

Greenhouse Gas Emissions Report 2020-21

Part of the Leicestershire County Council
Carbon Reduction Programme

Author: Michael Suddens
(Senior Carbon Reduction Officer)

Reviewers: Donna Worship
(Carbon Reduction Team Manager)

Date: November 2021



1. Introduction

Leicestershire County Council (LCC) 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 LCC'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 LCC's own operational greenhouse gas (GHG) emissions for the 2020-21 reporting period and the Council's 2030 net zero ambition, which includes emissions from the Council's buildings, fleet vehicles, streetlighting and traffic signals, business travel, water and waste. The full scope of emissions included in this report are provided in Appendix1.

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.

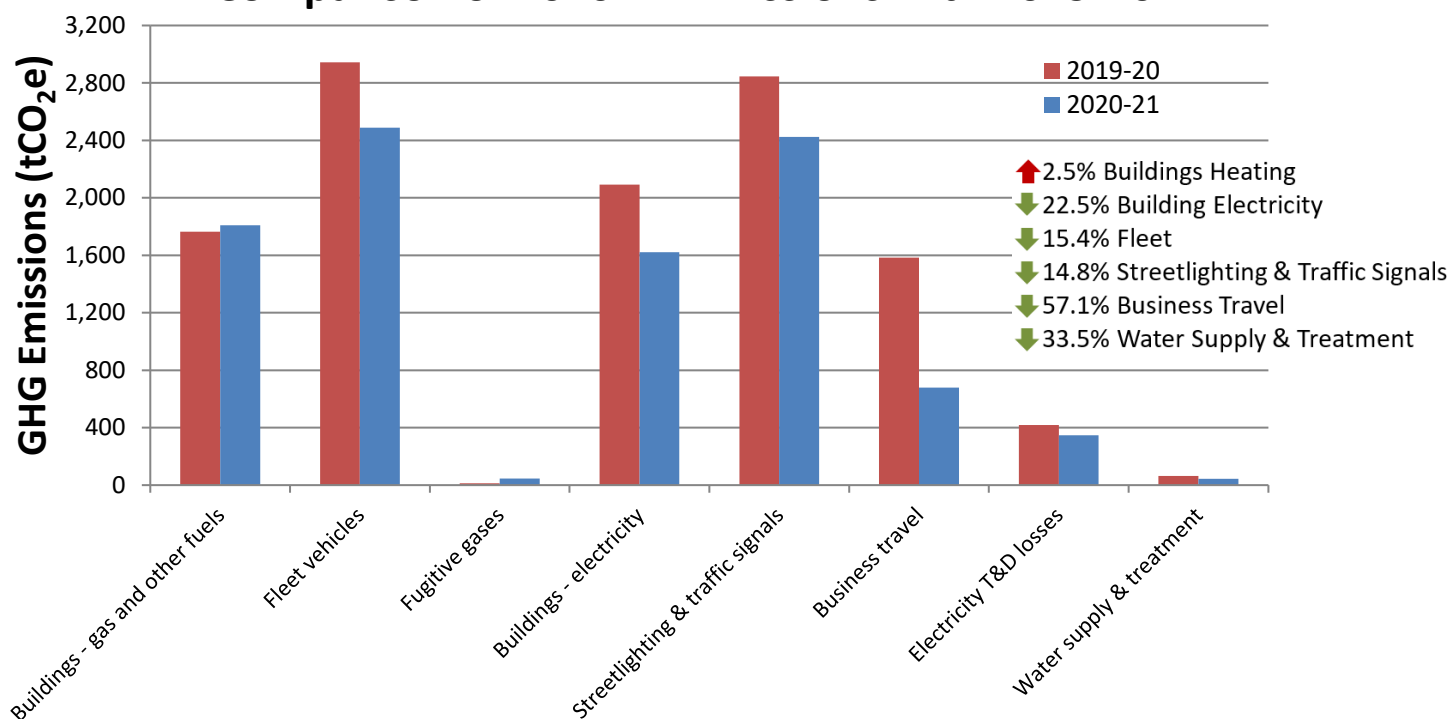
² A **climate emergency** is a situation in which urgent action is required to reduce or halt climate change and avoid potentially irreversible environmental damage resulting from it.

2. Headline Figures

Total net 2020-21
GHG Emissions
9,434 tCO₂e

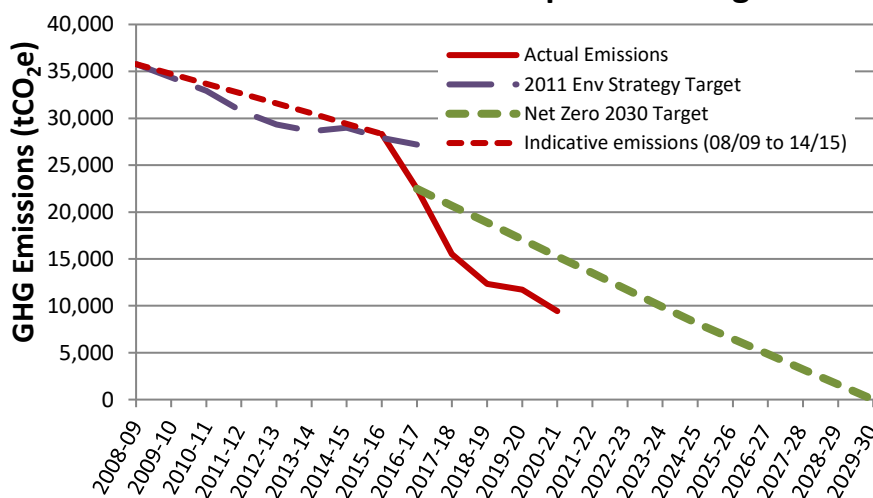
73.6% reduction since
2008-09 baseline
19.4% reduction
compared to 2019-20

Comparison of 2020-21 Emissions with 2019-20



- ✓ 2,268 tCO₂e reduction since 2019-20
- ✓ Significant reductions across business travel, streetlighting & traffic signals, building electricity and fleet.
- ✓ 417 tCO₂e reduction associated with the greening of the national grid
- ✓ 476 tCO₂e emissions avoidance through the use of on-site renewable energy, equivalent of 5% of 2020-21 emissions
- ✓ 5,853 tCO₂e below net zero targets

GHG Emissions Compared to Targets



3. 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.

4. Reporting Period

1st April 2020 to 31st March 2021

5. Organisational Boundary and Operational Scope

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. 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 the 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. Following a review of LCC's GHG report, water and waste emissions have been included for the first time within scope, due to the Council having a considerable level of influence over these emissions sources and tackling them aligns to other Environment Strategy objectives.

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 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 LCC's GHG footprint.

6. Baseline Emissions Year and Targets

The adopted baseline year is 2008-09 which the Council set in its Environment Strategy 2011 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 estate and operations to net zero by 2030 and to achieve a 64% reduction in emissions compared to the 2016-17 financial year by 2025.

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

7. 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 LCC 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 energy or litres of fuel, have been prioritised for accuracy. However, 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 2020 have been used for the purpose of this report, as the majority of the period covered by this report fell within 2020.

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 LCC.

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

8. 2020-21 Greenhouse Gas Emissions

GHG emissions data for period 1 st April 2020 to 31 st March 2021 (tCO ₂ e)						
	Sector	2020-21	2019-20	% Change	Base Year 2008-09	% Change
Scope 1 – Direct Emissions e.g. boilers, owned transport, air conditioning gases	Buildings	1,810	1,765	2.5%	4,317	-58.1%
	Fleet vehicles	2,489	2,944	-15.4%	4,358	-42.9%
	Fugitive gases	46	13	265.4%	-	-
	Sub-total	4,345	4,722	-8.0%	8,675	-49.9%
Scope 2 – Energy Indirect e.g. purchased electricity	Buildings	1,621	2,092	-22.5%	6,562	-75.3%
	Streetlighting & traffic signals	2,424	2,845	-14.8%	15,581	-84.4%
	Sub-total	4,045	4,937	-18.1%	22,143	-81.7%
Scope 3 – Other Indirect e.g. business travel and water supply/treatment	Business travel	679	1,585	-57.1%	3,237	-79.0%
	Electricity transmission & distribution losses	348	419	-17.0%	1,722	-79.8%
	Water supply & treatment	43	64	-33.5%	-	-
	Waste	3	7	-61.7%	-	-
	Sub-total	1,073	2,076	-48.3%	4,959	-78.4%
Total Gross Emissions		9,462	11,735	-19.4%	35,778	-73.6%
Carbon offsets		0	0	-	0	-
Renewable energy exports		-29	-33	-12.9%	0	-
Total Location-based Net Emissions		9,434	11,702	-19.4%	35,778	-73.6%
Full time equivalent (FTE) employees		4,789	5,129	-6.6%	6,880	-
Intensity measure: tCO ₂ e/FTE		1.97	2.28	-13.7%	5.2	-62.1%
Renewable electricity tariff		4,045	4,937	-	-	-
Total Market-based Net Emissions		5,418	6,798	-20.3%	35,778	-84.9%
Petrol and diesel (outside of scope)		0.09	0.09	6.0%	-	-
Woodchip (outside of scope)		754	935	-19.4%	-	-

Table 1: LCC 2020-21 GHG emissions, with a comparison to 2019-20 and the baseline year

2020-21 GHG Emissions by Source

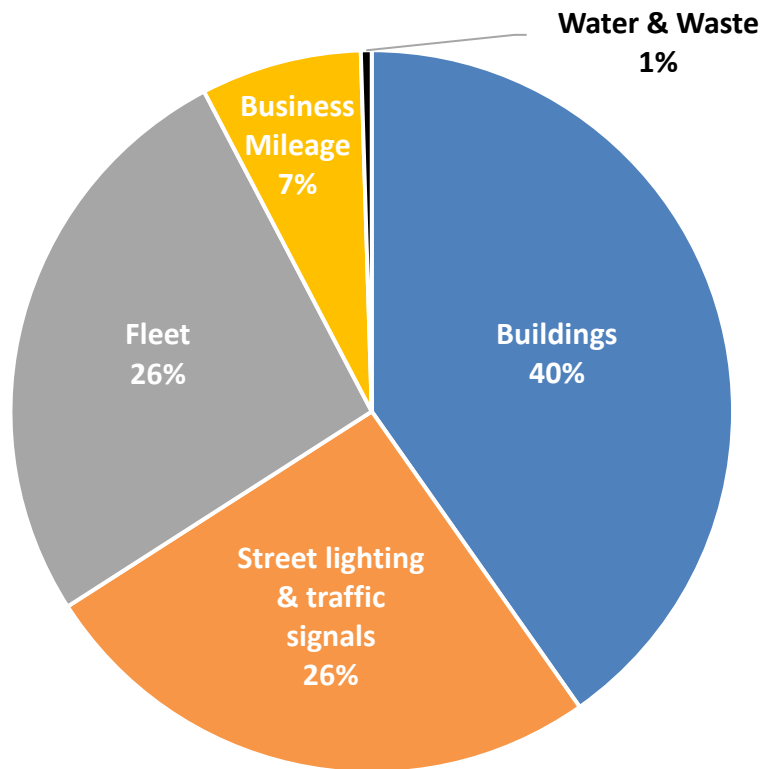


Figure 1: LCC 2020-21 GHG emissions by source.

2020-21 GHG Emissions by Scope

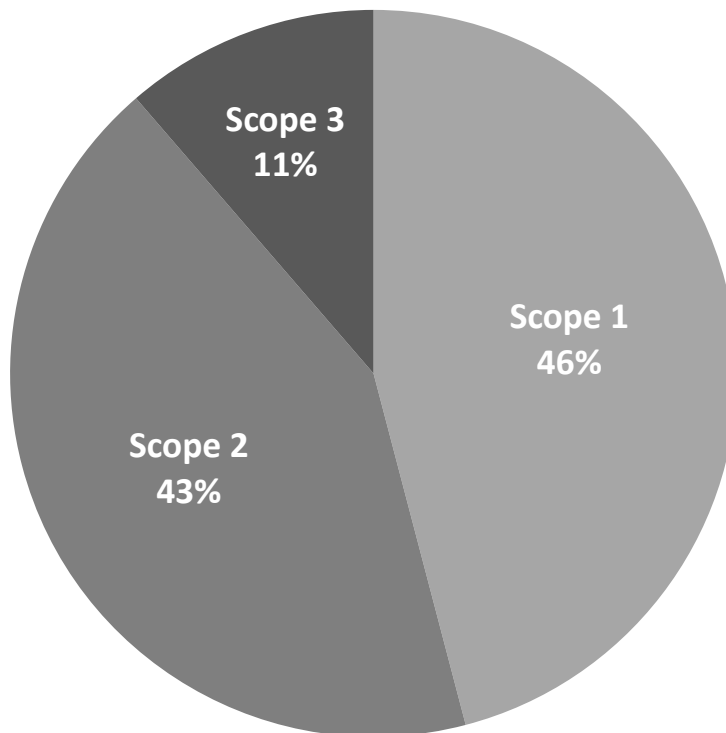


Figure 2: LCC 2020-21 GHG emissions by scope.

Comparison of 2020-21 GHG Emissions with 2019-20

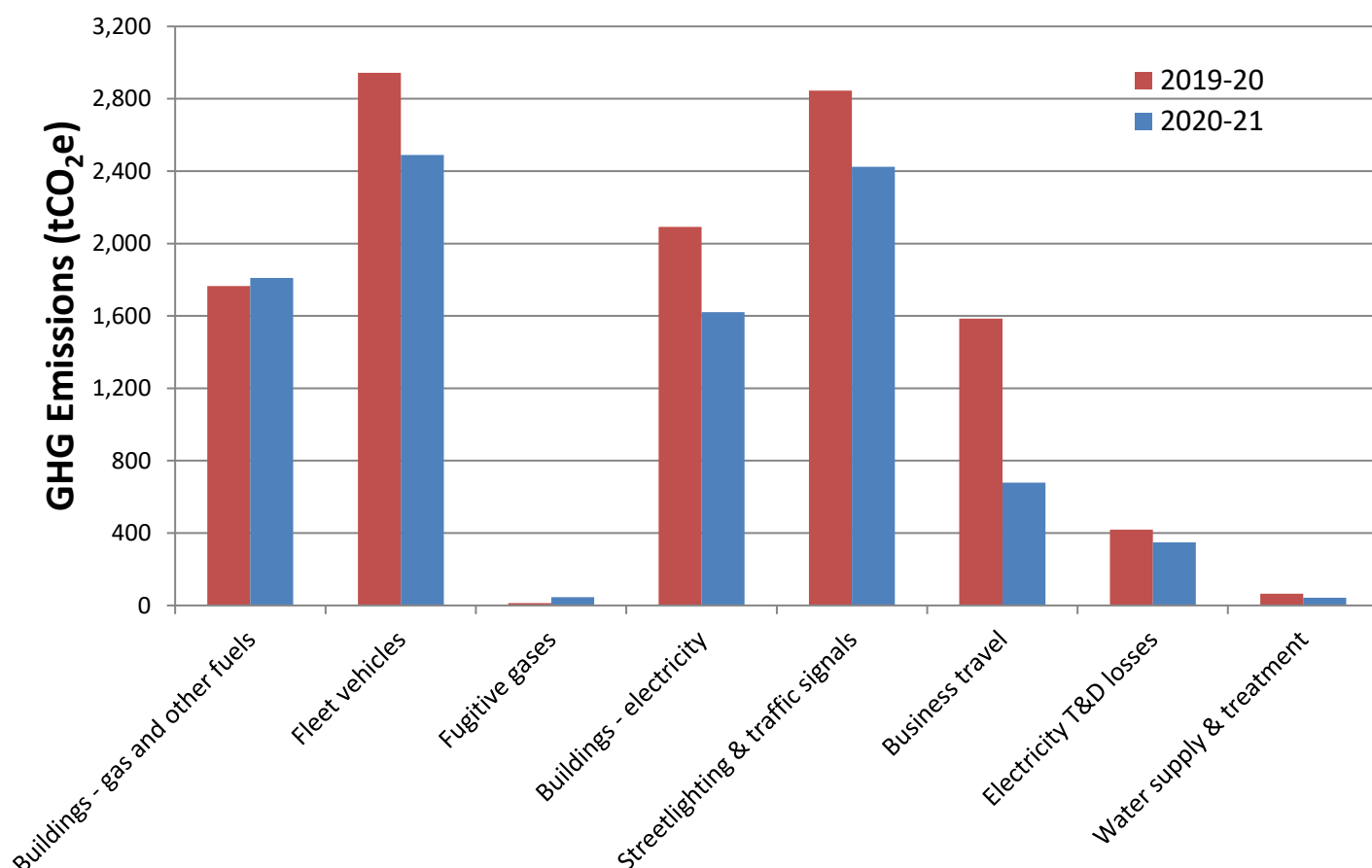


Figure 3: LCC 2020-21 GHG emissions by source, compared to 2019-20.

9. Performance Against Baseline and 2019-20

Leicestershire County Council net greenhouse gas emissions reduced by 19.4% (2,268 tCO₂e) compared to the 2019-20 financial year to 9,434 tCO₂e – equivalent of 1.97 tCO₂e per fulltime equivalent employees. This level of reduction has been achieved through significant levels of emissions reduction from business travel, streetlighting and traffic signals, building electricity and fleet. The Council recognises that Covid-19 lockdowns and the significant shift to LCC employees working from home would have impacted on the Council's operations and emissions during the entire 2020-21 financial year. This level of emissions reduction means LCC GHG emissions have now reduced by 73.6% 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 2.5% (45 tCO₂e) compared to 2019-20 levels. The main cause of this was due to Covid-19 regulations within buildings to keep building users safe, for example measures to increase ventilation within buildings were in force for much of 2020-21, which required more heating to maintain internal temperatures. There was also the requirement to continue to heat large areas of Council buildings despite having a much lower office capacity, due to having to socially distance office users. A small part of this increase can also be associated with slightly colder weather. When the figures are adjusted for temperature, consumption increases, reinforcing the impact of Covid-19 lockdown and restrictions on building heating emissions.

Looking at individual fuel types that make up the 2.5% rise in emissions demonstrates that an increase in gas use contributes all of the increased emissions (rising 4.3% compared with the year before). Meanwhile, LPG, oil, kerosine and wood chip emissions all reduced compared to 2019-20 by a combined 36% (31 tCO₂e).

Fugitive emissions increased by 265% (33 tCO₂e) compared to 2019-20. These emissions are calculated from information LCC 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. Despite the increase from the previous year, 2020-21 fugitive emissions remain below the average for the last 11-year period.

Fleet Vehicles

LCC fleet emissions reduced by 15.4% (455 tCO₂e) compared to 2019-20, halting the increase in fleet emissions seen over the previous two financial years. This reduction can mainly be attributed to the impacts of Covid-19 on Council operations. Emissions reductions have been noticed across almost all areas of the Council, such as Sustainable Travel (-39%), Operational Property (-22%), Waste Sites (-6%). Highways Operations is the only area where fleet emissions increased (0.5%), due to a 4% rise in diesel emissions offset by a 12% reduction in gas oil emissions. The rise in diesel emissions can be explained by the Council hiring more vehicles to ensure social distancing, resulting in additional diesel fuel usage in Highways Operations but overall, this was more than offset by reductions elsewhere in the Council's fleet.

Diesel fuel use remains the greatest source of LCC fleet emissions (86%), followed by gas oil use (13%) and petrol/distance claims making up the remaining 1%.

Scope 2 Emissions

Building Electricity

Emissions from electricity consumption in council operated buildings fell by 22.5% (471 tCO₂e) compared to 2019-20. The majority of this reduction (67%, 315 tCO₂e) can be attributed to the impact of Covid-19 lockdown and a significant shift to home working for Council employees, meaning less electricity was used during the year, e.g. desk equipment, printers and lighting within buildings. The Council's continued programme of energy efficiency and renewable energy investments across the property estate would also have contributed to some of this reduction.

The remaining 33% (156 tCO₂e) of the reduction seen within building electricity can be identified as the national impact of greening the electricity grid – the carbon conversion factor for UK electricity fell by 8.8% compared to 2019-20.

Streetlighting and Traffic Signals

Greenhouse gas emissions from LCC street lighting and traffic signals continue to improve in performance, as emissions fell by a further 14.8% (421 tCO₂e) compared to 2019-20. This is mainly due the decarbonisation of the national grid (54%, 227 tCO₂e) but also as a result of energy saving measures the Council has introduced, such as further ‘trimming and dimming’ of the streetlighting system to reduce electricity consumption, alongside the impact of different weather/lighting between years.

Scope 3 Emissions

Business Travel

Preliminary analysis using available data* shows LCC business travel emissions reduced by 57% (906 tCO₂e) because of 3.1 million less business miles claimed by staff in 2020-21 compared to 2019-20. Most of this reduction can be attributed to the impact of Covid-19 restrictions and a significant shift to working from home, reducing the ability but also the need to travel for business. Alongside the carbon emissions saving, this had a significant financial saving to the Council.

Prior to Covid-19, several projects were also in place which aimed to reduce the need to travel and manage staff journeys. These included the increased use of technology to enable more online meetings, provision of an electric pool vehicle and a flexible working policy. These may have also contributed to some of the reduction in business mileage.

*Business mileage claims for Q4 2020-21 are incomplete due to the Council’s shift to the new Oracle Fusion system, where claims have been made but data reports are not yet available.

Electricity Transmission and Distribution Losses

Electricity transmission and distribution loss emissions have reduced by 17% (71 tCO₂e) and can be explained by the reduced consumption detailed above (accountable for 60% of the change) and an 8% lower carbon conversion factor (accountable for 40% of the reduction).

Water Supply and Treatment

Emissions for water have been included within the Council’s GHG report for the first time in 2020-21. Though not previously included, water emissions have been calculated in previous years, allowing for changes since 2019-20 to be identified. Water emissions reduced by 33.5% (21 tCO₂e) compared to 2019-20 and can be attributed to the impact of Covid-19 on Council operations and the shift to home working. A third of this reduction in emissions is from water supply and the other two thirds from the treatment of wastewater used by the Council.

Waste

Emissions from waste generated in the Council’s offices have been included in the GHG report for the first time in 2020-21. Though not previously included, office waste emissions have been calculated in previous years, allowing for changes since 2019-20 to be identified. LCC emissions from office waste reduced by 61.7% (4 tCO₂e) since 2019-20 and can be attributed to the impact of Covid-19 on Council operations and the shift to home working.

10. Performance Against 2030 Net Zero Target

Leicestershire County Council's net GHG emissions in 2020-21 are 73.6% lower than the 2008-09 baseline. Figure 4 below demonstrates how LCC's emissions continue to fall well below the 2030 net zero target, where the previous 5-year period has seen an average emissions reduction of 19% per year. Currently the Council is performing 5,853 tCO₂e below net zero targets and requires an average of 1,048 tCO₂e per year reduction in future years to achieve net zero in 2030. It should be noted that prior to the impact of Covid-19, emissions reductions were beginning to slow down, 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.

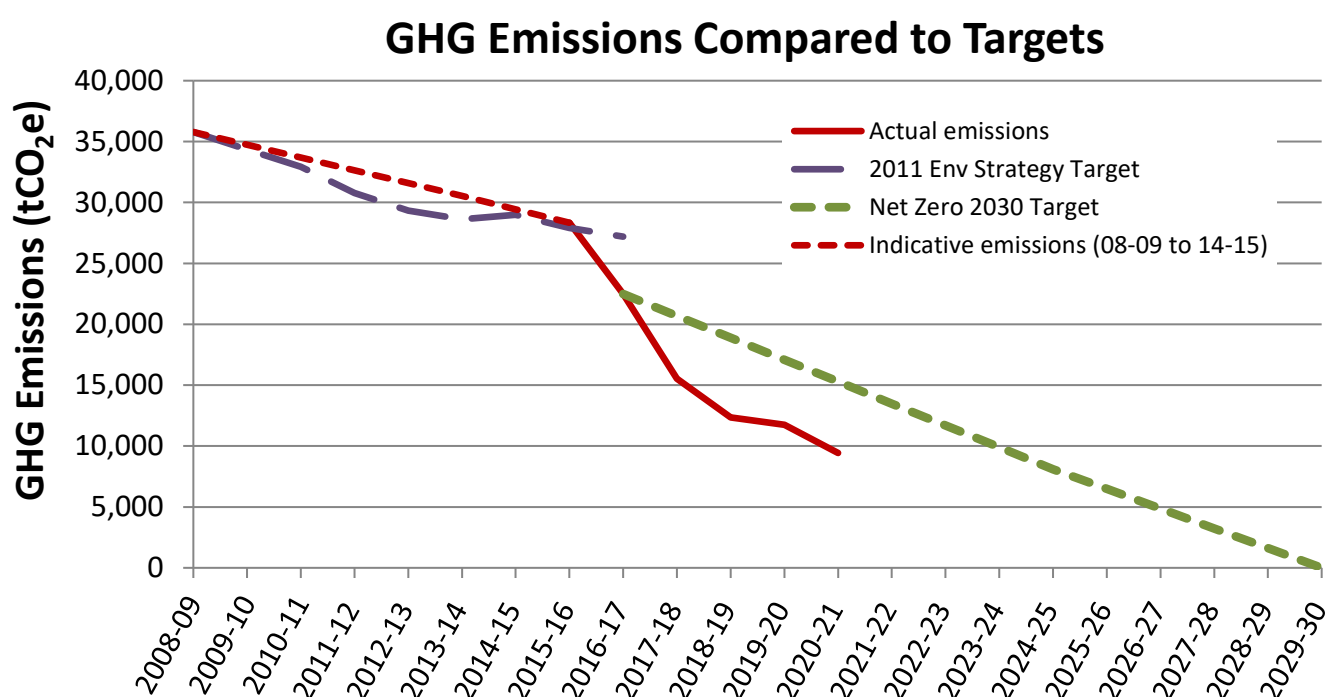


Figure 4: LCC actual net GHG emissions compared to 2011 Environment Strategy targets and the current 2030 net zero target.

11. 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 2020-21, the Council is estimated to have exported 122,364 kWh of electricity to the grid, accounting for 28.5 tCO₂e (0.3% of LCC's gross emissions). Compared to 2019-20, exported solar PV netted off 13% (4.3 tCO₂e) 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. In 2020-21, LCC biomass use was at its highest level. When combined with local solar PV generation on the Council's corporate buildings, 14.3% of energy used by the Council is from on-site renewables and avoided 476 tCO₂e of greenhouse gas emissions in 2020-21 (equivalent to 5% of LCC's net emissions and higher than any previous year), compared to if gas and grid electricity were consumed.

The Council sources 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 by LCC 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 LCC's 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 now also considers LCC'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 2020-21 electricity emissions (4,045 tCO₂e) are considered zero emission due to the electricity being produced by renewable sources. Total market-based emissions for LCC in 2020-21 were 5,418 tCO₂e (84.9% reduction compared to 2008-09 baseline).

Greener Bypass Resurfacing (wider scope 3)

Leicestershire County Council trialled new recycled and low carbon products and techniques in necessary highway improvements which recycled 5,000 tyres and saved 30 tCO₂e, compared to conventional resurfacing techniques. The Council's pilot project will go on to inform other local authorities as a case study on how to reduce emissions within highways projects across the UK.

Croft Quarry Restoration (wider scope 3)

Leicestershire County Council commissioned consultants to undertake a study of the GHG emissions associated with the transport of 14 million cubic metres of inert construction, demolition and engineering waste by rail, over a 20-year period, for the restoration of Croft Quarry, located in Leicestershire. The study assessed on site emissions, those arising from the transport of the waste and calculated the carbon sequestration arising from the habitat restoration scheme. This is a positive example of where the carbon impact of a project has formed a material consideration in the planning decision making process

Appendix 1 - Operational Scopes

The Council has measured scope 1, 2 and some 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 LCC 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 LCC does not pay for fuel
Fugitive emissions	Data is gathered from information LCC 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 LCC owned and leased buildings where we have operational control and are responsible for the bills (excludes schools).
Scope 3	
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. LCC does not routinely monitor commuting so information was not available.
Water supply and treatment	Included for the first time in 2020-21 GHG Report
Waste generated in operations	Waste generated in Council offices has been included for the first time in 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.