Appendix 1

Annual Greenhouse Gas Emissions Report, 2023/24

1.0 Introduction

In October 2019 East Sussex County Council declared a Climate Emergency. In 2020 it adopted a Climate Emergency Plan, which was updated in 2023. The approach taken in the Plan is that, to make its fair contribution to reducing county-wide emissions, the County Council will aim to stay within a science-based budget. This budget is based on a recognised methodology developed by the UK's Tyndall Centre for Climate Change Research for calculating carbon budgets by local authority area. The Tyndall model, based on current scientific understanding, shows that to stay within a budget based on a rise of no more than 1.5 degrees centigrade above pre-industrial levels (as agreed in the UN Paris Agreement on Climate Change) emissions from the county of East Sussex need to be cut in half every 5 years. Therefore, the Council has committed to also cutting its corporate emissions in half every 5 years.

This report gives an annual summary of emissions of greenhouse gases (GHG) from Council operations, measured as carbon dioxide equivalent (CO_2e) emissions for the financial year 2023/24, compared with emissions from the baseline year of 2019/20. The report follows guidance from the Department of Food, Environment and Rural Affairs (DEFRA) on how we should measure and report on these emissions.

The report covers:

- **Scope 1 emissions:** from fossil fuels used for heating schools and corporate buildings, together with the Council's vehicles.
- **Scope 2 emissions:** from electricity used in building and for street lighting.
- **Scope 3 emissions:** arise from all other activities of the Council and include business travel, water usage, waste, procurement and staff commuting. This is by far the largest part of our total emissions, as is typical for a local authority, as most of the Council's revenue and capital budgets are used to procure goods, services and works from third parties. Our Scope 3 emissions mostly comprise the Scope 1 and 2 emissions of other organisations (e.g. the energy that contractors and suppliers use to deliver services on behalf of the County Council).

Control v Influence: The County Council has direct control over Scope 1 & 2 emissions, arising from our own operations, and can influence (but not directly control) Scope 3 emissions.

2.0 CO_2e Emissions

2.1 Scope 1 & 2 Emissions

Figure 1 summarises the Council's estimated scope 1, 2 and 3 carbon emissions in 2023/24. We have calculated Scope 1 & 2 emissions based on robust consumption data. These emissions are from the operation of our buildings and vehicle fleet, and so are under our direct control. Details as to how these emissions have been calculated are summarised in table 1.

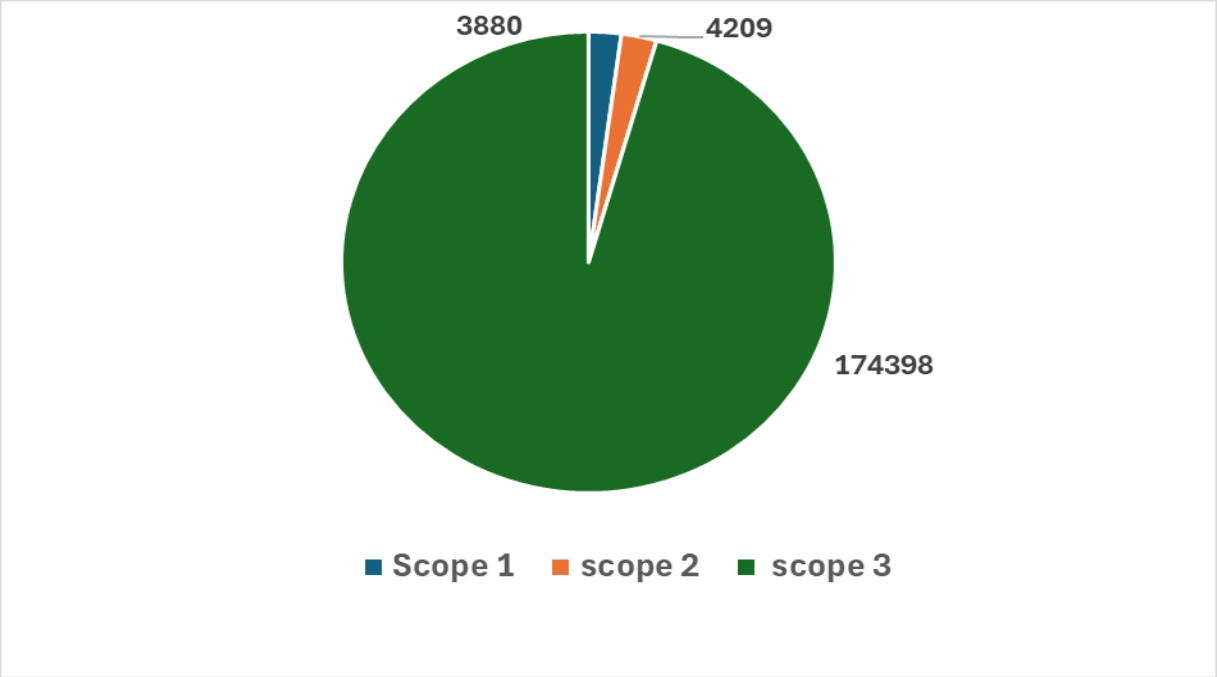

Figure 1: Scope 1, 2 & 3 Emissions Breakdown (tCO_2e 2023/24)

2.2 Scope 3 Emissions

Prior to 2020/21, only Scope 3 emissions from Business Travel and Electricity Transmission & Distribution were reported. From 2020/21 additional Scope 3 emissions have been included, notably supply chain and staff commuting emission data.

Scope 3 emissions have been calculated using a mixture of robust measured data, where this is available (e.g. staff mileage claims, tonnes of waste), and estimates, where robust data does not exist or would be too resource intensive to gather (e.g. from the many smaller companies in our procurement supply chain).

The vast majority of our carbon emissions come from the goods, works or services that we procure from third parties to deliver the Council's statutory functions. Figure 2 shows the estimated emissions by different sectors in the Council's supply chain.

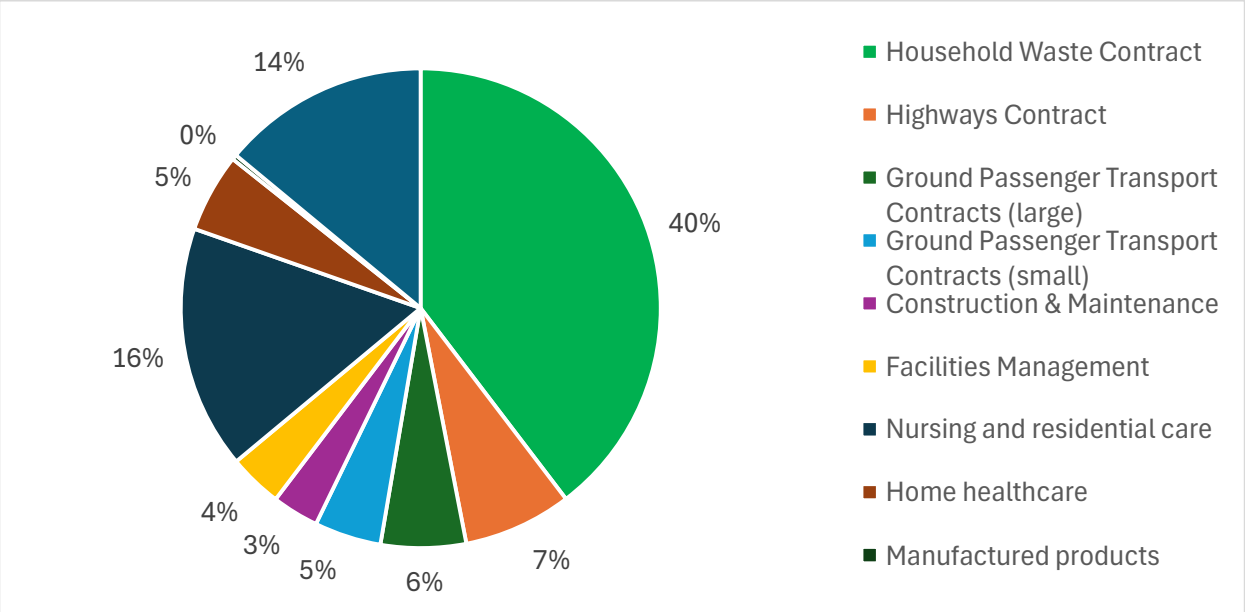

Figure 2. The Council's scope 3 procurement CO2e emissions by sector in 2023/24.

Table 1. Break down of ESCC's scope 1 – 3 carbon emissions.

Scopes	t CO2e	Explanation
Scope 1		
Gas Consumption	3,349	All natural gas used in ESCC buildings or those which we occupy to which ESCC is the counter party to the energy bill, including schools, properties closed and sold in 2020-21 and our portion of shared use.
Gas Oil, Burning Oil and Propane Consumption	365	All gas oil, burning oil, propane and biomass used in ESCC buildings or those which we occupy to which ESCC is the counter party to the energy bill, including schools, properties closed and sold in 2020-21 and our portion of shared use.
Owned Transport	165	All core fleet owned and operated by ESCC.
Process Emissions	n/a	Excluded as not applicable to ESCC activities.
Fugitive Emissions	n/a	Excluded due to cost of data collection.
Total Scope 1	**3,880**	
Scope 2		
Purchased Electricity	4,209	All purchased electricity used in ESCC buildings or those which we occupy to which ESCC is the counter party to the energy bill, including schools, properties closed and sold in 2019-20 and our portion of shared use. Including street lighting and traffic signals.
Exported electricity	-24	Electricity generated by ESCC solar PV assets and exported to the national grid
Total Scope 2	**4,185**	
Scope 3		
Household Waste Contract	67,394	Emissions reported by suppliers based on contract activity for ESCC
Nursing and residential care	27,906	Emissions calculated using spend based emissions factors
Other	23,772	Emissions calculated using spend based emissions factors
Highways Contract	12,453	Emissions reported by suppliers based on contract activity for ESCC
Ground Passenger Transport (large)	9,757	Emissions calculated using a mix of spend based emissions factors & the overall emissions from supplier organisations
Home healthcare	9,007	Emissions calculated using spend based emissions factors
Ground Passenger Transport (small)	7,655	Emissions calculated using spend based emissions factors
Facilities Management	6,180	Emissions mostly calculated from the overall emissions of supplier organisations
Construction & Maintenance	5,332	Emissions calculated using spend based emissions factors
Employee Commuting	2,188	Based on date on travel mode, days in the office, distance from home to work and days worked per year, taken from the 2022 ESCC staff climate change survey
Business Travel	990	All mileage claimed in private or leased vehicles, but excludes public transport and taxis, as below.
Employees Working from Home	801	Based on data on number of days worked in the office from the 2022 ESCC staff climate change survey and a UK Government emission factor for working from home. Note that the majority of emissions are related to home heating, with office equipment emissions an order of magnitude less
Manufactured products	586	Emissions estimated via ESCC & SCC model
Electricity Transmission and Distribution	259	Transmission and distribution loss associated with all purchased electricity.
Waste Disposal	61	Waste tonnages for corporate buildings and schools.
Water/ Sewage	57	Measured m3 water use in ESCC buildings.
Total Scope 3	**174,398**	
GRAND TOTAL	**182,463**	

In common with many other local authorities, we are continually improving the quality of the carbon emission data from our supply chain. Figure 3 illustrates the three-stepped approach that we are taking to improving data quality, namely moving from estimating emissions, based on spend with suppliers, through to requiring suppliers to report directly on the emissions that occur as a result of what they deliver under contract to the Council.

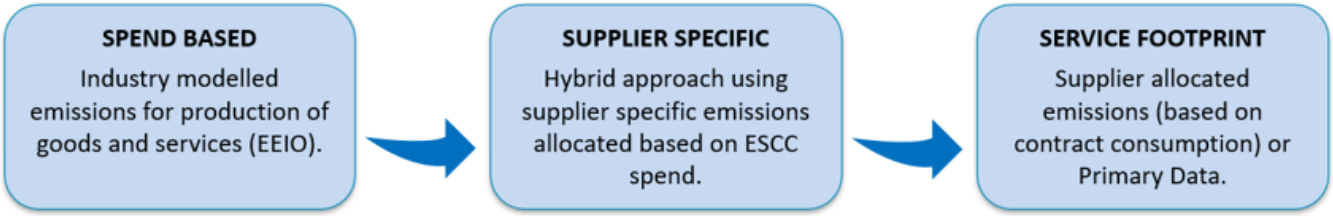

Figure 3. Stepped approach to increasingly accurate data for carbon emissions from procurement.

We significantly increased our engagement with major suppliers during 2023/24 and have gathered much more accurate carbon emissions data from some of them. Table 2 sets out how much of our procurement is being measured under each of the three different steps shown in figure 3. This highlights that about 45% of emissions from procurement in 2023/24 were reported much more accurately, which accounted for over half of our total procurement spend. Table 2 also shows a 37% reduction in carbon emissions between 2022/23 and 2023/24. This was largely because of the much greater accuracy of some of the data being collected. The remainder of our Scope 3 procurement emission figures should be regarded as providing an indication of scale, rather than a robustly accurate measure of carbon emissions. We will continue to work on improving the quality of this data.

Table 2. Scope 3 procurement data in 2022/23 and 2023/24.

SECTOR	2022/23 t CO2e	2023/24 t CO2e	% change	Spend Report [1]	Supplier Report [2]	Service Report [3]
Household Waste Contract	81,252	67,394	**-17%**	0%	4%	96%
Nursing and residential care	41,229	27,906	**-32%**	96%	4%	0%
Highways Contract	7,597	12,453	**64%** [4]	0%	0%	100%
Ground Passenger Transport Contracts (large)	45,813	9,757	**-79%**	52%	48%	0%
Home healthcare	6,710	9,007	**34%** [5]	98%	2%	0%
Ground Passenger Transport Contracts (small)	32,931	7,655	**-77%**	100%	0%	0%
Facilities Management	9,195	6,180	**-33%**	15%	85%	0%
Construction & Maintenance	5,136	5,332	**4%**	99%	1%	0%
Manufactured products	7,418	586	**-92%**	77%	23%	0%
Other	23,528	23,772	**1%**	99%	1%	0%
Total	**260,809**	**170,043**	**-35%**	**39%**	**16%**	**45%**
Intensity per £1,000 of spend	**0.56**	**0.35**				

Notes:
1. Spend Report = emissions calculated using spend based emissions factors (EEIOs).
2. Supplier Report = emissions calculated by suppliers directly reporting overall organisation emissions.
3. Service Report = emissions reported by suppliers based on contract activity for ESCC.
4. Highways Contract: this increase is due to the new contractor (Balfour Beatty Living Places) reporting a more comprehensive set of emission types from its contract activities than the previous contractor.
5. Home Healthcare: a few larger contracts have been reclassified and added to this sector.

Note that our carbon budget and target currently cover our Scope 1 & 2 emissions, but not our Scope 3 emissions, because of the lack of accuracy with most scope 3 procurement data. This may change in the next corporate Climate Emergency Plan, as the accuracy of scope 3 procurement data continues to improve.

2.3 Performance Against Target

Scope 1 & 2 CO_2e emissions: Figure 4 shows annual progress against the target for Scope 1 & 2 emissions during the 5-year carbon budget covering 2020-25, measured against the baseline year of 2019/20. The units are tonnes of carbon dioxide equivalent (tCO_2e). the main points to note are that:

1) Carbon emissions have consistently fallen year on year since the baseline year.

2) In 2020/21 the annual reduction target was marginally exceeded, largely due to a combination of Covid lockdowns, which saw a significant reduction in energy use for heating buildings and business travel, the continued decarbonisation of the national electricity grid, carbon reduction measures and changes to the estate.

3) In 2021/22 the annual reduction target was missed, mainly because of a rebound in building usage and business travel post Covid and a colder winter than average.

4) In 2022/23 emissions were further reduced by 15% (1,500 tCO_2). This was because of the continued decarbonisation of the national electricity grid, a mild winter, carbon reduction measures and changes to the estate. Covid guidance on keeping windows open to maintain ventilation will have contributed to the annual reduction target being missed by 4% (318 tCO_2).

5) In 2023/24 the annual emissions reduction was 5% (457 tCO_2). The main contributing factors to the reduction were estate changes, efficiency measures and warmer weather than in 2022/23. 25 carbon reduction capital schemes were delivered, against a target of 23. Further details are in section 2.7.

6) Overall, the cumulative reduction in the Council's emissions between 2019/20 and 2023/24 has been 35%, against a cumulative target of 43%.

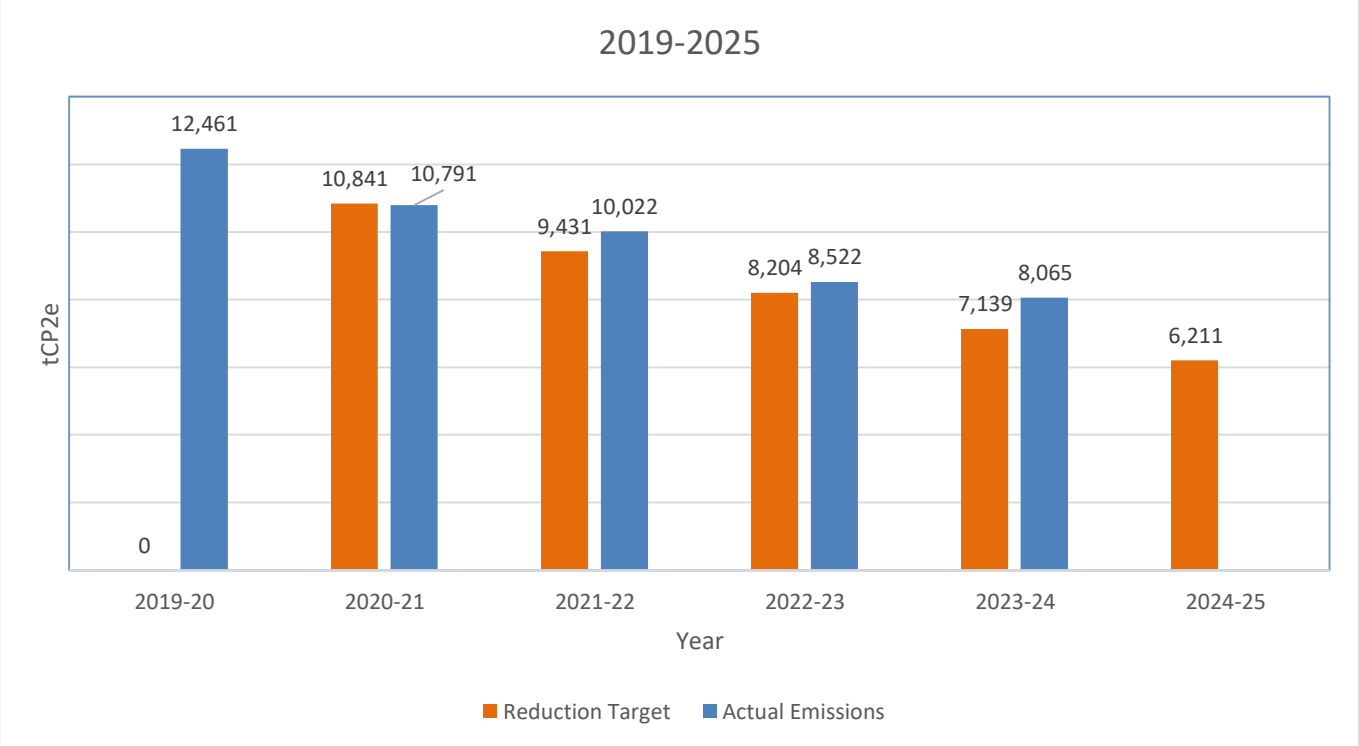

Figure 4: Carbon Emission Target v Actual 5-Year Carbon Budget 2021-2025 compared with the 2020 Baseline.

Table 3 shows the same data as in figure 4 and shows the actual percentage reduction each year and the cumulative reduction against the baseline year of 2019/20.

Table 3. Target and actual carbon emissions and percentages between 2019/20 and 2023/24.

Year	Target footprint (CO_2e)	Actual emissions (CO_2e)	Actual annual reduction (%) [1]	Cumulative target (%)	Actual Cumulative reduction (%) [2]
2019/20	Baseline year	12,461	n/a	n/a	n/a
2020/21	10,841	10,791	-13%	-13%	n/a
2021/22	9,432	10,023	-7%	-24%	-20%
2022/23	8,206	8,522	-15%	-34%	-32%
2023/24	7,139	8,065	-5%	-43%	-35%
2024-25	6,211			-50%	

Notes:
1 – the figures are the reduction against the previous year's actual total emissions.
2- the figures are the cumulative reduction against the baseline year and so are not the total % reduction of the figures in the 'actual annual reduction' column.

In 2023/24:

- Buildings accounted for 81% of Scope 1 and 2 emissions, with schools making up the largest share (figure 5). Corporate buildings include all non-school buildings, such as office buildings, libraries and residential homes. School buildings exclude those that have converted to academies.
- Fossil fuel heating (ie. gas and oil) made up 47% of building emissions, a reduction of 13% when compared with the previous two years, due to a milder winter.
- Street lighting electricity consumption was down 3% compared with 2022/23. This is a smaller reduction than has been achieved in previous years, as upgrades to more efficient LED lighting has largely been completed across the lighting portfolio.
- External temperatures: During 2023/24 external temperatures for the East Sussex region were warmer than during 2022/23.

Figure 5 illustrates the change in scope 1 and 2 emissions between 2019/20 and 2023/24, which is the current five year carbon budget time frame, across buildings, street lighting, ICT servers and business fleet.

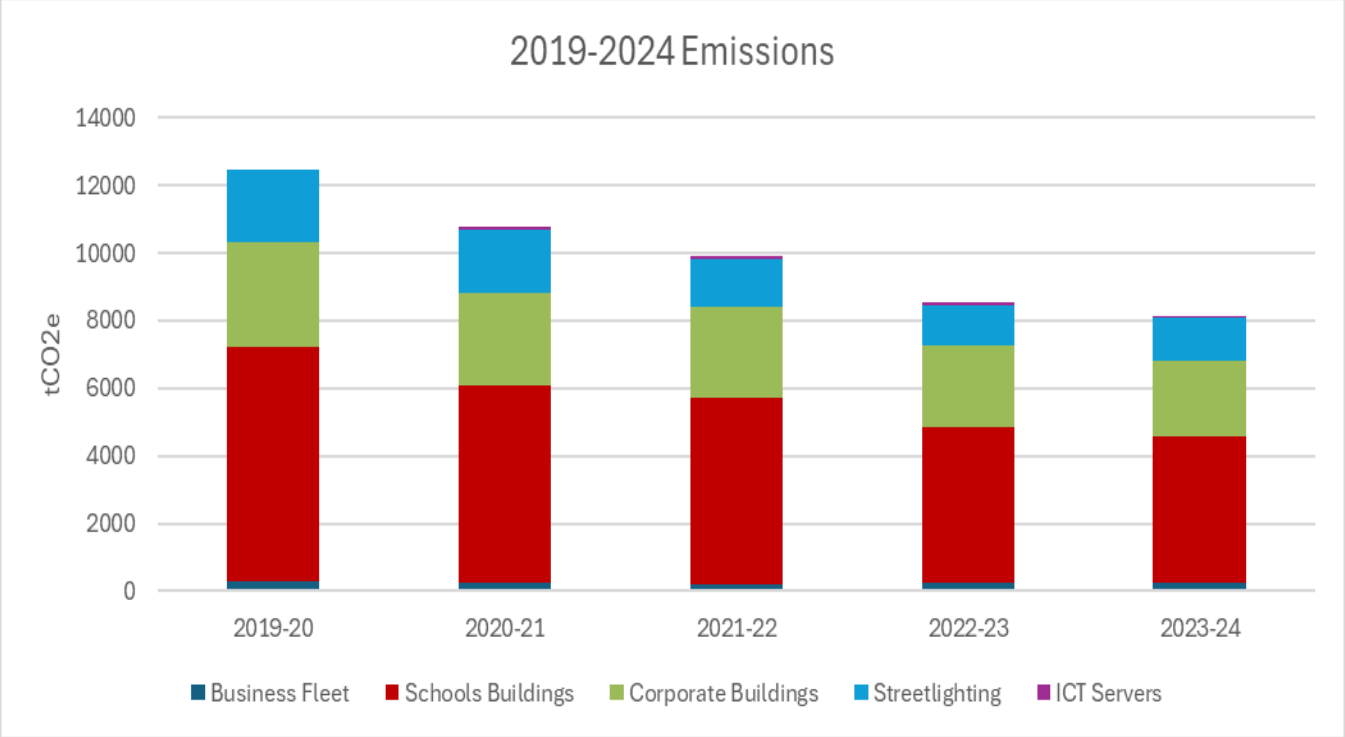

Figure 5. Scope 1 & 2 carbon emissions between 2019-24.

2.4 Historic Emissions Comparison

Figure 6 shows the progress made since 2008-9, when we started to report on our carbon emissions. Between 2008-9 and 2023/24 scope 1&2 emissions fell by over 73%.

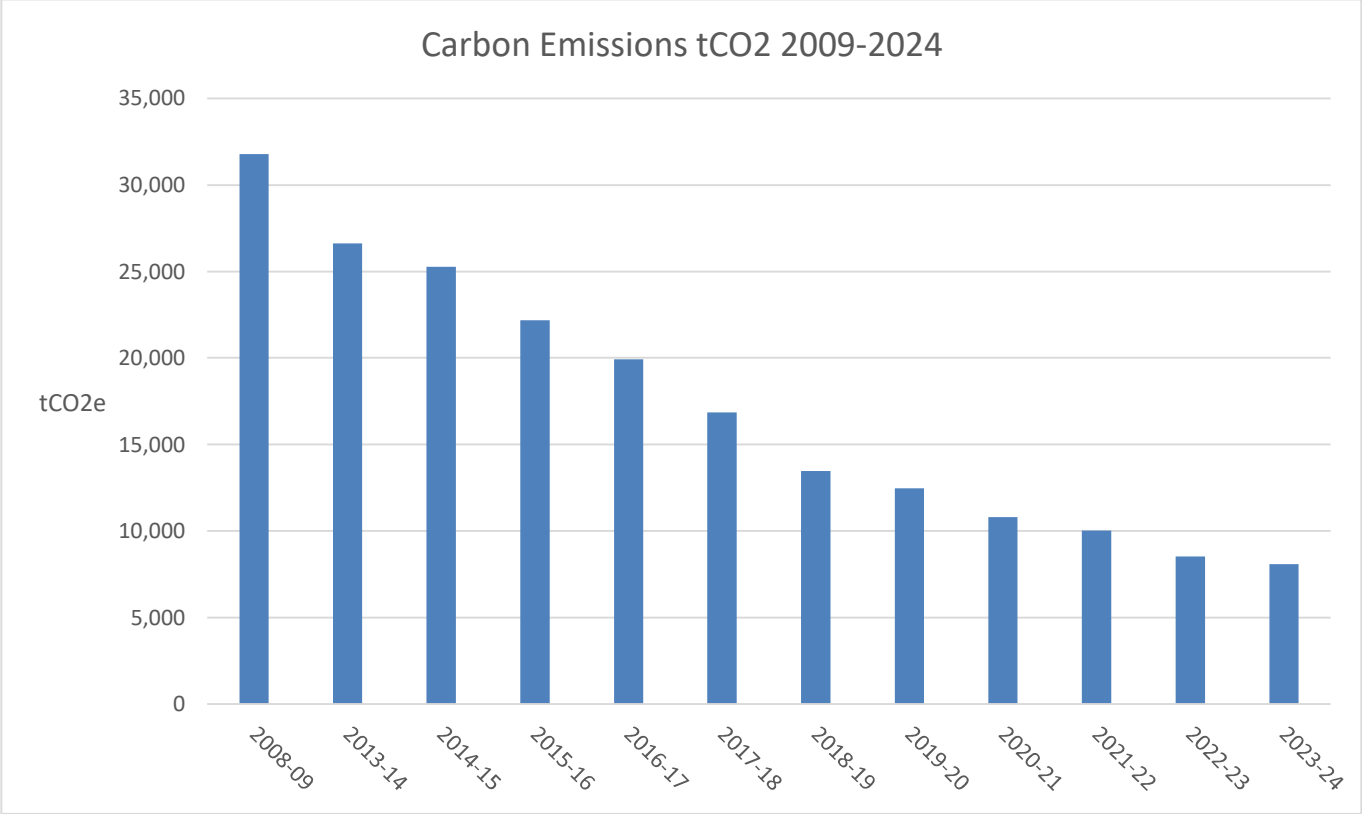

Figure 6: The County Council's carbon reduction between 2008-09 and 2023/24

2.5 Impact of Grid Decarbonisation and Estate Changes

The decarbonisation of the national electricity grid, whereby renewable energy and gas have largely replaced coal, has made a significant contribution during most years to reducing the Council's carbon emissions. However, in 2023/24 the carbon emissions from the Council's electricity consumption increased, despite a fall in the amount of electricity consumed by the Council. This was due to changes in the carbon emission factor, which is the figure used to convert electricity consumption from the national grid into equivalent carbon emissions. Carbon emission factors are produced by the Department for Energy Security and Net Zero. They are updated every year and widely applied in the UK. The UK grid carbon emission factor changes from year to year as the fuel mix consumed in UK power stations changes (i.e. between renewables, nuclear, natural gas, oil and coal) and as the proportion of imported electricity also changes. In most years the grid factor decreases. However, the emissions grid factor that the government published for use in calculating emissions that occurred during 2023/24 increased. This was due to a post-covid increase in national electricity demand and a relatively poor year for wind generation in 2021, which is when the emission factor for 2023/24 was based on because of the time it takes to collate and analyse the data (more information can be found here).

Another key factor affecting the size of the Council's carbon footprint is the change in the size of its estate, as a result of the disposal or addition of property. The main change is usually through schools converting to academies and leaving the Council's portfolio.

2.6 Intensity Measurement

In addition to reporting the absolute change in corporate carbon emissions, as shown above, it's also good practice to 'normalise' emissions against an appropriate business metric, such as tonnes of CO_2e per £ of revenue or per square metre of floor space. This allows comparison of energy efficiency performance over time and with other similar types of organisations. As recommended by the Carbon Trust, we divide our total emissions by our annual net revenue expenditure to give a carbon intensity measurement. Table 4**Error! Reference source not found.** shows how our carbon intensity has changed since 2008/9, mainly because of the decarbonisation of the national electricity grid, carbon reduction measures and changes to the estate. Carbon intensity in 2023/24 was 16 tCO_2e per £million, based on a net revenue budget of £501m and emissions of 8,089tCO_2e.

Table 4: Emissions Intensity Comparison.

Emissions Intensity Comparison	2008-9 Base Year	2019/20	2020/21	2021/22	2022/23	2023/24
Net Revenue Budget (£m)	314	375	403	417	453	501
Scope 1 & 2 Emissions t CO2e	31,790	12,461	10,791	10,022	8,522	8,065
Scope 1 & 2 Carbon Intensity	101	33	27	24	19	16
Scope 1 & 2 Change on Prior Year	n/a	-8%	-19%	-10%	-22%	-14%
Scope 1 & 2 Change on Base Year	n/a	-67%	-74%	-76%	-81%	-84%

2.7 Actions to Reduce Scope 1 & 2 CO_2e Emissions

The Council has used a mix of corporate funding and external grants to deliver its carbon reduction programme since 2008/9. Between 2009 and 2024 we invested £14.8 million into over 260 projects which, collectively, generate estimated savings on energy bills of over £1m per year. This investment has supported the delivery of a wide range of projects, including solar PV, LED lighting, building fabric improvements, heating controls, boiler replacements, low carbon heating and energy efficient ICT.

During 2023/24 the main carbon reduction measures that the Council invested in included 10 solar PV installations, 5 LED lighting upgrades, 3 heat decarbonization schemes at schools that previously relied on oil boilers and 7 schemes covering a mix of carbon reduction activities (eg. estate rationalization; building fabric improvements). These projects have been supported by good housekeeping, plus monitoring and targeting.

On-site renewable solar energy generates around 1.7MW of clean energy each year. Table 5 provides a summary of sites where solar PV came on-line during 2023/24. A total of 21 sites have had solar PV installed over the last 3 years.

Table 5. The sites where solar PV came online during 2023/24.

Site	System online	Annual saving (£)	Annual saving (CO2e)
The Keep	May-23	£24,788	25.3
Phoenix Centre	Jul-23	£3,725	3.9
Bodiam Primary School	Oct-23	£7,359	4.1
Chiddingly Primary School	Dec-23	£8,564	4.7
Plumpton Primary School	Dec-23	£9,463	5.2
Rocks Park Primary School	Mar-24	£10,977	6.1
Hailsham Library	Jan-24	£2,960	2.4
Newhaven Library	Jan-24	£5,502	5.3
Bexhill Library	Mar-24	£2,752	2.3
St Nicholas Centre	Feb-24	£4,553	4.3

Totals:	**80,643**	**63.6**

Case study – Milton Grange solar PV

Milton Grange is a Council-owned residential care home in Eastbourne. It had 156 solar PV fitted, at a cost of £92,411, 60% of which was covered by a government grant. During 2023/24 the panels generated 60,900 kWhs, which was 29% of the site's overall electricity consumption. This reduced the electricity bill at Milton Grange by £13,860, giving a payback period of 9 years, and reduced carbon emissions during the year by 14 tCO_2e.

2.8 Actions to Reduce Scope 3 Emissions

2023/24 was the first full year that resources had been dedicated to addressing Scope 3 procurement emissions. This has led to a significant improvement in both the quality of information and the measures taken by the Council in its procurements and contracts. The consequence is that:

1) The improvement in the quality of much of the data, and bringing it up to date, highlighted a 37% reduction in the estimated carbon emissions from scope 3 procurement when compared with 2022/23.

2) The introduction of carbon reporting and reduction requirements in contracts during 2023/24 means that, by the end of 2024/25, over 70% of suppliers in the construction / maintenance category will report directly and have carbon reduction measures in place.

Case study – Planned Maintenance Framework

The Council engages a number of electrical, mechanical, roofing and building contractors to carry out critical maintenance work on corporate and school buildings.

The Framework Agreement for this activity was re-procured in 2023/24, which enabled the Council to work with about 30 suppliers, most of whom are local SMEs, to develop carbon reduction plans. 18 carbon reduction plans were produced and all Framework providers will report against a carbon-related key performance indicator from the end of 2024.

The Framework starts in September 2024 and:

1) places about 3,200 tCO_2e of the Council's scope 3 emissions under management.
2) provides a pathway to reduce these by 39% by the end of the framework agreement in 2028.

Require all bidders to submit a Carbon Reduction Plan for their organisation.

Ask for proposals on how they will intend to reduce on site emissions during delivery.

Assess their capability to deliver decarbonisation schemes and solutions.

Included a Key Performance Indicator requiring progress on carbon reduction targets to be reported.

3.0 Supporting Information

3.1 Organisation Information

For information on the services that ESCC provides and is responsible for delivering, and how we are organised and managed, please refer to our website.

3.2 Reporting Period

This report covers the period from 1st April 2023 to 31st March 2024. Our base year is 2008/09, we chose this as it was used for the previous national indicator, NI185.

3.3 Geographical Boundary

All ESCC operations are carried out within the UK.

3.4 Organisational Boundary

We are defining our organisational boundary via the equity share approach. Although we have 100% equity in the majority of our estate, there are some buildings where we are not in full control of operations but are still responsible for paying a proportion of the energy bills, e.g. some leisure centres. Adjustments have been made to these figures during the calculation phase, to take account of the portion for which we are responsible.

3.5 Operational Boundary

Error! Reference source not found. on the following page shows what we have included and excluded from our reporting in 2023/24. We have used the 2023 conversion factors, published by DESNZ, which are available here.

3.6 Alterations to Previous Figures

We have made no alterations to previous emissions figures, except for the 2008-9 base year recalculations – see Section 3.9 for details.

3.7 Carbon Offsets

To date, we have not purchased carbon offsets to reduce our emissions, as it is widely recognised good practice to reduce emissions as much as possible before using offsets to compensate for residual emissions. Our current focus remains on emissions reduction through energy efficiency, decarbonisation of heat and on-site renewable generation. We are, however, looking into options for good quality offsetting to support carbon reduction.

From April 2021, electricity supplied to all corporate buildings and street lighting has been purchased on a green tariff. Currently, schools continue to purchase their electricity on a brown tariff, though the Council has offered and encouraged the take up of green electricity by schools.

As is best practice, we do not count our green tariff electricity as a carbon reduction measure because purchasing renewable generated electricity already in the marketplace makes very little material difference to total UK carbon emissions. On-site renewable and energy efficiency measures give direct carbon savings and offer a more robust mechanism for us to play our part in making genuine carbon reductions.

Instead, the Council decided to use a location-based approach to calculate our carbon emissions from purchased electricity. This approach uses the average carbon emission intensity of the national grid.

3.8 Renewable Generation

Some of our sites benefit from onsite renewable generation in the form of solar thermal, solar photovoltaic and/or biomass boilers. Such measures provide zero or low carbon energy now, rather than relying on improvements over time in grid electricity carbon intensity. It also demonstrates leadership and will help support the growth of a local green supply chain. A breakdown of currently installed solar PV capacity, which remains within our portfolio and reporting boundary, is given in Table 6 below:

Table 6: Solar PV Generation 2023/24

	Installed Capacity (kWp)	Annual Generation (kWh)
School	388	354,314
Corporate (Non-School)	198	604,098
Total	586	958,412

3.9 Base year recalculation

In order to provide meaningful comparisons of our carbon reduction performance, we compare our current year with the baseline year of 2008-9, when we first reported on our carbon emissions.

We periodically adjust the baseline year 2008-9 figures to take account of significant estate changes such as schools converting to academies and site closures. We remove the 2008-9 carbon emissions for sites that have left the estate and add emissions for significant property additions.

We do this to track genuine performance improvements rather than, for example, counting carbon emission reductions for schools that convert to academy as a reduction, when those emissions remain in the county of East Sussex even if they are no longer within our building portfolio.

Re-baselining took place in 2014-15 and again in 2020/21. This means that the baseline year figures shown in this report are lower than those reported in 2008-9, as emissions were included for properties that are no longer in our portfolio. We will recalculate the baseline year emissions in any given year if the significance threshold is met. The significance threshold is set at an annual reduction of 5% of the baseline year's total emissions, where the reduction has come only from estate changes. The baseline year

emissions total will not change until the beginning of the next 5 year carbon budget unless the significance threshold is met.

3.10 Limitations

We have automatic meters installed across most of our estate which allows us to report with a high level of accuracy on our electricity and gas related CO_2 emissions. Street lighting consumption is un-metered and the local distribution network allocates our usage based on the information we submit to them on our street lighting stock. The energy data in this report is calculated using billed kWh figures, which are validated each month against the readings taken from the automatic meter reading (AMR) loggers, where available. Where meters are not fitted with AMR loggers, manual reads are taken at least quarterly to ensure billing accuracy. Currently, we only hold limited information on combusted biofuel (i.e. biomass) as the purchasing of this fuel is delegated to individual sites and so we lack sufficient data to report. Our data for solar PV generation uses a mixture of accurately recorded generation data and estimates based on kWp system size for some 3rd party owned systems installed on schools prior to 2021, where we cannot obtain generation data from the installers.

We have made the best efforts to report on our emissions using the data we have available and, although we are confident in the quality of the data that we hold, there will always be scope for further improvement and adjustment in years to come.