

**CARBON MANAGEMENT PLAN
ANNUAL REPORT 2023-24**

East Dunbartonshire Council

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Executive Summary

The Council's carbon emissions during 2023/24 - 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 **14,720 tCO₂e** (compared to 14,648 tCO₂e last year). This figure is 72 tCO₂e, or 0.5%, higher than the emissions recorded in 2022/23.

The 0.5% increase has been driven by an increase in emissions from electricity caused by the increase in the emission factor for electricity from 0.19338 kg CO₂e per kWh in 2022/23 to 0.20707 kg CO₂e per kWh in 2023/24. This led to an increase in the Council's emissions of **295.5 tCO₂e**. Consequently, the Council's emissions would have been lower if the emissions factor for electricity had remained at the same level.

The Council set a target to keep its overall corporate emissions below a 1.7% increase from 2022/23's total emissions by the end of 2023/24 in anticipation of the increase in the emission intensity of electricity offsetting emissions reductions being achieved through other Council action.

There was a major reduction in emissions due to lower levels of total household and commercial waste. The installation of more efficient gas boilers on Council buildings also lowered gas consumption in the short term, however, these new gas boilers will lock in emissions in future years. There was also a slight decrease in the Council's fleet carbon footprint of approximately 1% on 2022/23 levels. Business mileage and waste saw a decrease of 11.3% and 7.7% respectively in their emissions.

Emissions from Built Assets have risen by 2.1% since 2022/23 and this area remains by far the largest source of the Council's carbon emissions at 65% of overall corporate carbon footprint in 2023/24. The next largest areas are Fleet, then Waste which account for 15%, and 13% of 2023/24's carbon footprint respectively.

While it was previously anticipated that a significant emissions reduction would occur in the 2024/25 financial year due to continued grid decarbonisation, the most recent figures for the emission factor of electricity in 2024/25 indicate that it will slightly increase. This is expected to be a short-term anomaly as progress in decarbonising the grid is expected to result in reductions in the electricity emissions factor in future financial years. Consequently, a target is recommended to keep the Council's overall corporate emissions increase below **14,890 tCO₂e** in 2024/25. This would be 1.15% higher than emissions in 2023/24, however, 18% lower than emissions in 2019/20 and 54% lower than emissions in 2012/13.

More significant emissions reductions are expected to be delivered beyond 2024/25, following feasibility work currently being undertaken in relation to key aspects of the Council's current footprint. Should the emission factor of electricity return to its 2022/23 levels, significant emissions reductions would be achieved in built assets and street lighting. Waste and fleet emissions are also anticipated to decrease from 2025 due to the change of collection schedules from a two-weekly to a three weekly, the planned procurement of additional electric vehicles and the implementation of optimised routing systems for fleet. Work underway on the emerging Climate Action Plan and LHEES is also expected to contribute to corporate emissions reductions from 2025. Collectively, this suggests that **13,820 tCO₂e** is an appropriate target for the Council's carbon footprint

in 2025/26, which represents around a 24% reduction on the 2019/20 baseline and 57% reduction on the 2012/13 baseline

The analysis of area-wide emissions in East Dunbartonshire showcases a near-continuous decline in emissions since recording began, with 2022 per capita emissions being the second lowest out of all the Councils in Scotland. Despite the significant progress in reducing area-wide emissions in East Dunbartonshire, the adoption of proxy values to measure progress against key facets of the Council's area-wide net zero modelling will be necessary to capture progress in more difficult areas to reduce emissions such as buildings, transport and land use.

Cost estimates provided throughout the report give a clear indication that carbon emissions continue to be a significant financial 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 (CMP); this is the eighth such report. A new baseline year of the 2019/20 financial year was introduced in the 2023 iteration to sit alongside the existing one of 2012/13.

Council approved the Evidence and Options (E&O) stage of the Climate Action Plan in September 2023 along with a net zero target of 2036 for direct greenhouse gas emissions (including emissions from our fleet of vehicles and buildings) and energy that we purchase (such as electricity), in addition to a target of 2045 for all other emissions including those for the East Dunbartonshire area as a whole. Details on how to deliver on these ambitious targets are included in the draft Climate Action Plan, which is expected to be reported to Council in spring 2025.

An Interim Carbon Management Plan was approved by PNCA in January 2024¹ which set out a target for corporate carbon emissions reductions. This iteration of the CMP also sets out targets for emissions reductions in the run up to the introduction of a new approach to corporate carbon management that will be introduced via the emerging Climate Action Plan (CAP).

By the end of 2023/24, the Council aimed to keep the overall emissions increase to no more than 1.7% over the level of total emissions from 2022/23. This level would represent a 3,357 tCO₂e, or around an 18% reduction on the 2019/20 baseline and a 18,024 tCO₂e, or 54% decrease in emissions compared to the 2012/13 baseline. The progress towards these targets is examined in the report by looking at each emission source while also considering broad future trends towards the Council's net zero targets.

The 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.

East Dunbartonshire's area-wide emissions are also analysed, underscoring the need for greater efforts in more challenging areas including transport, heat decarbonisation and behavioural change.

The CMP continues to report on the Council's corporate footprint that was covered in previous years while setting out additional corporate emission sources that are recommended to be reported on in future years to deliver on the Council's net zero targets and in response to an anticipated extension of statutory emission reporting. Additionally, the agreement of an area-wide net zero target and a series of actions to achieve this target by Council necessitate the introduction of a framework for area-wide reporting, which will be set out in further detail in the Climate Action Plan (CAP). In the interim, an analysis of area-wide emissions in recent years against the Council's area-wide net zero trajectory has been included in this iteration of the CMP.

¹ See [East Dunbartonshire Council Carbon Management Plan Update Report 2023/24](#)

Overall Corporate Footprint

The Council's overall carbon footprint in 2023/24 was 14,720 tonnes of carbon dioxide equivalent (tCO₂e). This is an increase of 72 tCO₂e, or almost 0.5% on the total emissions in 2022/23 of 14,648 tCO₂e. As explained in the 2022/23 CMP Update Report,² a rise in emissions was expected from the increased emission intensity of electricity combined with additional electricity demand from the New Allander Centre and Woodland View School. However, the emissions increases were significantly lower than those that were anticipated by the targets set in the Carbon Management Plan Update Report³ of 14,900 tCO₂e or 1.7% increase from 2022/23 emissions. This is despite the fact that the increase in the emissions factor of electricity drove up emissions in the Council's built estate and streetlighting by **295.5 tCO₂e**.

Table 1: Council Emissions by Scope⁴

Year	Scope 1	Scope 2	Scope 3	Total tCO ₂ e
2012/13	9,793	12,421	10,206	32,420
2013/14	10,574	11,489	7,635	29,698
2014/15	9,532	12,861	7,602	29,995
2015/16	9,306	10,338	11,778	31,422
2016/17	8,291	9,154	11,328	28,773
2017/18	9,160	7,959	14,305	31,424
2018/19	8,267	6,258	4,498	19,023
2019/20	8,800	5,345	4,112	18,257
2020/21	7,893	3,955	3,722	15,570
2021/22	8,572	4,347	3,668	16,587
2022/23	8,278	4,281	2,089	14,648
2023/24	8,016	4,397	2,307	14,720

These values also represent a 3,537 tCO₂e, or 19% reduction on the 2019/20 baseline and a 17,700 tCO₂e, or 55%, decrease in emissions compared to the 2012/13 baseline, exceeding the 18% and 54% targets set in the interim report.

Breakdown by Source

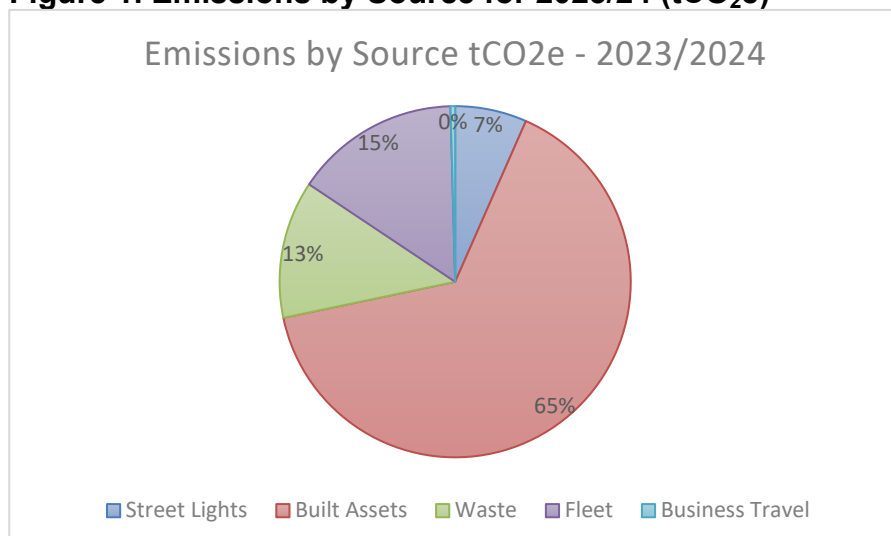
The following diagram (Figure 1) shows the Council's carbon footprint broken down into its main components.

² See [East Dunbartonshire Council Carbon Management Plan Update Report 2023/24](#)

³ See [East Dunbartonshire Council Carbon Management Plan Update Report 2023/24](#)

⁴ Scope 1 is in reference to Direct emissions from sources controlled by the council, such as the council's fleet and fuel use (natural gas, gas oil, biomass) in the council's built assets. Scope 2 is in reference to indirect emissions from purchased energy (electricity), and Scope 3 is in reference indirect emissions from all other activities such as waste and business travel.

Figure 1. Emissions by Source for 2023/24 (tCO₂e)



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 years, with commentary on the likely reasons behind the observed trends.

Built Assets Context

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 9,619.1 tCO₂e, or 65%, of 2023/24's carbon footprint.

Emissions from energy use in built assets have increased by **195 tCO₂e, or 2.1%**, compared to the reported figure for 2022/23. However, had the emission factor for electricity remained unchanged since last year, there would have been a decrease in emissions from energy use in built assets of 40 tCO₂e, or 0.4% compared to 2022/23 levels. Changes to the emission factor between last year and this resulted in a reportable increase of 235.5 tCO₂e from this source. Accordingly, emissions in this area would have been lower than the previous year's level if it had not been for this external factor.

Emissions from Built Assets have decreased by 6,601 tCO₂e, or 41%, since the 2012/13 baseline year and by 1,362 tCO₂e, or 12%, since the 2019/20 baseline year. Some of the emissions reductions in built assets, which were offset by the increase in the emissions factor, has been due to new more efficient gas boilers being installed across the Council's estate. There are also actions that are likely to reduce emissions such as a small office at Southbank Road moving from gas to electricity. The on-going LED installation programme is also likely to lead to reduced emissions in these areas.

Gas Use and Boiler Replacements

Carbon emissions from natural gas use are the largest aspect of the built assets carbon footprint, accounting for 5,739.6 tCO₂e, around 60% of total built asset emissions. This represents a 3.6% decrease on last year's figure of 5,956 tCO₂e. Various boiler replacements that were undertaken on Council buildings helped to lower gas consumption.

During 2023/24, boilers were replaced at a number of Schools,⁵ which contributed to reduced gas use through more efficient heating systems. However, while these developments have led to a reduction in emissions compared to the previous year, the installation of new gas boilers lock in greenhouse gas emissions over the period of use of the boiler. Furthermore, these boilers will need to be replaced with clean heating systems well before the 2038 deadline to comply with the forthcoming Heat in Buildings (Scotland) Bill, as set out in the consultation paper that was prepared for PNCA committee in January 2024.⁶

Electricity Use

Electricity use and related emissions are a significant part of the built assets' carbon footprint and accounted for around 40% of emissions in this area in 2023/24. The 2023/24 carbon footprint of 3,806 tCO₂e for electricity consumption in built assets is around 13% higher than the 2022/23 level of 3,371 tCO₂e, and approximately 17% and 69% lower than emissions from electricity usage in the baseline years 2019/20 and 2012/13, respectively.

A standardised emissions factor is provided to all public bodies in Scotland to estimate emissions associated with different types of energy and fuel usage. These factors, particularly the emission factor for electricity, tend to change to better reflect recent developments such as an increase in the proportion of renewable energy that is used to generate electricity.

The emissions factor for grid electricity generation rose by 7% between 2022/23 and 2023/24, reaching 0.20707 kg CO₂e per kWh, up from 0.19338 kg CO₂e per kWh. The change is due to an unanticipated reduction in energy generated from wind farms, leading to a higher reliance on natural gas for electricity generation and a decrease in renewable generation.⁷ This increase in the emission factor led to an increase of around **235.5 tCO₂e** to the Council's carbon footprint in 2023/24 in relation to electricity use for built assets.

While third party information on anticipated changes to the emission intensity of electricity is used to inform targets for changes in future corporate emissions, these predictions are less reliable for periods beyond a year in the future as they are adjusted as more information becomes available. For example, in the early 2020s, a continuation of the year-on-year reduction of the emissions factor for electricity was expected to continue, however, more recent data suggests that the emission factor for electricity is now anticipated to remain at similar levels to 2023/24 due to higher share of natural gas within the grid mix for the second year running. Despite this break in the trend, a return to the trend of decreases in the emission intensity of electricity are expected in future years as a reflection of on-going work to decarbonise the grid^{8 9} and a dramatic increase in UK renewable capacity over the coming years¹⁰.

⁵ Castlehill Primary, Holy Family Primary, Torrance Primary, Colquhoun Primary, Harestanes Primary, Baljaffray Primary, Clober Primary, Hillhead Primary, Killermont Primary, St Machans Primary, and Craighead Primary Schools

⁶ See [Scottish Government Heat in Buildings Bill Consultation](#)

⁷ ITP Energised (2023) [New UK Grid Emissions Factors 2023](#)

⁸ UK Government (2023) [Greenhouse gas reporting: conversion factors 2023](#)

⁹ Carbon Brief (2024) [Analysis: UK electricity from fossil fuels drops to lowest level since 1957 - Carbon Brief](#)

¹⁰ National Grid (2024) [How much of the UK's energy is renewable? | National Grid Group](#)

Biomass and Oil Use

Biomass and oil consumption accounted for 38 tCO₂e and 35 tCO₂e respectively in comparison to 59 tCO₂e and 38 tCO₂e in 2022/23. These figures combined account for less than 1% of emissions from built assets. The 2023/24 decrease in emissions from biomass was due to short-term supplier issues and these emissions are expected to rise again next year.

New Developments

Increased electricity demand in new developments in East Dunbartonshire have also contributed to the increase in the Council's emissions since 2022/23. The New Allander Centre opened in early 2023 and had its first full financial year in operation in 2023/24.¹¹ It has a gas-powered combined heat and power plant with gas boilers and while the new building is more efficient than the previous one and includes modern features such as heat recovery to further reduce energy use, it uses more electricity than the former Allander Leisure Centre. As a result, the new leisure centre contributed to an increase in emissions.

The new Additional Support Needs School at Woodland View School¹² opened in August 2023 and also has gas combined heat and power in addition to gas back up boilers, replacing Campsie View School in Lenzie and Merkland School in Kirkintilloch. While the new building is more efficient than the previous buildings, the new school consumes more electricity due to its enhanced digital technology.

Provision of the new 5G pitch at Lennoxton has also involved the extension of the pavilion.¹³ As part of the works, the existing electric heating system has been replaced with a more efficient Air Source Heat Pump, completed in March 2024. The efficiency gains from the new heating system had limited impact in the 2023/24 financial year.

A funding decision was received the Scottish Government in October 2023 for the construction of a new Lenzie Academy which will have a zero direct emissions heating system.¹⁴

Moreover, the proposed Balmuildy Primary School would have zero direct emissions heating systems and would have high energy efficiency standards. Proposed refurbishments at Milngavie and Bearsden Primary Schools would also include the installation of zero direct emission heating systems. However, these projects are contingent on securing funding, as such, there is some uncertainty associated with when the emissions savings will occur.¹⁵

The Council's Local Heat and Energy Efficiency Strategy (LHEES) identifies multiple opportunities for small district heating networks based on heat pumps, connecting secondary and primary schools which are close together. These include the following heat network opportunities: Bishopbriggs Academy, Thomas Muir Primary School, St Helen's Primary School; St Matthew's Primary School, Wester Cleddens

¹¹ See [Technical Notes 2023, Issue 4 - Allander Leisure Centre Opening Date](#)

¹² See [Additional Support Needs Schools](#)

¹³ See [Construction begins at new Lennoxton sports facility](#)

¹⁴ See [Lenzie Academy rebuild - East Dunbartonshire Council](#)

¹⁵ [Cover Report: Strategic Planning & Performance Update](#)

Primary School; and Kirkintilloch High School, Oxbang Primary School. In order to reach net zero emissions, fossil fuel powered heating systems such as gas boilers, 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 2023/24, it is estimated that approximately £4.353 million was spent on electricity and gas alone (unit costs and Climate Change Levy costs only).¹⁶ This constitutes an increase of approximately £1.042 million or 31.4% on last year's estimates of £3.311 million.¹⁷ This is further compounded by the fact that the unit cost of electricity between 2022/23 and 2023/24 has almost doubled, even though gas prices slightly decreased. 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.

Fleet

As anticipated in the 2022/23 Carbon Management Plan Update Report,¹⁸ fleet emissions in 2023/24 are very similar to the 2022/23 levels with only a minor decrease of approximately 1% or 22 tCO₂e from 2,225 tCO₂e in 2022/23 to 2,203.2 tCO₂e in 2023/24. The emission factor for diesel, which accounted for most of the fleet mileage, decreased slightly from 2.56 to 2.51 kg CO₂e/litres which slightly reduced the overall fleet induced emissions, saving around 40 tCO₂e. These changes in emission factor are intended to reflect greater fuel efficiency of newer vehicles.

Fleet overtook waste to become the Council's second largest source of emissions in 2022/23 and this remains the case in 2023/24, accounting for 15% of East Dunbartonshire Council's footprint in 2023/24. While the Fleet Team is responsible for the Council's fleet, fleet vehicle mileage, and thus emissions, will vary according to the needs of Council services. However, for the purpose of consistency with previous years, all the Council's fleet emissions are described in a single section.

Emissions from the Council's fleet have decreased by 383 tCO₂e, or 15%, since the 2012/13 baseline year and 136 tCO₂e, or 6%, since the 2019/20 baseline year. The proportion of electric vehicles in the Council's fleet is an important factor in reducing fleet-related emissions. Since electric vehicles used by the fleet team are currently owned by the Council and no longer leased, fluctuations in fleet emissions EV leases are anticipated to stabilise going forward.

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. The establishment of enhanced charging infrastructure will be critical to accelerating decarbonisation of the Council's fleet and corporate carbon footprint on the whole.

¹⁶ Assumptions of 16.0169 p/kWh electricity and Climate Change Levy for electricity of 0.00775 p/kWh and 4.1277 p/kWh gas and Climate Change Levy for gas of 0.00672 p/kWh

¹⁷ Due to the volatility of electricity prices, coupled with the sharp increase in unit prices of gas and electricity in 2022/23, the 2022/23 Annual Carbon Management Plan indicated that cost estimates were of £4.31 million. This was based on the assumptions of 14 p/kWh electricity rather than 8 p/kWh.

¹⁸ [East Dunbartonshire Council Carbon Management Plan Update Report 2023/24](#)

Discussion is on-going for this development although it is not anticipated to be in operation for a few years.

Plans for a 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 be best achieved. In the interim, officers are working on plans for replacement electric vehicles at present and more electric vehicles will be procured from 2025/26 onwards, however, no vehicles will be purchased for the financial year 2024/25. 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 establishment of enhanced charging infrastructure will therefore be critical to accelerating decarbonisation of the Council's fleet.

The introduction of new technologies is also expected to reduce emissions from Waste vehicles, by enabling more efficient routing and service delivery. The optimisation of collection schedules from a two-weekly to a three weekly residual waste collection will also decrease the frequency of collection, further lowering emissions.

The cost associated with fleet emissions in 2023/24 is £1,042,474.98,¹⁹ a decrease of almost 13% from the 2022/23 levels of £1,198,124. This reduction can be partially attributed to a decrease in the cost of unit of fuel between 2022/23 and 2023/24.²⁰

Waste

Waste constitutes the third largest source of the Council's carbon emissions, accounting for 13% of 2023/24's total footprint. Emissions from the Council's landfilling, recycling, combustion, composting and anaerobic digestion of municipal and commercial waste amounted to 1,863.6 tCO₂e in 2023/24. This represents a reduction of 7.7% or 155 tCO₂e from the 2022/23 level of 2,018 tCO₂e. Additionally, it is a decrease of almost 49% or 1,794 tCO₂e on the 2019/20 baseline of 3,658 tCO₂e and around 81% or 8,063 tCO₂e on the 2012/13 baseline of 9,927 tCO₂e.

This is primarily due to a reduction in household and commercial waste to landfill from 2,181 tonnes in 2022/23, accounting for 976 tCO₂e, to 1,699 tonnes in 2023/24, or 846 tCO₂e. This decrease is specifically noteworthy considering the increase in the emissions factor for commercial and industrial waste to landfill from 0.467 CO₂e/tonnes in 2022/23 to 0.520 CO₂e/tonnes, accounting for an additional 4.5 tCO₂e. Additionally, the emissions factor of household, municipal, and domestic waste to landfill increased from 0.44620 CO₂e/tonnes in 2022/23 to 0.49704 CO₂e/tonnes, accounting for an additional 82 tCO₂e.

A reduction of approximately 3.6% is also noted in the amount of waste incinerated in 2023/24 compared to 2022/23 of 29,863 tonnes to 28,804 tonnes. Since the volume of incinerated waste has also decreased, this indicates that the reduction in waste sent to landfill is not due to waste being diverted to incineration. Instead, the downward trend is potentially a result of the Council's waste reduction campaigns and a return to lower pre-pandemic waste levels.

¹⁹ Data taken from fuel bills

²⁰ Statista (2024) [UK weekly road fuel prices 2024](#)

The overall waste managed in tonnes decreased by around 2.3% from 58,869 tonnes in 2022/23 to 57,541 tonnes in 2023/24. The proportion of waste recycled / composted in 2023/24, was nearly identical to that in 2022/23, with 47% or 27,038 from 57,541 tonnes recycled/composted in 2023/24 and 46%, or 26,825 tonnes from 58,869 tonnes in 2022/23. The emissions factor for recycling, combustion, garden waste and anaerobic digestion remain nearly the same between 2022/24 and 2023/24 having little impact on overall waste emissions.

A minor increase in waste emissions is possible for the financial year 2024/25, as the cost for Garden Waste Permit from July 2024 could lead to more garden waste being added to general waste whose disposal is more emission intensive than garden waste disposal. However, it is also possible that residents reduce their general waste to ensure that there is space in this bin if garden waste is displaced, which would mean that the impact could be low or neutral.

In 2025/26, waste emissions are expected to decrease due to the optimisation of collection schedules from a two-weekly to a three weekly waste collection, which will be introduced in 2025. There is evidence from other Councils around the UK that this contributes to a reduction of general waste going to landfill and an increase of recycled waste, leading to an overall waste emissions reduction.²¹

The costs associated with landfilling, recycling/diversion and composting of municipal and commercial waste are complex and hard to break down, especially considering that the council pays a gate fee. However, it is estimated that almost £173,500 was spent on landfill tax alone in 2023/24.²² This is a decrease of over 19% from the estimate of £215,000 for 2022/23.²³ The cost implications of landfilled waste per tonne are expected to become more significant in 2025,²⁴ when the Scottish ban on landfilling of biodegradable waste comes into force.

Street Lighting

In 2023/24, emissions from street and Christmas lighting (collectively referred to as 'street lighting') constituted 971.8 tCO₂e, or 7% of the Council's carbon footprint. Emissions from street lighting have increased by 62 tCO₂e, or around 6.8% in 2023/24 compared to 2022/23. This is largely due to the higher emission factor of 0.21 kg CO₂e/kWh in 2023/24 for electricity compared to 0.19 kg CO₂e/kWh in 2022/23, since the increase in the emission factor approximately contributed to an additional 60 tCO₂e for street lighting.

Emissions from street lighting have decreased by 2,436 tCO₂e, or 71% since the 2012/13 baseline year and by 231 tCO₂e, or 19%, since the 2019/20 baseline year. The LED lighting conversion programme is still ongoing after resuming in 2021/22, following the temporary halting during 2020/21. However, given the comparatively small proportion of the Council's emissions that street lighting accounts for, savings attributed to the LED programme are very small. It is anticipated that the programme will deliver approximately 5 tCO₂e in annual emissions savings over the course of their life, in addition to cost savings for the Council.

²¹ BBC News (2023) [Recycling rates in mid Devon rise after three-weekly waste collections - BBC News](#)

²² Assumptions of the current standard rate is £102.10 per tonne [New Scottish Landfill Tax Rates 2023/24](#)

²³ Assumptions of the 2022/23 standard rate is £98.60 per tonne [New Scottish Landfill Tax Rates 2022/23](#)

²⁴ Assumptions of the 2024/25 standard rate is £103.70 per tonne [New Scottish Landfill Tax Rates 2024/25](#)

The costs associated with street lighting energy consumption in 2023/24 are £725,265²⁵ which is an approximate increase of 91% or £345,000 of last year's values of £380,338.²⁶ Considering that street and Christmas lighting consumption in 2023/24 is at a similar level to the consumption in 2022/23, this increase highlights the growing financial implications for the Council's from electricity costs amidst the current energy crisis.

Business Mileage

Emissions from the Council's business travel activities in 2023/24 constitute 62.8 tCO₂e or 0.4%, of the total footprint. The total emissions in this area have decreased by around 11.3% from 71 tCO₂e in 2022/23. Emissions from business mileage have decreased by 215.2 tCO₂e, or 77.4%, since the 2012/13 baseline year and 13.2 tCO₂e, or 17.3%, since the 2019/20 baseline year. There was very little change in the emission factor applied to this emission source, meaning that the fall in emissions is predominantly attributable to a lower number of miles being travelled. Overall, business mileage continues to account for a small minority of emissions and this year's figure represents a notable decrease in relation to the baseline year. The estimated cost associated with business mileage emissions in 2023/24 is £105,996²⁷ a decrease of £10,039 from £116,035 in 2022/23.

Supporting Activities

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 2023/24, which are anticipated to deliver corporate carbon reductions in the future, include:

- Advancing work on the draft Climate Action Plan (CAP), to support the Scottish Government's target of achieving Net Zero by 2045 and to deliver on the Council's net zero target of 2036 for direct greenhouse gas emissions and 2045 for remaining corporate emissions and area-wide emissions. The draft CAP is expected to be taken to Council in early 2025.
- Undertaking the range of actions set out in the LHEES' Delivery Plan. The Draft LHEES was approved by the Council in September 2024 and public consultation was completed in October 2024.
- Developing the Circular Economy Strategy that will support the reduction of emissions from waste and elements of the Council's supply chain.

Changes to the Council's Corporate Carbon Footprint

The Evidence and Options stage of CAP development work has been completed and was approved by Council in September 2023. In approving the report, Council agreed a corporate net zero target of 2036 for Scopes 1 and 2 emissions, and 2045 for all emissions in addition to pathways that contained actions that are required to meet the

²⁵ Assumptions of 16.0169 p per kWh electricity and Climate Change Levy of 0.00775

²⁶ Due to the volatility of electric prices, coupled with the sharp increase in unit prices in 2022/23, the 2022/23 Annual Carbon Management Plan indicated that cost estimates were of £637,276. This was based on the assumptions of 14 p/kWh electricity rather than 8 p/kWh.

²⁷ Data taken from costs paid to staff

Council's corporate net zero target, area wide net zero target and target to improve resilience to the on-going impacts of climate change.

In approving the Evidence and Options report, Council noted that the Carbon Management Plan will be enhanced to allow the achievement of the Council's net zero targets. In addition to reporting on area-wide emissions, the boundaries of the Council's corporate carbon footprint will need to be expanded to include emissions from the Council's supply chain, employee commuting, water use, and emissions offsetting required to deliver on corporate net zero targets. Detail of these actions and the delivery responsibilities for each of them will be developed further in the forthcoming draft CAP.

The Draft CAP will also set out a process to 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 Networks (Scotland) Act (2021), the Heat in Buildings Strategy (2021), the forthcoming Heat in Buildings Bill, and the requirement for public bodies to demonstrate alignment of spending plans and use of resources to contribute to emissions reduction.

The Scottish Parliament passed the Climate Change (Emissions Reduction Targets) (Scotland) Bill which replaced the 2030 and 2040 interim targets to net zero with a carbon budget-based process in November 2024.²⁸ Further details on the carbon budgets will be set through secondary legislation, along with a new Climate Change Plan and Statutory Guidance, which is expected to provide revised guidance on public bodies climate change duties reporting.

Environmental Standards Scotland (ESS) launched an investigation into the effectiveness of the systems in place to support local authorities in their duty to contribute to the delivery of national climate change targets under the Climate Change (Scotland) Act 2009. This investigation led ESS to submit a series of recommendations to Scottish Government including a call for mandatory reporting of scope 3 emissions. Scottish Government published an Improvement Report which noted that a revised Statutory Guidance document will be published with further information on required scope 3 emissions reporting. The Statutory Guidance will replace the current interim guidance and is anticipated to include guidance on revised PBCCD reporting, or to be accompanied by a revised PBCCD process set out in a separate guidance. These changes are intended to standardise the sources of emissions that are captured in local authority corporate emissions and extend the boundaries of corporate emissions measurements to incorporate additional areas into statutory annual reporting.

The Scottish Climate Intelligence Service (SCIS), which was established with joint funding from Scottish Government and local authorities to support Councils by building capacity a standardised approach to area-wide emissions calculations and extending the boundaries of corporate carbon footprints, will aid in adopting a standardised approach to estimating supply chain emissions.

²⁸ Scottish Government (2024) [Climate Change Bill passed - gov.scot](https://www.gov.scot/news/2024/11/20/climate-change-bill-passed/)

Council's Supply Chain

By far the largest component of the Council's wider corporate emissions are the emissions from the Council's supply chain at an estimated 80% of the Council's overall emissions, which emphasises the importance of improving carbon reduction mechanisms in the procurement process, and developing a data capture mechanism in this area to obtain more accurate figures (as current figures are based upon spend and sector benchmarks), and sustainable procurement programmes.

As explained in the Evidence and Options report, further details on what the Council will have to report on is required including investigation of how estimated emissions from the Council's supply chain can be quantified. A standardised methodology for estimating supply chain emissions will need to be agreed on a pan-Scotland level. This is likely to be implemented in collaboration with the newly formed Scottish Climate Intelligence Service.

Employee Commuting

A Council travel survey will be required to measure emissions from commuting. The Evidence and Options report shows that homeworking combined with efforts to reduce office sizes can lead to a 2% reduction in overall buildings and transport emissions from Council's emissions. An increase in homeworking will increase the Council's emissions associated with homeworking, however, it will reduce the emissions associated with employee commuting and emissions associated with office use where a reduction in offices accompanies the increase in homeworking. Work is on-going to establish an employee commuting survey to allow the Council to report emissions in this area and measure progress.

Water Use

The Evidence and Options report estimates that emissions from water usage are 0.3% of the Council's total Scope 3 emissions. It notes that developing monitoring for this and implementing measures to reduce water consumption and decarbonise water will be required to deliver against the Council's elected net zero pathways.

Offsetting

The E&O report also showcases that across all of the proposed pathways to reach net zero, residual emissions will remain in 2045, and consequently will need to be offset. Offsetting will be required annually to meet net zero as the Council and area continue to emit emissions. These will need to be included within annual operational costs. The future costs of carbon credits are uncertain, hence in the analysis that was carried out by Ricardo, a range of £30-£300/tCO₂e was used.

An alternative to purchasing carbon credits from an already certified carbon offset project is to invest in the creation of carbon offsets within East Dunbartonshire, also referred to as insets. This would offer more local benefits and would give the Council greater control over the schemes and certainty over the outcomes of the projects. Initial data gathering for this approach to using nature-based solutions in the East Dunbartonshire Council area to support offsetting are underway. Offsetting and nature-based solution will need to be maximised to deliver against corporate and area-wide net zero targets.

Estimated Future Trends

Future Corporate Carbon Emissions

2024/25 Estimate and beyond

The predicted emission factor for grid electricity for 2024/25 is 0.20705 kg CO₂e per kWh, a very minor variation on the 2023/24 level of 0.20707 kg CO₂e per kWh. The transmission and distribution (T&D) emissions factor is predicted to increase from 0.01792 kg CO₂e per kWh to 0.01830 kg CO₂e per kWh. This goes against the trend of a steadily reducing electricity emissions factor for the years 2018-2022 which largely resulted from the diminishing contribution of coal in the grid mix, and the challenges in bringing new renewable generation online at scale due to grid constraints. The continued reduction of the electricity emissions factor for the past five years highlights the current higher intensity factor as an anomaly, albeit one that is now into its second year. However, households, businesses and other users have collectively installed additional renewable energy generation capacity which is anticipated to be reflected in future emissions factors.²⁹

Grid decarbonisation is currently challenged due to high up-front and running costs of some low emissions heating systems and vehicles compared to fossil fuel-based systems. Paradoxically, renewable energy is significantly cheaper than fossil fuels in the UK and most other countries,³⁰ but savings are not always passed on to consumers due to a variety of factors including carbon taxes, coupled electricity and gas rates and policy costs.³¹ Nonetheless, there are strong indications that the global market is changing at pace, supported by market-based instruments including subsidies and carbon pricing, and this is likely to change the future economics of decarbonisation, increasingly favouring zero and low-carbon solutions.

Moreover, renewable energy consumption across the power, heat, and transport sectors is projected to increase by nearly 60% from 2024 to 2030, raising the share of renewables in final energy consumption to almost 20% by 2030, up from 13% in 2023. Most of this growth (around 75%) comes from electricity generation owing to continued policy support, declining costs, and the expanding use of electricity for road transport and heat pumps. Renewable fuels, such as bioenergy and hydrogen, account for 15%, with solar thermal and geothermal contributing the remaining 10%.³² Additionally, the closure of the last coal power station in the UK in September 2024 marked a milestone in the country's transition to cleaner energy sources and grid decarbonisation,³³ reinforcing the trend toward renewables and the decline of fossil fuel dependency. The UK now joins a third of OECD countries whose electricity production is already coal-free, with this projected to increase to three quarters of OECD countries phasing out coal by 2030.³⁴

Nonetheless, while emission reductions are anticipated from 2025/26 onwards, a slight increase in emissions is expected for 2024/25. This is due to the emission factor of

²⁹ ITP Energised (2024) [New 2024 UK Grid Emissions Factors - ITP Energised](#)

³⁰ International Energy Agency (2024) [Rapid rollout of clean technologies makes energy cheaper, not more costly - News - IEA](#)

³¹ Nesta (2023) [The electricity-to-gas price ratio explained](#)

³² IEA (2024) [Global overview – Renewables 2024 – Analysis](#)

³³ BBC News (2024) [UK to close last coal power station after 142 years](#)

³⁴ Ember Energy (2024) [Coal generation in OECD countries falls below half of its peak](#)

electricity slightly increasing rather than decreasing, which will result in a slight emissions increase if electricity consumption remains consistent with 2023/24 levels across both built assets and street lighting. Furthermore, biomass emissions in built assets are expected to rise again in 2024/25 due to the resolution of supplier-related challenges. A minor increase in waste emissions is possible following the introduction of the Garden Waste Permit. No changes in emissions are anticipated from fleet operations or business mileage, making the Council's carbon footprint below 14,890 tCO₂e an appropriate target for 2024/25. This would be 1.15% higher than emissions in 2023/24, however, 18% lower than emissions in the baseline year 2019/20 and 54% lower in emissions compared to the 2012/13 baseline.

For the financial year 2025/26, emissions are expected to return to a downward trend following the anomaly observed in the emission intensity of electricity over 2023/24 and 2024/25. Should the emission factor of electricity return to its 2022/23 levels, an estimated reduction of approximately 500 tCO₂e could be achieved across both built asset and street lighting. Additionally, waste and fleet emissions are also expected to decrease. Waste emissions are expected to decrease due to the optimisation of collection schedules from a two-weekly to a three weekly waste collection, which will be introduced in 2025. The planned procurement of additional EV along the implementation of optimised routing systems for fleet is expected to lead to a further decrease. These plans coupled with the carbon savings opportunities addressed in the emerging CAP and LHEES, suggest that 13,820 tCO₂e is an appropriate target for the Council's carbon footprint in 2025/26. This would represent around 24% reduction on the 2019/20 baseline and 57% reduction compared to the 2012/13 baseline.

The emerging Climate Action Plan will also support the development of new longer-term emission reduction targets for future years.

Future Costs

It continues to be difficult to definitively project future carbon-related financial costs, particularly in relation to gas and electricity. For the 2023/24 period, energy prices generally decreased compared to record high prices in 2022/23. However, even with these reductions, energy prices remained historically high compared to pre-crisis levels from the early 2020s. Moreover, there has been a recent increase in the updated Ofgem energy price cap from October to December 2024, representing a 10% increase from the previous cap, which reflects ongoing volatility in the energy market. Given the potential lag associated with pre-negotiated agreements with energy suppliers, these price fluctuations will not be immediately apparent to the Council, but they could eventually contribute to increased expenses once these agreements are renewed.

More importantly, the price gap between electricity and gas prices discourages decarbonisation efforts through the adoption of electric vehicles, heat pumps, and other lower emission electric-based technologies.³⁵ This is particularly pronounced in the UK where electricity prices have become more expensive than in any EU country despite the UK having relatively low gas prices.³⁶ In addition to a drop in the price of electricity to better reflect market rates, an urgent expansion of grid capacity in Scotland will also be required to support decarbonisation.³⁷ A minor step in lowering the current cost

³⁵ Nesta (2023) [The electricity-to-gas price ratio explained](#)

³⁶ Nesta (2024) [For the first time, UK household electricity prices rose to levels higher than those in any EU country](#)

³⁷ Scottish Parliament (2023) [Urgency needed to create capacity in Scotland's electricity infrastructure](#)

disadvantage of electricity will be taken as the Climate Change Levy (CCL) for gas is expected to match the CCL for electricity by 2024/25.³⁸

Despite some of these challenges, 2023 household gas demand dropped to levels last seen in the 1970s, while the contribution of renewables to electricity generation reached record highs.³⁹ Moreover, investments in green energy demonstrate forward momentum. For instance, global investment in low emissions vehicles is projected to increase considerably in the coming years with BloombergNEF's annual Electric Vehicle Outlook estimating over 100 million passenger EVs expected on the roads globally by 2026 and over 700 million by 2040, up from 27 million at the beginning of 2023.⁴⁰

A record of over 3 million heat pumps were sold in Europe in 2022⁴¹ with many countries including Nordic countries, Switzerland and France already having well-developed markets for heat pumps which underscores that up-front costs have been overcome to achieve an economy of scale of heat pumps in many other countries.

Global investment in renewable energy has also shown rapid growth in 2023 to \$358 billion with a 22% rise compared to the start of 2022.⁴²

Aside from renewable energy use, there are already compelling financial incentives to pursue lower emission solutions in other areas of the Council's carbon footprint. 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 and its corresponding work-streams. 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.

Monitoring Area-wide Emissions

The Climate Action Plan (CAP)'s Evidence and Options report recommended the incorporation of reporting on area-wide emissions through the Council's emissions monitoring system. This will be implemented in future monitoring reports using a shared methodology across public bodies in Scotland. The Council will work with the SCIS and explore tools such as the Met Office's Local Authority tool to adopt standardised measures for monitoring climate resilience and local impacts of climate change.

To pave the way for the introduction of area-wide emission monitoring through the CAP, this CMP provides an analysis of area-wide emissions using the UK Government area-

³⁸ This contributes towards the delivery of the following actions from the LHEES Delivery Plan: Action 14 (to produce an annual monitoring / report of gas prices compared to typical cost of heat from heat networks to ensure potential heat networks do not worsen fuel poverty) and 21 (annual monitoring / report of gas vs electricity prices and heat pump case studies to ensure heat pumps can still reduce fuel poverty in properties with gas boilers).

³⁹ Nesta (2024) [For the first time, UK household electricity prices rose to levels higher than those in any EU country](#)

⁴⁰ BloombergNEF (2023) [Electric Vehicle Fleet Set to Hit 100 Million by 2026, but Stronger Push Needed to Stay on Track for Net Zero](#)

⁴¹ Carbon Brief (2023) [Guest post: How the energy crisis is boosting heat pumps in Europe](#)

⁴² BloombergNEF (2023) [Renewable Energy Investment Hits Record-Breaking \\$358 Billion in 1H 2023](#)

wide emissions data to measure progress against the Council’s target to reach net zero emissions from the East Dunbartonshire area where total GHG emissions in the Council are to reach 49.4 kt CO₂e by 2045, which is a 90% decrease compared with 2019 levels, with the remaining emissions being offset. This pathway is mainly based on the CCC’s 6th carbon budget’s “Balanced Pathway”, with all actions that were set out in the Evidence and Options report as being necessary to achieve the net zero target⁴³ being based on an accelerated version of the CCC pathway from 2050 to 2045 in line with the Scottish Net Zero target.

This scenario was considered to illustrate a pathway to net zero that is very ambitious and would entail achieving a full switch to low-carbon heating such as heat pumps, near complete electrification of the transport sector and partial decarbonisation of industrial processes.

Analysis of Area-wide Emissions

Table 2 shows that overall area-wide emissions in East Dunbartonshire have generally decreased year-on-year since 2005.

Table 2: Total greenhouse gas emissions in East Dunbartonshire Council from 2005 – 2022

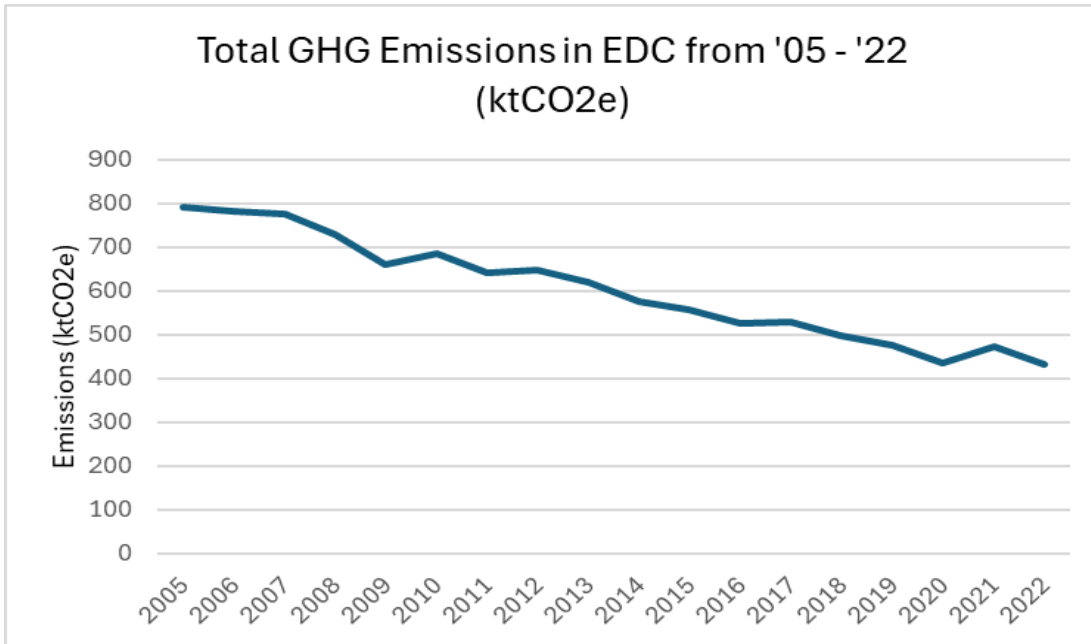
Year	Greenhouse Gas Levels (kt CO₂e)	Year	Greenhouse Gas Levels (kt CO₂e)
2005	791.8	2014	575.7
2006	782.1	2015	557.7
2007	775.8	2016	526.3
2008	727.9	2017	528.1
2009	660.5	2018	497.5
2010	685.9	2019	476.6
2011	641.4	2020	433.4
2012	646.4	2021	473.3
2013	620.6	2022	432.8

Due to a lag in when the data is published, total emissions for 2022 is the most up-to-date data available. Levels recorded in 2022, 432.8 kt CO₂e, are the lowest GHG emission levels since records began in 2005. Additionally, total East Dunbartonshire emissions in 2022 are 40.5 kt CO₂e less than total emissions in 2021 – which were

⁴³ The team has evaluated the actions in the CCC to determine which actions can be accelerated to 2045 and which can't be achieved before 2050. The majority of actions could be brought forward given the higher ambition by the Scottish Government; however, some actions in the agriculture and waste sector were not accelerated due to the challenges associated with them.

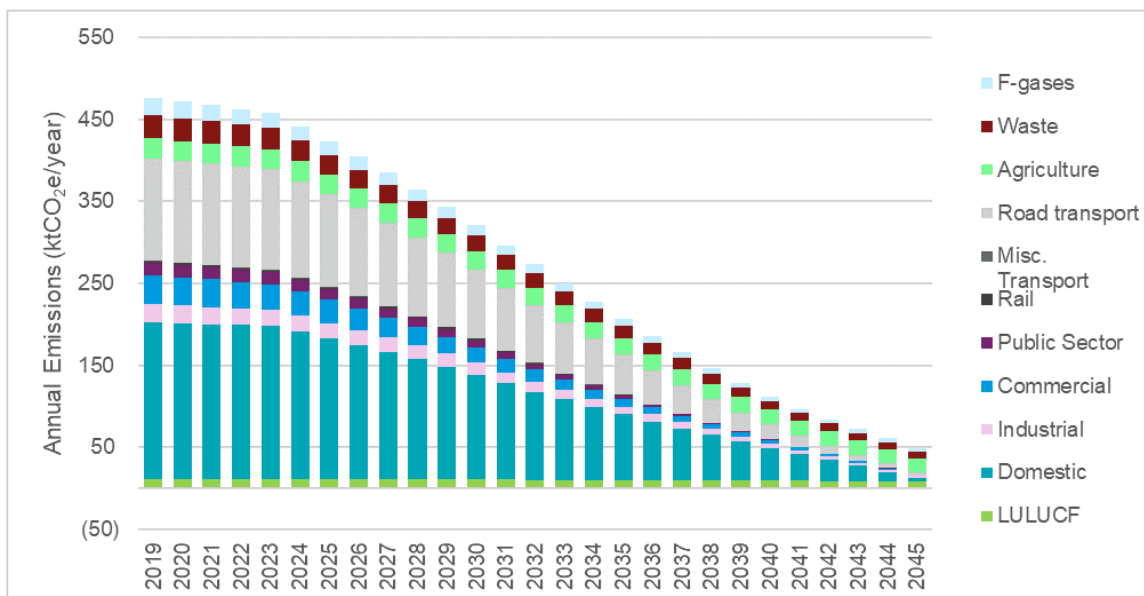
recorded at 473.3 kt CO₂e. The previous lowest total emission recorded for East Dunbartonshire was recorded in 2020 at 433.4 kt CO₂e (see Figure 2).

Figure 2: Total greenhouse gas emissions (GHG) in East Dunbartonshire Council from 2005 – 2022



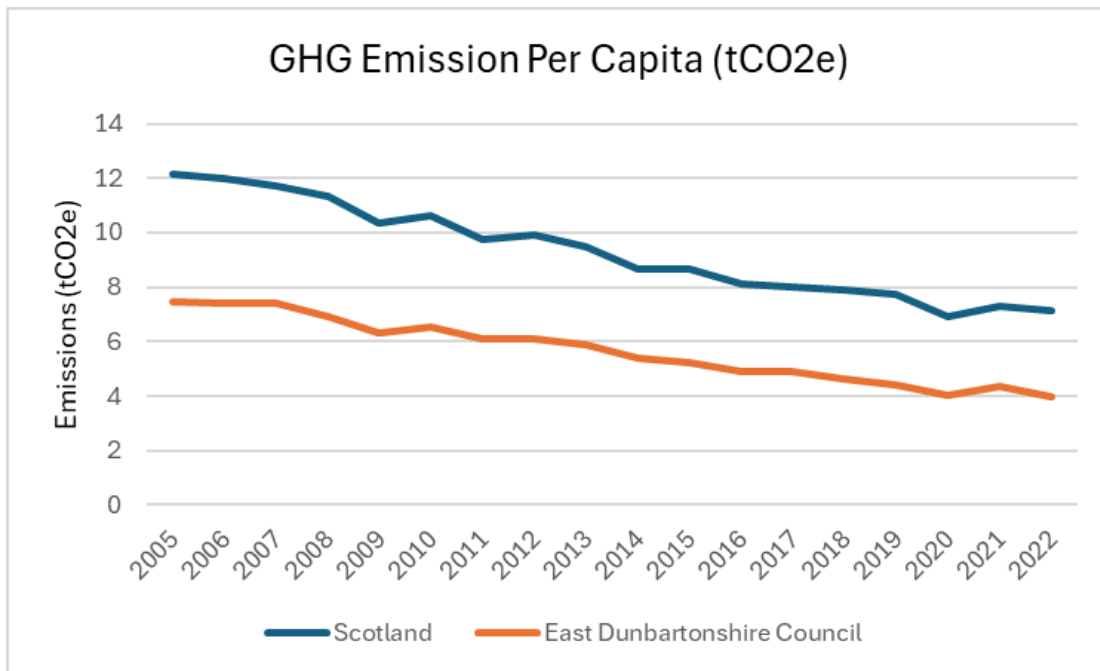
The Evidence and Option Report used a 2019 area-wide baseline. The 2022 total emission target level is about 460 kt CO₂e (see Figure 3). The actual total emissions for 2022 are below this target by 20-30 kt CO₂e. If emissions reduction improvements are made each year, along with actions set out in the Evidence and Options Report, then the Council is on route to meeting the early annual emission target levels to meet the 2045 goal. To reach the 2023 target, emission levels will need to demonstrate a continued reduction to a total emission value that remains under 450 ktCO₂e.

Figure 3. Emissions by sector after measures. Source: NZP Tool. Graph from CAP Evidence and Options Report.



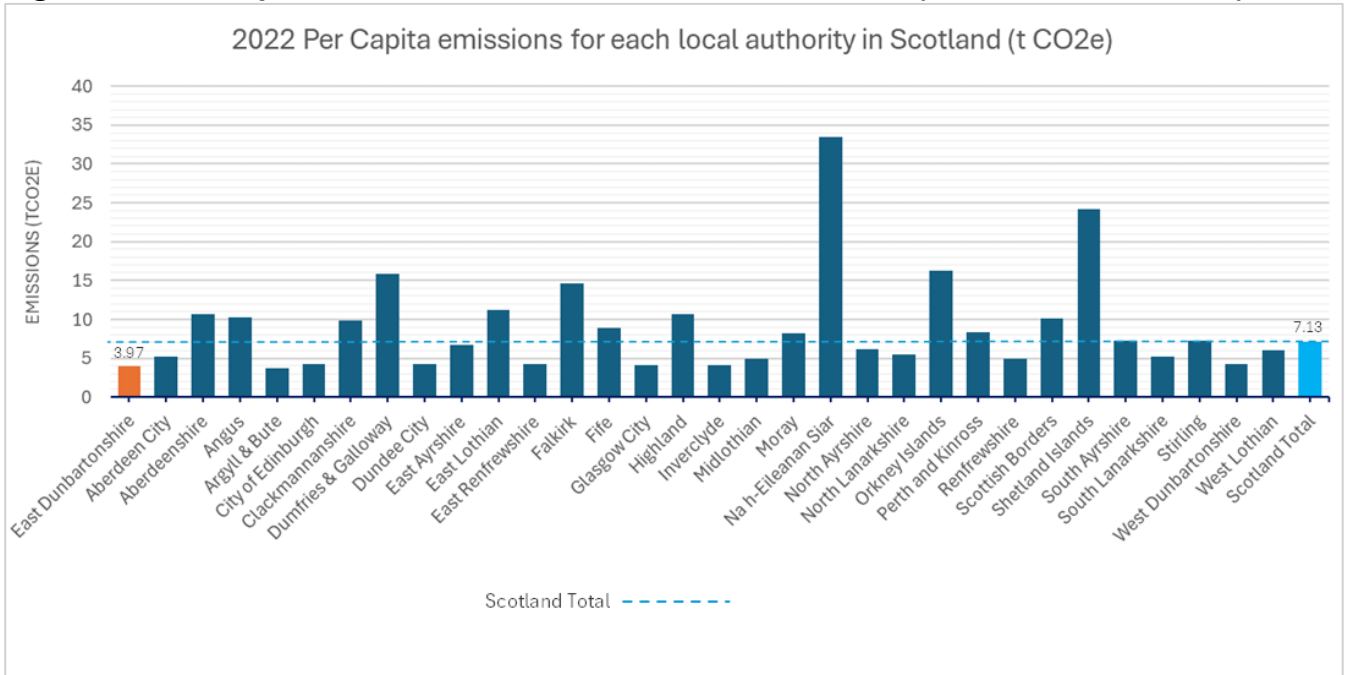
While emissions per capita in East Dunbartonshire are continuing to decrease from 2005 levels, when records first began, a similar decrease in per capita emissions is reflected across Scotland as a whole (**see Figure 4**). However, per capita emissions for East Dunbartonshire were recorded well below the Scotland Total for 2022 – which was recorded at 7.13 t CO₂e. This is partially due to the significantly greater per capita footprints in the Scottish Island and rural authorities such as the Scottish Borders driving up the average (**see Figure 5**).

Figure 4: Per capita GHG emissions from 2005 – 2022 in both East Dunbartonshire and Scotland as a whole.



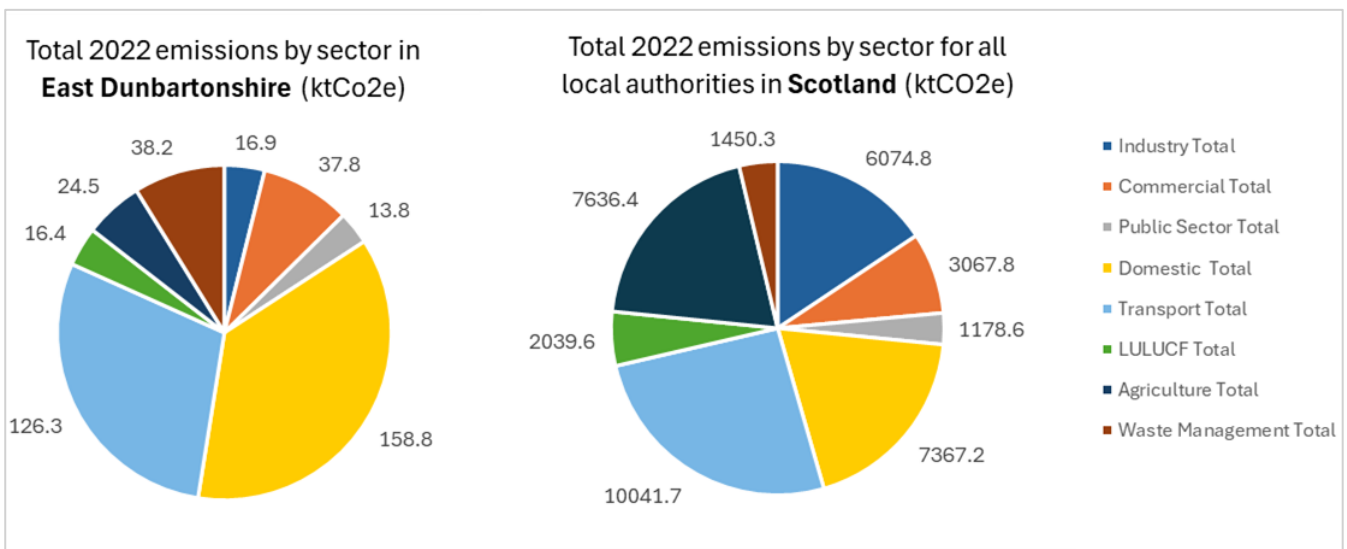
In 2022, GHG emissions per capita in East Dunbartonshire Council reached 3.97 t CO₂e, this is the second lowest 2022 emissions per capita for a local authority in Scotland, just behind Argyll & Bute with per capita emissions at 3.79 t CO₂e (**see Figure 5**). Half of local authorities in Scotland (16 out of 32) have emissions per capita values that are lower than Scotland as a whole – East Dunbartonshire is included in this group.

Figure 5: Per capita GHG in 2022 for all LAs in Scotland (measured in t CO₂e)



Across Scotland as a whole, transport had the biggest share of the total emissions for 2022 (see Figure 6). This differs from East Dunbartonshire, where the domestic sector contributed the most emissions to the total 2022 level, followed by transport. East Dunbartonshire’s industry sector also constitutes a significantly lower proportion than across Scotland. Waste management also contributes a larger share to East Dunbartonshire’s total emissions, the third largest emitting sector at 38.2 kt CO₂e, than reflected across Scotland as a whole - where it is the second lowest contributor to the total emission levels.

Figure 6: 2022 emissions for East Dunbartonshire Council by sector compared to Scotland totals by sector (kt CO₂e)



The Domestic and Transport sector continue to be the top two sources for total emissions in 2022- as it was in 2005 (See Figure 7). From 2005 to 2022, the total emissions for the domestic sector in East Dunbartonshire Council has seen a reduction by 49%. Total emissions for the transport sector have reduced by 23% from 2005 to 2022. Even though total emission levels have decreased from 2005 to 2022, 791.8 to 432.8 kt CO₂e, it is evident that efforts need to be made to make further emission reductions in these two sectors (See Figure 8).

Figure 7: Total emissions in East Dunbartonshire Council by sector, 2005 & 2022 (kt CO₂e)

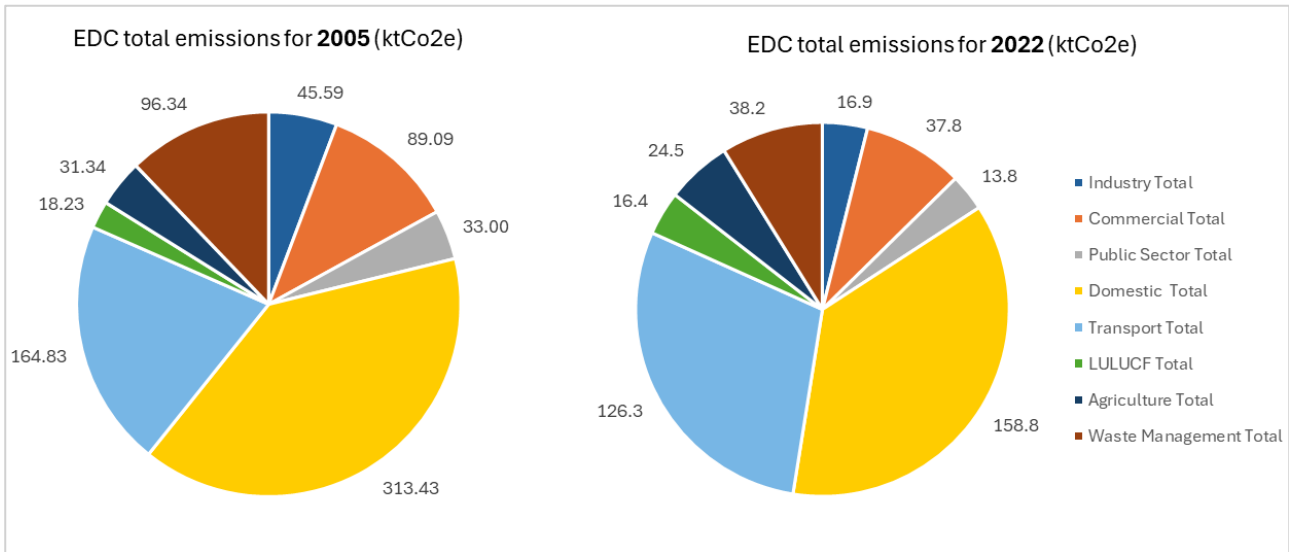
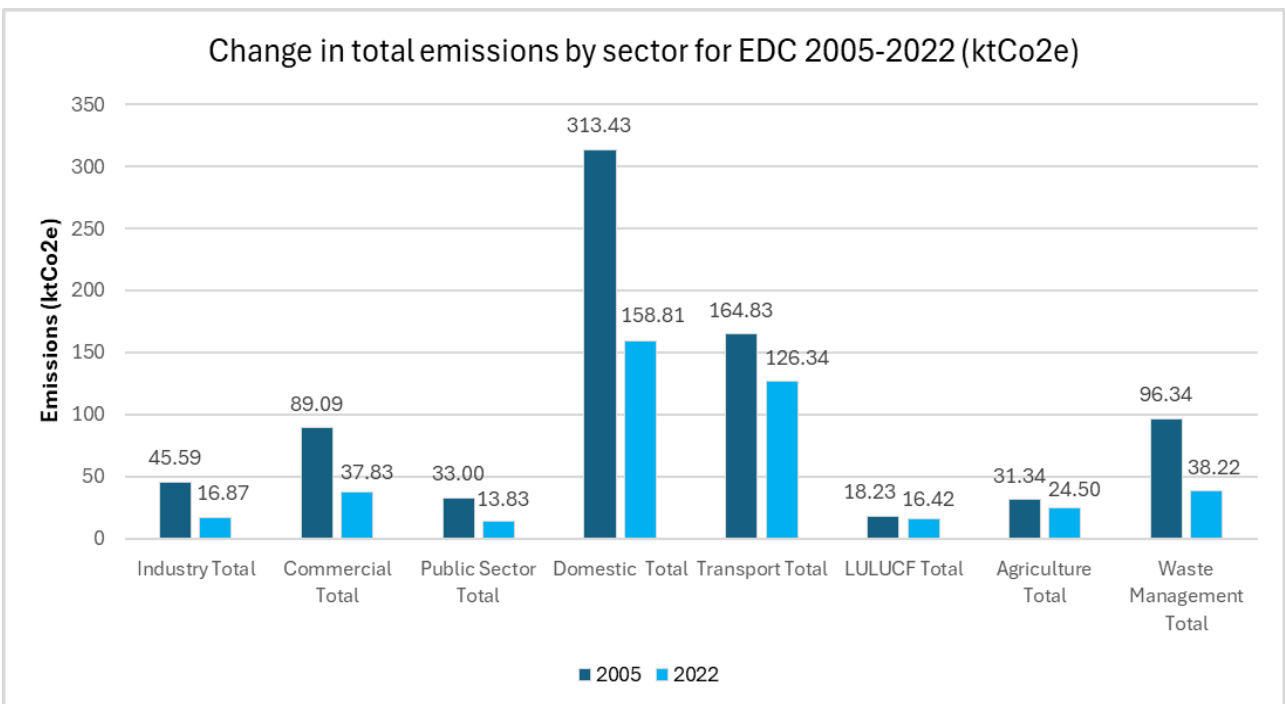


Figure 8: Total emissions in East Dunbartonshire Council by sector, change from 2005 to 2022 (kt CO₂e)



Despite the positive signs in emissions reductions in the East Dunbartonshire, much of this has been achieved due to decarbonisation of the grid and significant progress will need to be made in more difficult areas including transport, heat decarbonisation and behavioural change.

Consequently, future editions of the CMP will provide a set of proxy measures, such as sustainable transport metrics, heat pump numbers and proxies for more sustainable land use to capture progress in more difficult areas to decarbonise.

Conclusion

The Council's carbon emissions recorded for 2023/24 – 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 **14,720 tCO₂e** and represent a 0.5% increase on the levels from 2022/23.

This rise in emissions was anticipated in the Carbon Management Plan (CMP) Update Report 2023-24 ⁴⁴ and is due to an increase in the emissions intensity of electricity which caused an increase in the Council's emissions of **295.5 tCO₂e**. Consequently, the Council's emissions would have been lower if the emissions factor for electricity had remained at the same level as 2022/23.

While emissions from built assets and streetlights increased 2.1% and 6.8%, respectively from 2022/23 levels; waste, fleet, and business miles decreased by 7.7%, 1%, and 11.3% respectively. Compared to the 2012/13 and 2019/20 baseline years 2023/24's emissions decreased 55% (17,700 tCO₂e) and 19% (3,537 tCO₂e), respectively.

Consequently, the targets set in the Carbon Management Plan Update Report of limiting emissions increases to 1.7% compared to 2022/23 and achieving a 54% and 18% decrease in comparison to the 2012/13, and 2019/20 financial years have all been achieved.

The emission factor of electricity in 2024/25 will remain approximately similar to the 2023/24 levels. However, this is expected to be a short-term anomaly. The continued reduction of the electricity emissions factor is expected to resume in the upcoming financial years.

The analysis of area-wide emissions in East Dunbartonshire showcases an overall emissions decline, with per capita emissions being the second lowest 2022 emissions per capita for a local authority in Scotland.

Future editions of the CMP will provide more analysis of area-wide emissions and resilience to climate change to document progress against the Council's area-wide net zero and resilience targets. This will include the adoption of proxy values to measure progress against key facets of the Council's area-wide net zero modelling.

⁴⁴ [East Dunbartonshire Council Carbon Management Plan Update Report 2023/24](#)

Work underway on the emerging Climate Action Plan and Local Heat and Energy Efficiency Strategy will build on these reductions 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.