

Greenhouse Gas Emissions Report 2022-23

Part of the Leicestershire County Council
Carbon Reduction Programme

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Introduction

Leicestershire County Council ('the council') is committed to measuring and reporting its environmental performance in order to better understand its impacts and to monitor progress towards the targets in its [2018-2030 Environment Strategy](#).

The 2022-23 Greenhouse Gas Report forms part of the council's Carbon Reduction Programme and its commitment to become a net zero¹ council for its own operational emissions by 2030. This commitment was made in May 2019, alongside the council's declaration of a climate emergency² and later followed with a further commitment of working with Leicestershire people and organisations to become a net zero county by 2045 or before.

This report focusses on the council's own operational greenhouse gas (GHG) emissions for the 2022-23 reporting period and the council's 2030 net zero ambition, which includes emissions from the council buildings, fleet vehicles, streetlighting and traffic signals, business travel, water and waste. The full scope of emissions included in this report are provided in Appendix.1.

The council has followed the [Government's Environmental Reporting Guidelines](#), published by BEIS and DEFRA (2019), alongside international best practice guidance from the [Greenhouse Gas Protocol](#).

In accordance with Government recommendations, this report is published on the council's website.

"Leicestershire County Council 'declares a climate emergency' and 'recognises that there is an increasing urgency for action to avoid the worst impacts of climate change'. The Council 'will aim to achieve carbon neutrality from its own operations by 2030' and 'commits to work with business and other public bodies across the county and region to deliver this ambitious goal through all relevant technologies, strategies and plans'.

Leicestershire County Council, 15 May 2019"

¹ **Net zero** refers to the point when greenhouse gas emissions being emitted into the atmosphere are balanced with their removal, meaning there is no overall addition to atmospheric levels.

² A **climate emergency** is a situation in which urgent action is required to reduce or halt climate change and avoid potentially irreversible environmental damage resulting from it.

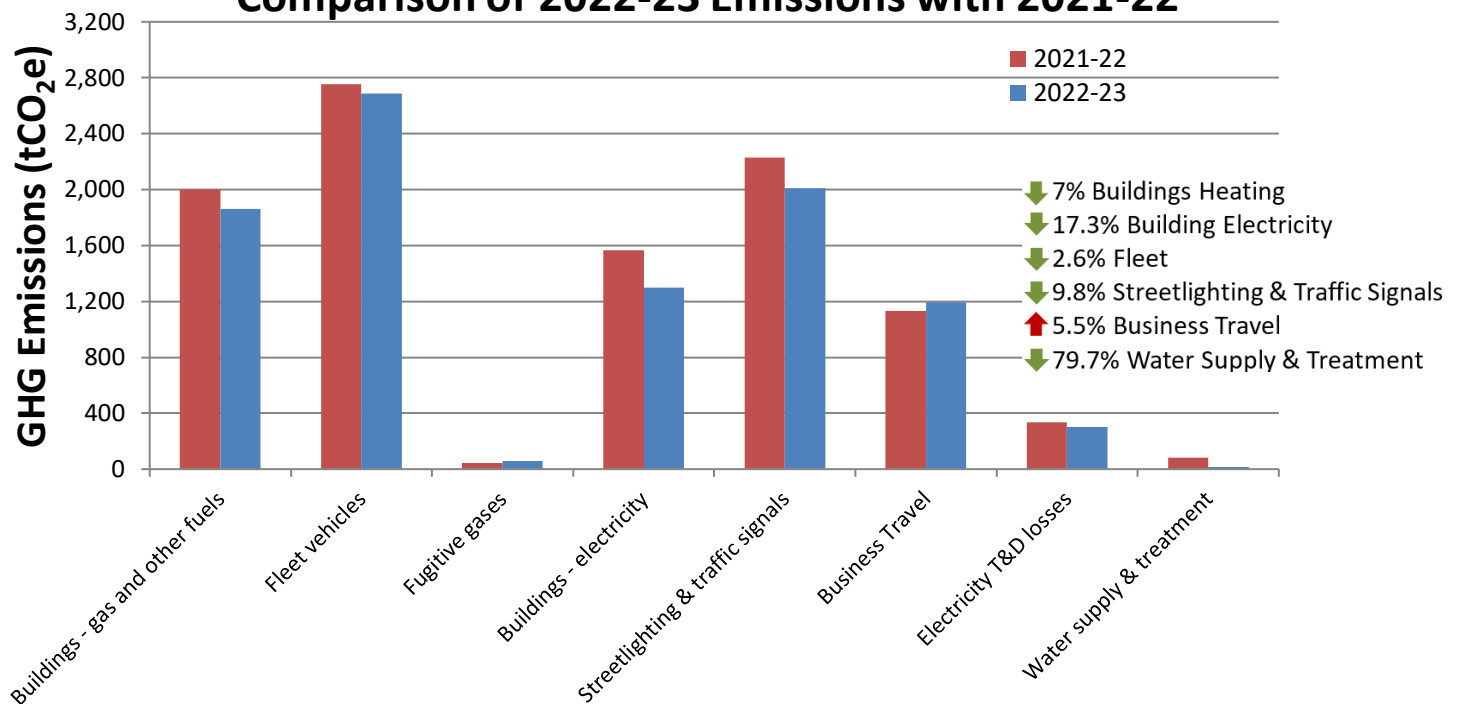
Headline Figures

Total net 2022-23
GHG Emissions
9,395 tCO₂e

73.7% reduction since
2008-09 baseline

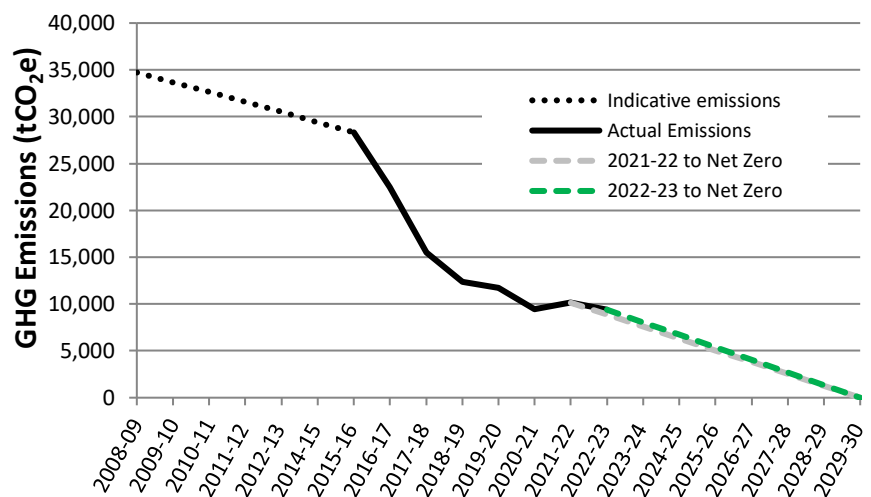
7.2% decrease compared
to 2021-22

Comparison of 2022-23 Emissions with 2021-22



- ✓ 732 tCO₂e decrease since 2021-22
- ✓ Reductions in all significant emissions sources, except for business travel.
- ✓ 324 tCO₂e reduction associated with the greening of the national grid
- ✓ 355 tCO₂e emissions avoidance through the use of on-site renewable energy, equivalent of 3.8% of 2022-23 emissions
- ✓ 1,342 tCO₂e average annual reduction required to meet net zero targets

Progress Compared to 2030 Net Zero



Organisation Information

Leicestershire County Council is the local government authority that provides council services within the Leicestershire area.

Registered address is:

County Hall
Glenfield
Leicestershire
LE3 8RA.

Leicestershire County Council does not operate outside the UK, all emissions are UK based.

Reporting Period

1st April 2022 to 31st March 2023

Organisational Boundary and Operational Scope

The organisational boundary for reporting the council's GHG emissions, for its own operations and activities, is operational control.

The operational scope includes the direct emissions from building heating and fleet (scope 1) and purchased electricity for buildings, streetlighting and traffic signals (scope 2), resulting from owned and leased assets and operations where the council is in operational control and is responsible for the purchase of energy or fuel. Some scope 3 emissions are also included: business mileage (grey fleet), transmission and distribution losses for electricity consumption, water supply and treatment, and waste.

The council has excluded GHG emissions from schools (all scopes) and contracted services such as waste disposal and business travel by public transport (scope 3), due to the cost of data collection and/or its availability. The council has also excluded the emissions resulting from activities undertaken by contractors, due to the limited requirements for contractors to annually monitor energy and fuel usage within existing contracts.

All greenhouse gas emissions are expressed as tonnes of carbon dioxide equivalent (tCO₂e).

See Appendix 1 for more information about scopes and sources of emissions, alongside commentary describing the basis for inclusion or exclusion within the council's GHG footprint.

Baseline Emissions Year and Targets

The adopted baseline year is 2008-09, which the council set in its 2011 Environment Strategy using a fixed base year approach.

Where there are relevant significant changes in the factors that informed the calculation of the base year emissions, such as the sale of council buildings, that result in a greater than 5% cumulative change in the total base year emissions, then the emissions for the base year and the year prior to the reporting year will be recalculated.

The Environment Strategy 2018-2030 includes a commitment to reduce carbon emissions from the council's own operations to net zero by 2030.

Joanna Gyll, Assistant Director for Environment and Waste Management, Environment and Transport Department, is responsible for the achievement of the target.

Calculation Method

The council has followed the Government's Environmental Reporting Guidelines, published by BEIS and DEFRA (2019), alongside international best practice guidance from the Greenhouse Gas Protocol.

Following this guidance, activity data has been collected for energy, resource and fuel consumption in buildings and vehicles under the council's operational control. Wherever possible, this has been actual consumption based on bills, invoices, and receipts. Activity data by volume or mass, e.g., kWh of electricity or litres of fuel, have been prioritised for accuracy. Where this is not available, other methods have been employed, for example miles travelled have been used for some transport sources. Estimated activity data covers less than 5% of emissions from building energy consumption and is based on extrapolation from known previous activity data.

The appropriate emissions factors for each year are drawn from the DESNZ Greenhouse Gas Conversion Factor Repository.

Emissions factors published in 2022 have been used for the purpose of this report, as the majority of the period covered by this report fell within the 2022 calendar year.

The council has adopted 'full time equivalent employee' as the intensity factor across the organisation. From 2014-15 onwards, the intensity measure has only been applied to the council's emissions, excluding schools, as employee and energy data for schools are no longer held by the council.

Leicestershire County Council has not sought independent external assurance of the Greenhouse Gas Report.

2022-23 Greenhouse Gas Emissions

GHG emissions data for period 1 st April 2022 to 31 st March 2023 (tCO ₂ e)						
	Sector	2022-23	2021-22	% Change	Base Year 2008-09	% Change
Scope 1 – Direct Emissions e.g., boilers, owned transport, air conditioning gases	Buildings	1,860	2,000	-7.0%	4,317	-56.9%
	Fleet vehicles	2,685	2,756	-2.6%	4,358	-38.4%
	Fugitive gases	60	44	35.1%	-	-
	Sub-total	4,605	4,800	-4.1%	8,675	-46.9%
Scope 2 – Energy Indirect e.g., purchased electricity	Buildings	1,297	1,567	-17.3%	6,562	-80.2%
	Streetlighting & traffic signals	2,009	2,228	-9.8%	15,581	-87.1%
	Sub-total	3,306	3,795	-12.9%	22,143	-85.1%
Scope 3 – Other Indirect e.g., business travel and water supply/treatment	Business travel	1,193	1,131	5.5%	3,237	-63.1%
	Electricity transmission & distribution losses	302	336	-10.0%	1,722	-82.4%
	Water supply & treatment	17	84	-79.7%	-	-
	Waste	5	6	-9.3%	-	-
	Sub-total	1,518	1,557	-2.5%	4,959	-69.4%
Total Gross Emissions		9,428	10,152	-7.1%	35,778	-73.6%
Carbon offsets		0	0	-	0	-
Renewable energy exports		-33	-25	35.4%	0	-
Total Location-based Net Emissions		9,395	10,127	-7.2%	35,778	-73.7%
Full time equivalent (FTE) employees		4,864	4,860	0.1%	6,880	-29.3%
Intensity measure: tCO ₂ e/FTE		1.93	2.08	-7.3%	5.2	-62.8%
Renewable electricity tariff		3,306	3,795	-12.9%	-	-
Total Market-based Net Emissions		6,123	6,357	-3.7%	35,778	-82.9%
Petrol and diesel (outside of scope)		0.16	0.15	11.5%	-	-
Woodchip (outside of scope)		694	711	-2.3%	-	-

Table 1: Council 2022-23 GHG emissions, with a comparison to 2021-22 and the baseline year

2022-23 GHG Emissions by Source

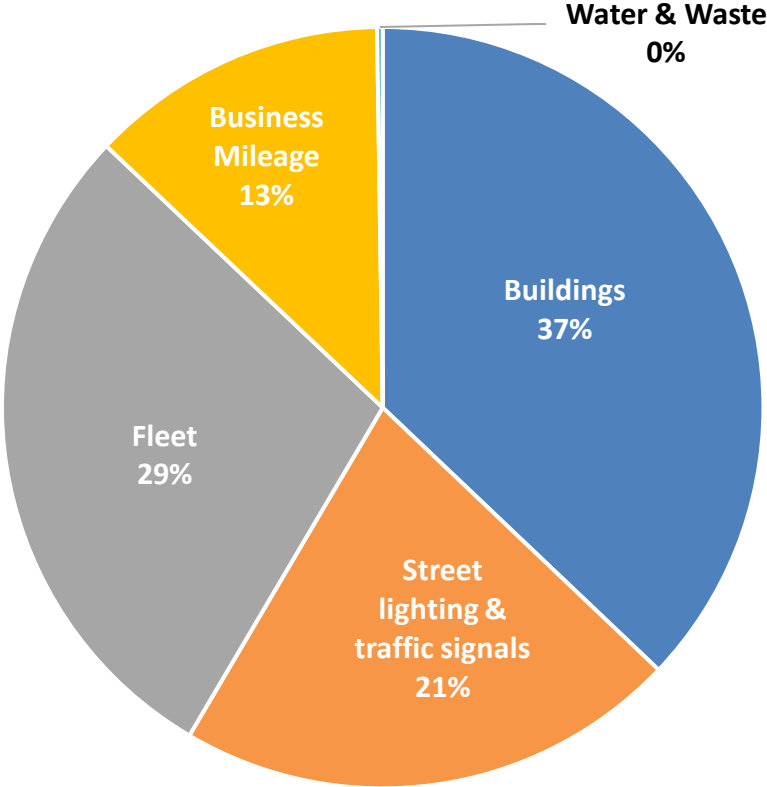


Figure 1: Council 2022-23 GHG emissions by source.

2022-23 GHG Emissions by Scope

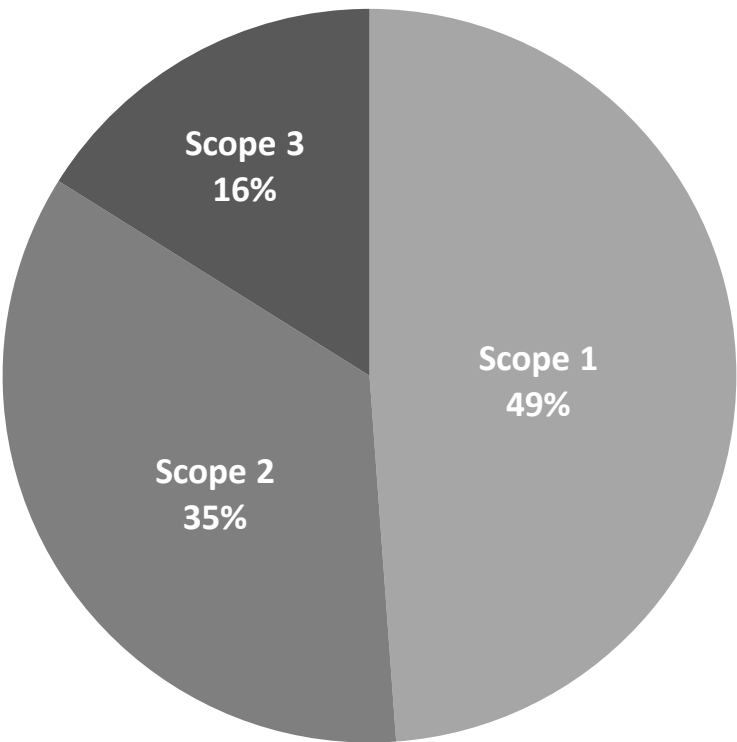


Figure 2: Council 2022-23 GHG emissions by scope.

Comparison of 2022-23 GHG Emissions with 2021-22

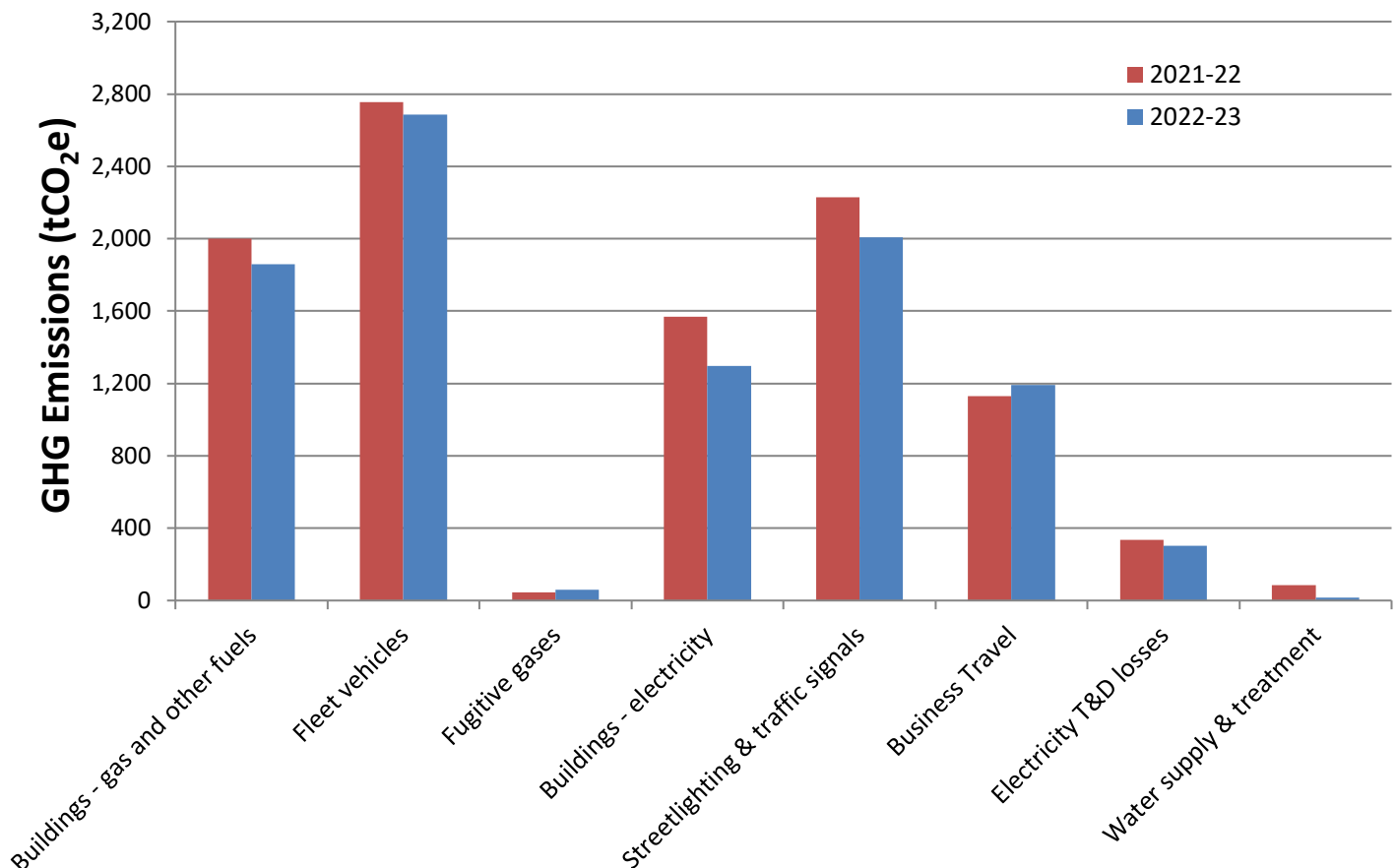


Figure 3: Council 2022-23 GHG emissions by source, compared to 2021-22.

Performance Against Baseline and 2021-22

Leicestershire County Council net greenhouse gas emissions decreased by 7.2% (732 tCO₂e) compared to the 2021-22 financial year to 9,395 tCO₂e – equivalent of 1.93 tCO₂e per full-time equivalent employee (0.15 tCO₂e decrease compared to 2021-22). The reduction in council emissions is welcomed following the COVID-19 bounce back experienced in 2021-22, with emission reductions seen across all major sources, except business travel which continues to see bounce back in emissions. Overall, council emissions have now reduced by 73.7% since the 2008-09 baseline year. The below sections discuss the reasons behind these changes in more detail.

Scope 1 Emissions

Buildings (Heating and Fugitive Emissions)

Emissions from gas and other fuels used in buildings decreased by 7% (140 tCO₂e) compared to 2021-22 levels. The main cause of this was due 4 site closures leading to a 103 tCO₂e reduction in emissions. Gas emissions decreased despite the County Hall biomass boiler being offline between January 2023 and February 2023 due to the replacement of a boiler component.

Of the other heating sources, LPG emissions rose 54% (7.8 tCO₂e), meanwhile, gas oil and kerosine emissions increased compared to 2021-22 by a combined 6.8 tCO₂e. The rise in LPG can be linked to a return to pre-Coronavirus levels. The rise in gas, oil and kerosine is from its use at two locations for heating and power, previously not included in the council's carbon footprint.

Fugitive emissions increased by 35% (16 tCO₂e) compared to 2021-22. These emissions are calculated from information the council maintains on refrigeration and air conditioning equipment to ensure compliance with F-gas regulations. The data experiences large annual variations due to the varying nature of leaks in systems and subsequent maintenance to top up F-gases.

Fleet Vehicles

Council fleet emissions reduced by 2.6% (71 tCO₂e) compared to 2021-22, which can all be attributed to a significant reduction in gas oil emissions (74%, 226 tCO₂e), offset by a 6% increase in diesel emissions. A trial of hydrotreated vegetable oil, helped to reduce the rise in diesel emissions by 54 tCO₂e. Emissions reductions have been noticed within Highways Operations (9%) and Sustainable Travel (2%). Meanwhile, emissions increased at Recycling and Household Waste Sites (17%) and Operational Property (1%). The rise in diesel emissions can be attributed to the change in government restrictions on the use of gas oil (red diesel), meaning there was a shift to diesel usage.

Diesel fuel use remains the greatest source of council fleet emissions (97%), followed by gas oil use (3%) and petrol, propane and distance claims making up <0.4% of emissions

Scope 2 Emissions

Building Electricity

Emissions from electricity consumption in council operated buildings fell by 17.3% (270 tCO₂e) compared to 2021-22. Most of this reduction can be attributed to the national impact of greening the electricity grid – the carbon conversion factor for UK electricity fell by 8.9% compared to 2021-22. Additionally, there was a 7.2% (93 tCO₂e) decrease in electricity used in council buildings. The reduction in electricity use can be attributed to a combination of lower building occupancy, reduction in non-seasonal ventilation, energy efficiency measures and increased solar PV output.

Streetlighting and Traffic Signals

Greenhouse gas emissions from council street lighting and traffic signals continue to improve in performance, as emissions fell by a further 9.8% (219 tCO₂e) compared to 2021-22. This is

mostly due to decarbonisation of the national grid (91%), followed by a 100,000 kWh reduction in electricity usage, saving an additional 19 tCO₂e. The reduction in electricity use can be associated with energy saving measures completed at the end of 2021-22 to trim the operational hours and dim appropriate streetlighting assets, which were fully realised during 2022-23.

Scope 3 Emissions

Business Travel

Council business travel emissions increased by 5.5% (62 tCO₂e) due to 355,000 more business miles being claimed by staff in 2022-23 compared to 2021-22. This increase can be attributed to the continued return of council services and operations post-Coronavirus, including the need to travel for business purposes. Business mileage emissions remain significantly lower than pre-Coronavirus (25%, 392 tCO₂e), with many council staff utilising smarter and more flexible working practises, such as online and hybrid meetings. Note business mileage claims do not include commuting to and from work and only includes mileage claimed by staff in carrying out council business.

Electricity Transmission and Distribution Losses

Electricity transmission and distribution loss emissions reduced by 10% (34 tCO₂e) compared to 2021-22 and can be explained by an 6% lower carbon conversion factor, alongside a reduction in building and streetlighting electricity use as discussed above.

Water Supply and Treatment

Water emissions reduced by 79.7% (67 tCO₂e) compared to 2021-22 and can be attributed mainly to a change in supplier and use of estimated meter readings in 2021-22, which exaggerated water use compared to the longer-term average. Roughly a third of this decrease in emissions is from water supply and the other two thirds from the treatment of wastewater used by the Council.

Waste

Council emissions from office waste decreased by 9.3% (1 tCO₂e) since 2021-22 as a result of a cumulative reduction in different waste streams across council operations.

Performance Against 2030 Net Zero Target

Leicestershire County Council's net GHG emissions in 2022-23 are 73.7% lower than the 2008-09 baseline. Figure 4 below demonstrates that despite the rise in emissions during 2021-22, council emissions are now at the lowest ever levels. The previous 5-year period has seen an average emissions reduction of 9% per year. It should be noted that emissions reductions have started to slow down over the last 3 years, which is expected as the council's emissions become nearer to net zero and opportunities for emissions reductions become less frequent and smaller in magnitude. The council now requires an average of 1,342 tCO₂e per year reduction in future years to achieve net zero in 2030 (77 tCO₂e higher than in 2021-22). The 2022-23 emissions reduction rate falls short by 45% compared to the required annual average reduction needed to meet net zero by 2030.

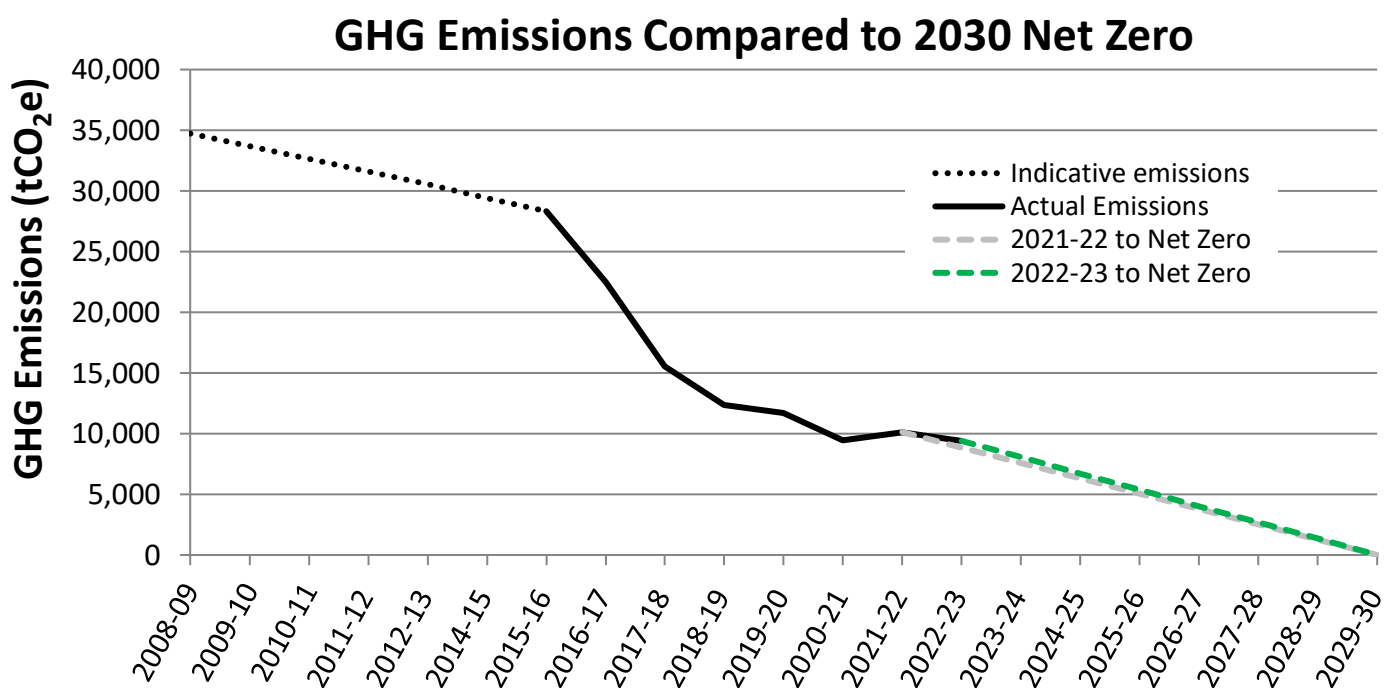


Figure 4: Council net GHG emissions compared to 2030 Net Zero

Positive Actions

Renewable Energy and Emissions Avoidance

The council has invested in solar photo-voltaic (PV) panels on many of its buildings. It is estimated that 25% of the electricity generated is not used directly in these buildings and is instead exported to the national grid for use by others outside of the council. This effectively replaces the need for electricity to be generated from a fossil fuelled power station and can be used to 'net' off the council's 'gross' emissions. County Hall generation has been excluded from the calculation as the high energy consumption in this building is likely to mean that all generated electricity is used on site.

In 2022-23, the Council is estimated to have exported 171,668 kWh of electricity to the grid, accounting for 33 tCO₂e (0.4% of the council's gross emissions). Compared to 2021-22, exported solar PV netted off 35% (8 tCO₂e) more GHG emissions. This can be attributed to the largest amount of solar power ever generated across the council's estate, despite the reduction in carbon intensity of the grid (discussed above).

Leicestershire County Council also uses biomass to provide heat to most buildings on the County Hall campus. When combined with local solar PV generation on the council's corporate buildings, 10.9% of energy used by the council is from on-site renewables and avoided 355 tCO₂e of greenhouse gas emissions in 2022-23 (equivalent to 3.8% of net emission), compared to if gas and grid electricity were consumed. In 2022-23, council biomass use was at its lowest level in the last 6-year period, as a result of the boiler being offline between January 2023 and February 2023 due to the replacement of a boiler component.

The council continues to source biomass from a local supplier, Milner's Forestry, based in Markfield, which provides benefits of cost savings, carbon reduction, and biodiversity improvement, as well as local economy and woodland management benefits. 90% of the material used is sourced within The National Forest under management plans and felling licences. The remaining 10% of material is sourced from local arboriculture waste. The distance travelled to transport biomass to County Hall is reduced through this contract, whilst supporting local sustainable forestry management and reinforcing green jobs across the county.

Market-Based Emissions and Green Tariff

The council changed its electricity contract to a green tariff in October 2019, meaning all grid electricity used now comes from renewable energy sources. In line with DEFRA/BEIS guidance and the Greenhouse Gas Protocol, the council's headline emissions figures focus attention on location-based emissions, where this renewable generation is taken into account when calculating the national average grid electricity carbon emissions factor for the year.

In recognition of the council's positive step in having a green energy tariff and supporting national decarbonisation of the electricity grid by increasing demand for low-carbon energy, the GHG report also considers the council's emissions following a market-based approach to reporting emissions. A market-based approach enables the council to directly reflect the emissions associated with the electricity it purchases for its operations. Following this approach, the council's 2022-23 electricity emissions (3,306 tCO₂e) are considered zero emission due to the electricity being produced by renewable sources. Total market-based emissions for the council in 2022-23 were 6,123 tCO₂e (82.9% reduction compared to 2008-09 baseline).

Appendix 1 - Operational Scopes

The council has measured scope 1, 2 and a subset of scope 3 emissions within the GHG Report, where accurate and annual data is available. The different scopes of emissions are described below:

- **Scope 1** (direct emissions) Activities owned or controlled by the council that release emissions straight into the atmosphere. Examples include emissions from owned or controlled boilers and vehicles.
- **Scope 2** (energy indirect) Emissions being released into the atmosphere associated with the consumption of purchased electricity, heat, steam and cooling. These are indirect emissions that are a consequence of the council's activities, but which occur at sources not owned or controlled.
- **Scope 3** (other indirect) Emissions are a consequence of the council's actions, which occur at sources which are not owned or controlled. Examples of scope 3 emissions include business travel (e.g. use of staff vehicles or public transport), employee commuting, and purchased goods and services.

	Notes on inclusions and exclusions
Scope 1	
Council combustion e.g. gas, solid and liquid fuels in boiler plant	All fuel used in council owned and leased buildings where we are responsible for the bills (excludes schools). Less than 5% of total fuel use excluded where information was unavailable.
Owned and leased transport	Fuel consumption has been excluded if the council does not pay for fuel
Fugitive emissions	Data is gathered from information the council maintains on refrigeration and air conditioning equipment to ensure compliance with F-gas regulations. The data experiences large annual variations due to the varying nature of leaks and maintenance between years.
Scope 2	
Purchased electricity	All electricity used in all council owned and leased buildings where we have operational control and are responsible for the bills (excludes schools).
Scope 3	
Fuel well to tank emissions	The council is working to improve its data availability and quality for scope 3 emissions reporting and has included wider actions to influence these emissions within its 2030 Net Zero Council Action Plan. Well to Tank emissions from energy, gas, liquid and solid fuels consumption have been excluded e.g. diesel, LPG, coal, electricity and natural gas.

Business travel	Business travel by public transport has been excluded, based on previous years this represents approximately 1% of scope 3.
Employee commuting	Excluded due to lack of good quality information and availability of data. The council does not routinely monitor commuting, so information was not available.
Water supply and treatment	Included since the 2020-21 GHG Report
Waste generated in operations	Waste generated in council offices has been included since the 2020-21 GHG Report. Other sources of waste generated in council operations (e.g., highways construction) have been excluded due to data availability.
Purchased goods and services / Capital goods	Excluded due to lack of good quality information and availability of data.
Downstream leased assets	Some included within the council's scope 1 and 2 data. Separation of third-party emissions where another organisation leases areas within some council assets is not possible due to lack of good quality information and availability of data.
Investments	Excluded due to lack of good quality information and availability of data.
Out of scope	
Biomass fuel - woodchip	As a renewable fuel source, the carbon emitted from burning biomass is not included in the calculation as this will be reabsorbed by growing fuel trees as part of the natural carbon cycle.
Vehicle fuels – petrol and diesel	Standard vehicle fuels include a small percentage of biofuels. The carbon emissions from this element is 'out of scope' as it will be reabsorbed by new biomass crops.