

CARBON MANAGEMENT PLAN UPDATE REPORT 2023-24

East Dunbartonshire Council

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Executive Summary

As reported to PNCA Committee in December 2023 and recorded in the Council's Climate Change Public Bodies Duties report, 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 - were 12% lower than the emissions recorded in 2021/22.

An 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, will lead to an estimated increase of **218.62 tCO₂e** to the Council's carbon footprint in 2023/24.

This appears to be a short-term anomaly as a **38% reduction** in the emission intensity of electricity from the grid is expected between 2023/24 and 2024/25 while further decreases are expected in each of the three financial years after this.

Built Assets is the area that is responsible for the highest proportion of emissions and the changes in the emission intensity of the grid are likely to drive an overall increase in emissions in this area.

Another of the largest sources of emissions reductions between 2021/22 and 2022/23 was a major reduction in waste going to landfill. However, a continuation of this trend is not expected in the 2023/24 financial year so emissions in this area are expected to remain broadly consistent.

Emissions from fleet, which overtook waste in 2022/23 to become the second largest source of emissions after Built Assets at the Council, is anticipated to remain relatively similar to 2022/23 levels while estimated 13 tCO₂e savings on business miles compared to previous years, which would do little to offset the increase in emissions from electricity.

Consequently, a target is recommended to keep the overall emissions increase no higher than **1.7% over** emissions from 2022/23 levels. 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 emerging Climate Action Plan will also support the development of new longer-term emission reduction targets for future years.

Introduction

East Dunbartonshire Council approved the Evidence and Options stage of the Climate Action Plan in September 2023 and has now agreed a net zero target of 2036 for our direct greenhouse gas emissions (including emissions from our fleet of vehicles and buildings) and energy that we purchased (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 will be included in the draft Climate Action Plan which will be reported to Council in 2024.

A commitment to annual reporting of emissions was introduced in the 2015 Carbon Management Plan, establishing a new 2012/13 baseline 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.

The 2022/23 Carbon Management Report, which was reported to PNCA Committee in November 2023 (report reference PNCA/095/23/RS), outlined how the 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.

This report provides estimates of emissions for the 2023/24 financial year by examining estimated emissions from the major contributors to the Council's carbon footprint.

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

Breakdown by Source

The following diagram (Figure 1) shows the Council's carbon footprint from 2022/23 broken down into its various components.

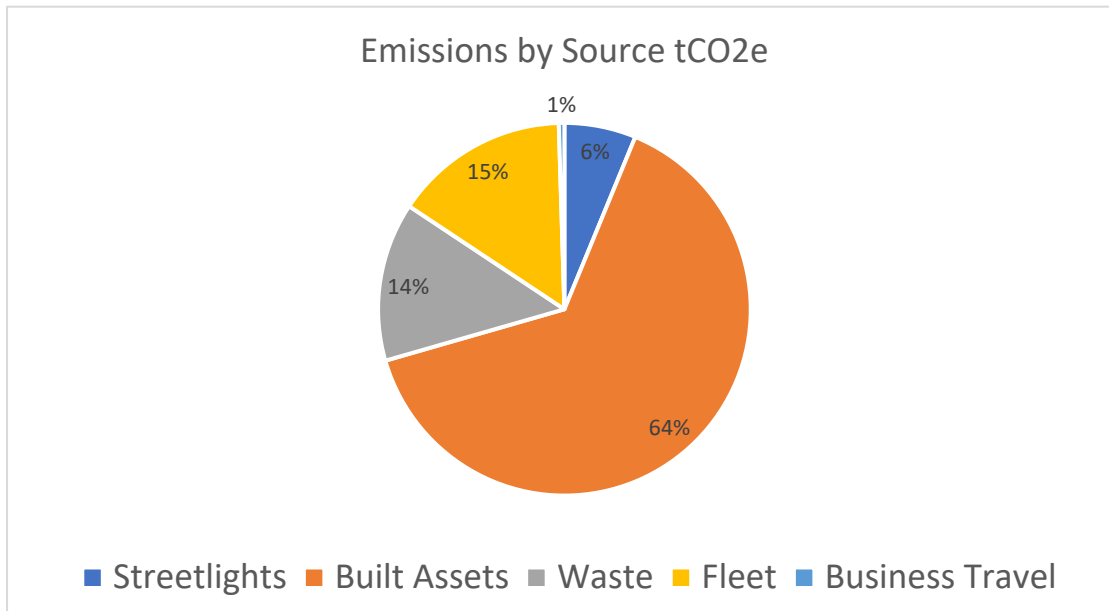


Figure 1: Breakdown of 22/23 carbon footprint by emission source

Estimated emissions on each of the sources shown in Figure 1 is examined to create a realistic target for the 2023/24 financial year.

Built Assets

Energy use in built assets – arising from electricity, gas, oil and biomass consumption – continued to be by far the largest source of the Council's carbon emissions in 2022/23. Carbon emissions related to gas use are the largest aspect of the built assets carbon footprint, accounting for 63% of the total in 2022/23.

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 can change based upon relevant developments such as an increase in the proportion of renewable energy that is used to generate electricity.

The decrease in Council emissions between 2021/22 and 2022/23 were largely due to a combination of a lower emission factor for electricity as a result of on-going decarbonisation of the grid, more efficient boilers being installed in Council buildings and a warmer winter reducing demand for gas to heat buildings. It is important to note that while the new gas boilers reduced emissions in the short-term, they lock in emissions over the lifetime of the heating system and are not conducive to reaching net zero emissions.

For the 2023/24 financial year, the generation emissions factor for grid electricity has increased from 0.19338 kg CO₂e per kWh in 2022/2023. to 0.20707 kg CO₂e per

kWh. The change is due to an unanticipated reduction in energy generated from onshore and offshore wind farms as a result of calmer weather in and around the UK in 2021. Consequently, electricity from natural gas fired power stations increased to meet the shortfall.²

Electricity use and related emissions are a significant part of the built assets' carbon footprint and accounted for 36% of emissions in this area in 2022/23. The change in emission factor would add an estimated **218.62 tCO₂e** to the Council's carbon footprint through electricity usage in 2023/24 (assuming that usage in kwh remained at 2022/23 levels).

Nevertheless, this is a short-term anomaly as a **38% reduction** in the emission-intensity of electricity from the grid is expected in the 2024/25 financial year as a results of accelerating decarbonisation of the electricity grid. This means that the emissions factor is expected to decrease from 0.20707 kg CO₂e per kWh in 2023/24 to 0.1284 kg CO₂e per kWh in 2024/25. Additionally, further decreases are expected in each of the next three financial years³ as a reflection of on-going work to decarbonise the grid.

There are various new developments in East Dunbartonshire that have opened or are set to open in the 2023/24 financial year which have an impact on emissions from that period onwards.

The New Allander Centre opened in early 2023 and will have its first full financial year in operation.⁴ It has a gas-powered combined heat and power plant with gas boilers and while the new building is more efficient than the previous buildings 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, it is anticipated that the new leisure centre will lead to an increase in emissions.

The new Additional Support Needs school at Woodland View School⁵ opened in August 2023 also has gas combined heat and power and gas backed up boilers, replacing Campsie View School in Lenzie and Merkland in Kirkintilloch. While the new building is more efficient than the previous buildings, it is likely these new schools will consume more electricity since there is more technology in the buildings that requires electricity in addition to heat recovery units and air conditioning in the buildings.

At Lennoxtown's 5g pitch,⁶ an extension is being put onto the existing pavilion, and the pavilion will be powered by a new Air Source Heat Pump replacing old electric heating system. However, it is expected to be complete in March / April 2024 so will have limited impact in the 2023/24 financial year.

² See [New UK Grid Emissions Factors 2023 - ITP Energised](#)

³ See [Greenhouse gas reporting: conversion factors 2023 - GOV.UK \(www.gov.uk\)](#)

⁴ See [Technical Notes 2023, Issue 4 - Allander Leisure Centre Opening Date | East Dunbartonshire Council](#)

⁵ See [Additional Support Needs Schools | East Dunbartonshire Council](#)

⁶ See [Construction begins at new Lennoxtown sports facility | East Dunbartonshire Council](#)

A small Council office at Southbank Road has moved from gas to electric which will have a positive effect on emissions reductions. Boiler replacements are also proposed at Castlehill Primary School, Holy Family Primary School and Gartconner Primary school during 2023/24. These are expected to lead to minor short-term reductions in gas use as more efficient heating systems are used. However, these will also lock in new emissions through the lifetime of the boilers which will need to be replaced with clean heating systems before 2038 to comply with the forthcoming Heat in Buildings (Scotland) Act.

An increase in the proportion of staff working from Council offices is expected in the 2023/24 financial year which would further increase electricity use. Collectively, these developments mean that the carbon emissions from Built Assets are likely to be significantly higher than 2022/23 levels.

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 and 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.

It is anticipated that the Heat in Buildings (Scotland) Act will be introduced during 2024/25 and will impose a legal duty for the Council to transition all of its buildings to clean heating systems in advance of the 2038 deadline. This will require the replacement of all gas heating systems with zero direct emissions heating systems by then.

Beyond the 2023/24 financial year, the new Balmuildy Primary School and new Milngavie Nursery are expected to open in 2024/25 and have zero direct emissions heating systems and high energy efficiency standards. The current plan for refurbishments at Milngavie and Bearsden Primary Schools also includes the installation of zero direct emission heating systems. However, it is important to note that a planning decision is still being awaited and a review of the Capital Programme at Council could lead to changes in the delivery dates and scope of future projects.

Fleet

The 2022/23 emissions from the Council's fleet of vehicles increased approximately 7% from 2021/22 and overtook waste as the second largest source of emissions and accounted for 15% of East Dunbartonshire Council's footprint in 2022/23.

Engagement with the Fleet Teams indicates that there is no major changes expected in emissions from the Council's fleet in 2023/24 financial year compared to the previous year.

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. Ways of overcoming these constraints are being assessed through the on-going study.

As a result of the barriers, the number of leased electric vehicles in the Council's fleet fell between 2021/22 (43) and 2022/23 (35) and this contributed to the increase in emissions from the fleet during this period. There are no major changes in fleet emissions expected between the 2022/23 financial year and the 2023/24 financial year.

Waste

Emissions from the Council's landfilling, recycling, combustion, composting and anaerobic digestion of municipal and commercial waste in 2022/23 were 37% lower than 2021/22. Additionally, it is a decrease of almost 45% on the 2019/20 baseline and around 80% on the 2012/13 baseline.

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 tCO_{2e}, to 2,181 tonnes in 2022/23, or 976 tCO_{2e}. 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.

No major changes are expected from last year's emissions now that the proportion of waste going to landfill is below 5% of overall waste processed by the Council.

Street Lighting

In 2022/23, emissions from street & Christmas lighting (collectively referred to as 'street lighting') constituted 910 tCO_{2e}, or 6% of the Council's carbon footprint. Emissions from street lighting have decreased by 92 tCO_{2e}, 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.

Updates on the on-going LED installation project for the 2023/24 financial year are summarised in the table below:

Project Site	Estimated annual kwh reductions
Kilsyth Road Kirkintilloch	12,441.088 KWH ⁷
Phase1 - Teviot, Lendale Lane, Lyne Croft, Mennock, Horndean Bishopbriggs	2345.112 KWH
Dougalston Ave Milngavie	1451.736 KWH
Killermont Road Bearsden	2903.472 KWH
Phase 2 – 2 nd half of Teviot, Yarrow, Herriot Bishopbriggs	2121.768 KWH
Canderrigg, Bowmont Hill Bishopbriggs	1228.392 KWH
Hilton Park, Allander Gardens, Calder Gate Bishopbriggs	1675.08 KWH
Pinelands	446.668 KWH
Queens Court Milngavie	1,414.512 KWH
Total	26027.85 KWH

Estimated emissions saved from annual reductions of 26027.85 Kwh at an emissions factor of 0.20707 kg would be approximately **5.4 tCO₂e**.

However, the estimated emissions savings for these projects will not have occurred for the whole duration of the financial year so the 2023/24 savings are assumed to be significantly lower than the total. However, they will collectively deliver approximately 5.4 tCO₂e in annual emissions savings over the course of their life in addition to cost savings for the Council.

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 so these savings are a very small proportion of overall emissions. Since the greater emissions intensity of electricity will also affect the emissions from street lights, there is not expected to be major net change in the emissions in this area in the 2023/24 financial year.

⁷ burning hours are typically 4136 hours per annum so multiply the wattage by this and divide by 1000 for the KWH

Business Mileage

Emissions from the Council's business travel activities in 2022/23 constituted 71 tCO₂e or 0.5%, of the total footprint.

2023/24 business mileage figure was 152,733 miles in late November 2023 which is significantly smaller relative to the proportion of the year than the total mileage for 2022/23 of 257,856, which implies that emission reductions can be anticipated from vehicle mileage.

The emissions from the 152,733 miles would be an estimated 42 tCO₂e. When accounting for December 2023 to March 2024 and less efficient winter mileage, the total is likely to be around 58 tCO₂e. This is an estimated 13 tCO₂e savings compared to the previous year.

Overall

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.

Collectively the additional emissions from an increased emissions factor for electricity are expected to add an estimated **218.62 tCO₂e** to the Council's carbon footprint in 2023/24.

While the total emissions increase from all other development cannot be quantified, it is expected that additional emissions should be anticipated from the New Allander Centre, Woodland View School and additional demand for electricity from higher office occupancy rates by staff.

There are also actions that are likely to reduce emissions in the short term such as more efficient boilers at Castlehill Primary School, Holy Family Primary School and Gartconner Primary school and one small office moving from gas to electricity.

The on-going LED installation programme combined with lower staff miles are also likely to lead to reduced emissions in these areas.

An appropriate target for the Council's carbon footprint would be to keep levels below **14,900 tCO₂e**, before the significant emissions reductions expected in the 2024/25 financial year are realised.

This would be **1.7% higher** than emissions in 2023/24, however, this level of emissions 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.

Future Trends

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The increase in emission factor for electricity from 0.19338 kg CO₂e per kWh in 2022/23 to 0.20707 kg CO₂e per kWh in 2023/24 appears to be a short-term anomaly as a **38% reduction** in the emission intensity of electricity from the grid is expected between 2023/24 and 2024/25 while further decreases are expected in each of the three financial years after this.

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), the Heat in Buildings Bill, which the Scottish Government is currently consulting on, and the requirement for public bodies to demonstrate alignment of spending plans and use of resources to contribute to emissions reduction.

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, 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 carbon solutions.

Global investment in low emissions vehicles is projected to increase considerably in the coming years with BloombergNEF'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 2023.⁸

A record of over 3 million heat pumps were sold in Europe in 2022⁹ 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 2022.¹⁰ Renewable energy is

⁸ See [| BloombergNEF \(bnef.com\)](https://www.bnef.com)

⁹ See [Guest post: How the energy crisis is boosting heat pumps in Europe - Carbon Brief](#)

¹⁰ See [Renewable Energy Investment Hits Record-Breaking \\$358 Billion in 1H 2023 | BloombergNEF \(bnef.com\)](#)

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.¹¹ 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 support decarbonisation.¹²

The indicative costs of decarbonisation and potential ways of meeting these costs will be assessed through the Climate Action Plan and its corresponding work-streams.

¹¹ See [The electricity-to-gas price ratio explained | Nesta](#)

¹² See [Urgency needed to create capacity in Scotland's electricity infrastructure | Scottish Parliament Website](#)

Conclusion

The Council's anticipated carbon emissions for 2023/24 arises from the Council's use of electricity, natural gas, oil, biomass and transport (fleet and business travel), and from waste management activities – is likely to be marginally higher than the levels from 2022/23.

This will be driven by an increase in emissions from built assets in particular, with fleet, waste and streetlighting all expected to be broadly similar while business mileage is expected to decrease from 2022/23 levels.

One of the main drivers for emissions reduction between 2021/22 and 2022/23 was the on-going decarbonisation of the grid and the consequent reduction in the emission factor for electricity. However, a short-term reversal to this trend is expected for the 2023/24 financial year due to an unanticipated reduction in energy generated from onshore and offshore wind farms and electricity from natural gas fired power stations increasing to meet the shortfall.

An appropriate target for the Council's carbon footprint would be to keep levels below **14,900 tCO₂e**, before the significant emissions reductions expected in the 2024/25 financial year are realised.

This would be **1.7% higher** than emissions in 2023/24, however, this level of emissions 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.

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