

CABINET

Date of Meeting	21 st Jan 2025
Report Subject	Council Carbon Emissions Update 2023/24
Cabinet Member	Collective Responsibility
Report Author	Chief Officer (Planning, Environment & Economy)
Type of Report	Operational

EXECUTIVE SUMMARY

The council calculates its carbon footprint annually to measure the quantity of greenhouse gas emissions it is responsible for to monitor and direct decarbonisation efforts towards Net Zero Carbon by 2030. This report is for the period relating to 1st April 2023 – 31st March 2024 and the calculation was submitted to Welsh Government on 2nd September 2024.

The Carbon Emission Update 2023/24 presents the results of the 2023/24 calculation, comparing them against figures from the Council's baseline year of 2018/19, in this case showing an increase of greenhouse gas emissions. The report also provides explanation as to why emissions have changed, as well as noting any improvements or difficulties relating to the data and methodology. The report also notes the significant progress made by the Council to generate renewable energy.

The end of the report concludes with considerations to review targets and internal reporting of procurement emissions, investigate impacts of leisure facilities coming back under Council control, and introduce methodology to better understand land sequestration.

RECOMMENDATIONS

1	To note the contents of the report, and progress made in the past year to improve data collection for the Council's carbon footprint.
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REPORT DETAILS

1.00	EXPLAINING THE REPORT																																																																						
1.01	<p>Background</p> <p>The Carbon Footprint Update 2023/24 presents the results of the council's carbon emissions calculation for the period of 1 April 2023 to 31st March 2024. The carbon emissions are compared against the Council's baseline year of 2018/19 and previous reporting year of 2022/23, while providing explanations for any changes seen.</p>																																																																						
1.02	<p>Purpose</p> <p>The council calculates its carbon footprint annually, measuring the quantity of greenhouse gas emissions it is responsible for to monitor and direct decarbonisation efforts towards Net Zero Carbon by 2030. In September 2024, the calculation for the period 1st April 2023 – 31st March 2024 was completed and submitted to Welsh Government.</p>																																																																						
1.03	<p>Total carbon emissions for the period 2023/24 were 74,386 tCO₂e, a 60.2% increase in emissions compared to the 2018/19 baseline, and a 130.1% increase from the previous year.</p> <div data-bbox="320 898 1390 1693" style="border: 1px solid black; padding: 10px; margin: 10px 0;"> <p style="text-align: center;">Emissions by Source (tCO₂e)</p> <table border="1" style="width: 100%; text-align: center; font-size: small;"> <caption>Estimated Emissions by Source (tCO₂e)</caption> <thead> <tr> <th>Year</th> <th>Buildings (heating)</th> <th>Buildings (electricity)</th> <th>Buildings (water)</th> <th>Streetlighting (electricity)</th> <th>Fleet</th> <th>Business Travel - Car</th> <th>Business Travel - Rail</th> <th>Employee Commuting</th> <th>Supply Chain</th> </tr> </thead> <tbody> <tr> <td>2018/19</td> <td>5,000</td> <td>5,000</td> <td>5,000</td> <td>5,000</td> <td>5,000</td> <td>5,000</td> <td>5,000</td> <td>5,000</td> <td>25,000</td> </tr> <tr> <td>2019/20</td> <td>5,000</td> <td>5,000</td> <td>5,000</td> <td>5,000</td> <td>5,000</td> <td>5,000</td> <td>5,000</td> <td>5,000</td> <td>25,000</td> </tr> <tr> <td>2020/21</td> <td>5,000</td> <td>5,000</td> <td>5,000</td> <td>5,000</td> <td>5,000</td> <td>5,000</td> <td>5,000</td> <td>5,000</td> <td>20,000</td> </tr> <tr> <td>2021/22</td> <td>5,000</td> <td>5,000</td> <td>5,000</td> <td>5,000</td> <td>5,000</td> <td>5,000</td> <td>5,000</td> <td>5,000</td> <td>25,000</td> </tr> <tr> <td>2022/23</td> <td>5,000</td> <td>5,000</td> <td>5,000</td> <td>5,000</td> <td>5,000</td> <td>5,000</td> <td>5,000</td> <td>5,000</td> <td>15,000</td> </tr> <tr> <td>2023/24</td> <td>5,000</td> <td>5,000</td> <td>5,000</td> <td>5,000</td> <td>5,000</td> <td>5,000</td> <td>5,000</td> <td>5,000</td> <td>56,386</td> </tr> </tbody> </table> </div> <p><i>Image 1 showing changes in annual emissions per source.</i></p> <p>The cause of this increase is due to emissions from procurement which has seen a significant increase due to a methodology change. This increase is explained in section 1.04. Other emission sources have seen decreases which reflects the positive action being taken across the Council. Building emissions have reduced 3.4% compared to 2022/23 and 29.6% compared to the baseline year. Mobility and Transport emissions have reduced 3.1% compared to 2022/23 and 20.4% since the baseline year.</p>	Year	Buildings (heating)	Buildings (electricity)	Buildings (water)	Streetlighting (electricity)	Fleet	Business Travel - Car	Business Travel - Rail	Employee Commuting	Supply Chain	2018/19	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	25,000	2019/20	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	25,000	2020/21	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	20,000	2021/22	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	25,000	2022/23	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	15,000	2023/24	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	56,386
Year	Buildings (heating)	Buildings (electricity)	Buildings (water)	Streetlighting (electricity)	Fleet	Business Travel - Car	Business Travel - Rail	Employee Commuting	Supply Chain																																																														
2018/19	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	25,000																																																														
2019/20	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	25,000																																																														
2020/21	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	20,000																																																														
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2023/24	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	56,386																																																														

The methodology for procurement emissions remains highly challenging due to the spend-based methodology, significantly limiting the ability to reliably measure and monitor. Image 2 removes the procurement emission source helping to demonstrate more clearly the reductions across the Buildings, and Mobility and Transport sources.

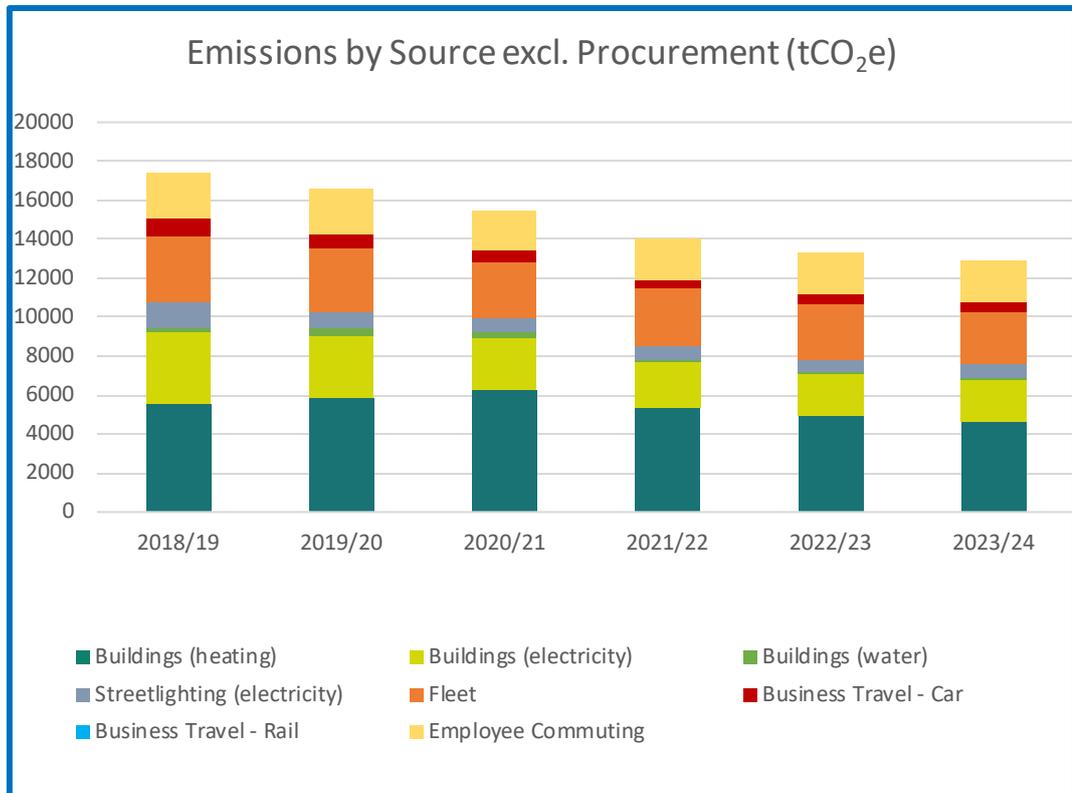


Image 2 showing changes in annual emissions per source excluding procurement emissions.

If Procurement emissions were excluded from all previous reporting, total emissions for 2023/24 would be 12,909 tCO₂e, a 3.3% reduction compared to 2022/23, and a 26.1% reduction compared to the baseline year.

1.04

In 2023/24, emissions from building electricity increased by 2.4%, and emissions from streetlighting increased by 7.4%, compared to 2022/23.

This is a result of the electricity grid's emission factor increasing by 7% compared to the previous period due to greater generation from natural gas, compensating for lower generation from renewables. Electricity consumption for buildings did reduce by 4.4% demonstrating progress being made to increase building efficiency and on-site renewables generation. Streetlighting electricity consumption increased by 0.2%.

The Mobility and Transport theme's emission reduction seen in 2023/24 is mostly explained by a reduction of Fleet emissions, the theme's largest emission source. Fleet emissions in 2023/24 reduced by 4.8% compared to 2022/23. Gas Oil/Red Diesel is no longer purchased due to legislative changes, and fleet vehicles have been and continue to be replaced with

	<p>newer and more efficient vehicles, resulting in an overall reduction of fuel use.</p> <p>Employee commute emissions reduced by 3.6% compared to 2022/23. This is due to small reduction in employee headcount used in the methodology, and a reduced emission factor for private vehicles with unknown fuel. The methodology used has been carried over from previous year's reporting. This does not include a revised methodology from the 2023 Employee Travel Survey.</p> <p>Business Travel emissions by car have increased 9.9% compared to 2022/23 and are now 40.7% lower than the baseline year. This is a result of an increase of staff making claims (4.3%), and the total miles claimed in the reporting period (9.5%). Additionally, Business Travel by rail has been included, with data being recorded since January 2024. Emissions for this source are minor at 0.048 tCO_{2e}. This is the second consecutive year of increases for Business Travel with 2022/23 also seeing a 9.9% increase.</p> <p>The significant increase in Procurement emissions is predominantly a result of revised mapping of the spend categories the council uses internally to the spend codes used in the carbon emissions calculation. This mapping revision has resulted in two outcomes.</p> <ul style="list-style-type: none"> • Spend has been allocated across more spend categories. • A greater amount of spend has been accounted for in 2023/24. <p>Another explanation for emissions increase, the emission factors of categories where Flintshire County Council has allocated spend in 2023/24 has increased 9.7% from the previous year.</p> <p>The 2023/24 Procurement calculation also includes emissions from three capital construction contracts using the higher tier methodology, and using actual data from these projects results in lower emissions when compared to spend.</p>
1.05	<p>Building on the improvements for Water Use in 2022/23, further minor improvements were made in 2023/24. This involved a better understanding that data is supplied based on billing periods. This allows data to be more reliably removed to prevent double counting a previous year's data where bill periods exceed the emissions reporting period.</p> <p>Data for Business Mileage by car remains good quality with 67.2% of data meeting the highest tier of methodology. This is a slight reduction from the 2022/23 period (71.9%) and remains limited as some employees cannot record their claims electronically which mandates fuel and engine size information. This is a known issue and is still in progress of being resolved.</p> <p>An employee travel survey was conducted in November and December 2023, with the aim of understanding barriers to more sustainable travel</p>

	<p>and improve the methodology used for employee commute emissions. However, a 10% response rate and erroneous travel data has rendered the responses unrepresentative of staff commute (as stated in the Environment and Economy Overview Scrutiny Committee, 11th June 2024). As a result, the original methodology for staff commute has been continued for 2023/24. A follow up employee travel survey with greater response rate will help to ensure the data is representative of the workforce.</p> <p>The majority of Procurement emissions continue to be calculated using spend-based methodology where council spend (£) is multiplied by an emission factor specific to a particular spend category. A significant change for the 2023/24 period is revised mapping of Flintshire County Council spend categories (Thompson) to the spend codes used in the emission calculation (SIC codes). This mapping exercise was carried out by Denbighshire County Council to more accurately and consistently allocate spend to a category.</p> <p>This has resulted in a 145.7% increase of spend being allocated to the calculation. Historically, spend has been omitted where no suitable category was identified. Emission factors were also updated in the 2023/24 period. For the categories where Flintshire County Council had spend, emission factors were 9.7% higher than the previous year. These two changes explain the significant increase in procurement and overall Council emissions, and demonstrates the inability to measure and monitor procurement emissions using this methodology.</p> <p>For 2023/24, a higher tier methodology was included in the calculation of some procurement emissions for the first time. The construction projects for Mynydd Isa, Croes Atti School, and Theatr Clwyd issued actual data of which Scope 1 and 2 emissions were applied to the Council's procurement calculation. Using this methodology calculates emissions as 321.9 tCO_{2e} for these three projects. A spend-based approach would have calculated emissions as 10,190 tCO_{2e}. This example and resulting emissions are not representative of all spend categories using a higher tier methodology, but does demonstrate the potential difference in outcomes and the progress being made by the Joint Procurement Business Partner employed jointly by Flintshire County Council and Denbighshire County Council.</p>
1.06	<p>2023/24 Emissions v 2018/19 Baseline Year and Targets</p> <ul style="list-style-type: none"> - Building emissions have reduced 29.6% since 2018/19, aiming for a 35% reduction by 2024/25. - Mobility and Transport emissions have reduced 20.4% since 2018/19, aiming for a 50% reduction by 2024/25. - Procurement emissions have increased 112.2% since 2018/19, aiming for a 30% reduction by 2024/25. <p>2023/24 Emissions v 2022/23 Emissions</p>

	<ul style="list-style-type: none"> - Building emissions: Reduced 3.4%% (with a 9% YOY target) - Mobility and Transport emissions: Reduced 3.1% (with a 9% YOY target) - Procurement emissions: Increased 223.8% (with an 8% YOY target) <p>Land-use Emissions</p> <ul style="list-style-type: none"> - Our land is estimated to have removed 1,513 tCO_{2e} - This figure continues using our baseline year's methodology and land use figures. - Data on Flintshire County Council's land type and size is currently being updated to acknowledge disposals, acquisitions, and land-use changes such as tree planting. - Alternative calculation methodologies are being investigated to allow for greater accuracy of carbon accounting and incorporate tree planting and felling data. <p>Renewable Energy Generation</p> <ul style="list-style-type: none"> - Total generation from renewables increased by 55.9% from the 2022/23 period with 5,486,409 kWh generated. - This improvement is mostly due to solar farms in Flint and Connah's Quay completing their first full year of generation. - Generation across all solar farms has increased by 124.6% since 2022/23, with roof-mounted solar increasing by 11.37%. - Electricity generation from wind increase by 22%. - However, generation from Biomass has reduced 5.42% and Landfill Gas by 39.07% compared to 2022/23
1.07	<p>Although positive steps have been made in measuring emissions in the Procurement theme, the spend-based methodology continues to present significant challenges as seen by the change in spend code mapping. This mapping change will not be applied to previous years in order to update the 2018/19 baseline, therefore, the theme's targets should be reviewed so it is possible to measure and monitor aspects the council has control and influence over.</p> <p>Removing procurement emissions from the council's carbon footprint does demonstrate the continued progress to reduce emissions and/or energy consumption from many sources it has control or direct influence over, although for 2023/24, no theme has met its year-on-year reduction targets.</p> <p>The Council's Climate Change Strategy is currently under review, and the 2023/24 emissions calculation and recent developments have identified considerations shown below.</p> <ul style="list-style-type: none"> - Review the targets and internal reporting of procurement emissions. - Investigate the carbon emission impacts of leisure facilities returning to Council control. - Introduce improved Land Use methodology to better understand the gap to Net Zero Carbon and enable monitoring of land use change.

2.00	RESOURCE IMPLICATIONS
2.01	

3.00	CONSULTATIONS REQUIRED / CARRIED OUT
3.01	This report has been to Climate Change Committee and Environment & Economy Overview & Scrutiny Committee, who noted the contents of the report.

4.00	RISK MANAGEMENT	
4.01	<p>There are risks when calculating carbon emissions that the quality or lack of raw data or the way in which it is processed and reported may reduce reliability through error or availability. To address this risk, the Climate Change team review the work in detail and is supported by neighbouring local authorities through peer review.</p> <p>Regarding the Carbon Emissions Update 2023/24 report, a key risk is poor communication of the council reporting its progress to Net Zero Carbon, which is compromised by procurement emissions out of the council's control and only considered an academic practice. This risk is addressed through <i>Image 2</i> in <i>Section 1.03</i> and further explanations throughout the report.</p> <p>Lower risks regarding communication includes poor use of terminology or presentation of data creating confusion or misunderstandings. To address this, language is carefully considered and a glossary at the end of the report is provided. Data is presented in simple tables and detailed further where it is felt useful for the reader.</p>	
4.02	Ways of Working (Sustainable Development) Principles Impact	
	Long-term	Positive: Scrutiny Committee will be informed of the council's progress towards Net Zero Carbon by 2030 as well as successes and challenges. In doing so the Committee will be able to scrutinise the results effectively.
	Prevention	Positive: The update will inform of emissions that have been prevented in the reporting year and how future emissions can be prevented by addressing issues identified.

	Integration	Positive: The Carbon Emission Update 2023/24 forms part of the carbon emission calculation, decarbonisation and reporting process, which in turn integrates with the following priorities under the Council Plan; Green Council, Ambitious Council and Supportive Council. It integrates with the public service board objectives in the Environment priority of the Wellbeing Plan as well as the Smart Access to Energy project in the North Wales Growth Deal. It also integrates with the Environment (Wales) Act 2016 and Welsh Government's decarbonisation of the public sector agenda.
	Collaboration	Positive: The update explains the progress made to introduce high tier methodologies into procurement, a result of collaboration between Flintshire and Denbighshire County Councils.
	Involvement	Positive: The update highlights the continued need to improve data quality which again includes staff commute and procurement to direct decarbonisation efforts and improve monitoring.
4.03	Well-being Goals Impact	
	Prosperous Wales	Positive: Decarbonising the council brings benefits of reduced energy costs, increased generation from renewables and greater control of activities through improved monitoring.
	Resilient Wales	Positive: Resilience can be increased through reduced energy demand and reliance on fossil fuels. Through the monitoring of emissions and data quality, we can improve decarbonisation strategies and target areas which are less resilient than others. Improved monitoring of land use in future will

		also bring climate resilience benefits.
	Healthier Wales	Positive: Realising progress towards Net Zero Carbon 2030 goals promotes positivity towards climate change helping to address related issues such as climate anxiety and stress. Addressing emissions from the local area (e.g., transport) will also benefit people's physical health.
	More equal Wales	Neutral: No impact identified.
	Cohesive Wales	Neutral: No impact identified.
	Vibrant Wales	Neutral: No impact identified
	Globally responsible Wales	Positive: The update reports on how the council is reducing its contribution to global warming through reduced emissions and makes recommendations on how to progress further.

5.00	APPENDICES
5.01	

6.00	LIST OF ACCESSIBLE BACKGROUND DOCUMENTS
6.01	None

7.00	OFFICER CONTACT DETAILS
7.01	Contact Officer: Ben Turpin – Climate Change Project Officer Telephone: 01352 703393 E-mail: ben.turpin@flintshire.gov.uk

8.00	GLOSSARY OF TERMS
8.01	Baseline Year: The emissions that occurred in the period of 1 st April 2018 – 31 st March 2019 are what targets are based on and all future carbon emission calculations compared to. Carbon emissions: Used interchangeably with greenhouse gas emissions; meaning emissions of carbon dioxide, methane etc from human and natural activities and sources. Wider greenhouse gas emissions are collectively calculated into a 'carbon dioxide equivalent' displayed as CO ₂ e.

Carbon Footprint: A measurement of the council's carbon emissions during a defined period of time, given as tonnes of carbon dioxide equivalent (tCO_{2e})

Carbon sequestration: the process involved in carbon capture and the long-term storage of atmospheric carbon dioxide.

Decarbonisation – Reduction of carbon emissions that result from an activity, material or product

Greenhouse Gas/ Carbon emissions: Emissions of carbon dioxide, methane etc from human and natural activities and sources. Wider greenhouse gas emissions are collectively calculated into a 'carbon dioxide equivalent' displayed as CO_{2e}.

Methodology: How the collected raw data used for carbon emission calculations is managed and rated in terms of its reliability. This is governed by Welsh Government.

Net Zero Carbon – Reduce carbon emissions and balance any that remain with carbon dioxide removal activities.

Raw Data: The most basic of data units used for carbon emission calculations. Examples include units of energy (kWh of electricity), vehicle type and mileage, tonnes of a particular waste, etc.

Spend Categories: A specific goods and services category within the procurement calculation which has an emission factor (kgCO_{2e} per £ spent).