

**CARBON MANAGEMENT PLAN
ANNUAL REPORT 2021-22**

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>Waste</i>	8
<i>Fleet</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 introducing new targets in relation to each baseline. By the end of 2022/23, the Council aims to have reduced its carbon footprint by 59% in relation to the existing baseline year, and 27% in relation to the new one.

The Council's carbon emissions during 2021/22 – 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 16,588 tonnes. This figure is 1,018 tonnes, or 7%, higher than the emissions recorded in 2020/21 and represents a 15,832 tonne, or 49%, decrease in emissions compared to the baseline.

The 7% increase observed since last year is largely due to a rise in energy consumption in buildings and is also contributed to by a rise in fleet fuel consumption, as services begin to return to normal following the first year of the pandemic. The overall impact of these increases is mitigated by decreases in emissions related to waste management and street lighting, and by a drop in the emission factor associated with electricity; recent measures undertaken in relation to built assets, waste, fleet and street lighting have also had a beneficial effect.

Analysis suggests that while emissions are likely to decrease again by the end of 22/23, an unanticipated delay in electricity grid decarbonisation means that the emissions reductions that were expected to be achieved during 22/23 are now unlikely to be delivered until 23/24. The 22/23 target is therefore revised downwards to 51% / 13%.

More significant emission reductions are expected to be delivered beyond 22/23, following feasibility work currently being undertaken in relation to the four 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 and zero direct emissions from '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

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 of time 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 emission reductions until the end of 22/23. 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.

A commitment to annual reporting was introduced in the 2015 Carbon Management Plan; this is the seventh such report. This report examines progress towards the 27/59% target by looking at each emission source in turn. Future trends are also considered.

The Carbon Footprint Forecast and Projects Tool, a spreadsheet tool developed by Resource Efficient Scotland, the Sustainable Scotland Network and partners, has been used to calculate these carbon emissions and estimates.

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 21/22 was 16,588 tonnes of carbon dioxide equivalent ('tCO₂e'). This is 1,018 tonnes, or 7%, higher than last year's footprint and 15,832 tCO₂e lower than the 12/13 baseline of 32,420 tCO₂e, representing a 49% decrease. This represents a slight decline in progress towards the target of 59% reduction compared to the 12/13 baseline and 27% reduction compared to the 19/20 baseline. However, as set out in the later sections of this report, these targets will now be reviewed.

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>

As explained in the Annual Carbon Management Report 20-21, the decrease in emissions recorded for that year were estimated to be due to the impact of the Covid pandemic. Since then, there has been a gradual return to normal service delivery, including an increase in building occupancy, with associated carbon emissions. While the emissions recorded for 21-22 are therefore higher than in 20-21, they still represent a decrease compared to the baselines and are more usefully considered in this context than in relation to 20-21, where Covid exerted a considerable distortion.

Breakdown by Source

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

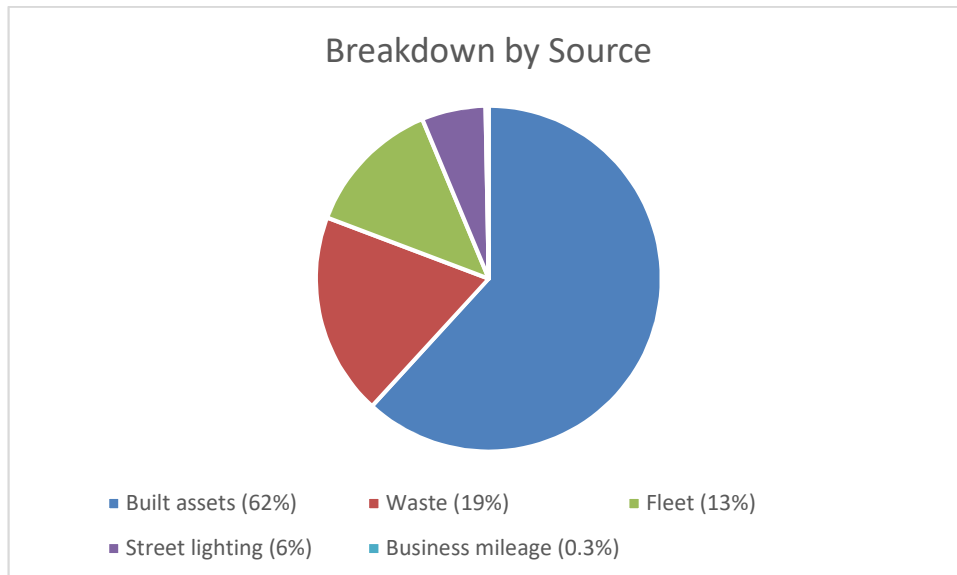


Figure 1: Breakdown of 20/21 carbon footprint by emission source

Each of the sources shown in

[Figure](#) 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 the largest source of the Council's carbon emissions, constituting 10,220 tCO₂e, or 62%, of this year's carbon footprint.

Emissions from energy use in built assets have increased by 901 tCO₂e, or 10%, compared to the reported figure for 20/21 but, more importantly, have decreased by 6,000 tCO₂e, or 37%, since the 2012/13 baseline year and by 635 tCO₂e, or 6%, since the 2019/20 baseline year. The rise in emissions since last year reflects a rise in all types of energy use and related emissions, with electricity use being the most significant element.

Biomass and oil consumption – and related emissions - both rose significantly in relative terms; the consumption of each fuel type rose by 11% and 124% respectively, and respective emissions rose by 8% and 124%. The relatively large consumption during 21/22 is understood to be partly due to a rise in building occupancy as service delivery began to return to normal and partly due to the presence of two additional temporary oil boilers operating at Meadowburn and St

Helen's Primary Schools. The overall contribution of biomass and oil to the total carbon footprint for built assets remains small at 3%.

Electricity use and related emissions are a larger part of the built assets carbon footprint; 3,730 tCO₂e were emitted as a result of electricity consumption in buildings in 21/22, accounting for 37% of the total built assets carbon footprint. 3,730 tCO₂e is 534 tCO₂e higher than 20/21, equating to a 17% increase. Particularly relevant in this context is the increase in electricity consumption in leisure centres, which are among the highest energy-consuming buildings within the Council's estate; during the reporting year, electricity use at Allander Leisure Centre, Kirkintilloch Leisure Centre and The Leisuredrome rose by between 47% and 84% as service delivery began to return to normal following the first year of the pandemic, resulting in a combined rise in electricity-related emissions of 180 tCO₂e, which is a third of the aforementioned 534 tCO₂e rise recorded across the whole built estate. Action taken during 21/22 to replace pool hall lamp and bulkhead fittings with LEDs at the Leisuredrome helped to reduce consumption, and the emission factor² for grid electricity reduced in 21/22 by approximately 9%, reflecting the ongoing decarbonisation of the grid; this has resulted in the increase in consumption described above giving rise to less carbon emissions than it would have during the previous year.

Carbon emissions related to gas use are the most significant aspect of the built assets carbon footprint, accounting for 6,216 tCO₂e, which is 61% of the total. This represents a 5% increase in emissions from gas use between 20/21 and 21/22, totalling 286 tCO₂e of additional emissions. Leisure centres are again particularly significant in this context; while a failure of the automatic meter reading system at Allander Leisure Centre meant that recorded gas use was lower than it would have been otherwise, significant rises in gas use were recorded at Kirkintilloch Leisure Centre and The Leisuredrome. The emission factor for gas only changed very slightly – a 0.4% drop – and has not therefore had a significant effect on the carbon emissions associated with the recorded consumption. Certain measures undertaken recently have reduced gas consumption: 21/22 was the first full year following the installation of humidity controls at Lillie Art Gallery, which is estimated to have reduced gas demand in the building, and replacement gas boilers were installed at 5 primary schools and 1 care home during 21/22 (with the installations completed in September, ahead of their season of peak use), with the newer, more efficient boilers estimated to deliver an approximate 20% efficiency in gas consumption.

It is important to note that the Council's investment in renewable energy over recent years has brought buildings-related emissions to a significantly lower level than would have otherwise been recorded.

- 17 Council assets were recorded as having biomass boilers in 21/22, collectively generating an estimated 7,938,810 kWh of heat; without these

² As explained in previous reports, 'emission factors' are UK Government estimates of the rate at which a given activity creates carbon emissions

installations, gas-related emissions for 21/22 would have been 1,454 tCO₂e higher.

- 12 Council assets were recorded as having solar PV installations in 21/22, collectively generating an estimated 131,683 kWh of electricity, meaning that electricity-related emissions are 30 tCO₂e lower than they would otherwise have been.
- The Council's first four air source heat pumps, which became operational during 20/21, delivered their first full year of carbon savings during 21/22. These installations are not sub-metered, meaning that their energy consumption and corresponding carbon savings compared to conventional heat sources cannot be calculated; however, it can confidently be stated that air source heat pumps deliver significant carbon reductions compared to gas-fired heating.

While interventions such as those above help to reduce the impact of fuel consumption in buildings, and while further interventions are planned in the near future (as described in the 'Future Carbon Emissions' section), ambitious measures will be required in order to prepare the Council for net zero and to enable the Council to halt gas consumption in line with zero direct emissions requirements.

To indicate the extent of costs associated with use of energy in built assets during 21/22, it is estimated that £2.97 million was spent on electricity and gas alone (unit costs and Climate Change Levy costs only); this is an increase on the spend estimated for 20/21, reflecting both a rise in electricity and gas use and a rise in unit costs, of 17% and 8% respectively. It should be noted that the aforementioned renewables installations partially offset these costs by generating income via the RHI scheme; the income generated in 21/22 by biomass alone was £325,737.86. (Solar PV installations had previously generated income via the Feed-In Tariff scheme, but these payments have now ceased). However, it should also be noted that further increases in the cost of gas and electricity are expected and that these will impact significantly on Council expenditure.

Waste

Emissions from the Council's landfilling, recycling, combustion, composting and anaerobic digestion of municipal and commercial waste are the second-largest source of the Council's carbon emissions, constituting 3,227 tCO₂e, or 19%, of this year's total footprint.

3,227 tCO₂e represents a 5% decrease in emissions compared to last year and, more importantly, a 67% reduction in relation to the 2012/13 baseline and a 12% reduction in relation to the 2019/20 baseline. The actual tonnage of materials being sent to landfill, recycling, combustion, composting and anaerobic digestion actually increased slightly – by 1% - compared to last year. Furthermore, the emission factors for landfilling, recycling and incineration – the waste management routes that accommodate the majority of the material tonnage – either rose slightly or remained constant, and are not therefore responsible for the recorded decrease in emissions. Instead, the reduction in emissions reflects a change in the proportions of materials in each category, with less going to landfill and more going to the relatively low-carbon waste management route of recycling – the tonnage of waste being recycled

increased by 8%, while the tonnage of waste being landfilled and incinerated reduced by 7.5% and 8% respectively. During the reporting year, waste management services experienced fluctuations in service usage as a result of the Covid pandemic. Kerbside recycling services were reinstated following a short period of suspension and the Council's Household Waste Recycling Centre was re-opened to a high demand. However, householders predominantly continued to work from home, generating additional waste across all streams., The costs relating to landfilling, recycling/diversion and composting of municipal and commercial waste are complex; however, it is estimated that over £486,800 was spent in 21/22 on landfill tax alone. The cost implications of landfilled waste are expected to become more significant in 2025, when the Scottish ban on landfilling of biodegradable waste comes into force.

Fleet

In 21/22, emissions from the Council's fleet of vehicles constituted 2,082 tCO₂e, or 13%, of this year's footprint.

Emissions from the Council's fleet have increased by 334 tCO₂e, or 19%, since 20/21 and, more importantly, have decreased by 504.5 tCO₂e, or 20%, since the 2012/13 baseline year and 257 tCO₂e, or 11%, since the 2019/20 baseline year.

The emission factor for diesel, which constitutes the majority of fleet mileage, dropped very slightly during 20/21, meaning that the reported rise of 19% reflects an actual rise in fuel consumption of just over 19%. While 19% would normally be a significant rise, it is not unexpected in the current context, given that service delivery had reduced dramatically in the previous year due to Covid. It should also be noted that the presence of electric vehicles in the Council's fleet helps to reduce fleet-related emissions to a lower level than would otherwise have been recorded; at the end of 21/22, there were a total of 43 electric vehicles. Ongoing fleet replacement activity also helps to reduce emissions by replacing older vehicles with more efficient vehicles; in 21/22, significant fleet replacement activity occurred, including upgrades of gritters, vans and 12 buses from Euro 5-rated diesel engines to Euro 6 equivalents.

While interventions such as those outlined above help to reduce the impact of fleet-related fuel consumption, and while further interventions are planned in the near future (as described in the 'Future Carbon Emissions' section), fleet-related emissions are classed as direct emissions and further, ambitious measures will be required in order to enable the Council meet its zero direct emissions requirements.

The cost associated with fleet emissions in 21/22 (comprising fuel bills) is £870,881.31. This is a 52% increase on the fleet-related spend reported for 20/21 and is due not only to a rise in fuel consumption but also to an increase in the cost per unit of fuel; the cost of a litre of diesel rose between 20/21 and 21/22 by approximately a third.

Street Lighting

In 21/22, 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 97 tCO₂e, or 9%, since 20/21; more importantly, they have decreased by 2,405.8 tCO₂e, or 71%, since the 2012/13 baseline year and by 201 tCO₂e, or 17%, since the 2019/20 baseline year. The 9% drop in carbon emissions since 20/21 is accounted for by the ongoing decarbonisation of the grid; as reported earlier, the emission factor for electricity dropped by 9%. Actual electricity consumption of street lighting has changed very little, falling by only 0.09% since 20/21. The temporary halting, during 20/21, of the small-scale LED lighting conversion programme means that the year's worth of electricity consumption savings that would usually be recorded following the previous year's replacement work was absent in 21/22. However, the programme did resume during 21/22 – 36 lights were replaced – which will have caused emissions to be slightly lower than they would otherwise have been. Overall, the number of lamps that had been converted to LED by the end of 21/22 was 13,519 of a total stock of 19,463, representing 69%; data from the Council's meter administrator indicates that 69% is significantly higher than the national average.

The costs associated with street lighting energy consumption in 21/22 are £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 21/22 constitute 56 tCO₂e, or 0.3%, of the total footprint.

Emissions from business mileage have increased by 21 tCO₂e, or 62%, since 20/21 and, more importantly, have decreased by 222 tCO₂e, or 80%, since the 2012/13 baseline year and 20 tCO₂e, or 26%, since the 2019/20 baseline year.

The emission factor applied to this emission source has not changed since last year, meaning that the rise in emissions is purely 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 22/22 (comprising costs paid to staff) is £90,088.65.

Supporting Activities

As detailed in the Carbon Management Plan, in addition to activities with direct carbon impacts, carbon management is also influenced by strategic and 'soft' measures. Key developments in 21/22, 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 21/22, this occurred formally via the new CAP LHEE Working Group and Net Zero Focus Group, and via existing connections formed via 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 will sit alongside the CAP
- Staff awareness initiatives linked to COP26 and Earth Hour

Estimated Future Trends

Future Carbon Emissions

22/23 Estimate

The target of 59% / 27% emissions reduction that was set during 20/21 for the end of 22/23 was based on an analysis that was undertaken using information that was available at the time. At the time, the predicted emission factor for grid electricity in 22/23 was 0.1273, which represented a 50% drop from the emission factor for 20/21; this was a significant aspect of the estimated feasibility of achieving a 50% / 27% emission reduction. Now, however, the predicted emission factor for grid electricity in 22/23 has changed to 0.2111, which represents a much smaller (17%) reduction; the 50% reduction is still anticipated, but not until 23/24. This development, which is outwith the Council's control, means that electricity-related emissions, which constitute a significant proportion of the Council's footprint, are likely to be significantly higher than was originally predicted.

Analysis has been carried out on the likely emissions arising from each source during 22/23, taking account of the likely changes occurring in a 'business as usual' scenario and also taking account of carbon savings likely to be generated by recent or planned projects for which carbon-saving impacts can be quantified. Based on this analysis, it is expected that the carbon footprint for 22/23 will be approximately 15,838 tCO₂e – i.e. 51% - lower than the 12/13 baseline and 2,419 tCO₂e - i.e. 13% - lower than the 19/20 baseline. This would represent a shortfall in emissions reductions compared with the targets set in the Interim Carbon Management Plan for 22/23 which were 59% (compared to the 2012/13 baseline) and 27% (compared to the 2019/20 baseline).

It should be noted that additional carbon savings may be experienced before the end of 22/23 as a result of 2 primary school gas boiler replacements, where air source heat pumps may be installed as a primary heat source with gas boilers acting as back-ups; assessment work led by Assets and Facilities was still underway at the time of this report being finalised. However, it is not estimated that these savings would be large enough for the 59% / 27% targets to be met.

Beyond 22/23

While short-term emission reductions are anticipated to be 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 2023. These measures include feasibility

work on further decarbonisation in schools, leisure centres, street lighting and fleet; they also include the Cloud Strategy, which involves moving applications and databases to cloud storage, entailing substantial reductions in power consumption. In addition to these Early Actions Measures, work has been programmed to provide enhanced insulation in 16 schools via a roof replacement programme, and studies are being undertaken to assess the feasibility of introducing air source heat pumps as a primary heat source in a further 8 schools by the end of 23/24. An ambitious approach is also being taken in relation to waste management; in addition to the Council's ongoing proactive approach via the implementation of the Clyde Valley Residual Waste contract, a waste composition analysis is planned for November 2022, which is expected to identify priority areas for future waste reduction measures.

When finalised, the CAP will build on these by identifying further opportunities for corporate emissions reduction. Opportunities assessment work is currently underway and will inform the creation of pathways for achieving net zero emissions across the whole corporate footprint, and zero direct corporate emissions in relation to 'heat and fleet'. This work will be guided by the requirements of new legislative and national policy requirements including the Climate Change (Emissions Reduction Targets) (Scotland) Act 2019, the Net Zero Public Sector Buildings Standard, the Heat in Buildings Strategy and the requirement for public bodies to demonstrate alignment of spending plans and use of resources to contribute to emissions reduction, which now forms a part of the Council's statutory climate change report.

Future Costs

It continues to be difficult to definitively project future carbon-related financial costs, particularly in relation to gas and electricity where prices have continued to rise in the context of the energy crisis. However, because this report is being produced approximately halfway through 22/23, it is already known that average unit prices for gas and electricity have increased sharply since the end of 21/22, far beyond the standard increases that would normally be expected; the average unit price of gas has trebled and the average unit price of electricity has increased by approximately a third, meaning that continued consumption of these fuels in amounts similar to those reported for 21/22 would have considerable higher costs attached. It can also be stated that the cost of renewable energy equipment is progressively falling and that, if this trend continues and while the cost of fossil fuel-based energy continues to rise, the affordability of installing low and zero carbon technologies will improve, reducing the capital cost of transition.

Through the development of the CAP, the cost of the rapid pace of transition required to meet legislative and policy requirements is currently being calculated; the CAP will also identify means of meeting these costs, including the range of measures being introduced by the Scottish and UK Governments to support the costs inherent in actions to reduce our future carbon footprint.

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.

Conclusion

Compared to the 2012/13 and 2019/20 baselines, the carbon emissions recorded for 21/22 represent a significant reduction. They do, in the case of built assets and fleet, also represent a slight rise compared to 20/21, but 20/21 was an atypical year due to Covid and has limited use as a basis for comparison. A short-term rise in emissions during 21/22 was expected when the 22/23 carbon reduction targets were set, and it was anticipated that this small and temporary decline in progress would be reversed by the ongoing decarbonisation of the electricity grid. However, it is now known that there will be a delay in grid decarbonisation and that the anticipated opportunity for these targets to be achieved is therefore unlikely to be realised.

In light of the above, it is considered appropriate to revise the 22/23 target down from 59% / 27% to a figure of 51% / 13%.

While a reduced 22/23 target represents slower-than-expected progress towards net zero and zero direct emissions, it is an appropriate and necessary response to a development outwith the Council's control and should be viewed in the context of previous progress made by the Council at a faster rate than expected. The previous Carbon Management Plan anticipated the achievement of a 20% carbon reduction between 2012/13 and 2019/20. However, the reduction achieved during this period was more than double this at 44% and, despite a slight increase in the past year, the momentum has been maintained with a 49% decrease in 21/22.

The Early Actions agreed at the outset of the CAP development process present important opportunities to accelerate action in 23/24, and the emerging CAP and LHEES will build on these by 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 a date to be agreed through the CAP process.