

**CARBON MANAGEMENT PLAN
ANNUAL REPORT 2022-23**

East Dunbartonshire Council

Table of Contents

Executive Summary	3
Current Carbon Footprint and Costs	4
Introduction	4
Overall Footprint	4
Breakdown by Source	6
<i>Built Assets</i>	6
<i>Fleet</i>	8
<i>Waste</i>	9
<i>Street Lighting</i>	9
<i>Business Mileage</i>	10
Supporting Activities	11
Estimated Future Trends	12
Future Carbon Emissions	12
Future Costs	13
Conclusion	15

Executive Summary

An Interim Carbon Management Plan was approved by Council in early 2022 introducing a new baseline year of 2019/20 alongside the existing one of 2012/13 and new targets in relation to each baseline. By the end of 2022/23, the Council aims to have reduced its carbon footprint by 51% in relation to the existing baseline year, and 13% in relation to the new one.

The Council's carbon emissions during 2022/23 – which arose from the Council's use of electricity, natural gas, oil, biomass and transport (fleet and business travel), and from waste management activities – totalled 14,648 tCO₂e (compared to 16,588 tCO₂e last year). This figure is 1,940 tCO₂e, or 12%, lower than the emissions recorded in 2021/22.

It represents a 3,609 tCO₂e, or 18% reduction on the 2019/20 baseline and a 17,772 tCO₂e, or 55% decrease in emissions compared to the 2012/13 baseline. These percentage reductions of 18% and 55% significantly exceeded the targets for 2022/23 of 13% and 51% relative to the 2019/20 and 2012/13 baselines respectively.

The 12% decrease observed since last year is largely due to continued decarbonisation of the grid, a significant reduction in the amount of waste going to landfill, gas boiler replacements and a warmer winter reducing demand for gas to heat buildings.

There were also increases in elements of the Council's carbon footprint including fleet, which saw an increase of approximately 7% on 2021/22 levels and overtook waste as the second highest contributor to Council's carbon footprint. Business miles also increased from the previous reporting year.

More significant emissions reductions are expected to be delivered beyond 2022/23, following feasibility work currently being undertaken in relation to key aspects of the Council's current footprint. Work underway on the emerging Climate Action Plan and Local Heat and Energy Efficiency Strategy will build on this by identifying further opportunities for corporate carbon reduction, to achieve net zero across all sources including the particularly challenging areas of 'heat and fleet'.

Cost estimates provided throughout the report give a clear indication that carbon emissions continue to be a significant consideration for the Council, and a growing concern in light of the current energy crisis.

Current Carbon Footprint and Costs

Introduction

A commitment to annual reporting was introduced in the 2015 Carbon Management Plan; this is the seventh such report. In 2015, East Dunbartonshire Council revised its Carbon Management Plan, establishing a new 2012/13 baseline of 32,420 tonnes of carbon dioxide equivalent ('tCO₂e') and setting a new target of 20% carbon reduction by 2019/20, which was subsequently revised to 44% by the same deadline then extended to 49% by 2021/22. All of these targets were met or exceeded.

An Interim Carbon Management Plan was then produced in early 2022 to ensure policy provision on corporate carbon management in the period between the expiry of the previous document and the introduction of a new approach to corporate carbon management via the emerging Climate Action Plan (CAP) for East Dunbartonshire. The Interim Carbon Management Plan ('Carbon Management Plan 2021-23')¹ introduced a new baseline year of 2019/20 alongside the existing one of 2012/13, and introduced new targets in relation to each baseline, based on an estimation of realistic emissions reductions until the end of 2022/23.

By the end of 2022/23, the Council had aimed to have reduced its carbon footprint by 27% in relation to the new baseline year, and 59% in relation to the existing one. However, considering a significantly higher emissions factor for electricity was provided than what was originally projected, it was considered appropriate to revise the 2022/23 target down from 59% / 27% to 51% / 13%. Accordingly, this report examines progress towards the 51% / 13% target by looking at each emission source in turn while also considering broad future trends.

This report also discusses the financial costs associated with the Council's carbon emissions; financial costs are an important issue in any area of Council activity, and there are particularly close links between carbon considerations and cost considerations. In the following sections, estimates are provided relating to costs associated with each element of the footprint.

Overall Footprint

The Council's overall carbon footprint in 2022/23 was 14,648 tonnes of carbon dioxide equivalent ('tCO₂e'). This is a decrease in 1,940 tCO₂e, or almost 12%, on the total emissions in 2021/22 of 16,588 tCO₂e.

It represents a 3,609, or 18% reduction on the 2019/20 baseline and a 17,772 tonne, or 55%, decrease in emissions compared to the 2012/13 baseline of 32,420 tCO₂e. These percentage reductions of 18% and 55% significantly exceed the targets for 2022/23 of 13% and 51% relative to the 2019/20 and 2012/13 baselines respectively.

¹ The Council's Carbon Management Plan 2021-23 is available at <https://www.eastdunbarton.gov.uk/residents/planning-and-building-standards/sustainability-and-climate-change/climate-action-plan-cap>

It is worth noting that while the reductions did not meet the previous reduction targets of 59% compared to the 2012/13 baseline and 27% compared to the 2019/20 baseline, these targets were based on a report that the emission factor of electricity was going to be 0.1273 kg CO₂e/kWh rather than the standard rate of 0.19 kg CO₂e/kWh that was provided to public bodies to calculate their 2022/23 carbon footprint.

As explained in the Annual Carbon Management Report 2021-22, large parts of the decrease in emissions recorded for 2020/21 were due to the impact of the pandemic and restrictions to contain the spread of Covid-19. Since the removal of such restrictions, there has been a gradual return to normal service delivery, including an increase vehicle usage with associated carbon emissions in 2022/23.

Breakdown by Source

The following diagram (Figure 1) shows the Council's carbon footprint broken down into its various components.

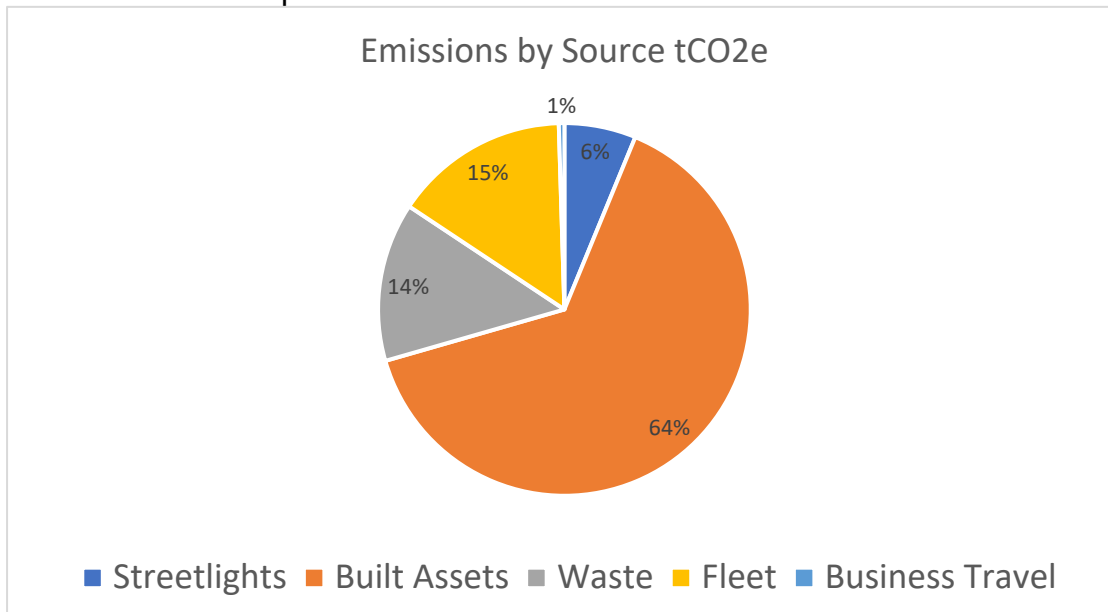


Figure 1: Breakdown of 22/23 carbon footprint by emission source

Each of the sources shown in Figure 1 is examined in more detail below. Developments are discussed in relation to the preceding year and the baseline year, with commentary on the likely reasons behind the observed trends.

Built Assets

Energy use in built assets – arising from electricity, gas, oil and biomass consumption – continues to be by far the largest source of the Council's carbon emissions, constituting 9,424 tCO₂e, or 64%, of this year's carbon footprint.

Emissions from energy use in built assets have decreased by 855 tCO₂e, or 8%, compared to the reported figure for 2021/22 but, more importantly, have decreased by 6,796 tCO₂e, or 41%, since the 2012/13 baseline year and by 1,549 tCO₂e, or 14%, since the 2019/20 baseline year. The decrease in emissions since last year are largely due to a lower emission factor for electricity as a result of on-going decarbonisation of the grid, new boilers being installed and a warmer winter reducing demand for gas to heat buildings. While the new gas boilers reduced emissions in the short-term, they do lock in emissions over the lifetime of the heating system.

Biomass and oil consumption accounted for 97 tCO₂e in 2022/23 or 1% of emissions from built assets. The 2022/23 total saw a major decrease from the 2021/22 figure of 275 tCO₂e. This major decrease is a result of various buildings changing adopting new fuel sources: in 2021/22 two schools were using gas oil for heating during winter due to boiler replacements that were being undertaken while Bocclair Academy has moved from using biomass to natural gas heating.

The Council technically has two heat networks: one biomass-powered one at St Matthew's / Wester Cleddens, and one at Craighead Primary school, community centre/library and private nursery which are all fed from the school's gas boilers.

Electricity use and related emissions are a larger part of the built assets' carbon footprint and accounted for 36% of emissions in this area. In 2022/23, 3,371 tCO₂e were emitted from electricity consumption in built assets. This figure is almost 10%, or 359 tCO₂e, lower than last year's figure.

On-going work to decarbonise the grid has resulted in the emission factor for electricity decreasing to 0.19 kg CO₂e/kWh in 2022/23 compared to 0.21 kg CO₂e/kWh in 2021/22. This decrease of almost 10% accounts for a large part of the difference between electricity use emissions 2022/23 and 2022/21: emissions from electricity in 2022/23 would have been approximately 350 tCO₂e higher if the 2021/22 factor were used.

However, the 2022/23 carbon footprint of 3,371 tCO₂e for electricity consumption is around 5% higher than 2020/21 level of 3,196 tCO₂e. As noted in 2021/22 Carbon Management Report, leisure centres, which are among the highest energy-consuming buildings within the Council's estate, saw increased electricity consumption as service delivery began to return to normal following the first year of the pandemic. This significant increase in electricity use was only partially offset by the lower emission factor for electricity in 2022/23. Despite this, electricity usage in the baseline year of 2012/13 was 12,421 tCO₂e so current levels are much lower at just 27% of this level.

Carbon emissions related to gas use are the largest aspect of the built assets carbon footprint, accounting for 5,956 tCO₂e, 63% of the total. This represents a 4% decrease on last year's figure of 6,216 tCO₂e. The emission factor for gas only decreased by a fraction of a percent between 2021/22 and 2022/23 so this did not play a major part in the change.

Various boiler replacements that were undertaken on Council buildings helped to lower gas consumption in the short term, however, new gas boilers will lock in emissions in future years. The warmer winter of 2022/23 also contributed to reduced levels of gas usage. These factors led to an overall decrease in emissions from gas despite the fact that the new building for Boclair Academy uses gas for heating instead of biomass from the previous site.

It is important to note that the Council's investment in renewable energy has brought built assets related emissions to a significantly lower level than would have otherwise been recorded. It is also important to acknowledge that in order to reach net zero emissions, fossil fuel powered heating systems, such as gas, will need to be replaced with zero direct emission heating systems.

To indicate the extent of costs associated with use of energy in built assets during 2022/23, it is estimated that £4.31 million was spent on electricity and gas alone (unit

costs and Climate Change Levy costs only).² This constitutes an increase of around 31%, or £1.34 million on last year's estimates of £2.97 million. This is further compounded by the fact that costs between 2020/21 and 2021/22 had also risen significantly reflecting both a rise in electricity and gas use and a rise in unit costs, of 17% and 8% respectively in this period.

Fleet

The 2022/23 emissions from the Council's fleet of vehicles constituted 2,225 tCO₂e an increase of approximately 7% from 2021/22 of 2,082 tCO₂e. Fleet overtook waste as the second largest source of emissions and accounts for 15% of East Dunbartonshire Council's footprint in 2022/23.

The rise in total diesel usage in 2022/23 to 862,608 litres from the 2021/22 figure of 780,796 was largely due to the fact that the Council had fewer electric vehicles in operation in 2022/23 compared to 2021/22 and the lifting of COVID-19 restrictions. Emissions from the Council's fleet have increased by 477 tCO₂e, or 27%, since 2020/21. However, they have decreased by 362 tCO₂e, or 14%, since the 2012/13 baseline year and 114 tCO₂e, or 5%, since the 2019/20 baseline year. The emission factor for diesel, which constitutes the vast majority of fleet mileage, increased slightly from 2.51 to 2.56 kg CO₂e/litres which slightly exacerbated the overall increase in emissions. While the overall rise of 7% would normally be a significant rise, it is not unexpected in the current context, given that service delivery had reduced dramatically in the previous years due to COVID-19.

The proportion of electric vehicles in the Council's fleet is an important factor in reducing fleet-related emissions. The number of leased electric vehicles in the fleet fell between 2021/22 (43) and 2022/23 (35) and this contributed to the increase in emissions from the fleet. The Scottish Government has identified fleet as a key area for action on emissions reduction and no new petrol and diesel cars and light vans can be procured for the fleet from 2025. This will result in significant reductions in fleet emissions in future years. Council has taken a decision to replace the current fleet depots with a new facility at Broomhill and planning is currently under way on its design and delivery.

The new depot will be designed for the switch to a 100% zero carbon fleet and a study is currently being undertaken on how decarbonisation can best be achieved. In the interim, officers are working on plans for replacement electric vehicles at present and more electric vehicles will be procured from 2024/25 onwards. Some barriers remain to the adoption of electric vehicles including challenges with infrastructure and prohibitive costs for both vehicles and charging facilities and ways of overcoming these constraints are being assessed through the current study.

The cost associated with fleet emissions in 2022/23³ is £1,198,124, an increase of over 37% from the 2021/22 levels of £870,881. This is above and beyond the 52% increase on the fleet-related spend reported between 2020/21 and 2021/22 where

²Assumptions of 0.14p per kwh electricity and Climate Change Levy of 0.00775 and 0.053p per kwh gas + Climate Change Levy of 0.00672p per kwh

³ Date taken from fuel bills

costs increased significantly due to both fuel consumption and an increase in the cost per unit of fuel; the cost of a litre of diesel rose between 2020/21 and 2021/22 by approximately a third.

Waste

Emissions from the Council's landfilling, recycling, combustion, composting and anaerobic digestion of municipal and commercial waste constituted 2,018 tCO₂e in 2022/23. This represents a 37% reduction from the 2021/22 level of 3,227 tCO₂e. Additionally, it is a decrease of almost 45% on the 2019/20 baseline of 3,658 tonnes and around 80% on the 2012/13 baseline of 9,927 tonnes. The recent reduction is primarily due to a reduction in household, commercial and industrial waste to landfill from 5,035 tonnes in 2021/22, accounting for 2,252 tCO₂e, to 2,181 tonnes in 2022/23, or 976 tCO₂e. Following these reductions, waste dropped from the second to the third largest source of the Council's carbon emissions, accounting for 14% of 2022/23's total footprint.

Correspondingly, there was an increase in the amount of waste incinerated in 2022-23 compared to 2021-22 of 24,501 tonnes to 29,863 tonnes. The significantly lower emission factor for waste being incinerated compared to landfill was the fundamental cause of the reduction in overall emissions compared to 2021/2022.

The overall waste managed in tonnes decreased by around 1% from 59,473 tonnes in 2021/22 to 58,869 tonnes in 2022/23. The emissions factors for landfilling, recycling and incineration – the waste management routes that accommodate the majority of the material tonnage – remained constant and are not therefore responsible for the recorded decrease in emissions. However, there was a decrease in the proportion of waste recycled / composted from 50%, or 29,937 tonnes out of 59,473 in 2021/22, to 46%, or 26,825 tonnes from 58,869 in 2022/23. There was also a minor decrease in the emission factor for garden waste and anaerobic digestion from 8.95 kg CO₂e/tonnes in 2021/22 to 8.91kg CO₂e/tonnes in 2022/23.

The costs relating to landfilling, recycling/diversion and composting of municipal and commercial waste are complex; however, it is estimated that almost £223,000 was spent on landfill tax alone in 2022/23.⁴ This is a decrease of over 54% from the estimate of £486,800 for 2021/22. The cost implications of landfilled waste per tonne are expected to become more significant in 2025, when the Scottish ban on landfilling of biodegradable waste comes into force.

Street Lighting

In 2022/23, emissions from street & Christmas lighting (collectively referred to as 'street lighting') constituted 910 tCO₂e, or 6% of the Council's carbon footprint. Emissions from street lighting have decreased by 92 tCO₂e, or around 9% in 2022/23 compared to 2021/22. This is largely explained by on-going decarbonisation of the grid and consequent lower emission factor of 0.19 kg CO₂e/kWh in 2022/23 for electricity compared to 0.21 kg CO₂e/kWh in 2021/22.

⁴ Assumptions of the current standard rate is £102.10 per tonne

In 2021/22, emissions from street & Christmas lighting (collectively referred to as 'street lighting') constituted 1,002 tCO₂e, or 6%, of the Council's footprint. Emissions from street lighting have decreased by 2,498 tCO₂e, or 73% since the 2012/13 baseline year and by 293 tCO₂e, or almost 24%, since the 2019/20 baseline year. The LED lighting conversion programme resumed during 2021/22, following the temporary halting during 2020/21. Overall, the number of lamps that had been converted to LED by the end of 2021/22 was 69%; with data from the Council's meter administrator indicates that 69% is significantly higher than the national average. This progress was built on in 2022/23 with an estimate of 71% converted which would amount to around 13,818 of a total stock of 19,463, or a conversion of around 300 units in 2022/23.

The costs associated with street lighting energy consumption in 2022/23 are £637,276⁵ which is very similar to the costs associated with street lighting energy consumption in 2021/22 which was £673,426. As noted in the Built Assets section above, electricity costs are a growing concern for the Council in light of the current energy crisis.

Business Mileage

Emissions from the Council's business travel activities in 2022/23 constitute 71 tCO₂e or 0.5%, of the total footprint. The total emissions in this area have increased by around 27% from 56 tCO₂e in 2021/22. Emissions from business mileage have increased by 36 tCO₂e, or 103% since 2020/21 but, more importantly, have decreased by 207 tCO₂e, or 66%, since the 2012/13 baseline year and 5 tCO₂e, or 6.5%, since the 2019/20 baseline year. There was very little change in the emission factor applied to this emission source, meaning that the rise in emissions is predominantly attributable to a higher number of miles being travelled. While the rise is significant, it is not unexpected given that service delivery has started to return to pre-Covid levels. Overall, business mileage continues to account for a small minority of emissions and this year's figure, while representing an increase since last year, represents a significant decrease in relation to the baseline year. The estimated cost associated with business mileage emissions in 2022/23 is £116,035⁶ an increase from £90,089 in 2021/22.

⁵ Assumptions of 0.14p per kwh electricity and Climate Change Levy of 0.00775

⁶ Data taken from costs paid to staff

Supporting Activities

As detailed in the Carbon Management Plan, in addition to activities with direct carbon impacts, carbon management is also influenced by strategic measures, 'soft' measures and measures aimed at the East Dunbartonshire area. Key developments in 2022/23, which are anticipated to deliver corporate carbon benefits in the future, include:

- Continued cross-Council liaison between officers with a particular influence on carbon emissions; during 2022/23, this occurred formally via the CAP LHEES Working Group, Net Zero Focus Group and the Carbon Management Officer Group (CMOG); members of CMOG have attended regular meetings of these new CAP groups, and informal discussions with CMOG members has also continued during the period to support carbon management and CAP work.
- Undertaking of further Scottish Government-funded consultancy work to inform the Local Heat and Energy Efficiency Strategy (LHEES) which is being developed alongside the CAP.
- Various campaigns to increase food recycling rates⁷, reduce vehicle emissions⁸ and an on-going project to drive emissions reductions in buildings across East Dunbartonshire.⁹

⁷ [Recycling your food waste is eggs-cellent | East Dunbartonshire Council](#)

⁸ [Vehicle emissions | East Dunbartonshire Council](#)

⁹ [Re-Heat Project | East Dunbartonshire Council](#)

Estimated Future Trends

Future Carbon Emissions

2023/24 Estimate

The original target of 59% / 27% emissions reduction that was set during 2020/21 for the end of 2022/23 was based on a forecast for the emission factor for grid electricity in 2022/23 being 0.1273, which would have represented a 50% drop from the emission factor for 2020/21. Since the emission factor for grid electricity in 2022/23 was 0.19338, which represents a much smaller reduction, these forecasts were revised down to 13% and 51% reductions relative to the 2019/20 and 2012/13 baselines respectively. The registered reductions of 18% and 55% in 2022/23 significantly passed the targets.

The predicted emission factor for grid electricity for 2023/24 is 0.1273, a significant reduction on the 2022/23 level of 0.19338. However, as this was the same figure that was initially cited for 2022/23, it should be treated with caution.

Beyond 2023/24

While short-term emission reductions are anticipated to be relatively limited, significant opportunities for carbon savings beyond this period are currently being developed. The CAP 'Early Actions Measures' described in the Interim Carbon Management Plan are expected to deliver substantial savings, both in terms of the emission sources in the existing carbon footprint and the sources in the wider footprint that will be introduced via the CAP and LHEES in 2024.

The evidence and options stage of CAP development work has been completed and Council agreed a corporate net zero target of 2036 for Scope 1 and 2 emissions, and 2045 for all emissions. The Draft CAP is now in preparation and will identify actions for corporate emissions reductions to align with the delivery of these targets and interim 'milestone' targets. This will include pathways to the adoption of zero direct emission heating systems and ultra-low emission vehicles to target complex areas to decarbonise including 'heat and fleet'.

This work is being guided by the requirements set out in recent legislation including the Climate Change (Emissions Reduction Targets) (Scotland) Act 2019, the Net Zero Public Sector Buildings Standard, the Heat in Buildings Act (2021) and the requirement for public bodies to demonstrate alignment of spending plans and use of resources to contribute to emissions reduction.

Future Costs

It continues to be difficult to definitively project future carbon-related financial costs, particularly in relation to gas and electricity where average unit prices have continued to rise sharply, far beyond the standard increases that would normally be expected, in the context of the recent energy crisis.

A key challenge to decarbonisation is the fact that low emissions heating systems and vehicles still tend to have higher up-front costs than fossil fuel-based systems. However, there are strong indications that the global market is changing at pace which would create more of an economy of scale and could significantly reduce costs. Global investment in low emissions vehicles is projected to soar in the coming years with BNEF's latest annual Electric Vehicle Outlook estimating over 100 million passenger EVs expected on the roads by 2026 and over 700 million by 2040, up from 27 million at the beginning of 2023.¹⁰

A record of over 3 million heat pumps were sold in Europe in 2022¹¹ with many countries including Nordic countries, Switzerland and France already having well-developed markets for heat pumps.

Global investment in renewable energy has also skyrocketed in 2023 to \$358 billion with a 22% rise compared to the start of 2022.¹² Renewable energy is significantly cheaper in most countries, including the UK, than fossil fuels. Despite this, the lower prices from renewable energy generation are often not passed on to consumers. A range of factors contributes to this including the price of electricity being artificially high by virtue of being coupled to the price of gas, carbon taxes on electricity and various policy costs.¹³ A drop in the price of electricity to better reflect market rates will also need to be accompanied by an urgent expansion of grid capacity in Scotland to help to drive decarbonisation.¹⁴

However, in other areas of the council's carbon footprint, there are already compelling financial incentives to pursue lower emission solutions. The extension of landfill tax and upcoming Scottish ban on landfilling of biodegradable waste create mean that increasing the recycling rates in East Dunbartonshire can deliver cost savings in addition to emission savings.

The indicative costs of decarbonisation and potential ways of meeting these costs are being assessed through various work strands including the CAP. While the cost of carbon-reduction projects should be fully considered when developing business cases, so too should paybacks – the savings generated by carbon reduction projects often outweigh start-up and maintenance costs, especially when a longer-term view is taken.

¹⁰ See [| BloombergNEF \(bnef.com\)](https://www.bnef.com)

¹¹ See [Guest post: How the energy crisis is boosting heat pumps in Europe - Carbon Brief](#)

¹² See [Renewable Energy Investment Hits Record-Breaking \\$358 Billion in 1H 2023 | BloombergNEF \(bnef.com\)](#)

¹³ See [The electricity-to-gas price ratio explained | Nesta](#)

¹⁴ See [Urgency needed to create capacity in Scotland's electricity infrastructure | Scottish Parliament Website](#)

Conclusion

The Council's carbon emissions recorded for 2022/23 – which arose from the Council's use of electricity, natural gas, oil, biomass and transport (fleet and business travel), and from waste management activities – represent a 12% reduction on the levels from 2021/22. While emissions from built assets, waste and streetlights all decreased, fleet and business miles increased from 2021/22 levels.

These reductions contribute to a long-term trend of emissions reductions with 2022/23 levels 18% lower than the 2019/20 baseline and 55% lower than the 2012/13 baseline. These percentage reductions of 18% and 55% significant passed the targets for 2022/23 of 13% and 51% relative to the 2019/20 and 2012/13 baselines respectively.

The decrease observed since last year is largely due to continued decarbonisation of the grid, a significant reduction in the amount of waste going to landfill, gas boiler replacements and a warmer winter reducing the demand for gas to heat buildings. There were also increases in elements of the Council's carbon footprint including fleet, which saw a decrease in the number of active electric vehicles and overtook waste as the second highest contributor to Council's carbon footprint after built assets. The emissions from business miles also increased in 2022/23.

Work underway on the emerging Climate Action Plan and Local Heat and Energy Efficiency Strategy will build on this by identifying further opportunities for corporate carbon reduction across all sources thereby setting out a realistic yet ambitious pathway to allow the Council to demonstrate recognition of the grave threat posed by climate change and to commit to rapidly reduce carbon emissions and achieve corporate net zero emissions by 2036 for Scope 1 and 2 emissions and 2045 for all emissions as agreed by Council in September 2023.