources. Industrial emissions have reduced which may partly indicate a reduction in overall industrial output or a shift from the higher emissions industries. The reduction in public sector emissions is at least partly due to the reduction in the size of the public sector.

The table and graph shows the emissions change for each end user category since 2005.

Emissions source	Change from 2005
Industry	-39%
Domestic	-40%
Transport	-16%
Agriculture	-11%
Commercial	-74%
Public Sector	-44%
Waste Management	+32%
LULUCF Net Emissions*	+13%

* LULUCF net emissions are negative, the increase indicates that 13% more emissions are being removed than in 2005.



Achieving Net Zero by 2030

Reaching net zero by 2030 is a Council Target. The national commitment is a reduction of 68% by 2030 and net zero by 2050. There are similar targets shared by others in the global community. Local individuals, organisations and corporations also share this aspiration and are taking action on the emissions sources they control. However, less than 1% of the County's emission are produced by the Council and the Council does not have the powers to influence many of the emission sources.

Emissions are the result of a complex web of interacting issues across societal, cultural, environmental and economic factors. To achieve net zero we will need to:

- use less energy overall
- shift from high emission to low/zero emission energy sources
- balance land management for food production, carbon sequestration, ecosystem function and water movement, while adapting to a changing climate
- ensure that there are the societal, economic, regulatory and political systems in place to enable and encourage these changes to occur at the pace required.

Role of local authorities in net zero delivery

The role of local authorities in net zero delivery has been examined in some detail by the House of Commons, National Audit Office, UK Net Zero Strategy, Review of Net Zero (Skidmore report) and the Climate Change Committee. Each of these has produced detailed reports that highlight where local government can effectively support the national emissions reduction and what support is required for Councils to do so.

The following quotes were selected from these various reports and were included in the introduction of the papers produced for the House of Commons debate on 'the role of local government in reaching net zero', June 2023.

National Audit Office:

"Local authorities have an essential part to play in decarbonising local transport, social housing and waste because of their powers and responsibilities in these sectors. More broadly, key stakeholders such as the Climate Change Committee (CCC) see a key role for local authorities in encouraging and enabling wider changes among local residents and businesses to reduce emissions."

Department for Levelling Up, Housing and Communities Select Committee report:

"…many of the funds allocated to climate action, such as those aimed at improving the energy efficiency of the existing housing stock and encouraging more sustainable modes of travel, are delivered through local authorities.

…no layer of government is closer to people or better able to tailor climate action to meet the needs of local communities."

Net Zero Strategy: Build back greener:

"Not only does local government drive action directly, but it also plays a key role in communicating with, and inspiring action by, local businesses, communities, and civil society.

Local government decides how best to serve communities and is best placed to integrate activity on the ground so that action on climate change also delivers wider benefits – for fuel poor

households, for the local economy, for the environment and biodiversity, as well as the provision of green jobs and skills."

All of reports highlight how important local government is in net zero delivery, but also accept that there are a number of challenges. One of the most significant is that central government has not set out a clear role, expectation or resourcing for local government, nor how work between central government departments and the tiers of devolved and local authorities should function.

Delivery priorities for local government

The research reports referenced in the section above provide greater detail on where local government should direct effort towards net zero. This is primarily those areas where the Council has a statutory function in particular planning, to enable low carbon homes and energy generation and transport, in the provision of both services and infrastructure.

However, there are other areas where the Council can make a significant contribution to emission reduction. The following list is not exhaustive.

Leadership: Government policy, international commitments and the Councils' own declarations indicate acceptance to reduce GHG emissions to net zero. At a local level it is important that the Council demonstrates this commitment to communities, businesses and other stakeholders. The Council has a Carbon Management Plan and associated action plan that sets out how we will achieve this.

Enable change: The Council can enable the changes required to support emissions reduction. Council can set favourable planning policy to enable net zero housing, commercial and renewable energy development and can develop local strategies for infrastructure, transport, economic development, the natural environment and cultural heritage that can all foster emissions reduction.

Deliver emissions reduction: Undertake direct emission reduction projects and source low/zero emissions goods and services through procurement choices. Councils provide critical services for waste, transport and social housing and so have significant impact on the emissions of these sectors.

Work with and support others: Engage with local representatives of business, public services and communities to identify barriers, synergies and opportunities.

Engaging communities: Councils have the capacity to reach local citizens and can encourage active travel, recycling, home energy efficiency and other climate positive behaviours.

Challenges to Achieving Net Zero

Reaching net zero will require changes to our economy, landscape and the way in which people live their lives. While these are significant challenges, it is important to recognise that it is possible to achieve net zero with the technologies available to us today.

Technical challenges

Renewable energy and electricity network capacity: Generating more renewable energy along with the electrification of heat and transport requires an electricity distribution network that can accommodate a significant increase in energy flow. Current renewable energy generation and network grid capacity are far below what net zero requires. Building this capacity will require significant time, investment and an acceptance of landscape change arising from additional solar panels, wind turbines and overhead lines.

Availability of solutions: Countries across the world are decarbonising, creating huge demand for zero emission technologies like solar panels, electric vehicles, heat pumps and batteries. Supply chains are not yet producing the volume of new technologies at the pace required.

Policy and regulation

Policy direction: Clear and consistent policy direction is required to ensure that national/local government, business and communities can accept and embrace the move to net zero.

Regulatory barriers: Any regulatory barriers that are identified will need to be removed where they act to slow or prevent achieving net zero. These include planning policies that prevent energy efficiency or renewable energy installation, or financial regulations that prevent investment.

Cost and investment: While significant investment is required to reach net zero, continuing use of fossil fuels also has spiralling costs. The future costs arising from climate change impacts also need to be assessed. Flooding for example has direct a cost from damage, potential future costs of insurance, cost of lost goods and production, increased costs arising from disrupted transportation networks and reduced asset value.

Human factors

Public acceptance: No clear consensus exists on the acceptable cost for reaching net zero, in financial terms or the impact on communities, landscape, environment and heritage.

Personal choice: People must actively participate and contribute to achieving net zero, through behaviour and consumer choices. This significant shift requires awareness and education.

The Herefordshire Climate and Nature Partnership Board

In order to support transition to a net zero County, it is essential that the Council can engage with individuals, communities and businesses. In January 2020, the council established a Climate and Ecological Emergency Steering Group to;

1. steer and oversee the development of a new collaborative countywide Climate and Ecological Emergency (CEE) Action Plan for Herefordshire and;
2. establish a representative and accountable governance structure to oversee and support the delivery of the CEE Action Plan from March 2021

The Herefordshire Climate and Nature Partnership (HCNP) board was established as the governance structure to oversee the delivery of the plan.

The Boards' vision is "a thriving net zero-carbon and nature-rich Herefordshire by 2030".

The purpose of the Partnership is to catalyse and coordinate new action to help achieve this vision, through steering and overseeing the implementation of Herefordshire's Climate and Nature Action Plan ('the Action Plan').

The role of the Board is to work collaboratively to:

a) Mobilise individuals and organisations countywide to sign up to the Partnership and to engage in the Action Plan.
b) Commission Projects to support implementation of the Action Plan.

c) Monitor progress on the Action Plan, including helping to develop up to date carbon and nature assessments for the county.
d) Review and update the Action Plan, by regularly reviewing progress and priorities, and drawing on examples of good practice from Herefordshire and elsewhere.

There are 6 thematic subgroups that report back to the board. These provide an opportunity for wider engagement and harness the skills and experience of community members with particular expertise.

- Energy
- Housing and Buildings
- Transport
- Land and Farming
- Waste
- Food

The partnership and board are not legal entities, hold no budget and is not a statutory body. Its work, and the role of the members is guided by a written Terms of Reference.

Herefordshire Council support for the Partnership

As well as establishing the HCNP, the Council provides ongoing support to the board from staff in the Sustainability & Climate Change team. The Cabinet Member for Environment has a position on the board and is an active participating member.

Herefordshire Council provides secretariat functions to the board. This supports the Board with membership, meeting arrangements, minutes and revisions to the Terms of Reference.

The HCNP has a role in project development. The board determines potential projects based on the action plan and provides an outline scope and aims to the Council. Council Officers then develop business cases and help seek external grant funding or look to bid to the Climate Reserve through an established process of governance. If approved, any contracted services that are procured by the Council with costs sourced from the Climate Reserve are managed by Council officers. Officers manage the contract delivery and report back to the Board.

The HCNP provides a role as a non-statutory advisory board to the Council. It also has a role acting as a key stakeholder for engagement with specific projects and can help disseminate public consultations from the Council. Board members may also sit on other stakeholder groups and advisory boards.

Achievements of the Herefordshire Climate and Nature Partnership

Projects

- **40 Business audits**: Consultants were procured to provide written energy and emissions audits to interested Herefordshire businesses. This helps reduce the County's emissions and supports economic development.
- **40 farm carbon audits**: Specialist consultants were appointed to undertake detailed carbon audits on farms. With agriculture generating 40% of the County emissions, it is imperative that farm businesses are supported and enabled to identify and then reduce emissions. Farming is an economic sector placed at significant risk from climate change.
- **Renewables opportunity mapping**: A project to assess the renewable energy potential of the County. The board proposed this exercise and helped to share the scope of the project via the energy subgroup.

Engagement and expertise

- **Adaptation strategy**: Several board members engaged with the development of the adaptation strategy, bringing their sector expertise to the process and representing specific interests e.g. farming.
- **Council core strategy/local plan**: The Board is a useful platform to communicate strategic documents to key stakeholders. Board members can disseminate further through their sector networks.
- **Nature recovery network opportunity mapping:** The Board provided input into the project, enabling discussion across a broad range of interests.
- **Greener Footprints communication campaign**: This is a Council run initiative where the Board has provided advice to help shape, produce content and communicate the campaign.

Governance

- Establishment of the Partnership board, its Terms of Reference, functions and connections with other interest groups in the County.
- Development of a Countywide action plan to guide project delivery and the ongoing monitoring of achievements.
- Development of a website to communicate the action plan, act as a platform for engagement and sharing successes, case studies and local stories such as the Herefordshire Climate and Nature Partnership Board Summary

Greenhouse Gas emissions: The Council's progress and future delivery

The Council provides a wide range of local services and functions. Greenhouse gas emissions are produced by the energy used to operate the buildings and vehicles required to deliver those services. The Council sets its own internal policies, methods of working, procurement procedures and other operational functions that can influence emissions. The emissions reduction achieved to date and future emissions reduction can be categorised into two very broad activities:

Using less energy and **switching** to an energy source that produces lower or zero emissions.

The following tables illustrate the:

- Council and employee emissions – these are the sources where the Council has most control
- Delivery partner emissions – these are sources where the Council has more limited or indirect control

The tables are structured in the following way:

Table header	**Explanation of contents**
Source	This is the category used in the Council GHG emissions reports. These categories help interpret the GHG emissions report to a wider audience and are useful to understand where the Councils emissions are produced. In the Delivery partners table, this is the partner that produces the emissions as several partners contribute to the same source category.
Fuels	The fuels that are consumed to produce the emissions in that category
What has been achieved so far	A very brief summary of the work that has contributed to the emissions reduction since 2008/09. The list is very broad and does not quantify which have had most impact or been most cost effective.
Future emissions reduction options	Examples of activities that would further reduce emissions. This list only intends to illustrate the range of potential projects that could be considered. It is not meant to indicate any priority or which are preferable or most effective. These options have not been costed, evaluated or proposed and should not be considered recommendations. It may not be desirable, feasible or indeed possible to progress some of these example projects.
Barriers	Factors that limit the ability of the Council to deliver further emissions reduction. Some of these are outside of the Council's control.

Council and employee emissions

These emission sources are directly produced from the Council's buildings and other assets, the Council's fleet and the Council's staff. The staff emissions are produced by commuting to work, business miles in the employee's own vehicle and the emissions associated with working from home (WFH).

Source	Fuels	What has been achieved so far	Future emissions reduction options	Barriers
School Buildings	Mains Gas and electric* and some LPG and Oil	Building insulation improvements; Solar PV installation; LED lighting and controls; asset rationalisation; schools converting to Academies (and so no longer reported as Council emissions)	Target those schools using LPG or oil for upgrade to electric heat pump; continued improvement to building fabric; appliance efficiency improvements; behaviour change; switch to biogas supply; integrate into district heat network	High cost of heat pumps and little operational savings unless significant solar PV is also installed; age and condition of some building stock; disruption during works; developing sound investment cases;
School Transport	Diesel, petrol	Much of the change likely reflects operational reduction and vehicle efficiency improvement. Improvements to data collection have also improved accuracy, resulting in a significant drop in reported emissions.	Change Councils own transport fleet from diesel to electric mini-buses; encourage uptake of taxi contracts to EV taxis; improved public transport options; improved active travel options;	Local availability of electrified passenger vehicles; large distances typical of rural County; cost to replace diesel with EVs; EV charging infrastructure a consideration but likely minor
Council Offices	Gas and electric*	Building insulation improvements; significant savings in the last few years on resetting heating and ventilation controls to reduce usage; Solar PV installation; LED lighting and controls; building rationalisation;	Change gas heating systems to electric heat pumps; staff training for behaviour change; further building fabric improvements; continued asset rationalisation; further solar PV installation where possible; switch to biogas supply; integrate into district heat network	High cost of heat pumps and little operational savings unless significant solar PV is also installed; age and condition of some building stock; limitations on listed buildings; embedding behaviour change; disruption during works; developing sound investment cases;
Town Halls & associated assets	Gas and electric*	Building insulation improvements; significant savings in the last few years on resetting heating and ventilation controls to reduce usage; Solar PV installation; LED lighting and controls	Change gas heating systems to electric heat pumps; staff training for behaviour change; further building fabric improvements; continued asset rationalisation; further solar PV installation where possible; switch to biogas supply; integrate into district heat network	High cost of heat pumps and little operational savings unless significant solar PV is also installed; age and condition of some building stock; limitations on listed buildings; embedding behaviour change; developing sound investment cases;

Source	Fuels	What has been achieved so far	Future emissions reduction options	Barriers
Commute and Working from Home WFH	Diesel/ petrol/ electric for vehicles; Assumed gas & electric for WFH	2022/23 is first year a WFH figure has been available to include in the report. Commuting has been included since 2008/09. Both figures are modelled estimates and commuting results in higher emissions per staff day; for commuting, the emissions from a typical car have reduced since 2008/09, contributing to the measured reduction.	Advice to staff on home energy efficiency; schemes to encourage active travel to work; public transport provision/promotion; car sharing schemes; salary sacrifice schemes for bicycles, EVs, home energy improvement; (Note: it would be valuable to gain further insight into staff commuting and working from home behaviour)	Limited ability to control where staff live and what vehicles they own; (Note: measuring progress would be very difficult as we'd still be obliged to use modelled estimates)
Business miles	Diesel/ petrol/ electric	Business mileage fluctuates with Council operations but has been driven down by the general efficiency improvements of private vehicles	Encourage increased use of the EV pool cars, displacing private vehicle mileage; place electric pool vehicles with high mileage teams;	Private mileage may be best option depending on the journey; resistance from staff to switch to electric pool cars;
Council Fleet	Mostly diesel, minor petrol & electric	Use of full electric and petrol hybrid for pool cars fleet; electric van;	Replacement of all fossil vehicles with full electric vehicles; improved driver behaviours to improve efficiency; improved vehicle maintenance;	Cost of electric replacements; some specialist vehicles might have limited options; charging infrastructure required; resistance from staff to switch to electric vehicles;
Libraries, museums and Courtyard	Gas and electric*	Building insulation improvements; re-setting heating and ventilation controls to reduce usage; solar PV installation; LED lighting and controls	Change gas heating systems to electric heat pumps; behaviour change; further building fabric improvements; continued asset rationalisation; further solar PV installation where possible; staff training for behaviour change; switch to biogas supply; integrate into district heat network	High cost of heat pumps and little operational savings unless significant solar PV is also installed; age and condition of some building stock; limitations on listed buildings; embedding behaviour change; developing sound investment cases;

Source	Fuels	What has been achieved so far	Future emissions reduction options	Barriers
Community and recreation centres	Gas and electric*	Building insulation improvements; Solar PV installation; LED lighting and controls	Change gas heating systems to electric heat pumps; behaviour change; further building fabric improvements; continued asset rationalisation; further solar PV installation where possible; switch to biogas supply; integrate into district heat network	High cost of heat pumps and little operational savings unless significant solar PV is also installed; age and condition of some building stock; limitations on listed buildings; staff training for behaviour change; developing sound investment cases;
Street Lighting	electric*	Switch to LED lamps across almost all assets; supplied by renewable electricity	Ensure any new assets are LED; Replace any remaining non-LED assets;	LED may not be suitable/available for some specialist or heritage applications

*electricity consumption for these source categories currently produces zero emissions as it is 100% renewable. There are additional emissions associated with the Transmission & Distribution of electricity (known as T&D Losses) and these form a small part of electricity emissions. We are obliged to include these emissions as part of our reporting as they are not covered by the renewable electricity guarantee system that applies to the Councils electricity consumption.

Delivery Partner emissions

These are the emissions from outsourced Council functions and are organised by the organisation delivering those functions. Several organisations contribute to the 'contractors assets' and 'contractors fleet' categories.

Source	Fuels	What has been achieved so far	What we can still do	Barriers
FCC Waste collection (Contractors fleet and assets)	Diesel	These emissions have remained unchanged. Any vehicle efficiency improvements have likely been offset by the increase in housing stock and collection routes.	Review service provision; review routing to find more optimal routes to reduce mileage; driver behaviour to improve fuel economy; replace diesel with electric vehicles; reduce the volumes of waste produced	High cost of electric vehicles; limited availability of specialist electric vehicles; limitations on charging infrastructure; reducing the volume of waste produced requires active participation from householders and packaging producers; recycling still needs to be collected
Severn Waste (Contractors fleet and assets)	Assets: Gas and electric Fleet: Diesel	These emissions have remained unchanged. Any vehicle efficiency improvements have likely been offset by the increase in housing stock and collection routes.	Review routing to find more optimal routes to reduce mileage; driver behaviour to improve fuel economy; replace diesel vehicles with electric; reduce the volumes of waste produced; use renewable electricity and/or gas at built assets; additional renewable generation at built assets;	High cost of electric vehicles; limited availability of specialist electric vehicles; limitations on charging infrastructure; reducing the volume of waste produced requires active participation from householders and packaging producers; recycling still needs to be collected; grid limitations;
Halo (Leisure centres)	Gas and electric	Installation of solar PV; improvements to heating and ventilation systems; improvements to lighting;	Change gas heating systems to electric heat pumps; behaviour change; further building fabric improvements; further solar PV installation where possible; switch to biogas supply; integrate into any future district heat network	Grid limitation on renewable installations; limitations of building fabric and condition; developing sound investment cases;
BBLP (Contractors fleet and assets)	Assets: Gas and electric Fleet: Diesel	Energy efficiency within buildings; vehicle replacement with more efficient models;	Review routing to find more optimal routes to reduce mileage; driver behaviour to improve fuel economy; replace diesel with EVs; Built assets supplied with renewable electricity and gas; integrate into any future district heat network	High cost of EVs; limited availability of specialist EVs; limitations on EV charging infrastructure; grid limitation on renewable installations; limitations of building fabric and condition; developing sound investment cases;

Source	Fuels	What has been achieved so far	What we can still do	Barriers
Shaw (Residential homes)	Gas and electric Minor diesel fleet usage	Energy efficiency improvements	Further improvements in building fabric; additional solar PV installations; heating system improvements; replacement of gas boilers with electric heat pumps; Built assets supplied with renewable electricity and gas;	Grid limitation on renewable installations; limitations of building fabric and condition; developing sound investment cases;

Greenhouse Gas emissions: Council functions to support County-wide reduction

Less than 1% of the County's emissions are produced by the Council and its partners. The rest is produced by the homes, businesses, transportation, farming and land use in the County. The Council develops and implements local policies and has other powers and statutory functions that can all potentially influence the emissions produced by others. These can be both enablers and barriers to emission reduction.

It is beyond the scope of this briefing paper to assess all of the Councils functions in terms of their impact on emissions. A detailed examination of each function would be required to:

- Determine which functions are most appropriate to use to deliver emissions reduction
- Identify conflicts between emissions reduction and delivering the other Council priorities
- Assess the Council's capacity and capability to exercise these functions to reduce emissions
- Evaluate which have had the most impact in the past and which are currently or potentially most impactful
- Identify any that could be revised to be more effective at enabling emissions reduction

While not evaluated, the following outlines some of the Council functions that influence the County's emissions.

Planning system
National and local planning policy has a huge impact on emissions reduction. Domestic and commercial building energy efficiency, the deployment of renewable energy generation, transport infrastructure and land use changes all directly impact County emissions.

Regulation and licensing
The Council has other powers of regulation and enforcement that can influence emissions. This includes enforcing minimum energy efficiency standards, building regulations and the licensing of activities and premises.

Local engagement
Councils can reach communities, citizens and businesses, effectively communicating advice and supporting emissions reduction. Examples include promoting grants or encouraging behaviours to reduce waste and energy use. Engagement also means responding to local concerns and providing a mechanism for others to help shape local policy through consultation and collaboration.

Funding
UK Government funding is frequently allocated to local authorities to deliver national projects across the County. The Council can also decide whether to apply for various elective funding streams across a wide range of functions. There are further opportunities to work alongside other local authorities, public bodies and other partners to collaborate in a number of different capacities. Finally, funding can be directed to businesses and communities across the County through various grant schemes.

Factors outside of the Councils control
There are factors that are significant drivers of emissions change that are not within the Council's area of control. In these areas, the Council can engage, lobby and provide evidence to central government departments to help enable change. These include:

- National infrastructure including the gas network, electricity grid, water network and rail network
- Financial instruments such as the provision of subsidies, tax relief and investment mechanisms
- Leadership, commitments, targets, incentives and overall policy direction set by the UK Government

Finally, and perhaps most significantly is:

- The commitment of political leaders, citizens and businesses to actively drive emissions reduction.

Further reading

County emissions data

UK local authority and regional greenhouse gas emissions national statistics, 2005 to 2021 - GOV.UK (www.gov.uk)

UK local and regional greenhouse gas emissions estimates for 2005-2021: Technical Report (publishing.service.gov.uk)

Climate and Nature Partnership Board

Getting Herefordshire to net zero and nature rich - Herefordshire Zero Carbon and Nature Rich

Reports examining the role of local government in achieving net zero

The role of local government in reaching net zero - House of Commons Library (parliament.uk)

Local government and net zero in England - National Audit Office (NAO) report

Local Authorities and the Sixth Carbon Budget - Climate Change Committee (theccc.org.uk)

Local government and the path to net zero - Committees - UK Parliament

Net Zero Strategy: Build Back Greener - GOV.UK (www.gov.uk)

Review of Net Zero - GOV.UK (www.gov.uk)

Current UK Climate target

UK's Nationally Determined Contribution, updated September 2022 - GOV.UK (www.gov.uk)