



# Carbon Emissions Calculation Report

April 2020 – March 2021

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Environment & Sustainability





# Carbon Emissions Report

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## Executive Summary

The purpose of this report is to provide Cheshire Fire and Rescue Services with update of progress against the organisations carbon emissions reduction target. The baseline set against the organisations carbon emissions in 2017<sup>1</sup>.

The 2019/20 carbon report detailed a reduction of 41% from a base-line figure from 2009. Reporting has now fixed a base-line from 2017 following Government guide-lines.

The report focuses on reduction within Cheshire Fire and Rescue Services premises and vehicles fleets.

This report utilises a combination of building energy consumption data, fleet vehicle fuel consumption records and finance data as recorded by Cheshire Fire and Rescue Service. All the consumption data provided was verifiable to the source. There was no use of estimated data in the 2020/21 period.

The baseline carbon emissions from 2017/18 were confirmed at 2,057 Tonnes CO<sub>2</sub>e on the Fire Service Carbon Emissions Report 2017-18

The normalised carbon emissions from 2020/21 were calculated at 835 Tonnes CO<sub>2</sub>e.

The reduction in carbon emissions from baseline levels is therefore 1,222 Tonnes CO<sub>2</sub>e.

**This represents a 59% reduction from baseline.**

Government expectations of Public bodies was to achieve a reduction of 30% by 2020. Cheshire Fire and Rescue Service did set a target of a reduction of 40% by 2020 from a base-line in 2009 and this was achieved.

There is a future Government expectation of achieving 50% reduction in Carbon Emissions by 2032 and this needs to be the realigned target. Government focus on this will evolve because of the focus on Carbon Emissions and the Climate Change net zero commitments nationally by 2050.

We have set aspirational goals to achieve 60% reduction by 2025 and 80% reduction by 2030 and this focus will be led by the Environment and Climate Change Strategy 2020 to 2025 and the Environment and Sustainability Working Group initiative set up in 2021.

Key Milestones from current government policy must be considered in strategic decisions;

- Reduction of national emissions by 78% by 2035 from 1990 levels is now enshrined in UK Law – Carbon Budget Order 2021.
- Sale of petrol/diesel and fossil fueled vehicles ceases in 2030.

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<sup>1</sup> This is change from the previous base-line of 2009 due to government changes in recording emissions reductions.





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- ~~Public Authority emissions cut by 50% by 2032 from a base-line of 2017 emissions.~~

## 1 Background

In 2008, Cheshire Fire and Rescue Service joined the Carbon Trust Local Authority Carbon Management Scheme to develop a Carbon Management Plan designed to reduce the service carbon emissions.

To achieve this reduction target, a range of carbon abatement schemes were developed to reduce carbon emissions from Fire Service premises and its vehicle fleet.

Since 2017 Cheshire Fire and Rescue Service have engaged ESOS Energy to review and verify its annual carbon emissions and for the financial year of 20/21 provided a progress update report. This data will be used to track performance against target, and to develop further carbon reduction strategies.

## 2 Carbon Emission Performance

### 2.1 Overview

ESOS Energy have completed a carbon emission verification covering all building energy consumption carbon emissions (gas, electricity etc) and all fleet vehicle carbon emissions (petrol, diesel etc) for the year 2020/21.

Building energy consumption data and fleet mileage data was provided by Cheshire Fire & Rescue Service and was processed, analysed and reported by ESOS Energy. The accuracy of the calculation relied on collating consumption data for all of the emission sources. For gas and electricity, data was provided in kilowatt hours (kWh) from meter readings or bills. For heating and transport emissions, this was provided by fuel type.

Since April 2020, Cheshire Fire and Rescue Service has been supplied by 100% renewable electricity from their providers Total Gas and Power. Please see Appendix A for Pure Green Certification.

The carbon emissions are calculated using the activity data collated multiplied by standard emissions factors. Conversion of energy and mileage data to tCO<sub>2</sub>e was carried out using **Greenhouse gas reporting: conversion factors 2020**

Fuel Type	kgCO <sub>2</sub> e
Natural Gas	0.185
Electricity	0.000
Burning Oil	0.247
LPG	0.214
Diesel Miles	0.271
Petrol Miles	0.281





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Diesel Litres	2.546
Petrol Litres	2.168

## 2.2 Results Building Stock

The table below summarises the Fire Service building stock carbon emissions:

Summary of Building Stock 2020/21		
Fuel	kWh <sup>2</sup>	Tonnes CO <sub>2</sub> e
Natural Gas	2,778,882	513
Electricity	1,886,120	0*
Oil	30,160	7.4
	<b>TOTAL</b>	<b>520</b>

\*The Zero CO<sub>2</sub>e figure is a direct result of moving to a renewable power supply.

## 2.3 Results Red Vehicle Fleet

The table below summarises the Fire Service vehicle fleet carbon emissions:

Summary of Vehicle Fleet 2020/21		
Fuel	Total Miles	Tonnes CO <sub>2</sub> e
Unleaded	29,248	8
Diesel	889,883	241
<b>TOTAL</b>	<b>919,131</b>	<b>249</b>

## 2.4 Results Grey Vehicle Fleet

The table below summarises the Fire Service vehicle fleet carbon emissions:

Summary of Vehicle Fleet 2020/21		
Fuel	Total Litres	Tonnes CO <sub>2</sub> e
Unleaded	6,800	15
Diesel	19,985	51

<sup>2</sup> Data has been normalised for degree days to account for variations in weather between the current year and the baseline year





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<b>TOTAL</b>	<b>26,785</b>	<b>66</b>
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## 2.5 Current Performance Against Baseline

The table below summarises Cheshire Fire and Rescue Service performance for the year 2020/21 against the baseline year of 2017/18:

Year	Carbon Emissions (Tonnes CO <sub>2</sub> e)	Variation %
2017/18	2,057	-
2018/19	2,056	-0%
2019/20	1,754	-15%
2020/21	835	-59%

## 2.6 Historic Performance (For Reference Only)

The table below details the historic performance from the base-line of 2009 and the progress made before the change in guide-lines by central government.

Year	Carbon Emissions (Tonnes CO <sub>2</sub> e)	Variation %
2010/11	2,862	-3.6%
2011/12	2,734	-7.9%
2012/13	2,479	-16.5%
2013/14	No Data	No Data
2014/15	No Data	No Data
2016/17	2,164	-27%
2017/18	2,057	-31%
2018/19	2,056	-31%
2019/20	1,754	-41%

## 2.7 Conclusion

The reduction in carbon emissions from baseline levels is 1,222 Tonnes CO<sub>2</sub>e. This represents a 59% reduction from baseline, which is an average reduction of 407 Tonnes per annum.

Cheshire Fire and Rescue Service has managed to reduce carbon emissions by 919 Tonnes CO<sub>2</sub>e since the previous year's assessment in 2019/20, which is testament to the support given by the Fire Authority and Senior Leaders to bold and creative emissions reduction projects being taken forward.

The current refurbishment project is continuing to produce more thermally efficient buildings. The additions of Solar PV to Phase 2 scheme to self-generate our own power





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~~and battery storage to fully utilize our self-generation will further mitigate and drive emissions reduction.~~

The elements already detailed within the previous phases are beginning to optimise our building performance; Occupancy sensors, heating controls, improved M+E, insulation, new windows and grade “A” roofing materials. Some of these elements would have already fed through to drive this excellent result.

The Fire Authority approval to use funds from the Environment Fund to retro-fit the on-call station from Phase Zero and Phase One will also have a major effect on future emissions and go a long way to mitigating the energy used in these building.

Electric Vehicle Charging infrastructure will be a major focus this year and in liaison with the Fire Service Fleet Manager we will be proposing to expand our network so more electric vehicles can be added to the fleet. It is also very positive that more colleagues are utilising and enquiring about our electric charging options as we lead and set examples of delivering a green agenda.

The newly adopted Environment and Climate Change Strategy 2020 – 2025 and the Environment and Sustainability Working Group will further drive the focus to deliver our aspiration targets towards Zet Zero.

This is a very positive result, but the target get harder the closer you get to it so we cannot rest on our achievements so far. We must keep the environment and sustainability performance question high in everyone’s mind and continue to innovate and develop plans and processes to delivery continuous improvement.



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**Cheshire**  
Fire & Rescue Service

## Appendix 1





**PURE GREEN  
Certification**

Awarded to

**WME Cheshire Fire**

THE ELECTRICITY SUPPLIED BY TOTAL GAS & POWER LTD  
FOR THE SUPPLY PERIOD OF 01/04/2020 – 01/04/2021  
WILL BE 100% GENERATED BY WIND, SOLAR OR HYDRO  
RENEWABLE SCHEMES AS ACCREDITED BY OFGEM

*Mark Rose*

Signed on behalf of TOTAL GAS & POWER LTD

Mark Rose – Director, Major Business      29/06/2021

Being supplied with Pure Green means you can report zero emissions for electricity under the GHG Protocol Corporate Standards, Scope 2 as the electricity can be matched to Renewable Energy Guarantee of Origin (REGO) certificates.\*

\*subject to any changes to GHG guidance

**TOTAL GAS & POWER**

