

Leicester
City Council

Leicester's City-Wide Carbon Footprint Statement 2019

October 2022

Contents

1. Executive Summary	3
2. Introduction.....	3
3. Area Information.....	4
4. Reporting Period	4
5.1 Sector Analysis	7
5.2 Industrial emissions	8
5.3 Commercial emissions.....	9
5.4 Domestic emissions	9
5.5 Public Sector emissions.....	9
5.6 Transport emissions	10
5.7 Carbon Emissions Per Person.....	10
6. Approach	10
7. Boundary & Scope	11
8. Baseline Year	11
9. Targets	11
10. Contact Details	12

1. Executive Summary

Leicester City Council has set an ambition to reach net zero carbon emissions in Leicester by 2030. From the baseline year of 1990 this equates to a reduction of 2,388.3 ktCO₂ over 40 years.

In 2019 Leicester's city-wide carbon dioxide (CO₂) emissions, as calculated using figures provided the UK government's Department for Business, Energy and Industrial Strategy (BEIS), were 1,217.8 ktCO₂. This represents:

- a reduction of 1,170 ktCO₂ from the 1990 baseline figure, equal to 49%
- a reduction of 843 ktCO₂ from 2005, equal to 40.9%
- a reduction of 54 ktCO₂ from 2018, equal to 4.2%

Emissions per city resident (per capita) in 2019 were 3.4 tCO₂, a fall from 3.6 tCO₂ in 2018, 6.8 ktCO₂ in 2005 and 8.5 ktCO₂ in 1990.

Emissions are split into sectors: Industrial, Commercial, Domestic, Public Sector and Transport. Emissions have fallen in all of these sectors in 2019, most significantly from industry and by less from other sectors. Within this, it can also be seen that emissions from Electricity have fallen much more in 2019 than those from Gas, Transport and other sources. Details of the reasons for these changes are provided within this report where available.

These figures cover emissions from energy and fuels used within the city. They do not include emissions from consumption and waste; however these areas are also included within our net zero ambition.

2. Introduction

Leicester City Council declared a climate emergency in February 2019. This means that we are committed to playing our part in reducing carbon emissions to prevent the impacts of climate change getting much worse and meet the goals of the Paris Agreement on climate change. As part of our response to the climate emergency we have produced Leicester's Climate Emergency Strategy and Action Plan, setting out our approach to these challenges and the wide range of actions being undertaken by the council.

Carbon dioxide is a greenhouse gas and is the one most widely produced by human activity. Sources include the burning of fossil fuels for heat, electricity generation and transport. Greenhouse gases trap the sun's heat on earth and are raising the average temperature of the world. This is already causing climate change, leading to extreme weather, sea level rise and damage to nature.

Leicester's city-wide carbon footprint includes the carbon dioxide emissions produced by Leicester residents and employers each year, reported in terms of kilotons (1000 tonnes) of carbon dioxide (ktCO₂). The figures include emissions from use of gas, electricity and other fuels in buildings, use of fuels for transport and a small amount of agricultural emissions in the city.

It uses information produced by the UK government's Department for Business, Energy and Industrial Strategy (BEIS). This report covers the 2019 calendar year, as this is the most up-to-date information available.

This report compares the carbon emissions for 2019 with previous years. It identifies how emissions have changed in each sector, and measures progress in reducing them. It also shows where more work will be needed to reduce emissions in the future.

Reducing Leicester's carbon emissions will require action from everyone, including the council, residents, communities and businesses.

3. Area Information

This carbon footprint covers the city of Leicester, as administered by Leicester City Council.

4. Reporting Period

The carbon emissions within this report cover the 2019 calendar year, from 1st January to 31st December. This is the most recent year for which UK Government-provided figures are available.

5. Change in Emissions

In 2019 Leicester's city-wide carbon emissions were 1,217.8 ktCO₂. This is a 4.2% reduction on 2017 CO₂ emissions and a 49% reduction on the 1990 baseline. The first year for which emissions figures are available by sector is 2005, and these figures are used for comparison elsewhere in the report.

Between 1990 and 2019 Leicester's population has increased by 26.5%, from 280,100 to 354,200. This has meant that emissions per capita (per person) have fallen from 8.5 tCO₂ per capita in 1990 to 3.4 tCO₂ per capita in 2019, a fall of 59.6%.

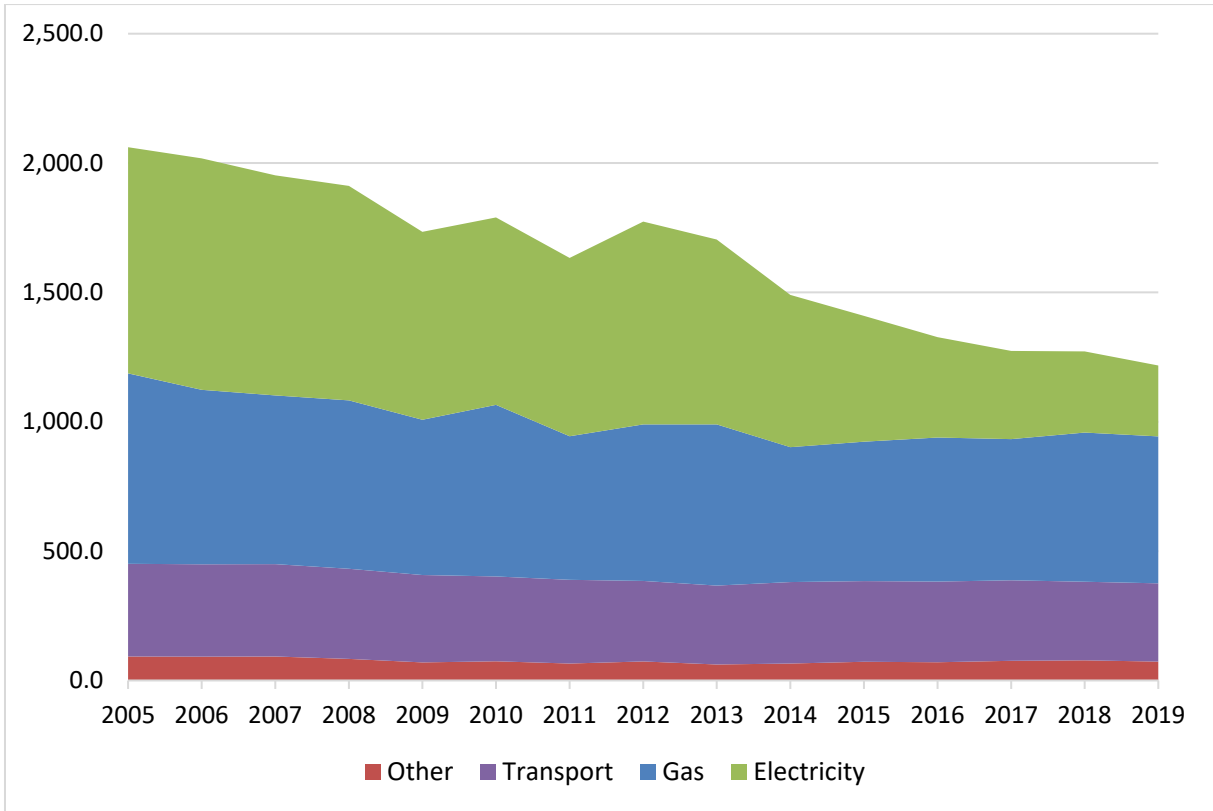
Whilst emissions have fallen by almost half since 1990, achieving the rapid rate of further emissions reductions required to achieve carbon neutrality will require significant extra work and investment. This means that the ambition to make Leicester carbon neutral by 2030 will require far reaching and radical action in the city, with robust support from national Government.

Much of the progress made so far is due to a reduction in the carbon emissions produced when generating electricity (also referred to as electricity's 'carbon emissions factor' or 'carbon intensity') in the UK. This is a result of the closure of coal-fired power plants and their replacement with renewables such as wind and solar power.

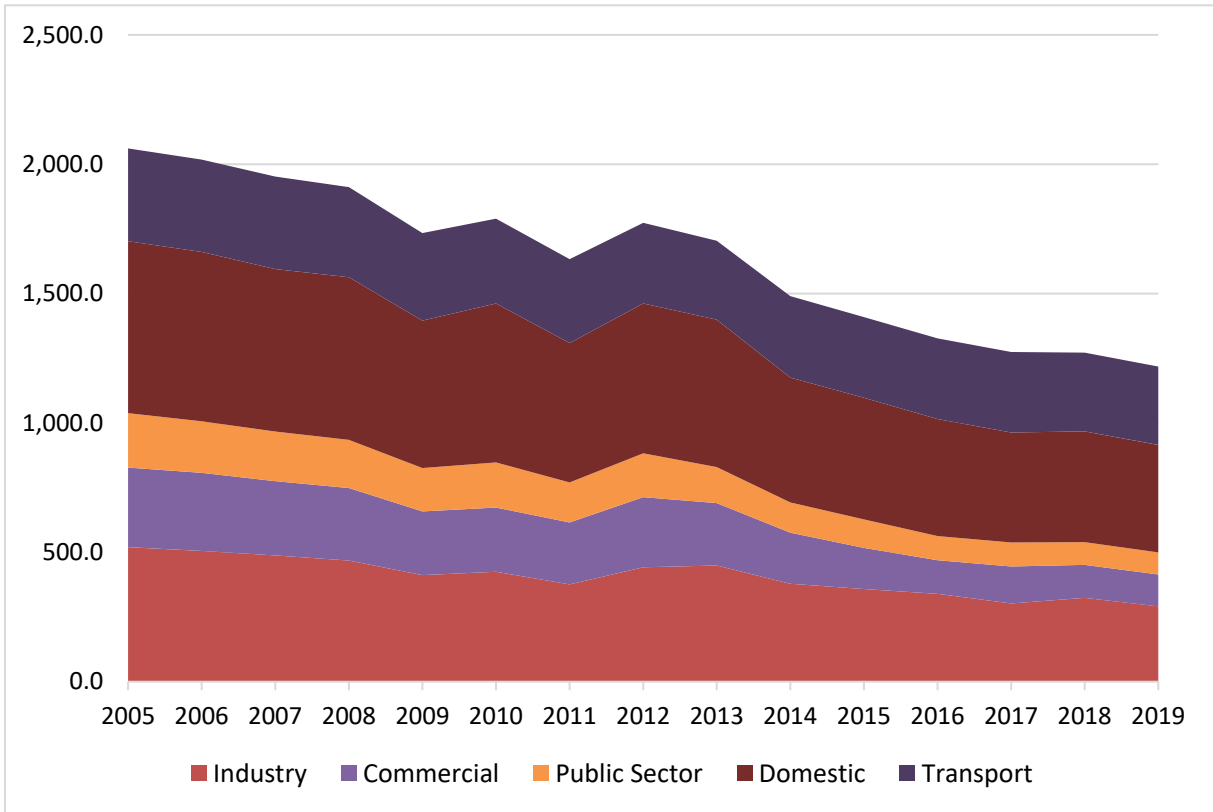
Emissions from gas use for heating and from fuel use in transport have fallen much more slowly since 1990. This means that they represent a growing portion of Leicester's overall emissions. Achieving carbon neutrality by 2030 in Leicester will therefore require particularly urgent action on heating and transport.

It should also be noted that figures from 2020 onwards are expected to be significantly affected by the Covid-19 pandemic, and the public health measures enacted across the country. The impacts of the pandemic on the annual figures will therefore be considered as part of the next annual report.

Changes in emissions in the different sectors are highlighted and discussed under the different sections later in this report and compared to both the 2005 and 2018 positions. Graph 1 below shows a summary of overall emissions from the different fuel sources in the footprint, and graph 2 shows the emissions split by sector.



Graph 1. Leicester's emissions by source from 2005 to 2019.

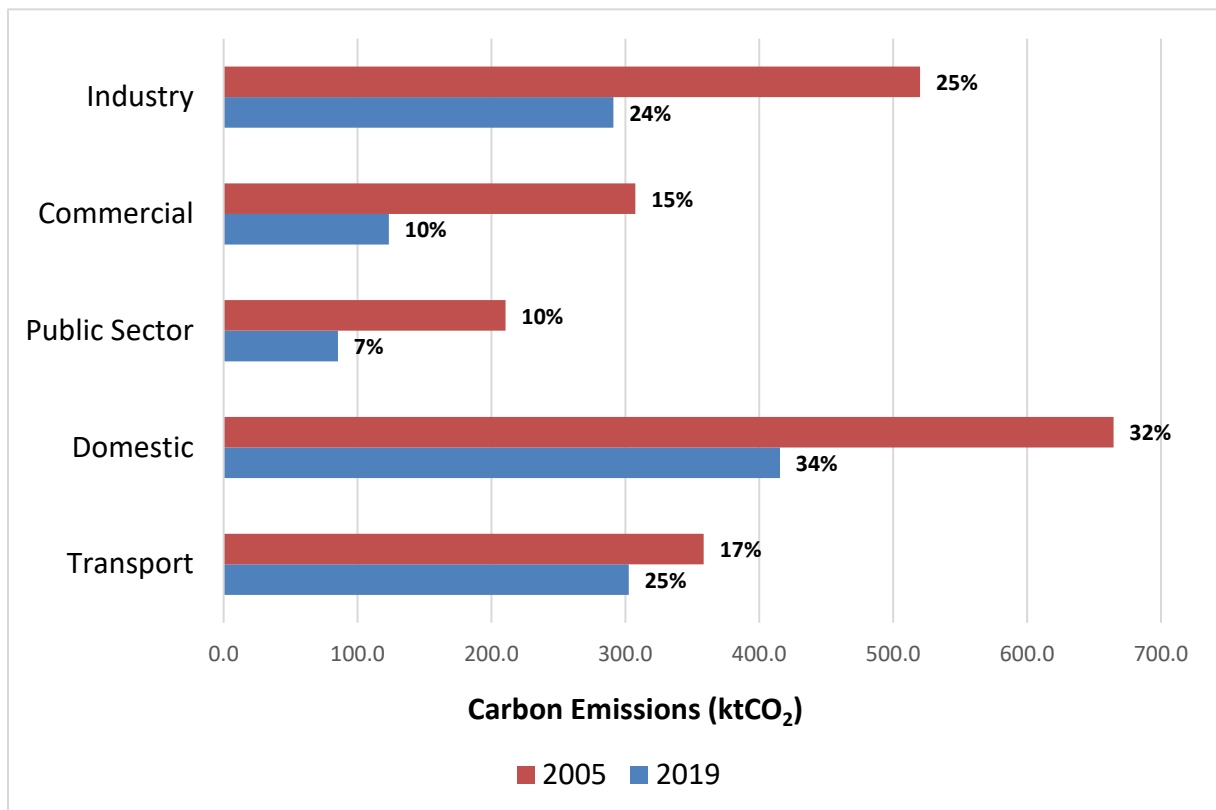


Graph 2. Leicester's emissions by sector from 2005 to 2019.

5.1 Sector Analysis

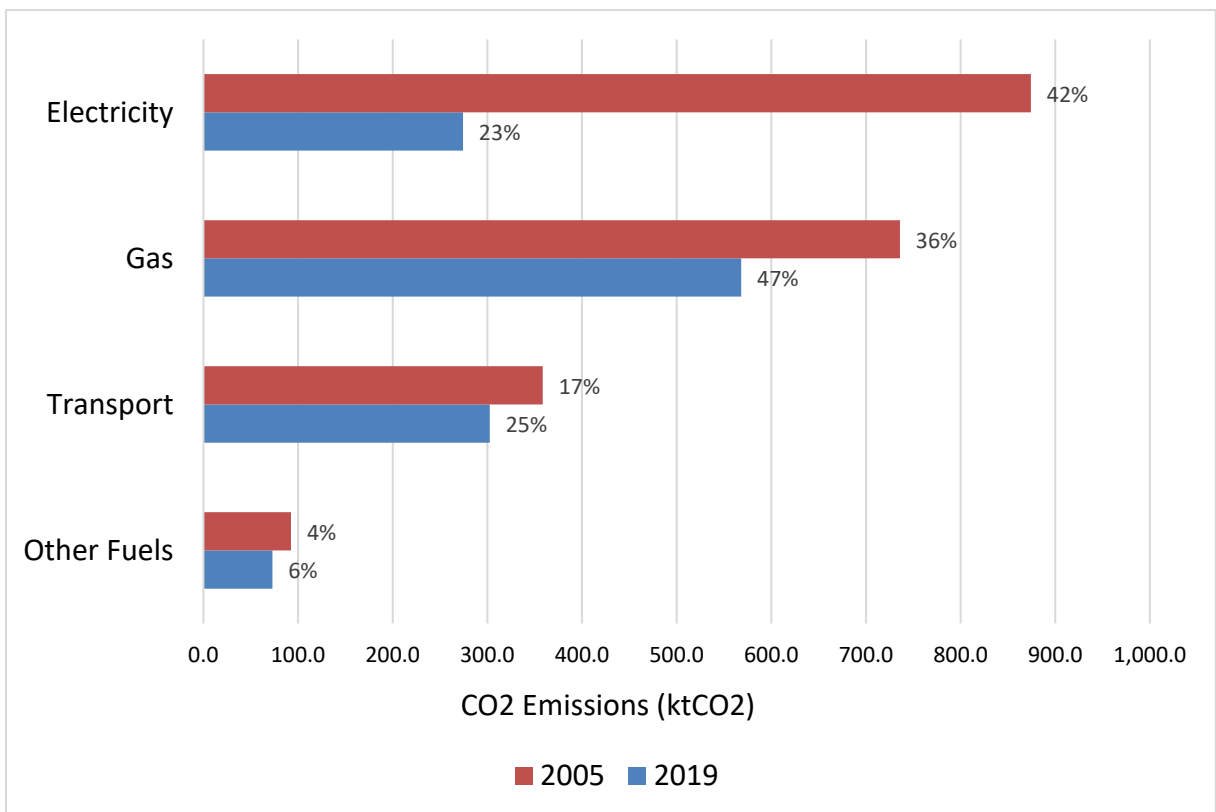
Leicester's city-wide emissions are divided into five sub-sectors – 'Domestic', 'Transport' and 'Industrial', 'Commercial' and 'Public Sector' – allowing trends to be monitored and the most CO₂ intensive sectors to be identified. An accompanying report to the BEIS figures states that a combination of direct data and proxy estimates were used to apportion emissions between the sectors. As such the figures for Leicester likely account for local factors to some degree but may not fully represent local conditions.

Graph 3 shows the total emissions associated with each of these sectors, as well as the proportion of the overall total represented by each. While domestic emissions have fallen significantly, they remain the largest source overall. Commercial and public sector emissions have also fallen, and now represent a smaller part of the overall total, with the proportion of emissions coming from industry remaining stable. Conversely, transport emissions have declined slowly, and now account for a much larger proportion of the total than in 2005.



Graph 3. Leicester's city-wide emissions attributable to each sector in 2019 in comparison to 2005.

The trends within each sector are driven by a number of factors, particularly changes to emissions from different fuel sources. Graph 4 shows the split between the overall emission sources, with electricity-related emissions having gone from being the largest part of the footprint in 2005 to the second smallest due to their rapid fall. Gas emissions have fallen more slowly and are now the largest proportion of the footprint and emissions from transport (largely fossil fuels) have fallen very slowly since 2005. Although emissions from other fuels continue to represent a relatively small part of the footprint they have also reduced very slowly.



Graph 4. Leicester’s actual city-wide emissions attributable to each emissions source in 2019 in comparison to 2005.

Further details of CO2 emissions changes in each sector, both in the last year and from 2005 can be found below.

5.2 Industrial emissions

Industrial emissions in 2019 were 291 ktCO₂. They have fallen by 10.2% since 2018 and 44% since 2005. Those from electricity use in industry (85 ktCO₂) have fallen the fastest over the year, by 17%, with emissions from gas use (140 ktCO₂) falling by 7.4% and those from other fuels (65 ktCO₂) falling by 6.6%. This sector also

contains a very small amount of agricultural emissions (0.6 ktCO₂), which have not changed significantly since 2012.

The reduction this year in emissions from generation of electricity used is largely due to the increase in renewable electricity generation in the UK. It's not totally clear why emissions from gas and other fuels fell this year. This may be due to changes within the sector such as economic conditions or potentially increased efficiency within buildings or industrial processes.

5.3 Commercial emissions

Commercial emissions in 2019 were 123 ktCO₂, and have fallen by 3.2% since 2018, and 59.9% since 2005. Within this, emissions from electricity (69 ktCO₂) have fallen the fastest over the year, by 7.1%, whereas emissions from gas use (55 ktCO₂) have increased by 2.2%. Emissions from other fuels are a very minor part of the footprint at just 0.1 ktCO₂ but have fallen by 2.2% over the year.

The fall in emissions is largely due to decarbonisation of UK electricity. The increase in gas emissions may be related to the fact that 2019 was a colder year than 2018, but a full explanation of the changes is not available.

5.4 Domestic emissions

Domestic carbon emissions are the largest part of the footprint, with domestic gas emissions alone larger than any other whole sector. Emissions were 41.4 ktCO₂ in 2019, a 3% fall on 2018 and 37.5% on 2005. Emissions from electricity (92 ktCO₂) fell by 12.4%, compared to a 0.2% increase in gas emissions (316.5 ktCO₂). A significant fall of 6.8% was seen in emissions from other fuels (7 ktCO₂).

The decrease in electricity emissions is likely largely due to increasing use of renewables, and to a lesser degree increased home efficiency. One of the main reasons for increased gas use is likely to be the cold weather, and the continued rise in the number of homes in the city.

5.5 Public Sector emissions

Public sector emissions were 85 ktCO₂ in 2019, having fallen by 2.6% on 2018 and 59.5% on 2005. These emissions include organisations such as the local NHS trust, the city council, universities and schools, the emergency services and central government offices. Emissions from electricity use (28.5 ktCO₂) fell fastest over the

year, by 11.7%, whereas gas emissions (56.8 ktCO₂) increased by 2.6%. Emissions from other fuels fell by 8.9%, but are almost negligible, standing at just 50 tCO₂ for 2019. Again, the reasons for these changes is likely to be a combination of electricity decarbonisation, weather-related impacts and local factors, particularly considering that the majority of emissions in this sector are likely to come from a small number of organisations.

5.6 Transport emissions

Transport emissions were 303 ktCO₂ in 2019, and decreased by just 0.4% compared to 2018 and are 15.6% lower than in 2005. Within this, emissions from travel on A-roads (132 ktCO₂) have fallen by 4.2%, whereas emissions from travel on minor roads (166 ktCO₂) have increased by 2.7%. Emissions from other transport have increased by 2.6%, but they remain a small part of the overall footprint (4 ktCO₂).

The overall reduction in emissions is likely due to continuing increases in the energy efficiency of new vehicles, balanced by rising vehicle numbers. The longer-term lack of emissions reductions, both locally and nationally, are attributable to the ongoing lack of progress in introducing significant numbers of Low-Emission Vehicles in the UK and the lack of a step change in increasing the role of sustainable travel modes.

5.7 Carbon Emissions Per Person

Dividing the city's carbon emissions by the number of residents is another way of showing how emissions have fallen. Since the 1990 and 2005 baselines Leicester's population has increased significantly. As the city's carbon emissions have fallen in this time, emissions per capita (per person) have therefore fallen faster than for the city as a whole.

In 2019 Leicester's carbon emissions per capita were 3.4 tCO₂, compared to 6.8 tCO₂ in 2005 and 8.5tCO₂ in 1990. This is similar to other cities of a similar size to Leicester, and below the national average of 4.2 tCO₂. Leicester's emissions per capita have fallen by 47.7% since 2005, which is also in line with the other cities and ahead of the national average reduction of 40.2%.

6. Approach

This report uses figures produced by BEIS for each local authority area in the UK. More details about these figures, and how they are calculated is available here: [UK local authority and regional carbon dioxide emissions national statistics - GOV.UK \(www.gov.uk\)](https://www.gov.uk/government/statistics/uk-local-authority-and-regional-carbon-dioxide-emissions-national-statistics)

7. Boundary & Scope

The figures in this report cover consumption-based carbon dioxide emissions in Leicester for sources considered to be within local authority influence. They cover emissions from fuel and energy used within the city (including generation and transmission of electricity).

As a result, the figures do not cover the following areas:

- Emissions of greenhouse gases other than carbon dioxide. Although carbon dioxide is the most commonly produced greenhouse gas, other greenhouse gases produced in Leicester include Methane (CH₄) and Nitrous Oxide (N₂O).
- Emissions from areas outside of local authority influence, including aviation, shipping, land use and waste.
- Emissions generated by the production of goods elsewhere, that are consumed within the city.

If these sources were included, the reported greenhouse gas emissions of Leicester would be significantly higher. As a result, in order to reach carbon neutrality in Leicester significant work will be needed to identify, monitor and reduce emissions from the areas above too.

Whilst these areas are not included in the figures, they are part of Leicester's ambition to reach net zero carbon emissions in the city by 2030.

8. Baseline Year

A baseline year of 1990 is used for the overall emissions from the city. A second baseline year of 2005 is also used for the more detailed discussion of trends, as this is the first year for which figures split by sector and source are available.

9. Targets

Following Leicester City Council's declaration of a climate emergency a new ambition has been developed, for the city and council to reach carbon neutrality by 2030 or as soon as possible, subject to the necessary support from national government.

10. Contact Details

This report was prepared by Aidan Davis, Sustainability Officer, on behalf of Leicester City Council.

For further information about Leicester City Council's sustainability actions, please visit: <https://www.leicester.gov.uk/your-council/policies-plans-and-strategies/environment-and-sustainability/climate-emergency/>

If you wish to contact us, please email: sustainability@leicester.gov.uk