Greenhouse Gas Emissions Report 2021-22

Part of the Leicestershire County Council Carbon Reduction Programme

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Reviewers: Carbon Reduction Programme Board

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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 2020-21 Greenhouse Gas Report forms part of the council's Carbon Reduction Programme and its commitment to become a net zero[1] council for its own operational emissions by 2030. This commitment was made in May 2019, alongside the council's declaration of a climate emergency[2] 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 2021-22 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.

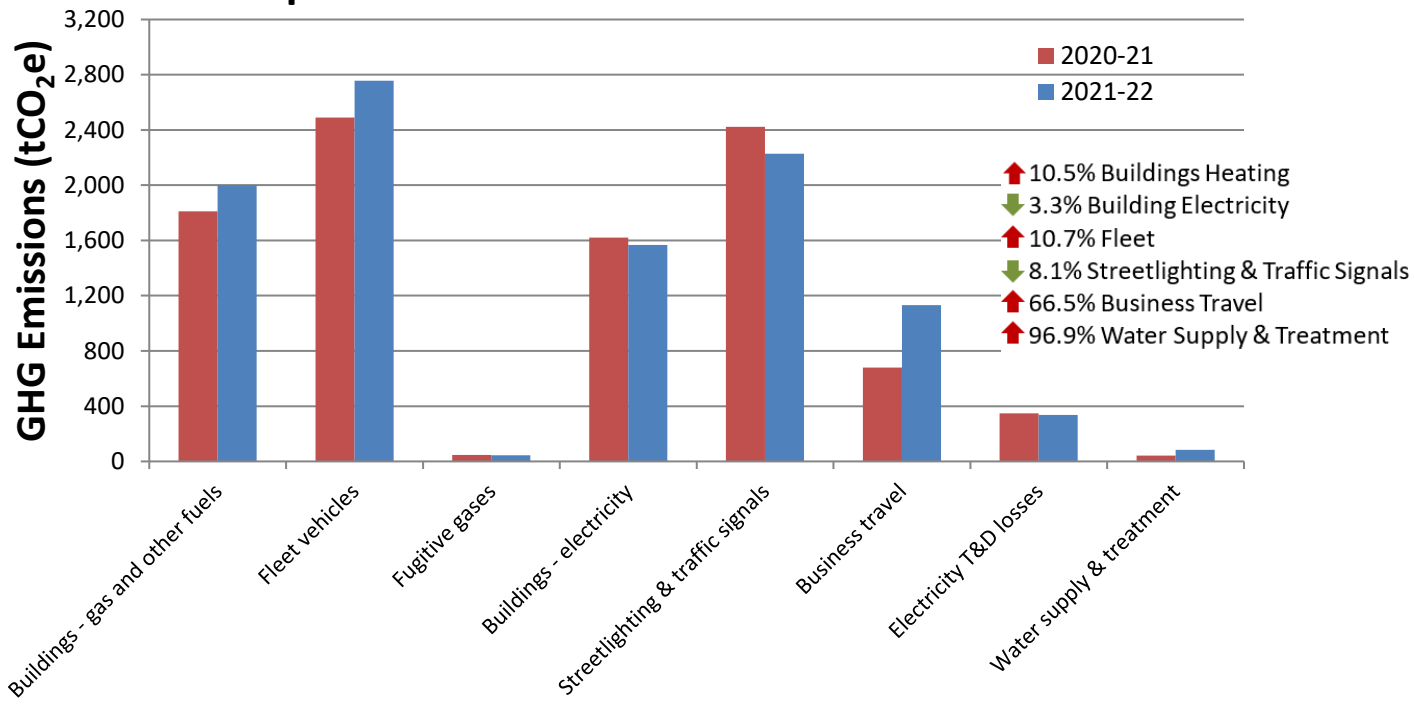
Headline Figures

Total net 2021-22 GHG Emissions
10,127 tCO_2e

71.7% reduction since 2008-09 baseline

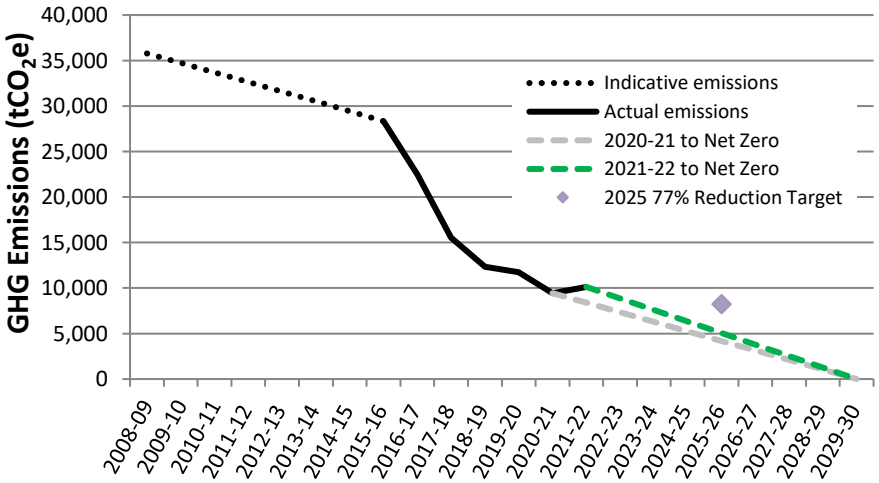
7.4% increase compared to 2020-21

Comparison of 2021-22 Emissions with 2020-21



- ✓ 693 tCO_2e increase since 2020-21
- ✓ Significant increase across building heating, fleet, business travel and water, due to Covid bounce-back.
- ✓ 433 tCO_2e reduction associated with the greening of the national grid
- ✓ 353 tCO_2e emissions avoidance through the use of on-site renewable energy, equivalent of 3.5% of 2021-22 emissions
- ✓ 1,265 tCO_2e 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 2021 to 31st March 2022

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 (tCO_2e).

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 and to achieve a 77% reduction in emissions compared to the 2008-09 baseline by 2025[3].

Joanna Guyll, 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 BEIS Greenhouse Gas Conversion Factor Repository.

Emissions factors published in 2021 have been used for the purpose of this report, as the majority of the period covered by this report fell within the 2021 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.

[3] Equivalent to the 64% reduction compared to 2016-17 by 2025 target stated in the Environment Strategy 2018-2030.

2021-22 Greenhouse Gas Emissions

GHG emissions data for period 1st April 2021 to 31st March 2022 (tCO_2e)						
	Sector	**2021-22**	**2020-21**	**% Change**	**Base Year 2008-09**	**% Change**
Scope 1 – Direct Emissions e.g., boilers, owned transport, air conditioning gases	Buildings	2,000	1,810	10.5%	4,317	-53.7%
	Fleet vehicles	2,756	2,489	10.7%	4,358	-36.8%
	Fugitive gases	44	46	-3.8%	-	-
	Sub-total	**4,800**	**4,345**	**10.5%**	**8,675**	**-44.7%**
Scope 2 – Energy Indirect e.g., purchased electricity	Buildings	1,567	1,621	-3.3%	6,562	-76.1%
	Streetlighting & traffic signals	2,228	2,424	-8.1%	15,581	-85.7%
	Sub-total	**3,795**	**4,045**	**-6.2%**	**22,143**	**-82.9%**
Scope 3 – Other Indirect e.g., business travel and water supply/treatment	Business travel	1,131	679	66.5%	3,237	-65.1%
	Electricity transmission & distribution losses	336	348	-3.5%	1,722	-80.5%
	Water supply & treatment	84	43	96.9%	-	-
	Waste	6	3	102.5%	-	-
	Sub-total	**1,557**	**1,073**	**45.1%**	**4,959**	**-68.6%**
Total Gross Emissions		**10,152**	**9,462**	**7.3%**	**35,778**	**-71.6%**
	Carbon offsets	0	0	-	0	-
	Renewable energy exports	-25	-29	-14.0%	0	-
Total Location-based Net Emissions		**10,127**	**9,434**	**7.4%**	**35,778**	**-71.7%**
	Full time equivalent (FTE) employees	4,860	4,789	1.5%	6,880	-29.3%
	Intensity measure: tCO_2e/FTE	2.08	1.97	5.8%	5.2	-59.9%
	Renewable electricity tariff	3,795	4,045	-6.2%	-	-
Total Market-based Net Emissions		**6,357**	**5,418**	**17.3%**	**35,778**	**-82.2%**
Petrol and diesel (outside of scope)		0.15	0.09	56.4%	-	-
Woodchip (outside of scope)		711	754	-5.7%	-	-

Table 1: Council 2021-22 GHG emissions, with a comparison to 2020-21 and the baseline year

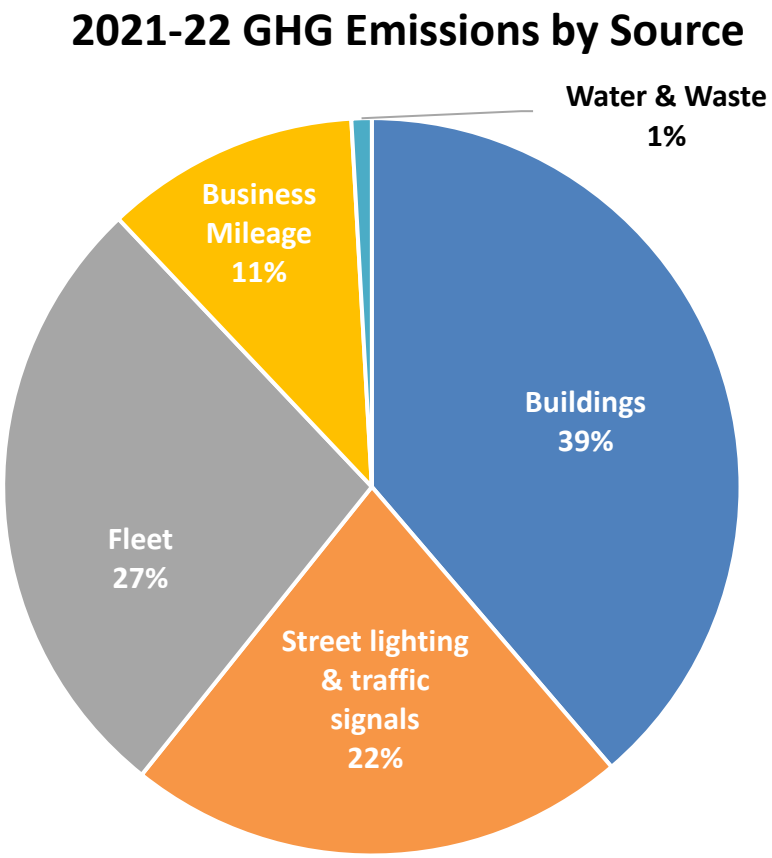


Figure 1: *Council 2021-22 GHG emissions by source.*

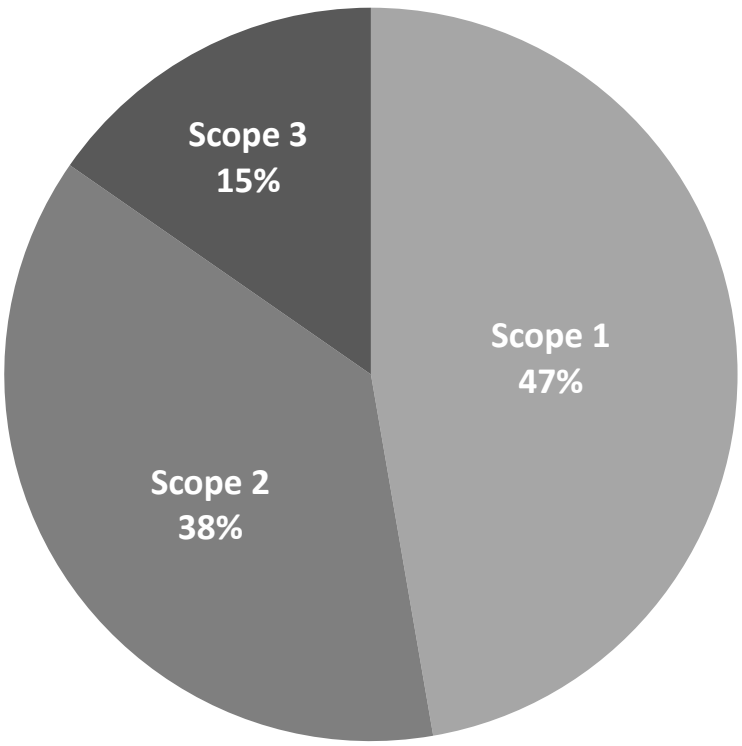


Figure 2: *Council 2021-22 GHG emissions by scope.*

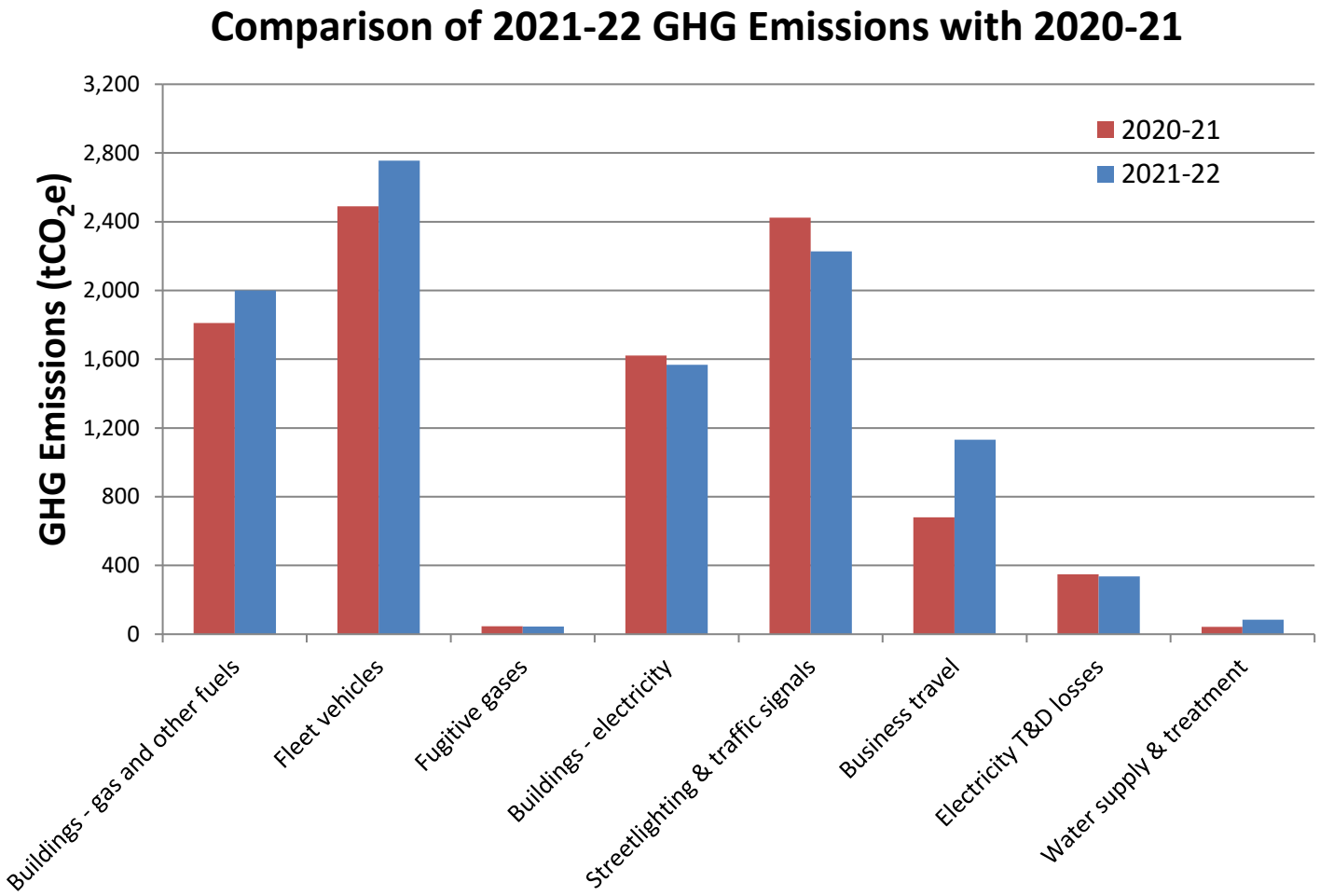


Figure 3: Council 2021-22 GHG emissions by source, compared to 2020-21.

Performance Against Baseline and 2020-21

Leicestershire County Council net greenhouse gas emissions increased by 7.4% (693 tCO_2e) compared to the 2020-21 financial year to 10,127 tCO_2e – equivalent of 2.08 tCO_2e per full-time equivalent employee (0.11 tCO_2e increase compared to 2020-21). The rise in council emissions was expected following the return of many council services and operations post Coronavirus, particularly with fleet and business travel emissions. Streetlighting, traffic signals and building electricity emissions continued to reduce. Overall, emissions remain 13% lower than 2019-20 (pre-Coronavirus) and means council emissions have now reduced by 71.7% 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 fuel use in buildings increased by 10.5% (190 tCO_2e) compared to 2020-21 levels. The main cause of this was due to the County Hall biomass boiler being offline between October 2021 and January 2022, whilst Public Sector Decarbonisation works took place to expand the network and install a thermal heat store, alongside replacement of a safety component to the boiler. As a result, County Hall was heated by gas for the majority of the year, which has a higher carbon intensity than biomass. During Coronavirus, energy management site visits and checks were paused and only recommenced towards the end of 2021-22, which have identified some sites had anomalous heating controls, including overheating, or longer running hours, leading to greater energy use. In addition, some Coronavirus measures remained in place within buildings to keep building users safe, for example measures to increase ventilation, which will have required more heating to maintain internal temperatures.

Looking at individual fuel types that make up the 10.5% rise in emissions demonstrates that an increase in gas use contributes nearly all of the increase in emissions (rising 12.1% compared with 2020-21). Of the other heating sources, LPG emissions rose 63% (3 tCO_2e), meanwhile, gas oil, kerosine and wood chip emissions all reduced compared to 2020-21 by a combined 8% (60 tCO_2e). The rise in LPG can be linked to an increase in building use post-Coronavirus, whilst woodchip reduced due to the biomass boiler being offline. Gas oil and kerosine are no longer used by the council due to being replaced by heat pumps at Beaumanor Hall.

Fugitive emissions reduced slightly by 4% (2 tCO_2e) compared to 2020-21. 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 increased by 10.7% (267 tCO_2e) compared to 2020-21, which can be attributed to the return of many fleet services and operations post-Coronavirus, offset slightly by a reduction in the carbon intensity of diesel. Emissions increases have been noticed across almost all areas of the council, such as Sustainable Travel (31%), Operational Property (11%) and Highways Operations (10%). Waste Sites are the only area where fleet emissions reduced (7%), due to a 37% reduction in gas oil and 2% in diesel emissions.

Diesel fuel use remains the greatest source of council fleet emissions (88.5%), followed by gas oil use (11%) and petrol, propane and distance claims making up the remaining 0.5%.

Scope 2 Emissions

Building Electricity

Emissions from electricity consumption in council operated buildings fell by 3.3% (54 tCO_2e) compared to 2020-21. All 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 2020-21. The full benefit of greening of the grid was supressed by a 6% (108

tCO_2e) increase in electricity used in council buildings. The rise in electricity use can be linked to a return to offices and services, leading to an increased use of desk equipment, printers, and lighting within buildings. Towards the end of 2021-22, the council's continued programme of energy efficiency and renewable energy investments across the property estate would have started to counteract some of the rise in building electricity consumption (see Section 11).

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 8% (196 tCO_2e) compared to 2020-21. This is all due to decarbonisation of the national grid, slightly supressed by a 1% (24 tCO_2e) increase in electricity used by the council's streetlighting assets. The increase in electricity use can be associated with an increase in the number of streetlights across the county, alongside the impact of different weather/lighting between years. Towards the end of 2021-22, further energy saving measures were completed to trim the operational hours and dim appropriate streetlighting assets, which will be fully realised next financial year.

Scope 3 Emissions

Business Travel

Council business travel emissions increased by 67% (452 tCO_2e) due to 1.5 million more business miles being claimed by staff in 2021-22 compared to 2020-21. Most of this increase can be attributed to the return of council services and operations post-Coronavirus, including the need to travel for business purposes. A small proportion (5.5%, 40 tCO_2e) of the rise in business mileage emissions can be linked to a delay in 2020-21 claims due to the council switching to Oracle Fusion software. Business mileage emissions remain significantly lower than pre-Coronavirus (29%, 454 tCO_2e), with many council staff utilising smarter working practises, such as online and hybrid meetings, flexible working, and home working.

Electricity Transmission and Distribution Losses

Electricity transmission and distribution loss emissions reduced by 3.5% (12 tCO_2e) compared to 2020-21 and can be explained by an 6% lower carbon conversion factor, supressed by an increase in building and streetlighting electricity use as discussed above.

Water Supply and Treatment

Water emissions increased by 96.9% (41 tCO_2e) compared to 2020-21 and can be attributed mainly to a change in supplier and use of estimated meter readings, alongside the return of council services and operations, including the use of council buildings and facilities. Roughly a third of this increase 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 increased by 102.5% (3 tCO_2e) since 2020-21 and can be attributed to the return of council services and operations, including the use of council buildings and facilities.

Performance Against 2030 Net Zero Target

Leicestershire County Council's net GHG emissions in 2021-22 are 71.7% lower than the 2008-09 baseline. Figure 4 below demonstrates that despite the rise in emissions, 70% (1,608 tCO_2e) of the emissions reductions since 2019-20 (pre-Coronavirus) have been maintained. The council now requires an average of 1,265 tCO_2e per year reduction in future years to achieve net zero in 2030 (217 tCO_2e higher than in 2020-21) and is 1900 tCO_2e above the 2025 target to cut emissions by 77% compared to 2008-09. The previous 5-year period has seen an average emissions reduction of 14% 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.

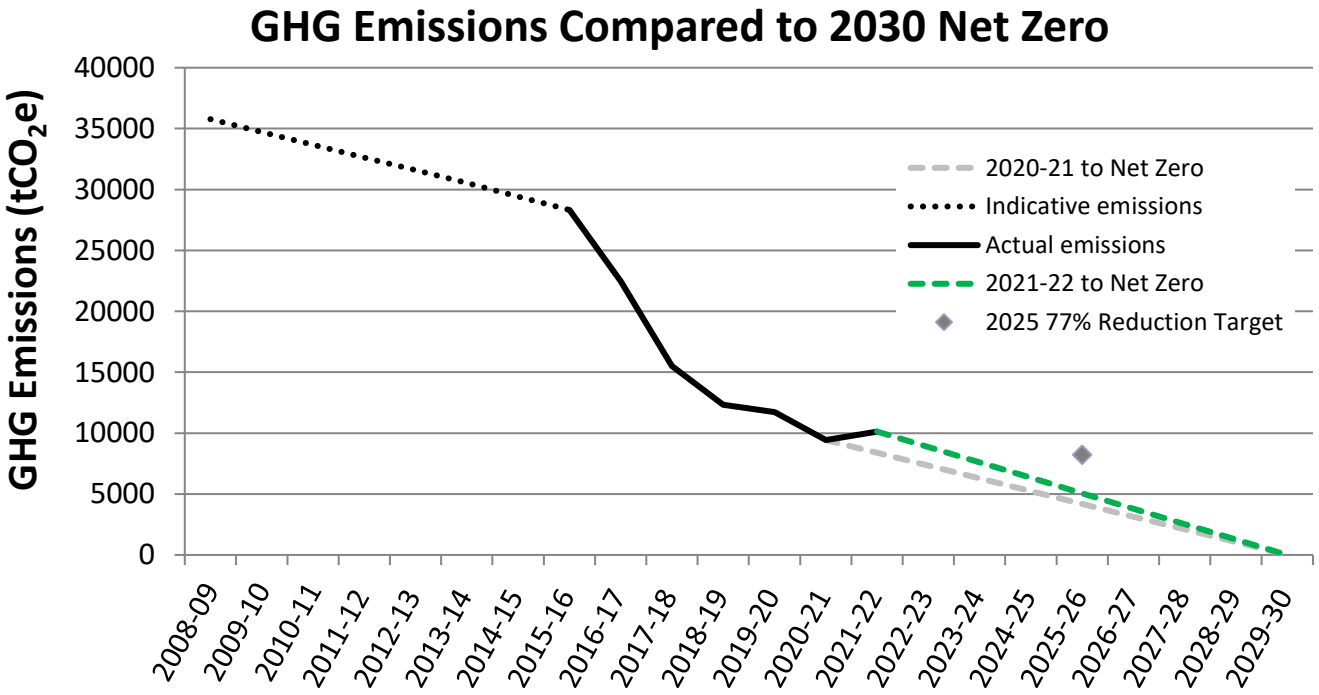


Figure 4: Council net GHG emissions compared to 2030 Net Zero

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 in the GHG report. 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 2021-22, the Council is estimated to have exported 115,492 kWh of electricity to the grid, accounting for 24.5 tCO_2e (0.2% of the council's gross emissions). Compared to 2020-21, exported solar PV netted off 14% (4 tCO_2e) less GHG emissions. This can be attributed to a number of factors including: the reduction in carbon intensity of the grid (discussed above), the number of annual sunshine hours, solar panel degradation/maintenance and incomplete solar generation readings between financial years.

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, 10.1% of energy used by the council is from on-site renewables and avoided 353 tCO_2e of greenhouse gas emissions in 2021-22 (equivalent to 3.5% of net emission), compared to if gas and grid electricity were consumed. In 2021-22, council biomass use was at its lowest level in the last 5-year period, as a result of Public Sector Decarbonisation Scheme upgrades to extend the biomass network and install a thermal store. Biomass heating output is expected to increase significantly in 2022-23.

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 2021-22 electricity emissions (3,795 tCO_2e) are considered zero emission due to the electricity being produced by renewable sources. Total market-based emissions for the council in 2021-22 were 6,357 tCO_2e (82.2% reduction compared to 2008-09 baseline).

Public Sector Decarbonisation Scheme (scope 1 and 2)

The council has successfully carried out £3.5 million Government Public Sector Decarbonisation Scheme grant works to cut emissions from many parts of its estates by using renewable sources of energy. The projects included the installation of a 90,000-litre thermal storage tank, additional solar panels on County Hall and air source heat pumps at Beaumanor Hall.

The upgrades installed with the grant will save the council an estimated £130,000 per year and reduce carbon emissions by 380 tCO_2e a year compared to pre-project, first being realised in 2022-23.

Street Lighting Savings (scope 2)

Leicestershire County Council manages c.71,000 streetlighting assets as well as illuminated signs and other electrical equipment. Through the dimming of 14,421 residential all-night lights the council saved 36.5 tCO_2e in 2021-22, as a result of the reduction in electricity used (171,945kWh). In 2022-23, the benefits will be fully realised, and savings will amount to 96 tCO_2e compared to pre-project energy use for the streetlights.

Food for Life Gold and Procurement (wider scope 3)

The council has a Leicestershire Food Plan which looks at how we can reduce the environmental footprint of food, including the carbon emissions associated with food production and consumption. Leicestershire Traded Services (LTS) is the council's trading arm and provides school meals to over 32,000 children a day. LTS achieved Gold Food for Life Served Here for these meals, which includes 15% spend on organic produce, 5% on free range pork and poultry, 75% of dishes freshly prepared from unprocessed ingredients, all ingredients UK grown and reformulation of recipes to include 20% less meat by adding beans and pulses.

All of these actions help to improve the environmental footprint of school meals through lower impact food production, fewer food miles and lower carbon footprint ingredients. Much of our improvement in environmental impact comes from a focus on purchasing UK produce. Whilst it is known that the majority of UK farmed products have a lower carbon impact than imported products, we are currently working to understand how this impact could be further reduced.

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 scope 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	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.
Fuel well to tank emissions	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.