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Plymouth net zero progress indicators

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Cover image: Plymouth Sound

Management summary

The 2021 GHG Monitoring report set out a series of potential measures to indicate progress on greenhouse gas (GHG) emissions reduction. An update in 2022 identified progress in some transport metrics although some were influenced by Covid 19 restrictions.

This update incudes data available in 2024 as summarised in the table overleaf.

Limited progress has been made in power and heat networks. Installation of photovoltaic generation capacity increased by 4 MW from 31 MW in 2021 leaving 101 MW to be delivered by 2050; rates need to quadruple to achieve this. Heat network connections have not increased although Plymouth City Council is using its influence to roll out low carbon heat networks and, when successful, these initiatives are likely to address the need for heat network connections in residential and non-domestic buildings.

Energy Performance Certificate data suggests that loft and cavity wall insulation rate remain low although because EPCs are updated sporadically this may not give an up to date picture. An area of particular concern in buildings is the adoption of low carbon heating. The bulk of low carbon heat measures are likely to be delivered through the replacement of individual gas boilers with heat pumps. Here, there has been negligible progress. It is important that a route map is developed for heat pump deployment in Plymouth.

Transport, the sector responsible for the largest portion of Plymouth's GHG emission (34%) is of most concern. The electrification of transport is a key component in reducing fossil fuel use. While the uptake of electric vehicles in the city remains on an upward trend, current numbers represent only 1% of those needed. The rate of installation of new charging points has reduced in 2023 and 2024, as has kms cycled in Plymouth. These are two areas where the Council has influence.

In the waste sector (13% of GHG emissions) the city needs to further reduce waste arisings and improve recycling rates. Progress also needs to be made in developing funding applications for carbon capture and storage at the Devonport EfW plant. The facility has an advantage in its proximity to the dockside which makes it well placed for CO_2 export.

The most significant remaining area where metrics are not identified is the industrial sector. Here it is important to identify were and how fossil fuels are being used and develop pathways for replacement with low carbon alternatives.

In summary, gradual progress is being made in many areas. Nonetheless, in many cases, the percentage of the trajectory towards the net zero need is still lower than it needs to be. Areas of particular concern are in two key high emission sectors; buildings (26% of GHG emissions) and transport (34% on GHG emissions), more specifically the adoption of low carbon heating in buildings and the changes needed in the vehicles in which and the way in which the city travels.

Sector	Metric	2021 level	2022 level	2023 level	2024 level	Average annual increment	Net zero need	% trajectory achieved
Power & heat	PV installations (MW)	31.3	33.0	35.3	N/A	2.0	136.3	26%
	Domestic heat network connections	2,859	3,025	3,003	2,970	37	7,483	40%
	Non-domestic heat network connections (% of floor area heated)	N/A	N/A	2%	2%	0%	22%	10%
Domestic buildings	Insulated pitched roofs	31,113	31,436	32,472	32,790	559	92,721	35%
	Insulated cavity walls	48,659	49,243	50,485	50,889	743	61,560	83%
	Insulated solid walls	17,842	18,164	18,258	18,413	190	None (discontinued)	N/A
	Heat pumps installed	162	180	217	385	74	97,390	0%
Non-domestic buildings	Buildings with EPC rating A & B	605	698	856	1,071	155	5,785	19%
	Buildings with low carbon heating	2,928	3,053	3,117	3,444	172	5,785	60%
Industry	GHG emissions (ktCO2e)	76,876	66,900	N/A	N/A	-9,976	N/A	N/A
Mobility	Miles per year (cars and taxis)	689 million	782 million	806 million	N/A	58 million	None (discontinued)	N/A
	BEV cars registered in Plymouth	455	735	1,125	N/A	335	117,320	1%
	BEV LGVs registered in Plymouth	40	55	78	N/A	19	15,100	1%
	Zero emission HGVs buses and coaches registered in Plymouth	0	1	0	N/A	0	1,281	0%
	Public and workplace charging sockets	152	292	294	306	51	2,185	14%
	Cycling activity (km cycled on major roads per year)	2.6 million	2.6 million	2.7 million	N/A	0.03 million	49.3 million	5%
	Walking (total km walked per year)	Unknown	Unknown	Unknown	Unknown	Unknown	139.4 million	Unknown
Waste	Waste arisings (tonnes)	108,162	108,261	100,070	101,655	-2,169	57,182	13%
	Domestic recycling rate	31.3%	36.7%	35.0%	36.6%	2%	57.0%	64%
	Non-domestic waste	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown
	Devonport EfW heat export (GWh)	54	Unknown	Unknown	Unknown	Unknown	Increase	Unknown
	Devonport EfW CCS	Not installed	Not installed	Not installed	Not installed	Unknown	Install	Unknown
F-gases	F-gases	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown

Contents

1 Introduction

While there may be a broad public understanding of what net zero GHG emissions means (i.e. minimal fossil fuel use), the two-year lag in the publication of GHG emissions statistics together with the difficulty of relating the reduction in quantities of CO_2 to everyday actions presents challenges for understanding CO_2 emission reduction.

The Carbon Neutral Plymouth report [1] examined each sector and provided some of the metrics for the trajectory to net zero GHG emissions in 2050. The metrics indicate the scale of intervention required to achieve a trajectory to net zero by 2030. These metrics, local metrics, and, where required, figures in the Committee on Climate Change's (CCC) Sixth Carbon Budget [2] were used in the Plymouth Greenhouse Gas Reporting and Monitoring 2021 report [3] to establish trajectories for each measure. The subsequent increment achieved for each measure was reported in 2022 [4]. Updates for 2023 and, where data is available 2024, are reported here in the context of what may be needed to achieve net zero emissions as referenced in the CCC's Seventh Carbon Budget [5].

2 Power and heat (networks)

2.1 Power

Power, distributed through the national and regional electricity networks, is the sector of the UK economy that has decarbonised most rapidly. As a result, the national grid emission factor has fallen by 69%, from 416 g CO_2/kWh in 2010 to 131 g CO_2/kWh in 2023 [5]. The use of a national emissions factor for local electricity CO_2 emissions calculations does not consider carbon emissions from power at a local level (from renewable electricity generation in Plymouth, for example) to be Plymouth's CO_2 reduction. All renewable energy generation in the UK contributes to national emissions reduction, so while Plymouth should do everything possible to deliver renewable electricity generation, the emission reduction benefits will be shared across the country. In the same way, Plymouth benefits from large offshore wind arrays located elsewhere around Britain's coastline.

Analysis of potential future renewable electricity deployment in Plymouth suggests that the majority of additional renewable electricity deployment will come from solar photovoltaic panels (PV) most of which is projected to occur on domestic rooftops. The Carbon Neutral Plymouth report assumes 34,000 installations with over 90% of installations (31,000) on homes (representing 26% of the projected 2050 Plymouth housing stock)[a]. While the PV installation rate is an important metric for the power sector in Plymouth, PV capacity and consequent

[a] Source: "Carbon Neutral Plymouth" CEE, University of Exeter, 2019 p11 which references "Analysis of Carbon Targets for Plymouth City Council 2014" CEE, University of Exeter, 2014. Estimated using SQW method, which assumes 2 kW systems fitted to 25% of existing homes and 50% of new home development, 5 kW systems on 40% of commercial sites, and 10 kW on 80% of industrial sites. This results in almost 34,000 installations, over 90% of which are on homes.

electricity production can be achieved in combination with larger installations such as the 13 MW ground array planned at Chelson Meadow.

Government statistics on renewable electricity for the prior year are published annually towards the end of September [6]. Table 1 shows the total installations in Plymouth from 2014 to 2023.

Table 1. PV installations, capacity and generation in Plymouth

Year	PV installations	PV capacity MW	PV generation MWh
2014	4,640	15.5	11,306
2015	5,861	21.2	16,932
2016	6,062	26.2	23,200
2017	6,158	26.7	24,264
2018	6,208	27.0	26,703
2019	7,573	30.4	27,332
2020	7,644	30.8	27,155
2021	7,787	31.3	25,948
2022	8,208	33.0	28,180
2023	8,885	35.3	30,455

Between 2021 and 2023 the statistics record:

- 1,098 additional PV installations.
- An increase in PV capacity of 4 MW.
- An increase in PV generation of 4,500 MWh.

Table 2 and

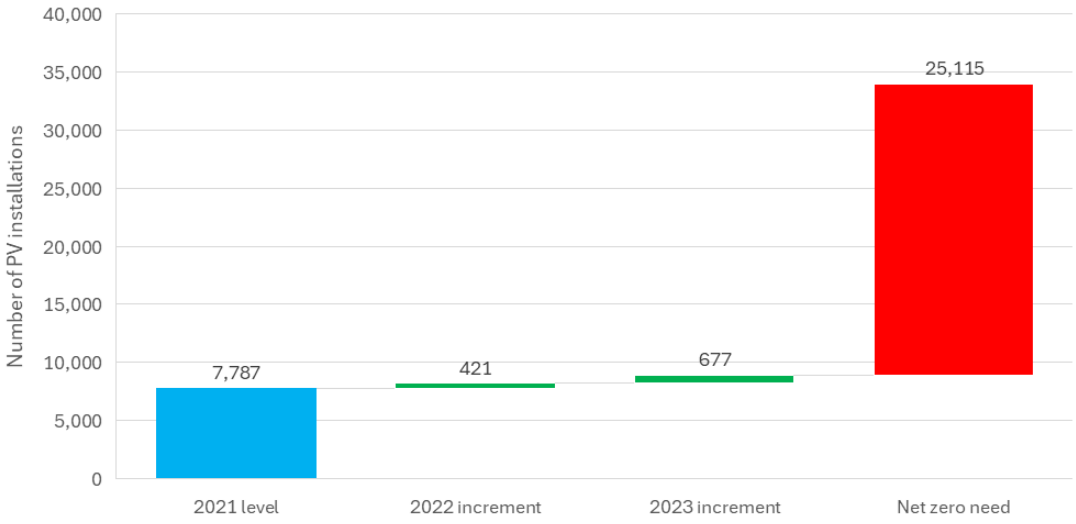


Figure 1 summarise the updated monitoring and reporting metrics.

Table 2. Plymouth's PV monitoring and reporting metrics

Sector	Power and heat		
Monitoring metric	PV installations (number)	PV capacity (MW)	PV generation (MWh)
2021 level	7,787	31.3	25,867
2022 increment	421	1.66	2,233
2023 increment	677	2.39	2,274
Net zero need	25,115	101.0	87,435
Data source	Renewable energy by local authority statistics, DESNZ [6]		
Data available	Annually		

Figure 1. Plymouth's PV installation trajectory.

2.2 Heat (networks)[b]

Buildings is the second highest-emitting sector in Plymouth, accounting for 26% of the city's total emissions. Decarbonising heating systems, the primary source of these emissions, is essential for reducing the sector's overall impact. Heat pumps are expected to be the leading technology in mitigating heating emissions (see Sections 3.2 and 3.3), with heat networks also playing a key role in areas with higher heat density.

In November 2023, DESNZ published statistics for heat networks registered under the Heat Network (Metering and Billing) Regulations as of December 2022 [7]. This records 17 communal heating networks and 3 district heating networks in Plymouth, serving 946 residential consumers, 2 commercial and 1 other.

Energy Performance Certificate [8] (EPC) data for heat networks as of 31st December 2021, 2022, 2023 and 2024 is summarised in Table 3 and Table 4.

Table 3. Heat network connections in Plymouth recorded in EPCs

Building type	2021	2022	2023	2024
Domestic (number of buildings)	2,859	3,025	3,003	2,970
Non-domestic (number of buildings)	49	62	59	59
Non-domestic (floor area in m^2)	n/a	n/a	75,485	75,485

Table 4. Year-on-year changes to heat network connections Plymouth recorded in EPCs

Building type	2021	2022	2023	2024
Domestic (number of buildings)	n/a	166	-22	-33
Non-domestic (number of buildings)	n/a	13	-3	0
Non-domestic (floor area in m^2)	n/a	n/a	n/a	0

EPC data shows considerably more buildings because it includes "community schemes" where, for example, a block of flats is served by a common heat source.

2.2.1 Domestic heat network connections

The Seventh Carbon Budget assesses that by 2040 the incidence of low-carbon heating in homes will increase to 68% from the current 8%, reaching 100% by 2050 [5]. Table 5 outlines the projected mix of low-carbon heat measures in 2040 under the Balanced Pathway.

Table 5. Additional residential heating measures by 2040 in the Seventh Carbon Budget

Low-carbon heating measure	Split of UK homes with low carbon heating in 2040	Plymouth homes with low carbon heating measures (68% of homes)
Individual heat pump	75%	62,355
Communal heat pump	3%	2,494
Low-carbon heat network	9%	7,483
Direct electric heating	13%	10,808
Total	**100%**	**83,140**[c]

[b] Note that the Climate Change Committee discusses heat under the buildings sector

[c] Based on 122,264 homes in Plymouth (2024) [9], with 68% of them having low-carbon heating measures.

As part of measures to achieve net zero emissions, the CCC envisages that 9% of domestic low-carbon heating systems installed by 2040 will consist of low-carbon heat networks, which equates to 7,483 homes in Plymouth (Table 5). The previous trajectory projected 19,000 homes connected to heat networks [4], but the Balanced Pathway now sees most low-carbon heating being delivered by individual heat pumps.

Table 6 shows a breakdown of Plymouth's domestic EPC data on heating at the end of 2022, 2023, and 2024, with the percentage for each type applied to the total number of homes.

Table 6. Heating types recorded in Plymouth domestic EPCs

Heating type	2022			2023			2024		
	EPCs	%	Plymouth	EPCs	%	Plymouth	EPCs	%	Plymouth
Mains gas central heating	73,995	85%	103,372	75,521	86%	104,979	78,936	86%	105,561
Electric storage heaters	5,339	6%	7,459	4,876	6%	6,778	4,938	5%	6,604
Electric room heaters	3,014	3%	4,211	2,921	3%	4,060	3,011	3%	4,027
Community schemes	2,165	2%	3,025	2,160	2%	3,003	2,221	2%	2,970
Room heaters mains gas	1,171	1%	1,636	977	1%	1,358	959	1%	1,282
Electric central heating	506	1%	707	506	1%	703	535	1%	715
LPG central heating	253	0%	353	280	0%	389	277	0%	370
Heat pumps	129	0%	180	156	0%	217	288	0%	385
Unknown	120	0%	168	88	0%	122	83	0%	111
Room heaters coal	69	0%	96	60	0%	83	56	0%	75
Oil central heating	68	0%	95	69	0%	96	68	0%	91
Solid fuel central heating	30	0%	42	24	0%	33	23	0%	31
Room heaters biomass	22	0%	31	19	0%	26	20	0%	27
Biomass central heating	9	0%	13	9	0%	13	9	0%	12
Room heaters bottled gas	4	0%	6	3	0%	4	2	0%	3
Room heaters oil	2	0%	3	1	0%	1	0	0%	0
Total	**86,896**	**100%**	**121,395**	**87,670**	**100%**	**121,867**	**91,426**	**100%**	**122,264**

The data shows that in 2022 there were 3,025 homes connected to heat network community schemes in Plymouth. In the last two years, the number of connections has decreased by 54. To meet the Seventh Carbon Budget trajectory, an additional 4,512 homes need to be connected to a heat network by 2040. Table 7 and Figure 2 summarise the updated monitoring and reporting metrics.

Table 7. Plymouth's domestic heat network connections monitoring and reporting metrics

Sector	Power and heat
Monitoring metric	**Homes connected to heat networks (number)**
2021 level	2,859
2022 increment	166
2023 increment	-22
2024 increment	-32
Net zero need	4,512
Data source	**EPC data** [8]
Data available	Monthly (but includes historical data)

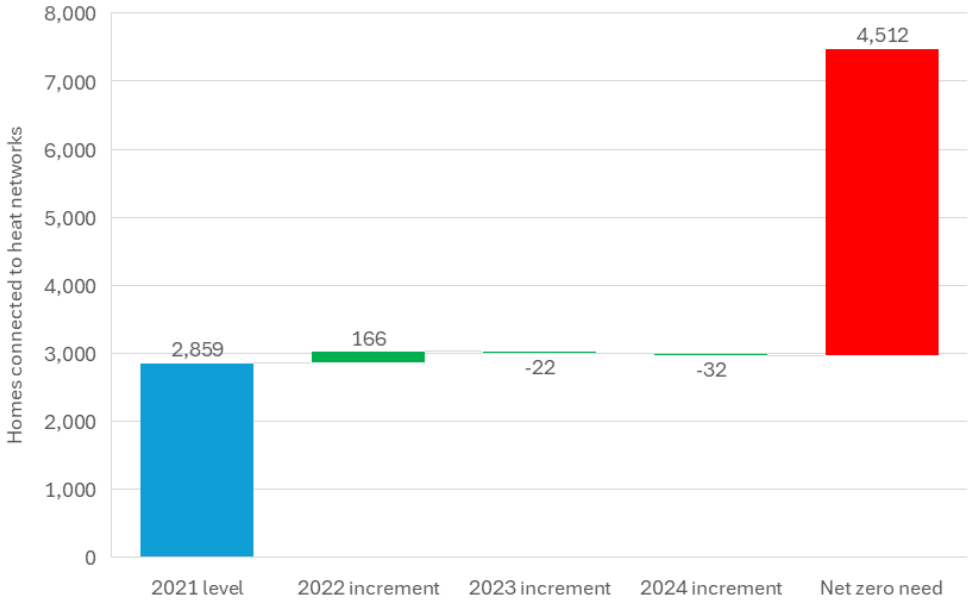


Figure 2. Plymouth's domestic heat network connections trajectory

2.2.2 Non-domestic heat network connections

The Seventh Carbon Budget aims to eliminate heating emissions in non-residential buildings by increasing the incidence low-carbon heating from the current 24% to 88% by 2040 [5]. This mainly relies on heat pump installations, either through individual systems or district heating. The exact mix depends on factors like feasibility, planning, heat density, and overall heat demand, but the CCC suggests that non-residential heat network connections largely mirror residential deployment rates. As an illustrative mix, the CCC's Balanced Pathway sees heat networks delivering 22% of heat demand in non-residential buildings by 2040.

Table 8 shows a detailed breakdown of non-domestic EPC data on heating in Plymouth at the end of 2022, 2023, and 2024.

Table 8. Heating types recorded in Plymouth non-domestic EPCs

Heating type	2022			2023			2024		
	EPCs	Area (m^2)	% area	EPCs	Area (m^2)	% area	EPCs	Area (m^2)	% area
Biomass	13	n/a	n/a	13	40,182	1%	14	42,532	1%
Coal	1	n/a	n/a	1	258	0%	1	258	0%
District Heating	62	n/a	n/a	59	75,485	2%	59	75,485	2%
Dual Fuel Appliances (Mineral + Wood)	3	n/a	n/a	4	734	0%	5	1,025	0%
Grid Supplied Electricity	2,638	n/a	n/a	3,014	1,130,055	34%	3,335	1,271,744	36%
LPG	18	n/a	n/a	18	6,997	0%	18	6,997	0%
Natural Gas	1,982	n/a	n/a	2,155	1,985,642	60%	2,247	2,055,108	58%
Oil	41	n/a	n/a	40	42,078	1%	41	42,411	1%
Other	108	n/a	n/a	113	31,961	1%	126	34,320	1%
Waste Heat	0	n/a	n/a	0	0	0%	1	1,384	0%
Total	**4,866**	**n/a**	**n/a**	**5,417**	**3,313,392**	**100%**	**5,847**	**3,531,264**	**100%**

EPC data shows that in the last 2 years, 3 buildings have disconnected from heat networks, reducing the total to 59. Historically, non-residential buildings connected to heat networks

have been monitored alongside residential connections. However, the updated Balanced Pathway trajectory focuses on heat demand over connection numbers, making this metric less practical. In the absence of detailed data on building-specific heat demand, progress in non-residential heat network connections is instead measured by the proportion of floor area heated by different sources. This method assumes a uniform average heat demand per unit area across non-residential buildings.

As of 2024, 2% (75,485 m^2) of Plymouth's non-residential floor area is heated by district heating. To align with the CCC's trajectory, an additional 20% (706,253 m^2) of Plymouth's non-residential floor area needs to be connected to a heat network. Table 9 and Figure 3 summarise the updated monitoring and reporting metrics.

Table 9. Plymouth's non-domestic heat network connections monitoring and reporting metrics

Sector	Power and heat
Monitoring metric	Non-residential floor area heated by heat networks (%)
2023 level	2%
2024 increment	0%
Net zero need	20%
Data source	EPC data [8]
Data available	Monthly (but includes historical data)

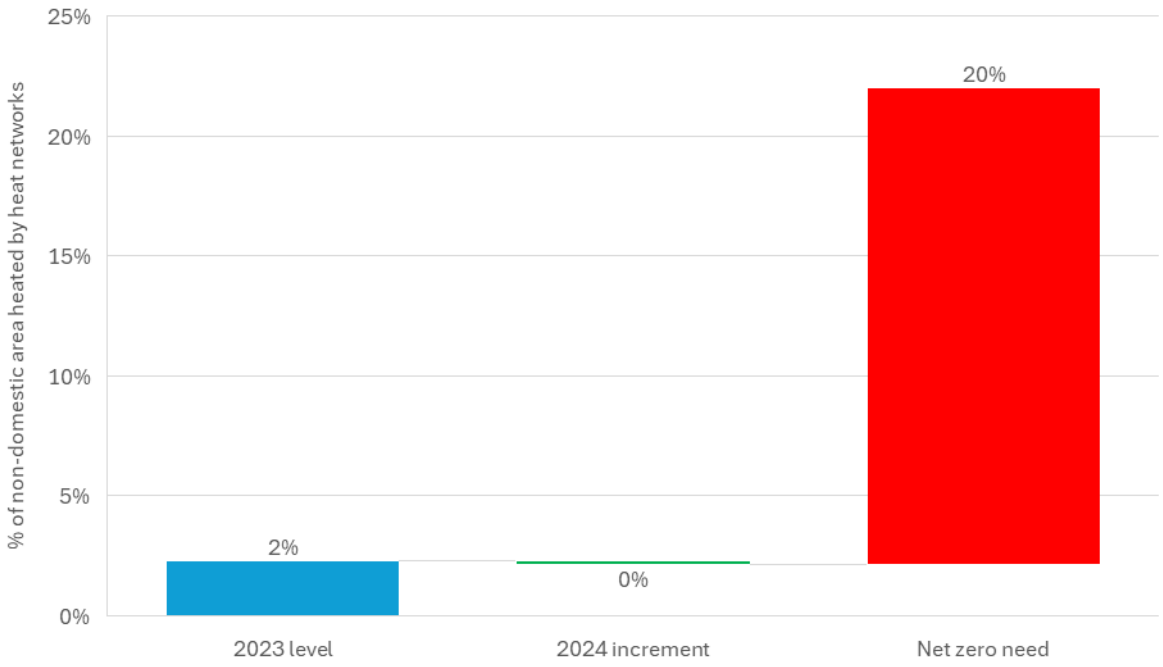


Figure 3. Plymouth's non-domestic heat network connections trajectory

Currently most properties (domestic and non-domestic) are connected to heat networks fuelled by natural gas. Fossil fuel-based heat networks will need to decarbonise to achieve net zero. The Seventh Carbon Budget [5] has existing heat networks converted to low-carbon heat sources from 2025, with 40% of existing heat networks converted by 2030 and all converted by 2040. Data sources need to be identified and a corresponding monitoring programme for the decarbonisation of Plymouth's heat networks needs to be developed.

3 Buildings

The majority of emissions associated with the buildings sector are due to the requirement for space heating and hot water (emissions from electricity use are considered in the power sector). Reducing emissions arising from space and hot water heating relies on reducing demand through behaviour and efficiency measures, as well as supplying any required heat using low-carbon technologies.

3.1 Fabric energy efficiency in homes

The Seventh Carbon budget includes trajectories for the insulation of loft and cavities in UK homes and indicates that all lofts and 87% of cavities are insulated by 2031 [5]. The CCC has concluded that solid wall insulation is generally not cost effective and is only installed in around 15,000 homes across the UK by 2040 which, pro rata, equates to 64 homes in Plymouth.

Data from Energy Performance Certificates (EPC) [8] provides information on Plymouth's homes. The dates of the EPCs go back to 2008, and there are duplicate records for some homes. While the data is processed to exclude duplicates, the information on homes that have older EPCs may well be out of date, due to changes to the properties since the most recent EPC was compiled. This caveat should be borne in mind when using EPC data.

Publication of EPC data occurs monthly. The assessment uses the data published at the end of December 2021, 2022, 2023, and 2024 and compares that to a year previously to identify the change in each year. Table 10 and Table 11 summarise the EPC coverage in Plymouth over the period.

Table 10. Domestic EPC coverage in Plymouth at the end of 2021, 2022, 2023 and 2024

Building type	2021	2022	2023	2024
Number of EPCs	83,415	86,896	87,670	91,426
Number of homes [9]	120,987	121,395	121,867	122,264
% EPC coverage	69%	72%	72%	75%

Table 11. Year-on-year changes to domestic EPC coverage in Plymouth in 2022, 2023 and 2024

Building type	2021	2022 increment	2023 increment	2024 increment
Number of EPCs	83,415	3,481	774	3,756
Number of homes [9]	120,987	408	472	397
% EPC coverage	69%	3%	<1%	3%

3.1.1 Roof/loft insulation

The recommended depth for loft insulation in pitched roofs is between 220mm and 270mm depending on the insulation material used [10]. Table 12 summarises current roof insulation data in Plymouth and compares them to data from the 2021 and 2022 analyses [3,4].

Table 12. Summary of changes in Plymouth roof insulation

Roof type	2021	2022	2023	2024
Pitched No insulation	9,914	9,874	9,459	9,283

Pitched < 200mm insulation	50,240	50,280	50,648	50,649
Pitched Requiring insulation	60,153	60,154	60,107	59,932
Pitched >200mm insulation	31,113	31,436	32,472	32,790
Total pitched	91,266	91,590	92,579	92,721
Other roofs	29,721	29,805	29,288	29,543
Total roofs	**120,987**	**121,395**	**121,867**	**122,264**

Insulated homes (new build where U values are given and pitched roofs with more than 200mm insulation) totalled 32,472 in 2023 and 32,790 in 2024, a 1,354 increase since 2022. However, the proportion of homes with pitched roofs requiring insulation remains virtually constant at 65% (only 222 homes less than in 2022). This indicates that additional loft insulation is mainly happening in new builds, while retrofitting of loft insulation in historic buildings is limited. Although EPCs are a lagging indicator it seems likely that the CCC trajectory of insulating all lofts by 2031 will be challenging at the current rate. The monitoring and reporting metrics are summarised in Table 13 and Figure 4.

Table 13. Plymouth's loft insulation monitoring and reporting metrics

Sector	**Buildings (domestic)**
Monitoring metric	**Insulated pitched roofs**
2021 level	31,113
2022 increment	323
2023 increment	1,036
2024 increment	318
Net zero need	59,932
Data source	**EPC data** [8]
Data available	Monthly (but includes historical data)

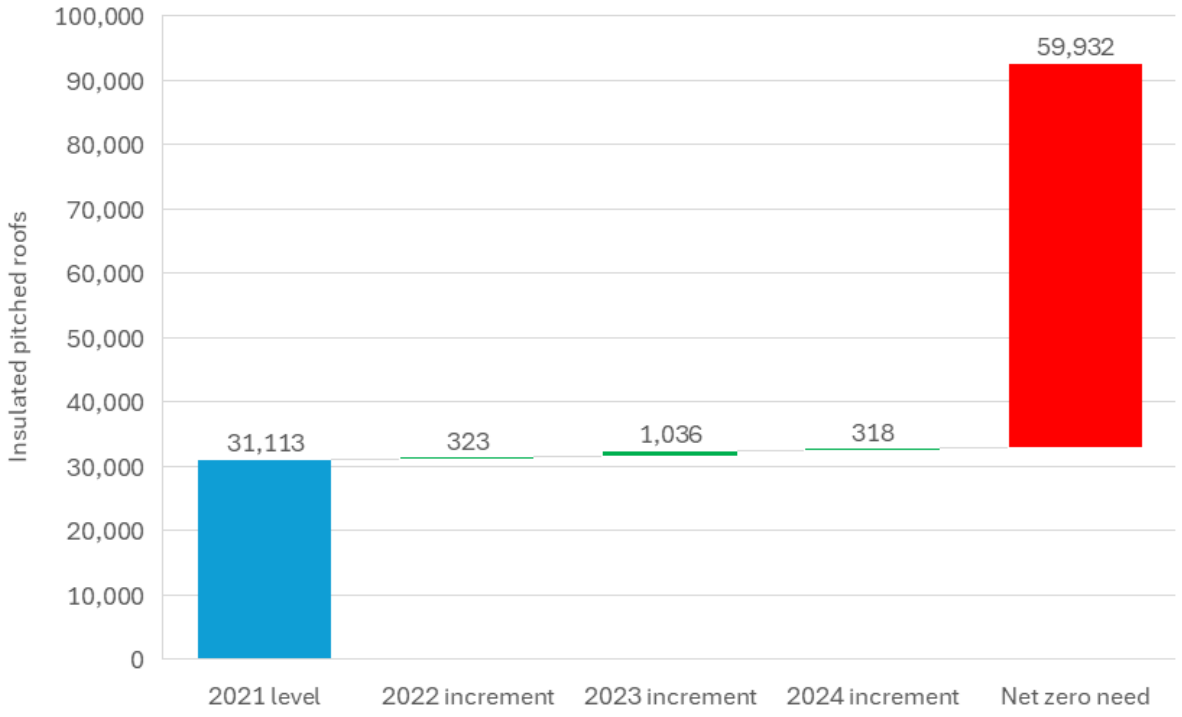


Figure 4. Plymouth's loft insulation trajectory

The results illustrate the challenges of using EPC data which is unlikely to capture all changes to the housing stock. Homes that have older EPCs may well be out of date, due to changes to the properties since the most recent EPC was compiled. While the data shows that few EPCs have recorded changes in loft insulation, it cannot be assumed that no more homes with pitched roofs in Plymouth have installed loft insulation over the year.

3.1.2 Wall insulation

Table 14 shows a summary of the EPC data for wall insulation in Plymouth.

Table 14. Wall insulation recorded in Plymouth EPCs

Wall type	2022			2023			2024		
	EPCs	%	Plymouth	EPCs	%	Plymouth	EPCs	%	Plymouth
Insulated cavity walls	35,249	41%	49,243	36,317	41%	50,485	38,052	42%	50,889
Insulated other walls	8,106	9%	11,324	8,639	10%	12,009	8,972	10%	11,999
Insulated solid walls	13,002	15%	18,164	13,134	15%	18,258	13,768	15%	18,413
Partly insulated cavity walls	2,246	3%	3,138	2,253	3%	3,132	2,348	3%	3,140
Partly insulated other walls	768	1%	1,073	765	1%	1,063	926	1%	1,238
Partly insulated solid walls	89	0%	124	78	0%	108	74	0%	99
Uninsulated cavity	12,215	14%	17,065	11,828	13%	16,442	12,235	13%	16,363
Uninsulated other walls	3,304	4%	4,616	3,104	4%	4,315	3,256	4%	4,354
Uninsulated solid walls	11,800	14%	16,485	11,465	13%	15,938	11,713	13%	15,664
Unknown	117	0%	163	83	0%	115	78	0%	104
Total	**86,896**	**100%**	**121,395**	**87,666**	**100%**	**121,867**	**91,422**	**100%**	**122,264**

Since 2022, the number of insulated cavity walls has increased by 1,646 to 50,889 – over 72% of Plymouth's housing stock (of those with cavity walls). The number of uninsulated cavity walls decreased by 702, indicating that cavity wall insulation is ongoing in both new and historic properties. To align with the CCC trajectory, which targets 87% of properties with cavity walls insulated by 2031, 10,671 additional properties from the existing stock need to be insulated (see Table 15 and Figure 5).

Table 15. Plymouth's cavity wall insulation monitoring and reporting metrics

Sector	Buildings
Monitoring metric	**Insulated cavity walls**
2021 level	48,659
2022 increment	585
2023 increment	1,242
2024 increment	404
Net zero need	10,671
Data source	**EPC data** [8]
Data available	Monthly (but includes historical data)

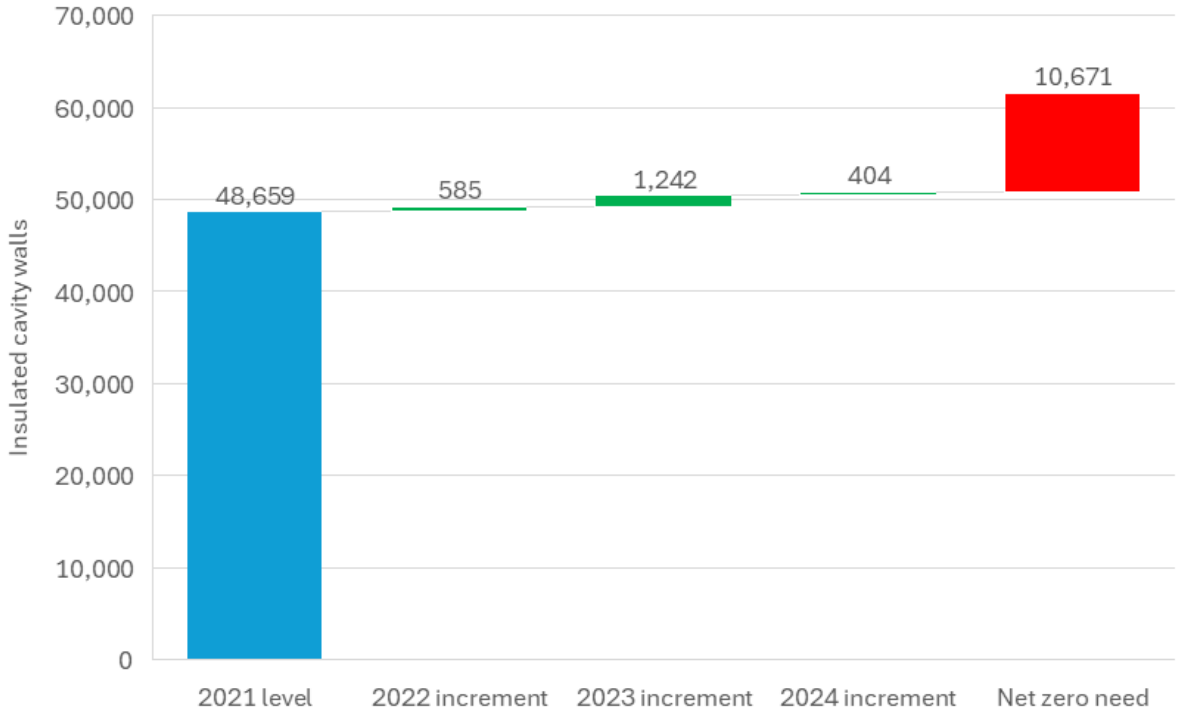


Figure 5. Plymouth's cavity wall insulation trajectory

The solid wall insulation metric has been dropped as the CCC sees the insulation of solid walls playing a small role in reducing emissions due to its poor cost effectiveness [5]

3.2 Low carbon heat in homes

The CCC highlights the electrification of heating as the key measure to eliminate residential building emissions. Heat pumps will play an increasingly dominant role in delivering low-carbon heating, projected to heat 52% of all UK homes by 2040 and 80% by 2050 (see Figure 6).

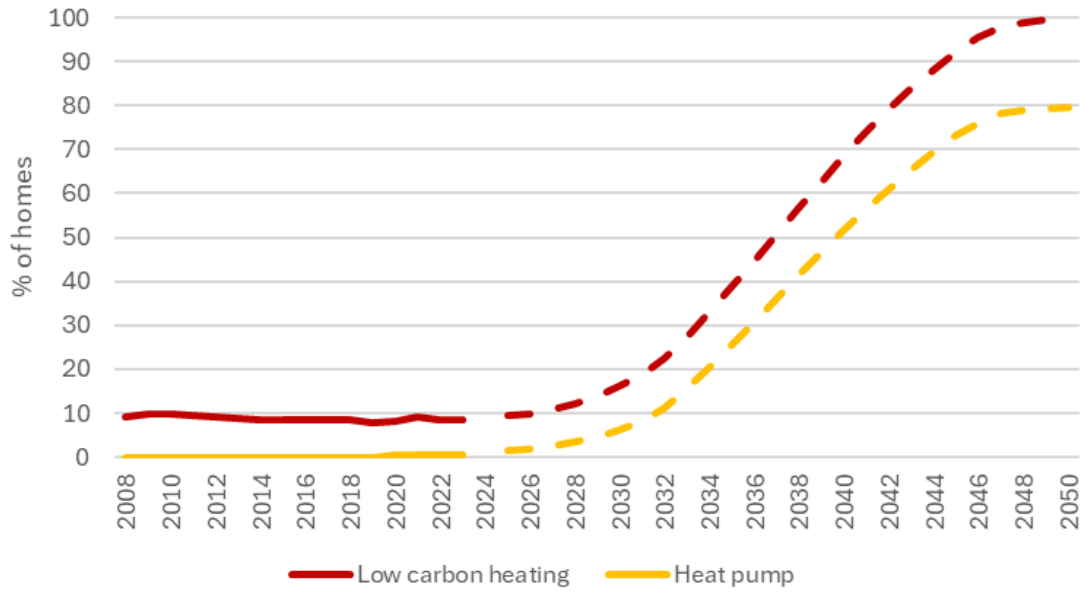


Figure 6. Pathway for low-carbon heating uptake in the Seventh Carbon Budget

Table 16 shows EPC data on heating in Plymouth's homes at the end of 2022, 2023, and 2024.

Table 16. Heating types recorded in Plymouth EPCs

Heating type	2022			2023			2024		
	EPCs	%	Plymouth	EPCs	%	Plymouth	EPCs	%	Plymouth
Mains gas central heating	73,995	85%	103,372	75,521	86%	104,979	78,936	86%	105,561
Electric storage heaters	5,339	6%	7,459	4,876	6%	6,778	4,938	5%	6,604
Electric room heaters	3,014	3%	4,211	2,921	3%	4,060	3,011	3%	4,027
Community schemes	2,165	2%	3,025	2,160	2%	3,003	2,221	2%	2,970
Room heaters mains gas	1,171	1%	1,636	977	1%	1,358	959	1%	1,282
Electric central heating	506	1%	707	506	1%	703	535	1%	715
LPG central heating	253	0%	353	280	0%	389	277	0%	370
Heat pumps	129	0%	180	156	0%	217	288	0%	385
Unknown	120	0%	168	88	0%	122	83	0%	111
Room heaters coal	69	0%	96	60	0%	83	56	0%	75
Oil central heating	68	0%	95	69	0%	96	68	0%	91
Solid fuel central heating	30	0%	42	24	0%	33	23	0%	31
Room heaters biomass	22	0%	31	19	0%	26	20	0%	27
Biomass central heating	9	0%	13	9	0%	13	9	0%	12
Room heaters bottled gas	4	0%	6	3	0%	4	2	0%	3
Room heaters oil	2	0%	3	1	0%	1	0	0%	0
Total	**86,896**	**100%**	**121,395**	**87,670**	**100%**	**121,867**	**91,426**	**100%**	**122,264**

Since 2022, EPC data suggests 205 heat pump installations in Plymouth, giving a total of 385 homes heated with heat pumps (<1% of all homes). Data from MCS [11] suggests 136 homes have heat pumps indicating that installations are occurring without MCS registration. To meet the Balanced Pathway trajectory of 80% of homes heated with heat pumps, an additional 97,004 installations are required by 2050. Although this seems unfeasible at the current rate, the CCC predicts that heat pump uptake will increase exponentially in future years, with most installations projected to occur after 2030 (Figure 6). The monitoring metrics and trajectory are summarised in Table 17 and Figure 7.

Table 17. Plymouth's heat pump installation monitoring and reporting metrics

Sector	**Buildings**
Monitoring metric	**Number of heat pumps installed**
2021 level	162
2022 increment	18
2023 increment	37
2024 increment	168
Net zero need	97,004
Data source	**EPC data** [8]
Data available	Monthly (but includes historical data)

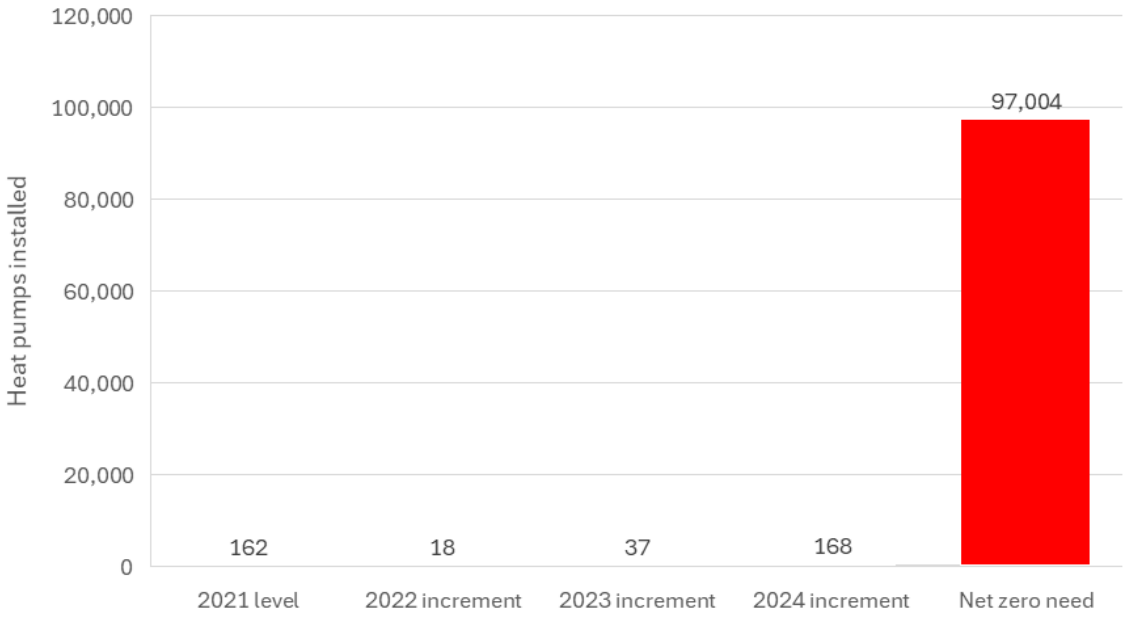


Figure 7. Plymouth's heat pump installation trajectory

3.3 Energy efficiency and low carbon heat in non-domestic buildings

The Seventh Carbon Budget's Balanced Pathway gives 35% of non-domestic building emissions reduction in 2040 from energy efficiency measures and assumes that all cost-effective energy efficiency measures are taken up by 2032 with 60% of these coming from energy management and building instrumentation and control measures, 26% from fabric measures and 14% from heating and hot water. However, the largest reduction of emissions in 2040 (49%) is from low carbon heating delivered through electrification (mainly heat pumps) and low carbon heat networks. Other reductions come from electrification of catering and other fuels.

In practical terms, the Balanced Pathway requires organisations (or in many cases, their landlords), to invest in efficiency measures and low and zero carbon building services.

Display Energy Certificate (DEC) and non-domestic Energy Performance Certificate (EPC) data provide an insight into Plymouth's non-domestic buildings[d]. There are about 5,850 non-domestic EPCs in Plymouth which is approximately the number of non-domestic premises recorded in the NEED data [12], indicating that most premises now have an EPC. DECs and EPCs provide an operational/asset rating from A (good) to G (poor) for each building based on the building's estimated CO_2 emissions. Buildings with DECs may also have an EPC.

The CO_2 estimates in DECs and EPCs are calculated using electricity CO_2 emissions factors that are not consistent with those used to produce Plymouth's 2022 GHG emission estimate. The CO2 emissions are therefore adjusted using a local emission factor. At the end of 2024, the

[d] DECs are required annually on buildings accessed by the public which are over 1000 m2, and less frequently (every 10 years) on smaller buildings (over 250 m2). There are about 490 premises with DECs in Plymouth (end 2024). Non-domestic EPCs have been required since 2008 on the sale, rental or construction of non-domestic premises and are also required every 10 years. However, some will be out of date with the potential for changes to have been made since the EPC was compiled.

calculated 0.164 kgCO_2/kWh electricity emission factor resulted in calculated emissions total from buildings with DECs of 57 kt CO_2 a 43% reduction compared to 133 ktCO_2 reported in the DECs.

Figure 8 shows the distribution of buildings, floor areas and CO_2 emissions for each DEC band. The graph suggests the poor performing buildings in bands E and F account for a disproportionate share of the building stock's CO_2 emissions.

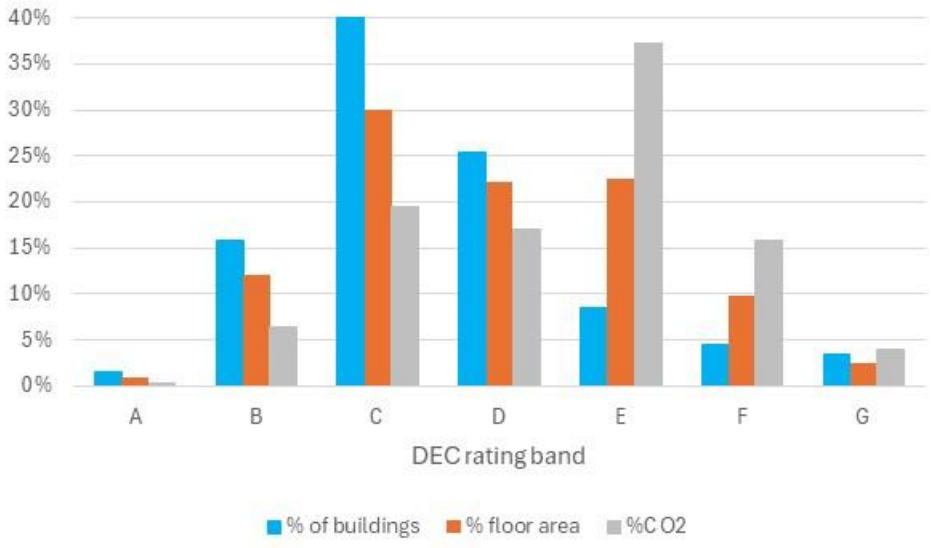


Figure 8. Percentage of non-domestic buildings, floor area and CO_2 emissions for each DEC band in Plymouth as at 31st December 2024

Average CO_2/m^2 figures for each rating band have been used to estimate how improvements in building performance to a better performing band is likely to impact CO_2 emissions[e]. Improving buildings with DEC ratings of E, F and G (75 buildings) to a D rating achieves a 30% reduction in CO_2 emissions, while improving only F and G rated buildings (33 buildings) achieves a 10% reduction.

EPCs do not provide energy consumption data so the methodology applied to DECs cannot be repeated. Total CO_2 emissions recorded in EPCs are 202 kt CO_2. As with DECs, the emissions from electricity consumption will be inconsistent with Plymouth's 2022 GHG inventory. If the 46% reduction derived for the DECs is applied, total emissions fall to 86 kt CO_2. Adding emissions from DECs gives a total of 143 kt CO_2. This adjusted total from DECs and EPCs compares with the GHG assessment's 147 kt CO_2[f].

Figure 9 shows the distribution of buildings, floor areas and CO_2 emissions for each EPC band which suggest a more proportionate profile of CO_2 emissions compared with the number of buildings and floor space than is found from DECs.

[e] Note that no specific allowance is made for electricity grid decarbonisation.
[f] Total emissions for commercial and public administration electricity and fuel

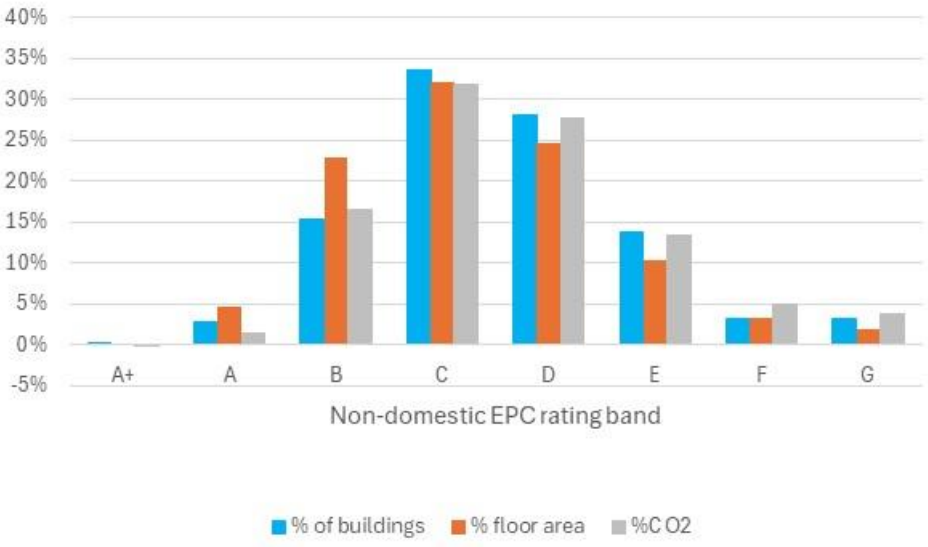


Figure 9. Percentage of non-domestic buildings, floor area and CO_2 emissions for each EPC band in Plymouth as at 31st December 2024

The Geographical Annex to the Non-domestic National Energy Efficiency Data-Framework [12] quotes the total number of non-domestic buildings in Plymouth in 2023 as 5,570. The number of new buildings added in 2022 is assumed to be equal to the additional number of buildings that achieved A and B EPC band ratings over the year giving 215 new buildings and a total of 5,785 non-domestic buildings.

Appendix A compares the number of non-domestic buildings by EPC band from the end of 2021 to the end of 2024[g]. Changes between these years see an estimated additional 1,364 EPCs and a net change of 436 buildings which encouragingly includes the addition of 726 buildings in EPC Bands C and above and a reduction of 270 buildings with EPC Band D and below. As with DECs, average CO_2/m^2 figures for each rating band in the EPCs have been used to estimate how improvements in building performance to a better performing band is likely to impact CO_2 emissions. Improving buildings with EPC ratings of C, D, E, F and G (4,246 of the buildings with EPCs) to a B rating achieves a 26% reduction in CO_2 emissions. Achieving a 26% CO_2 emission reduction for all buildings (i.e. including those without EPCs) will require significant energy efficiency upgrades to some 4,714 non-domestic buildings in Plymouth.

Table 18 and Figure 10 show the addition of 466 EPC band A and B buildings many of which, it can be assumed, will be new buildings.

[g] Note that there are methodology changes between the 2022 and 2024 analysis that are likely to lead to minor inconsistencies

Table 18. Plymouth's non-domestic EPC band improvement monitoring and reporting metrics

Sector	Buildings (non-domestic)
Monitoring metric	EPC A & B rated non-domestic buildings
2021 level	605
2022 increment	93
2023 increment	158
2024 increment	215
Net zero need	4,714
Data source	EPC data [8]
Data available	Monthly (but includes historical data)

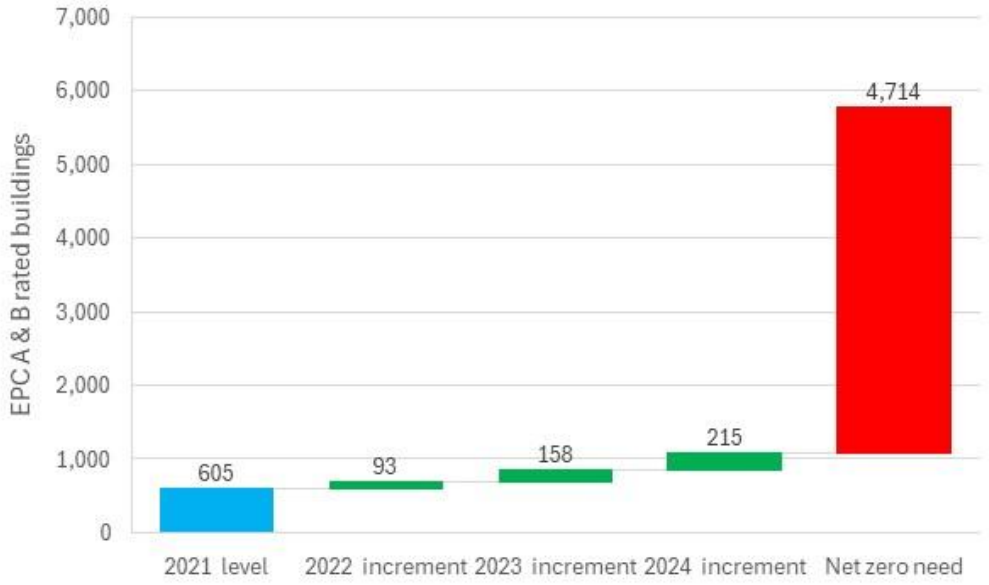


Figure 10. Plymouth's non-domestic EPC band improvement trajectory

The Seventh Carbon Budget provides for all non-domestic buildings to be heated with low carbon heat technology by 2050 with an interim pathway of 88% in 2040. Appendix B shows the changes between 2021 and 2024. Between these years a similar number of buildings adopted low carbon heating (217) to those adopting gas heating (219).

This suggest that there is currently insufficient progress in reducing the penetration of gas heating. However, the adoption of the Future Buildings Standard in Building Regulations should reduce the instances of gas heating in new buildings. The monitoring and reporting metrics are summarised in Table 19 and Figure 11.

Table 19. Plymouth's non-domestic low carbon heating installation monitoring and reporting metrics

Sector	Buildings (non-domestic)
Monitoring metric	Low carbon heating systems
2021 level	2,928
2022 increment	125
2022 increment	64
2024 increment	327
Net zero need	2,341
Data source	EPC data [8]
Data available	Monthly (but includes historical data)

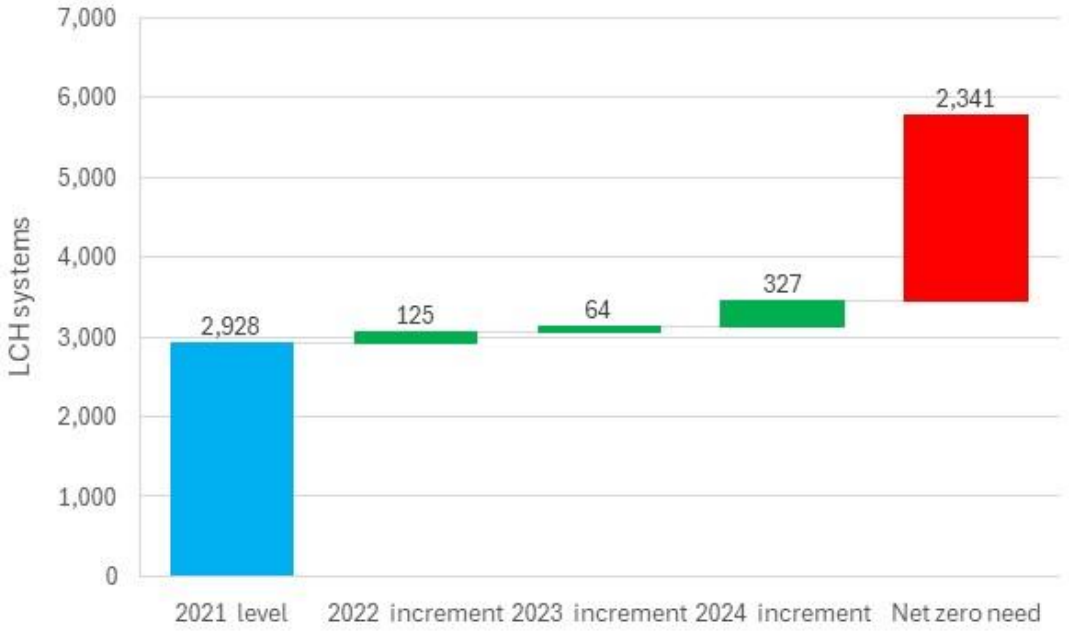


Figure 11. Plymouth's non-domestic low carbon heating installation trajectory

4 Industry

The industrial sector covers emissions from manufacturing and construction businesses excluding those arising from the consumption of electricity (included under the power sector) and from space heating and hot water provision in buildings (covered above). Typically, the sector includes energy intensive industrial activities such as chemicals and iron and steel, which together in 2023 were responsible for nearly one third [5] of UK industrial sector emissions. Few of these industries are present in Plymouth; average emissions from large industry represented only 6.1% of industrial emissions for the five years to 2020. Emissions in the area are more likely to occur from activities such as manufacturing, engineering, marine, tourism, hospitality and a variety of other smaller businesses.

Industrial emissions in Plymouth are relatively small (66.9 kt CO_2e or 6.7% of total emissions in 2022). Figure 12 shows the historic trajectory of industrial emissions in Plymouth. After a post pandemic bounce in 2021 emissions seem to have reverted to the general trend of gradually falling, but the current trend indicates net zero is some way off with emissions remaining above 44 kt CO_2e in 2050.

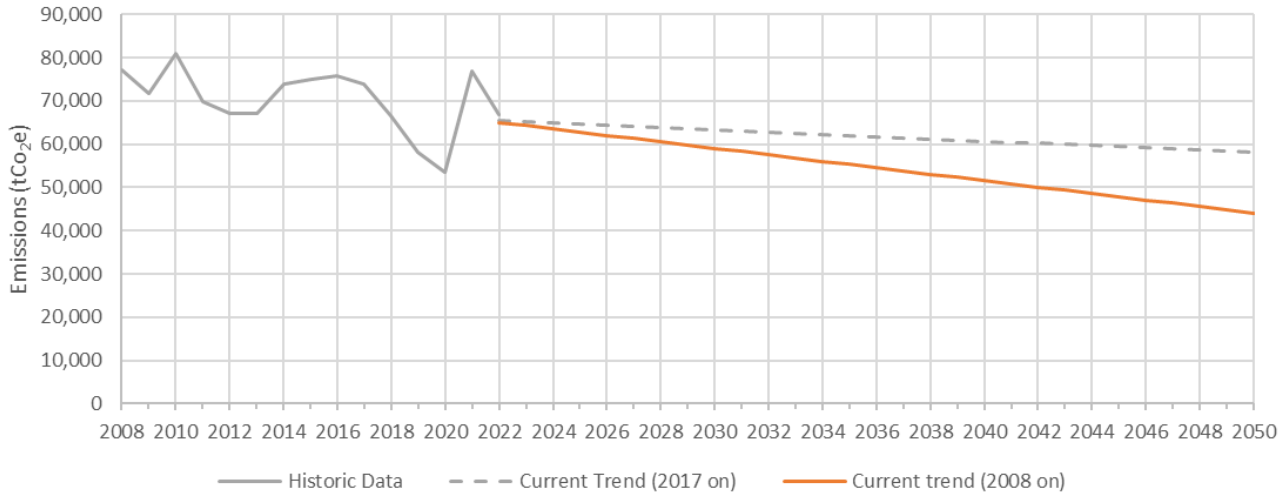


Figure 12. Historic and projected industrial emissions for Plymouth

The Committee on Climate Change envisions electrification as the main route to decarbonising industry as for many industrial processes, electrification is a better option than hydrogen because of its greater efficiency and availability. However, there remains a role for hydrogen where electrification is either impractical or not cost effective. Carbon capture and storage (CCS) is important for tackling process emissions for subsectors with limited alternatives, in particular cement and lime. There are few businesses in Plymouth in these industrial categories meaning that the decarbonisation of Plymouth's industry is likely to rely on the electrification of activities where gas is currently used.

There is currently insufficient granularity in the data available to set metrics for industrial GHG emissions reduction (such as the penetration of heat pumps).

5 Mobility

Transport is Plymouth's highest emitting source of GHG emissions with an estimated 343 kt CO_2e emitted in 2022 (34%). This is a consequence of separating electricity emissions into the power sector; most of which is currently consumed in buildings and not in transport. Hence, emissions associated with buildings are split between the buildings and power reporting sectors whereas most transport emissions appear in a single reporting sector. Nevertheless, transport is a very significant emissions sector and demands particular attention.

GHG emissions from the transport sector have fallen year-on-year and have reduced by one-third since 2008. There was a particularly sharp decline of 20% from 2019 to 2020, attributable to Covid-19 pandemic travel restrictions. Transport emissions have now returned to pre-pandemic levels.

5.1 Trends in vehicle utilisation

While lower emission vehicles will be key to the decarbonisation of the transport sector, reduction in vehicle use is also a factor. This can be achieved through a modal shift to active travel modes and public transport, and a reduction in the need to travel through increased

home working and spatial planning measures. The 2019 Climate Change Committee Net Zero Technical Report [13] assumes a 10% reduction in car and heavy goods vehicle (HGV) miles as part of a package of measures to achieve net zero emissions across all sectors by 2050. The 2021 monitoring report [3] assumes a 10% reduction in vehicle miles from 2019 levels by 2030 to achieve net zero on an accelerated timescale. This implies a 0.9% reduction per annum over an 11-year period. The reduction in car mileage was increased to 17% by 2050 in the balanced net zero pathway of the CCC's Sixth Carbon Budget report [2]. However, the Seventh Carbon Budget [5] indicates that the expectation is for distance travelled by all vehicles to steadily increase to 2050.

Figure 13 shows the trend in vehicle miles in Plymouth from 1993 to 2023 with the future trajectories assuming the per capita increase in vehicle miles modelled in the Seventh Carbon Budget [5].

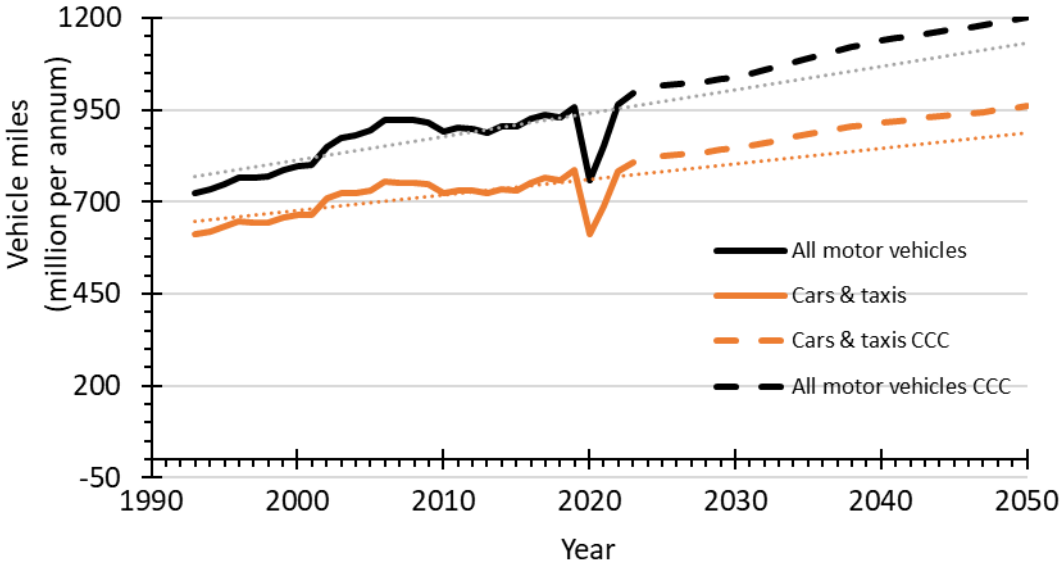


Figure 13. Vehicle miles on roads in Plymouth [14], with current trend (finned dotted lines) and projections using the CCC's Seventh Carbon Budget (dashed lines)

As vehicle miles are no longer constrained by the CCC's projections the metrics developed previously, which projected a fall in vehicle miles, are discontinued.

5.2 Electric and zero carbon vehicles

Electric vehicles and charging points hold the key to the transformation of mobility.

The balanced pathway in the CCC's Seventh Carbon Budget projects that by 2050 virtually all vehicles will be electric (Table 20).

Table 20. Percentage of electric vehicles in the fleet [5]

Vehicle type	2025	2030	2035	2040	2050
Cars	6%	29%	57%	80%	97%
Vans	3%	23%	52%	74%	95%
HGVs	0%	6%	31%	63%	93%

Achieving net zero GHG emissions therefore requires all cars and light goods vehicles (LGVs) driving in Plymouth to be battery electric vehicles (BEVs)[h]. The provision of corresponding charging infrastructure is required to support this transition. The CCC is also expecting the electrification of HGVs, buses and coaches albeit on a slower trajectory.

This report assesses GHG emissions on a territorial basis. This implies a scheme that imposes requirements or restrictions on all vehicles travelling on roads within the city jurisdiction, with the aim of excluding fossil fuel-powered vehicles. A proxy measure adopted here is to consider vehicles registered in the Plymouth area[i]; whilst not fully capturing all vehicles operating within the city it does give a picture of the transition towards BEVs.

The number of BEVs has been accelerating over the past decade with 1,125 cars and 78 LGVs registered at the end of 2023. No battery electric HGVs or buses or coaches are registered in Plymouth. Figure 14 shows uptake to date. This follows an exponential trend for cars; for LGVs the pattern is less clear due to the small number of vehicles.

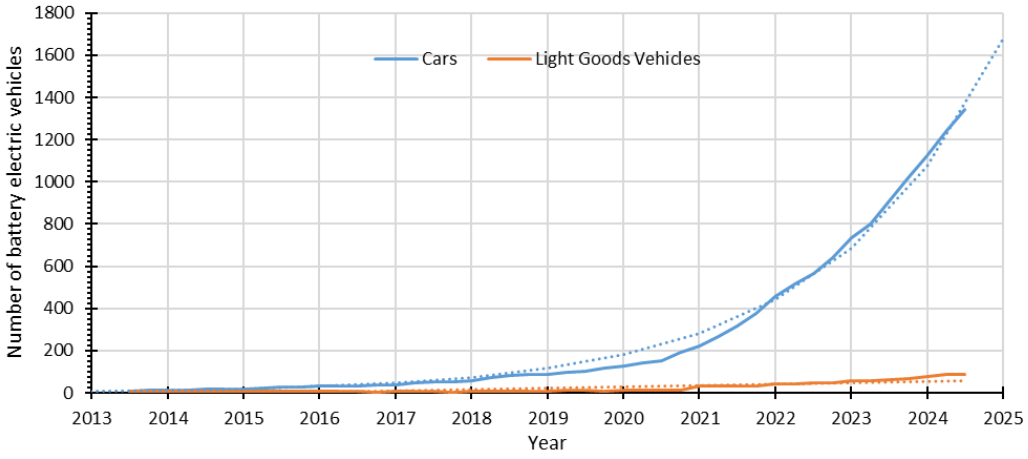


Figure 14. Battery electric vehicles registered in the Plymouth area from 2013 to 2024 [15]

5.2.1 BEV cars

There were 390 BEV cars registered in Plymouth in 2023 with a total of 1,125 BEV cars at year end. This exceeds the projection in the 2022 monitoring report [4] which forecast that the start

[h] Battery electric vehicles are fully electric and charged from the national grid. This is distinct from hybrid electric vehicles which have both an internal combustion engine and electric motors; depending on type the battery may be recharged only via an on-board generator or regenerative braking (hybrid), or additionally from the national grid (plug-in hybrid). Hybrid vehicles are now seen as a transitional technology, and battery electric vehicles are now needed to make significant progress towards net zero GHG emissions.

[i] Considering vehicle registrations in Plymouth is a consumption-based approach (as against territorial). Vehicles registered in Plymouth drive outside the boundaries; conversely many vehicles driving within Plymouth are registered elsewhere. The aim is that all vehicle mileage within Plymouth is undertaken in BEVs, which requires all those driving in the area using vehicles registered elsewhere to also be BEVs. Measures to achieve this might include a strict clean air zone, for example. BEV registrations in Plymouth are a relevant indicator of progress towards eliminating fossil fuel-based mobility, and one for which data are available.

of 2024 would see 1,067 BEVs in Plymouth. However, the figure is short of the 2,218 identified to be on trend for 100% of cars to be BEVs by 2030.

The exponential trend for uptake of BEV cars has been revised based on the latest registrations data, resulting in Figure 15. This indicates that there would be about 16,000 by 2030: about 13% of the current car fleet [16]. Extrapolating further, by 2035 all cars would be battery electric. However, from 2031 onwards the number of new BEVs introduced annually would exceed the current annual number of new car registrations[j] [17].

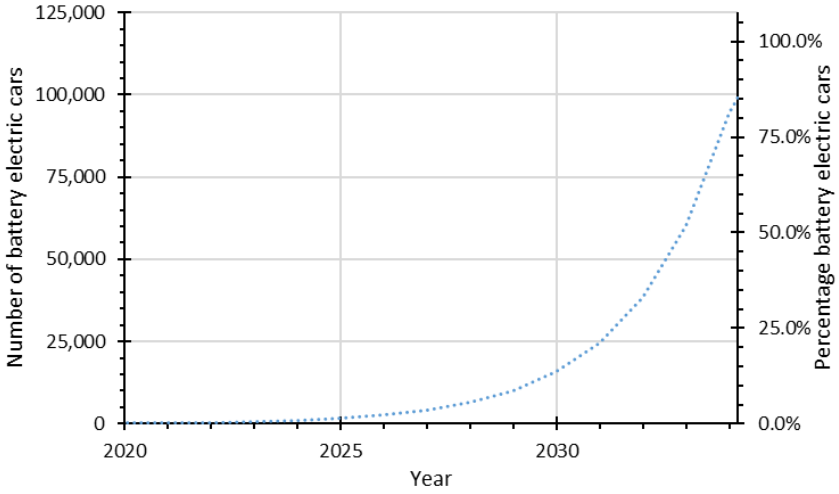


Figure 15. Projected battery electric cars in Plymouth to 2035 based on the current exponential growth rate

Table 21 shows the figures for the projection in Figure 15 and illustrates that from 2030 the uptake of BEVs is unlikely to be achievable through the normal vehicle replacement cycle. If, come 2030, the number of new registrations is limited to the current rate it would take about 15 years or until 2045 for all cars to be BEVs. This projection is broadly in line with the CCC's figures for cars in Table 20.

Table 21. Current trend battery electric car projections (shaded parts of the table with italic text are unlikely to be achievable through the normal vehicle replacement cycle - see text[k])

Year (1 January)	Total number of BEV cars	% of fleet	New BEV cars registered in year	% of new registrations
2024	1,074	1%	388	6%
2025	1,681	1%	606	9%
2026	2,629	2%	949	14%
2027	4,113	3%	1,484	22%
2028	6,435	5%	2,321	34%

[j] The number of new cars registered annually in Plymouth is estimated to be 6,766 (based on 117,900 cars registered in Plymouth in 2023[Error! Bookmark not defined.] and a 5.7% annual replacement rate for the south west of England in 2023[Error! Bookmark not defined.]). The replacement rate for the south west has fallen considerably from 8.3% in 2019 as a consequence of economic conditions and supply chain constraints.

[k] Projections for 2024 are impacted by the imperfect fit between the exponential growth curve and the actual number of BEV cars in 2024.

2029	10,066	9%	3,632	54%
2030	15,748	13%	5,681	84%
2031	*24,635*	*21%*	*8,888*	*131%*
2032	*38,539*	*33%*	*13,904*	*206%*
2033	*60,291*	*51%*	*21,752*	*322%*
2034	*94,319*	*80%*	*34,028*	*503%*
2035	*117,320*	*100%*	*23,602*	*349%*

New BEV cars introduced in 2023 represented about 6% of expected total new car registrations in Plymouth. For the United Kingdom as a whole, the corresponding figure is about 16%. It would therefore appear that BEV car uptake in Plymouth is significantly lower than the national average (this analysis assumes that fleet replacement in Plymouth with new cars equals the average for the southwest of England; if the introduction of new cars in Plymouth is below the regional average, this would explain the seeming disparity).

Table 22. Plymouth's battery electric car monitoring and reporting metrics

Sector	Mobility
Monitoring metric	BEV cars registered in Plymouth
2021 level	455
2022 increment	280
2023 increment	390
Net zero need	117,320
Data source	Licenced plug-in vehicle statistics, DfT [15]
Data available	Quarterly

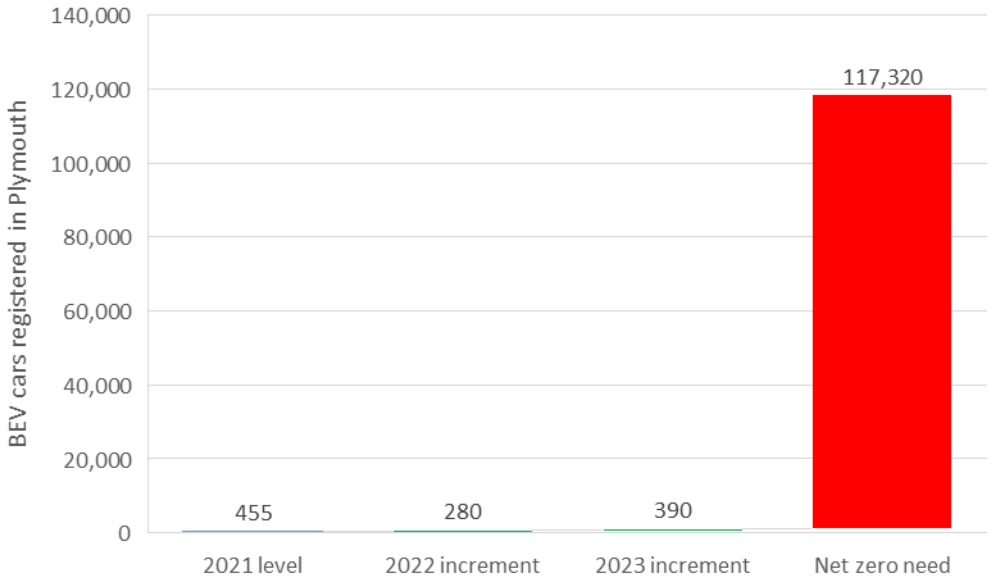


Figure 16. Plymouth's battery electric car trajectory

5.2.2 BEV LGVs

LGVs will also need to be replaced with BEVs. The percentage of LGVs registered in Plymouth that are already BEVs is lower than for cars (0.52% compared to 0.96% as at the beginning of 2024).

In 2022 and 2023, the number of LGV BEVs registered in Plymouth increased by 15 and 23 respectively. These increases are both well short of the required trajectory.

Table 23. Plymouth's battery electric light goods vehicle monitoring and reporting metrics

Sector	Mobility
Monitoring metric	BEV light goods vehicles registered in Plymouth
2021 level	40
2022 increment	15
2023 increment	23
Net zero need	15,100
Data source	Licenced plug-in vehicle statistics, DfT [15]
Data available	Quarterly

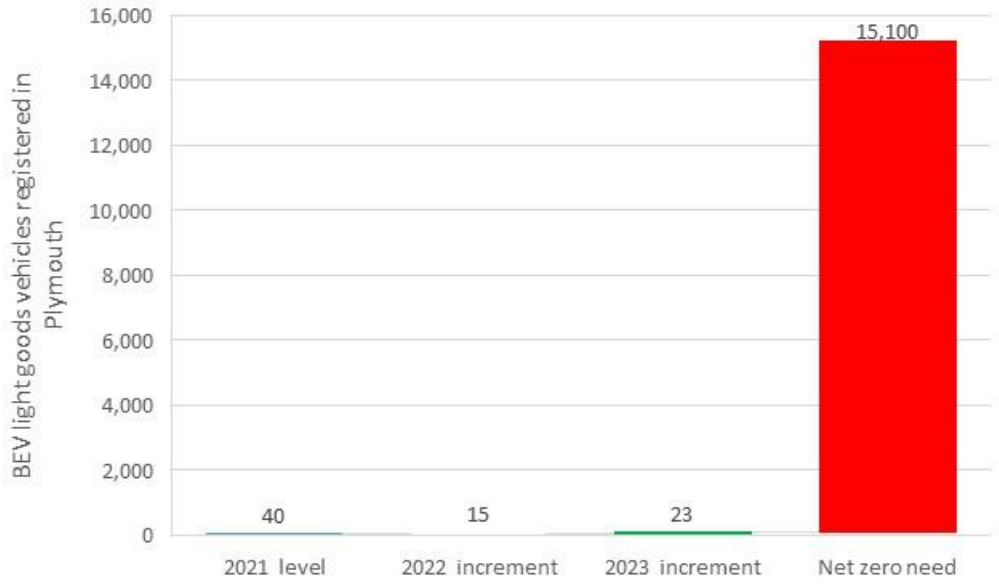


Figure 17. Plymouth's battery electric light goods vehicle trajectory

5.2.3 Zero GHG emission HGVs, buses and coaches

HGVs, buses and coaches will also need to be zero emissions along with cars and LGVs. At the end of 2023, there were 673 HGVs, and 608 buses and coaches registered in Plymouth; many other vehicles registered elsewhere will pass through the city's boundaries.

Although relatively few in number, larger vehicles have greater emissions per vehicle, so transitioning them away from fossil fuels is important. Zero emission vehicle technology is less established for heavy vehicles, although penetration of electric alternatives has come forward in some categories (waste trucks for example) and the CCC foresee HGV electrification tracking other vehicles with a 5-year delay (see Table 21).

Vehicle registration data indicates that no zero emission heavy vehicles are registered in Plymouth, although large operators often register vehicles away from the areas in which they operate. Replacement of the 1,281 HGVs, buses and coaches in Plymouth remains a challenge.

Table 24. Plymouth's zero emission heavy goods vehicle, bus and coach monitoring and reporting metrics

Sector	Mobility

Monitoring metric	Zero emission heavy goods vehicle, bus and coach vehicles registered in Plymouth
2021 level	0
2022 increment	1
2023 increment	-1
Net zero need	1,281
Data source	Licenced plug-in vehicle statistics, DfT [15]
Data available	Quarterly

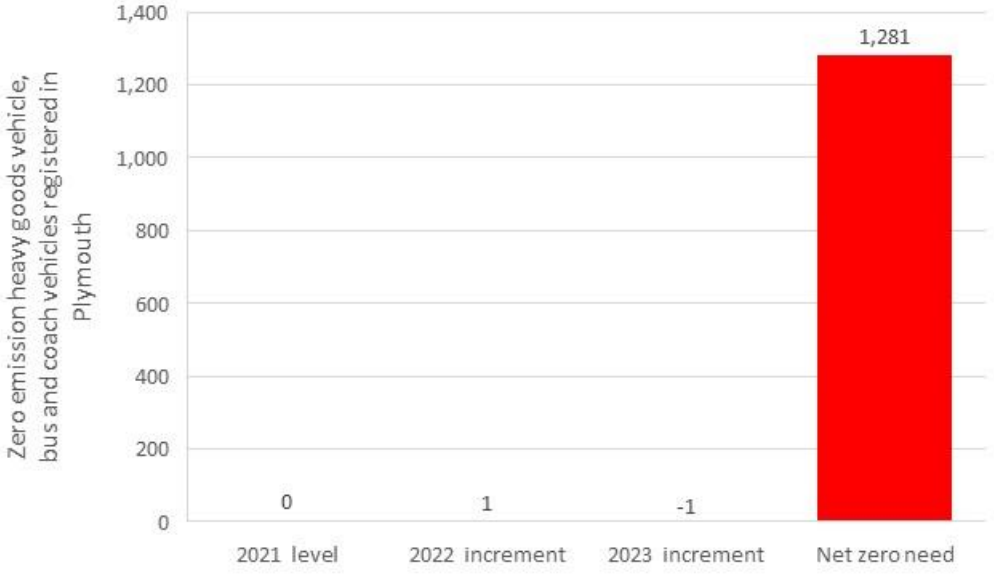


Figure 18. Plymouth's zero emission heavy goods vehicle, bus and coach vehicle trajectory

5.3 Charging points

The 2022 monitoring report [4] stated that 1,355 public electric vehicle charging points would be required in Plymouth by 2030 based on the 391,000 national figure by 2050 in the Sixth Carbon Budget [5]. The national figure in the Seventh Carbon budget is updated to 632,000, an increase of 62%, and have been used to update the values for Plymouth. The national numbers are prorated by the registered number of vehicles in Plymouth compared to the UK [16] and this increases the estimate for the number of charging points required in Plymouth to 2,185.

The Climate Change Committee reports do not define the term charging point. Historically there has been confusion between the number of charging sockets and the number charging locations with historic Department for Transport (DfT) data underreporting the number of charging sockets.

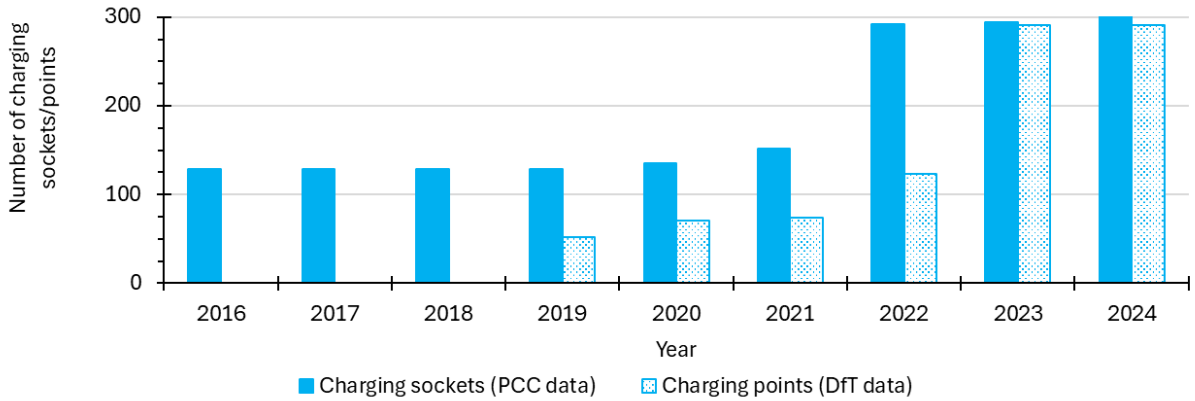


Figure 19 compares the DfT charge point data and Plymouth City Council's (PCC) charging socket data. The graph shows that DfT figures and PCC figure are approximately in agreement in 2024.

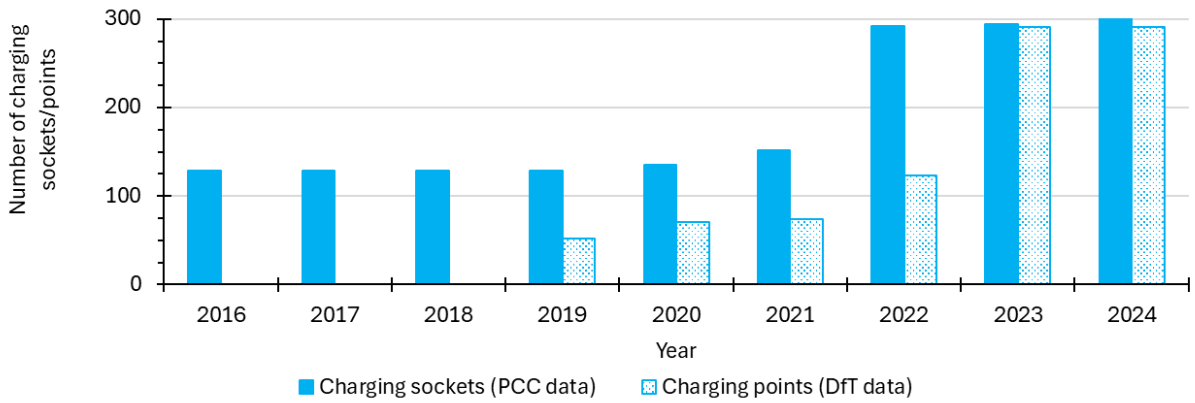


Figure 19. Number of public and workplace charging sockets/points in Plymouth as recorded by Plymouth City Council and the DfT

Table 25. Public and workplace electric vehicle charging sockets in Plymouth monitoring and reporting metrics

Sector	Mobility
Monitoring metric	Public and workplace electric vehicle charging sockets in Plymouth
2021 level	152
2022 increment	140
2023 increment	2
2024 increment	12
Net zero need	2,185
Data source	Plymouth City Council
Data available	On request

The PCC data suggests that charging installation rates have flat lined since 2022. Delivering the net zero need by 2050 requires an average of 75 new charge sockets each year over the 25-year period. Installation rates will need to return toward the level in 2022 as those in 2023 and 2024 have fallen well short of that necessary.

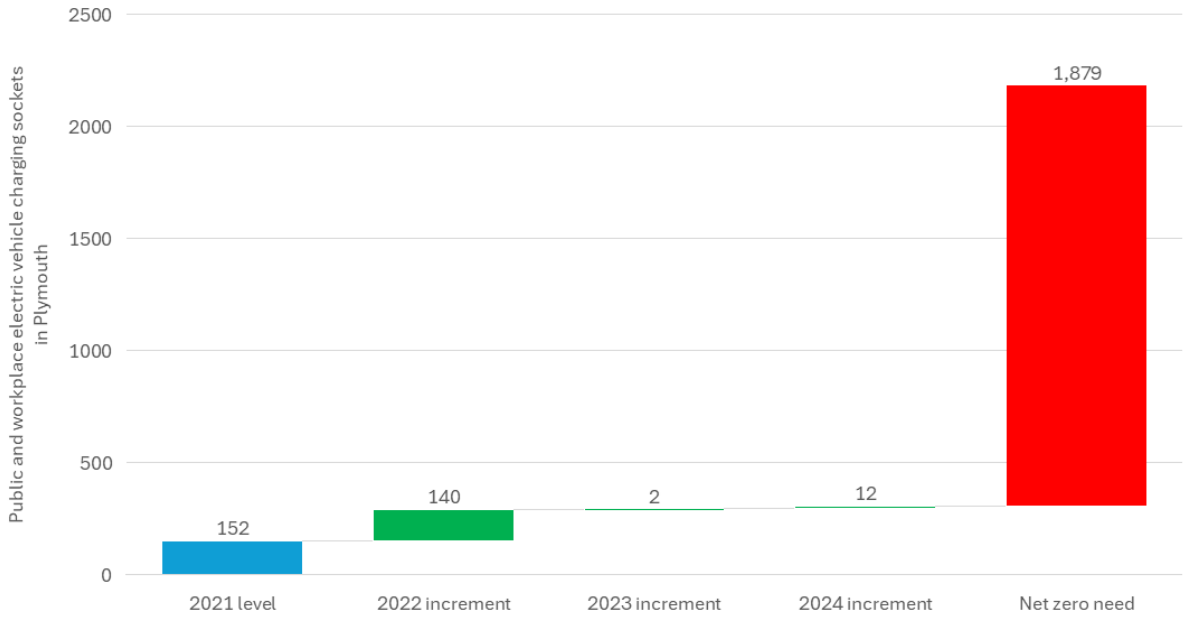


Figure 20. Public and workplace electric vehicle charging sockets in Plymouth trajectory

5.4 Modal shift (walking, cycling, and public transport)

The 2021 monitoring report [3] set an interim cycling count for Plymouth of 18,150 in 2020. This was based on an 11% modal shift from cars to cycling by 2030, requiring an 111% annual increase in the cycle count.

Cycle count data [14] for 2020 showed a decrease from 2019 levels as travel patterns were affected by the Covid-19 pandemic restrictions. This was followed by year-on-year reductions in cycle counts as pandemic restrictions persisted. In 2023, cycle counts have begun to increase as pandemic restrictions have been fully removed (Figure 21).

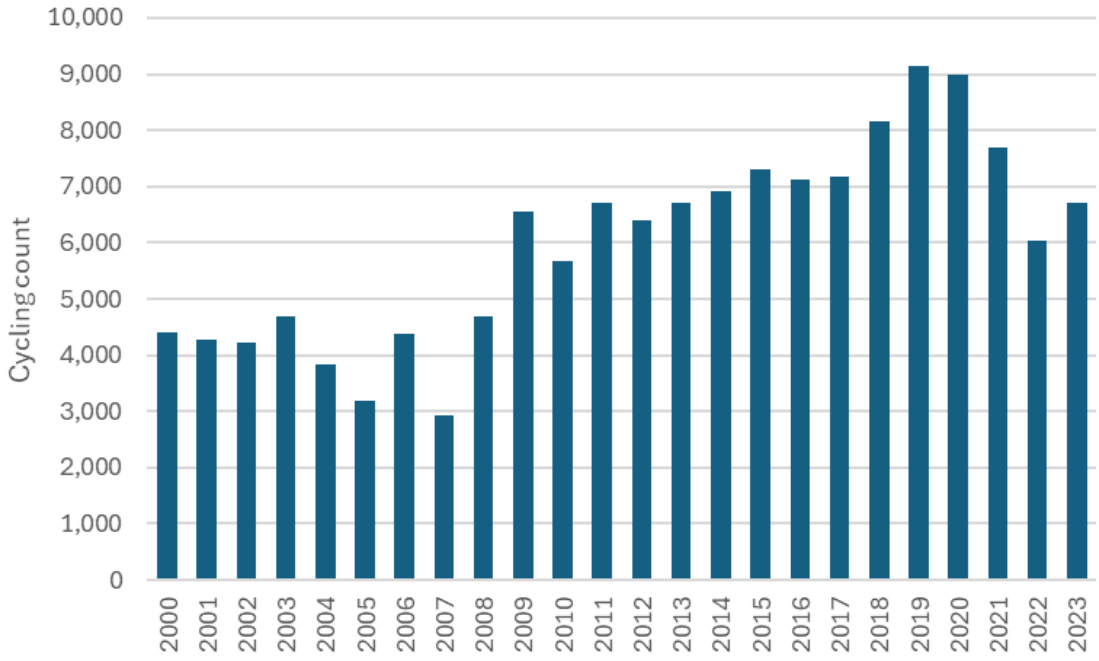


Figure 21. Cycling count in Plymouth from 2000 to 2023

The cycling count analysis sums cycles counted at all count locations reported by the Department for Transport in Plymouth. This approach has several shortcomings. Firstly, the number and location of counts vary from year to year, particularly on minor roads. Secondly, the analysis does not consider the distance travelled that a count represents. Thirdly, distance data (link length) associated with count locations is only provided for counts conducted on major roads and it also shows year-on-year variations.

The 2022 monitoring report [4] set out a more robust method based on distance travelled. Owing to the limitations outlined above, this restricts the analysis to counts located on major roads. Activity on major roads has now been adopted as a proxy indicator for cycling activity. Minor road count locations generally change from year to year, therefore excluding them should reduce random variability in the dataset.

Figure 22 shows cycling activity on Plymouth's major roads, based on traffic counts at the locations shown on Figure 23. Some of these routes have on-road or off-road cycle paths. A small number of count locations with incomplete data series have been excluded.

Growth in cycling activity has been sporadic, with large year-on-year increases in some years, and to a lesser extent year-on-year decline in others. Calculating a three-year rolling average from historic data clarifies the general trend. This averaged data shows increases from 2006 to 2019, with a slowing rate of increase. The average increase in annual cycle kilometres for the years 2007 to 2019 is 131,500 km per annum, or 11% of the 2007 value. At an average trip distance of 7.5 kilometres[l] [18], this equates to over 17,500 additional trips per annum. The subsequent sharp increase and decline is attributable to Covid-19 travel restrictions, and better matches expected changes in behaviour than the cycle count data presented earlier in this section. In the initial lockdown when residents were required to remain local, an increase in walking and cycling would be expected. As restrictions were eased, a switch back to car use would occur, with cycling activity returning to pre-pandemic levels.

[l] Average for the South West region. Urban trips are likely to be shorter.

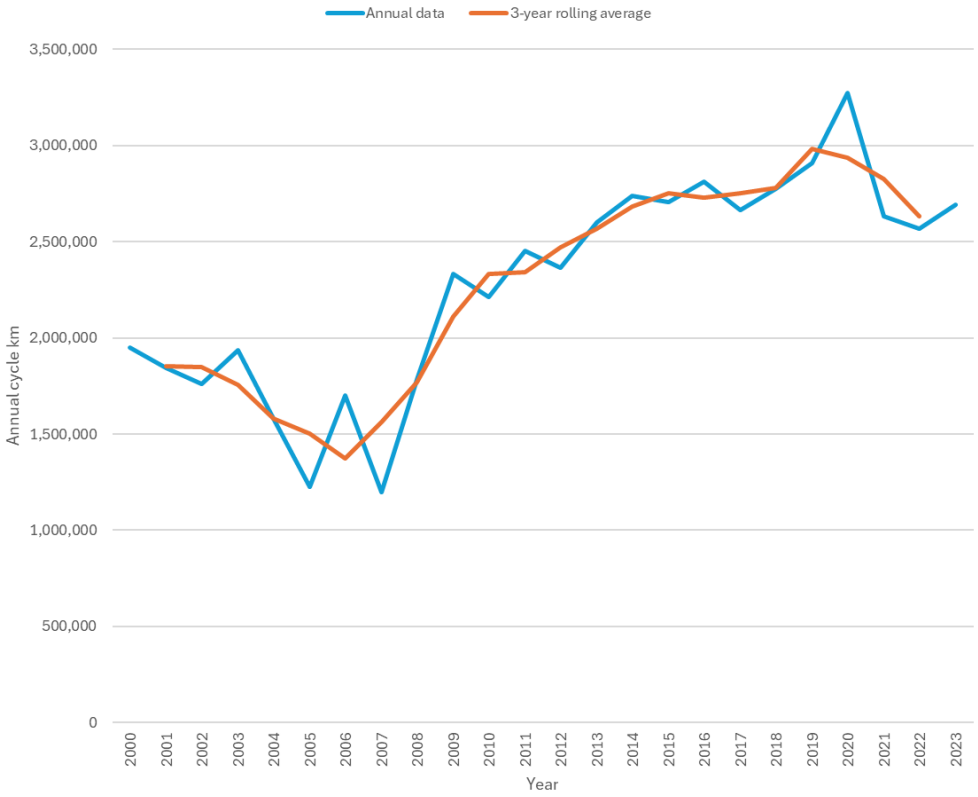


Figure 22. Cycling activity in Plymouth based on selected count locations on major roads and link lengths [14]

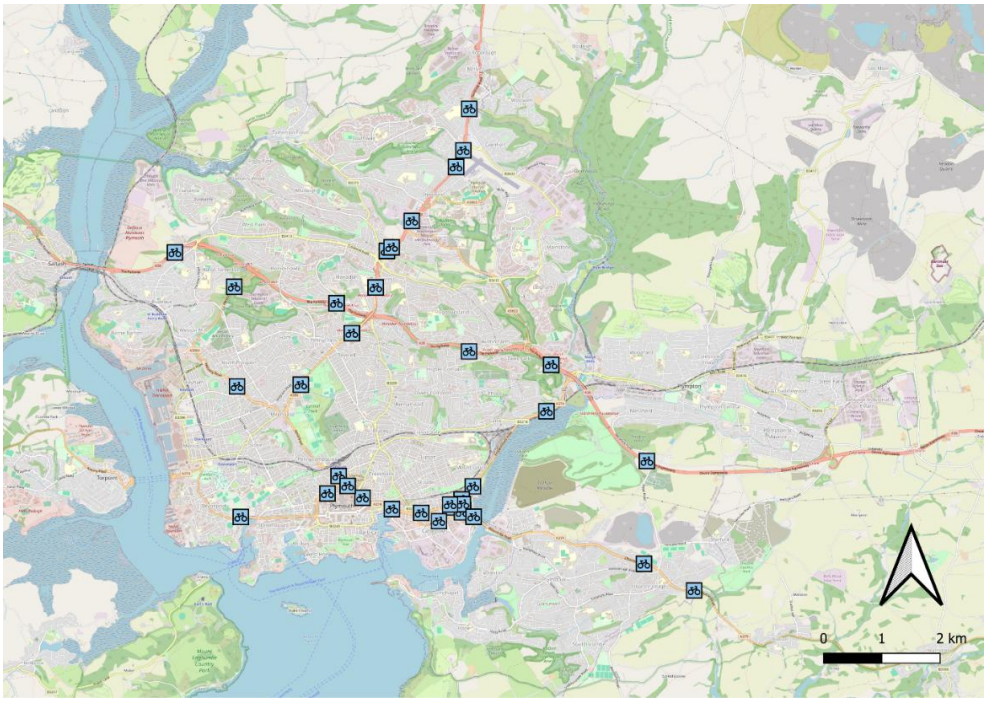
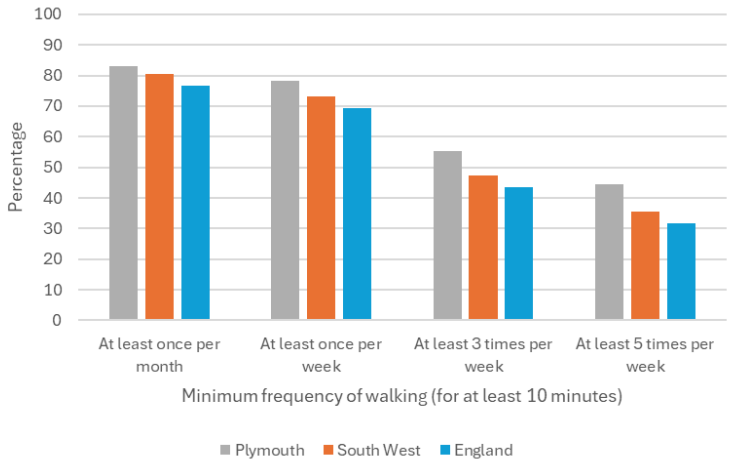
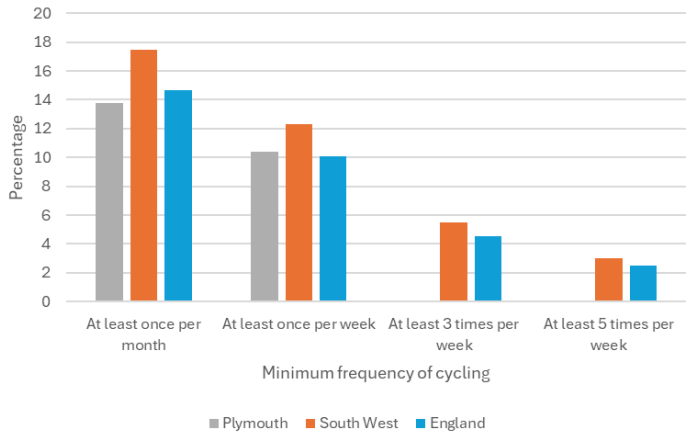


Figure 23. Major road count locations in Plymouth with consistent data from 2000 to 2023

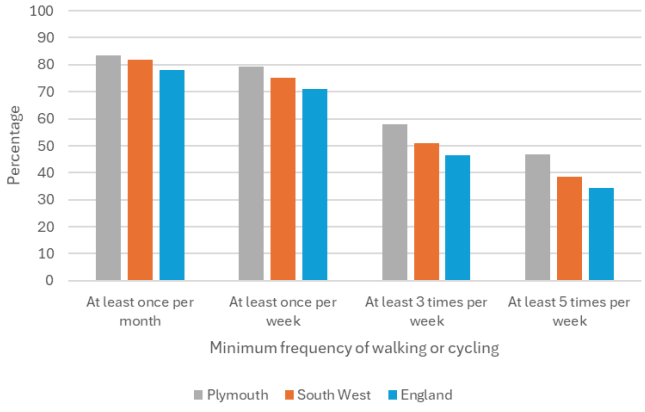
The Department for Transport (DfT) publishes statistics on walking and cycling based on the National Travel Survey and the Active Lives Survey [19]. These include the proportion of adults who do any walking or cycling, for any purpose, by frequency and local authority. Figure 24 shows the statistics for Plymouth for 2023 compared to the South West and England. In some years, data is suppressed due to a low sample size.



(a) Walking



(b) Cycling

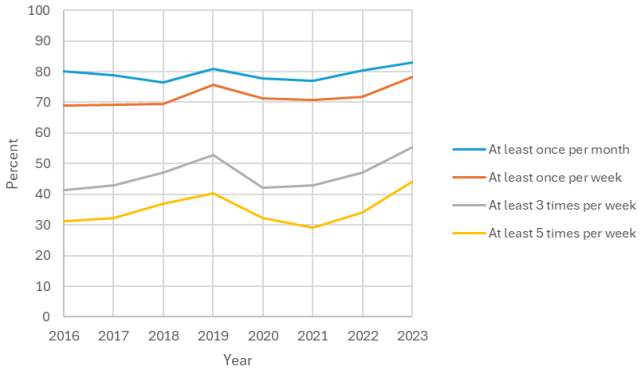


(c) Walking and cycling

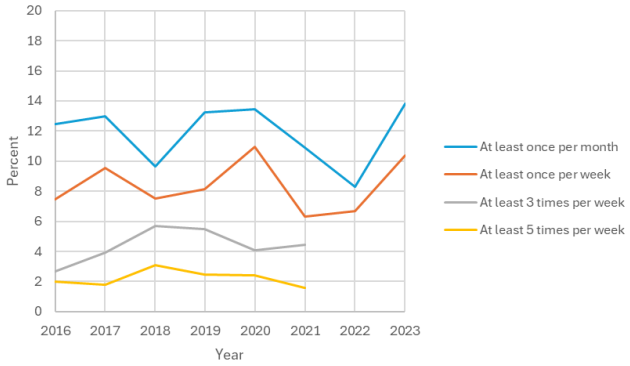
Figure 24. The proportion of adults who did any walking or cycling, for any purpose, in 2023

The figures indicate that people actively travel in Plymouth at similar frequency to the regional average, and more than the national average. This is mainly driven by increases in the proportion of people in Plymouth who walk since the end of the pandemic (Figure 25). Walking activity in Plymouth is higher than national and regional averages for all walking frequencies, reflecting a positive trend for the city. There has also been increases in the proportion of occasional cyclists (cycling once per week or less), although this remains below national and

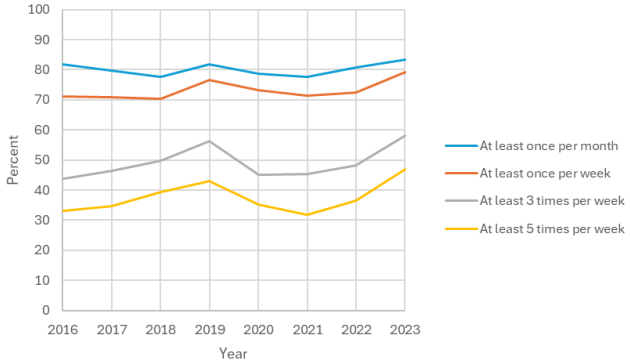
regional averages. The number of frequent cyclists (at least 3 times per week) has declined since 2018 (Figure 25), which is a concerning trend. In 2019, people cycled in Plymouth more than the national average, but this has now been reversed. Initiatives such as the city's shared bike scheme are designed to support cycling in Plymouth.



(a) Walking



(b) Cycling



(c) Walking and cycling

Figure 25. Trends in the proportion of adults who did any walking or cycling for any purpose in Plymouth from 2016 to 2021

5.4.1 Revised interim trajectories

In the Sixth Carbon Budget[m] the CCC assumes that 5-7% of car journeys could be shifted to walking and cycling (including e-bikes) by 2030, rising to 9-14% by 2050 [2]. Similarly, in the Seventh Carbon Budget, the CCC sets out a trajectory for modal shifts towards more active

[m] "Sixth Carbon Budget – Surface Transport" Committee on Climate Change, 2020, p9

modes of travel, aiming for 7% of car-kilometres to be switched to public transport and active travel by 2035, taking 2023 as the baseline year [5]. As these are national figures, urban areas such as Plymouth would be expected to exceed it.

England's Cycling and Walking Investment Strategy [20] aims to double cycling from 2013 to 2025 and the Transport Decarbonisation Plan [21] identifies that 43% of urban journeys are under 2 miles and aims for 50% of all journeys in towns and cities to be cycled or walked by 2050. The 2021 monitoring report assumed that by 2050 22% of car-kilometres would be walked or cycled with 11% achieved from each mode [3].

Increased use of public transport will also contribute to transport decarbonisation. In 2023, there were over 15 million local bus journeys made in Plymouth [22], with buses travelling over 8 million kilometres [22]. However, due to the increased passenger capacity of buses, data on passenger-kilometres is necessary to monitor a modal shift from cars. National data on passenger-kilometres travelled by mode is available [23], but a specific data source for Plymouth needs to be identified to assess the impact of public transport in the city.

Based on total car and taxi kilometres in 2023 (Section 3.4.1), over 139 million kilometres would need to be walked in 2050. A data source quantifying distances walked in Plymouth has yet to be identified, limiting effective monitoring of this metric.

Trajectories set in the 2021 monitoring report have been applied to the revised cycling activity data, replacing the previously assessed cycle counts. To align with the Seventh Carbon Budget, 2023 is taken as the revised baseline year. Furthermore, as the available cycling distance data only considers counts on major roads, the 11% modal shift trajectory will be applied to car and taxi mileage counted on major roads only, using the same count points. A combined modal shift metric can be monitored when more suitable data sources for walking and public transport activity are identified.

Figure 26 takes the historic cycling distance data counts from Figure 22 and projects to 2050 based on historic growth from 2000 to 2023. Assuming linear growth of the historic trend leads to a 6% increase from 2013 to 2025, well short of the doubling in the Cycling and Walking Investment Strategy.

Projections to meet the Cycling and Walking Investment Strategy and Transport Decarbonisation Plan values are also plotted. These are based on the annual car and taxi vehicle kilometres recorded at the count locations shown in Figure 23 in 2023 (459 million vehicle kilometres).

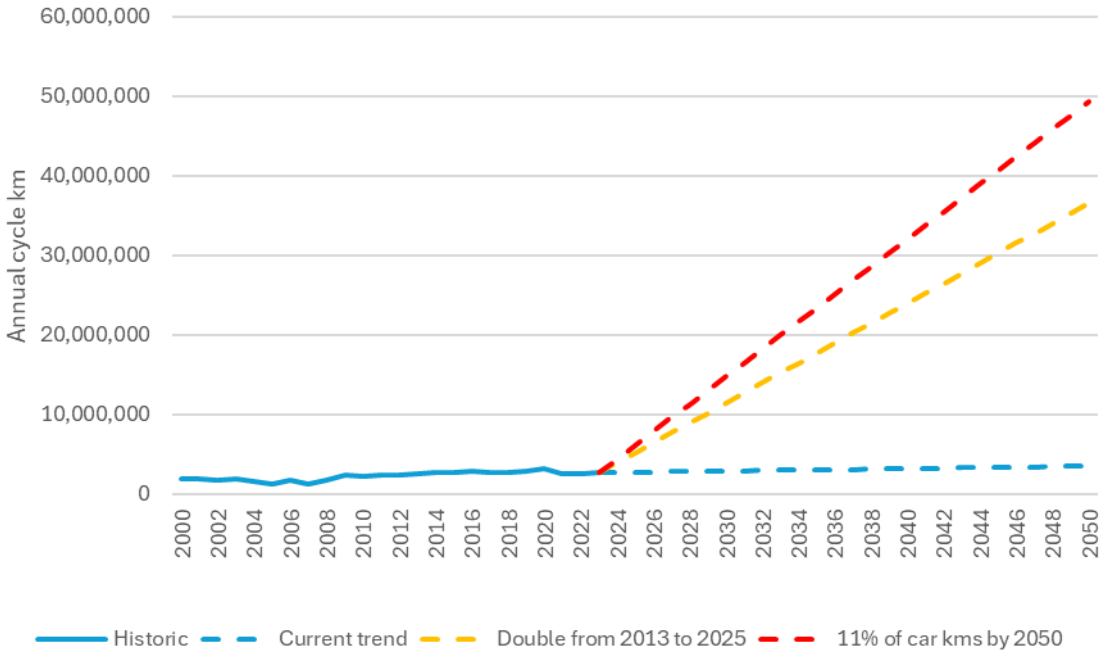


Figure 26. Projections of future cycling trajectories in Plymouth, based on selected count locations on major roads and link lengths [14]

Doubling 2013 cycling activity levels by 2025 would (if linearly extrapolated from 2023 on) lead to 36.5 million kilometres cycled by 2050, well short of the 49.3 million required for 11% of the car and taxi activity counted in 2023 to be cycled. To achieve an 11% modal shift by 2050 would require 1.7 million additional cycle kilometres per annum (64% of the cycle kilometres recorded in 2023). Encouraging cycling activity to increase an additional 46.64 million kilometres per year by 2050 remains a challenge.

Table 26. Distance cycled (on major roads) in Plymouth monitoring and reporting metrics

Sector	**Mobility**
Monitoring metric	**Annual distance cycled (on major roads) in Plymouth (million kilometres per year)**
2021 level	2.63
2022 increment	-0.07
2023 increment	0.13
Net zero need	46.64
Data source	**Local authority road traffic statistics, DfT** [14]
Data available	Annually

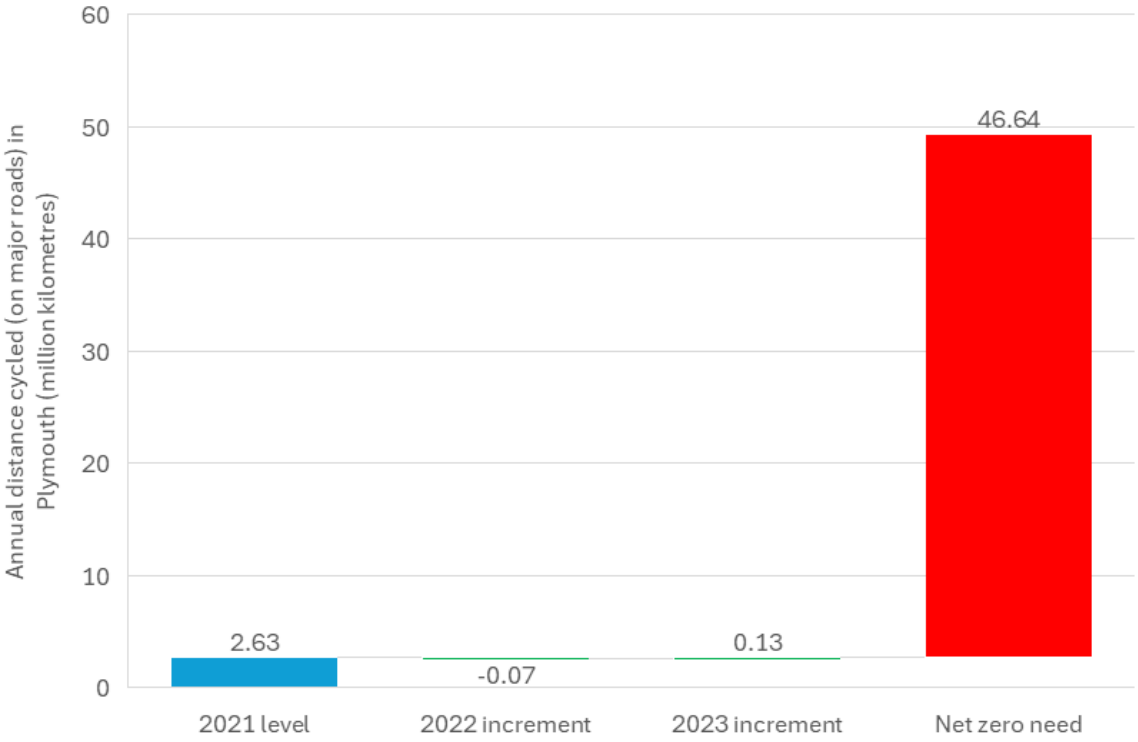


Figure 27. Distance cycled (on major roads) in Plymouth trajectory

6 Waste

The Seventh Carbon budget [5] suggests that UK waste emissions in 2050 will fall by 79% from 24.9 tCO_2e in 2022 to 5.1 $ktCO_2e$ in 2050. The major contributors to this reduction in emissions are 55% from waste reduction and 34% from the implementation of carbon capture and storage at EfW facilities. The additional 10% of emissions reduction comes from capturing more methane at landfills (5%), reducing wastewater treatment emissions (4%) and improving composting (1%).

It is important to recognise that locally Plymouth only has information on, and collection and disposal responsibilities for, domestic waste. Local authorities have little knowledge of or influence over commercial waste in their locality. This section therefore considers collection and disposal of domestic waste only.

6.1 Waste collection and recycling

The CCC's aim in the Seventh Carbon Budget [5] is for a 45% reduction in food waste by 2040 combined with a 5% reduction for resource efficiency and an increase in recycling rates to 57% by 2035.

Figure 28 shows historic waste arisings and recycling rates. In the period from 2014/15 to 2023/24 total arisings declined slightly from 107 kt to 102 kt (5%) although recycling rates remained relatively flat (34% average). The onset of the COVID-19 pandemic saw arisings rise to 108 kt in 2020/21 and recycling rates fall to 31%. Arisings have since returned to slightly below pre-pandemic levels.

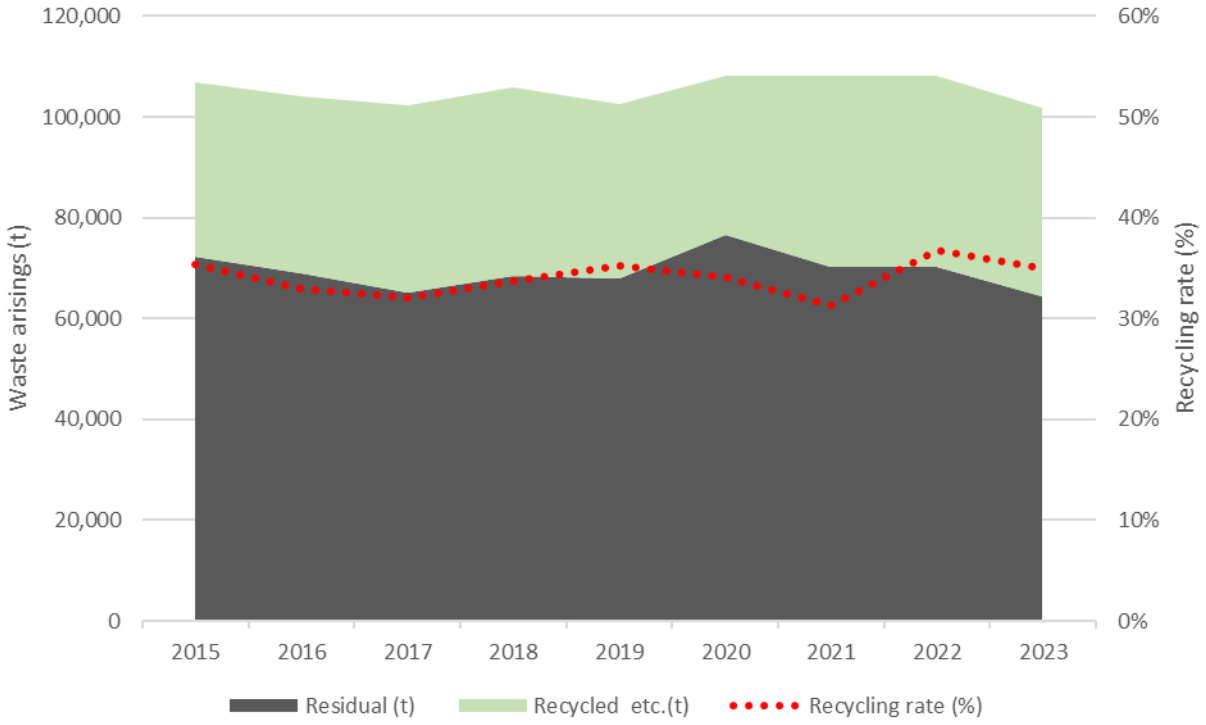


Figure 28. Historic and projected domestic waste arisings and recycling rates in Plymouth

By 2050 the CCC's measures reduce waste arising in Plymouth to 57 kt.

Table 27 and Figure 29 show the waste reduction metrics and trajectory.

Table 27. Plymouth's waste reduction monitoring and reporting metrics

Sector	**Waste**
Monitoring metric	**Waste arisings (tonnes)**
2021 level	108,162
2022 increment	98
2023 increment	-8190
2024 increment	1,585
Net zero need	57,182
Data source	**PCC waste team**
Data available	Annually

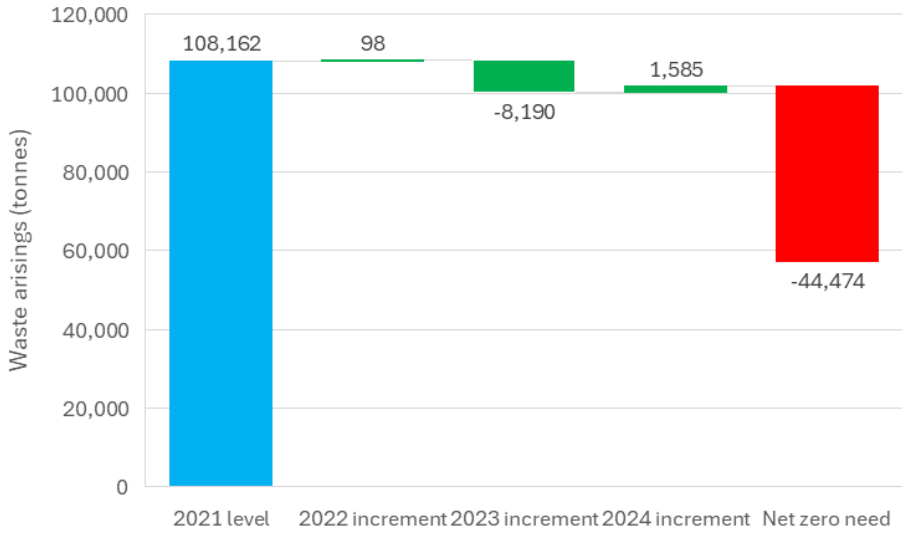


Figure 29. Plymouth's waste arisings

Table 28 and Figure 30 show the waste recycling metrics and trajectory.

Table 28. Plymouth's waste recycling rate monitoring and reporting metrics

Sector	Waste
Monitoring metric	Recycling rate (%)
2021 level	31.3%
2022 increment	5.4%
2023 increment	-1.7%
2024 increment	1.6%
Net zero need	57%
Data source	PCC waste team
Data available	Annually

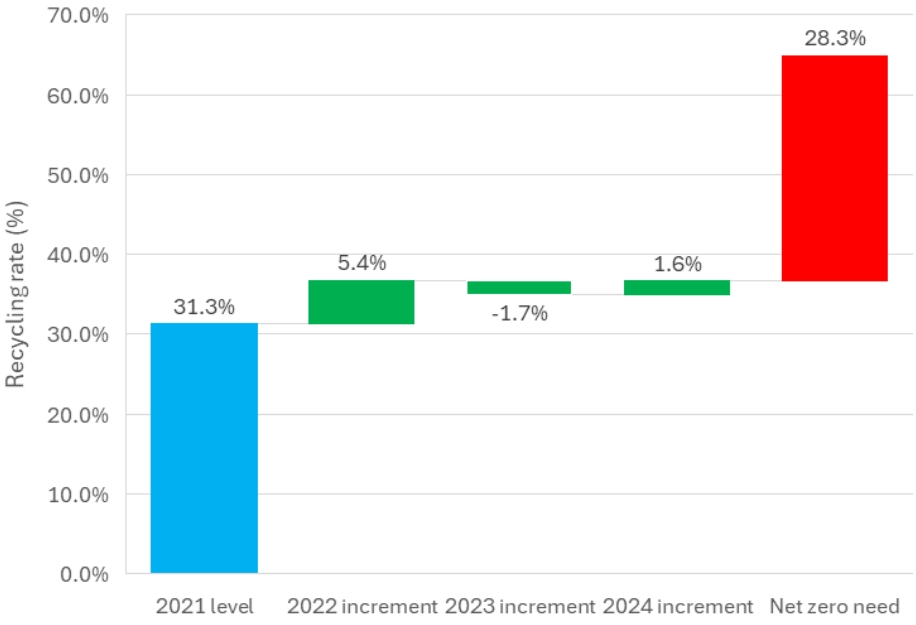


Figure 30. Plymouth's waste recycling trajectory

In practice, changes to recycling will be driven primarily by changes to local authority collection regimes, which in turn, will be dictated by the targets and collection regimes required under the Environment Act. The Act which is due to be implanted in March 2025 aims for a 50% reduction in the amount of waste per person, sent for residual waste treatment by 2042 and a requirement for segregated collection of glass, metal, plastic, paper & card, food and garden waste with the aim of a 65% municipal recycling rate by 2035. The behaviour of Plymouth's residents and businesses will need to adapt to the changes in collection regimes to ensure that the investment in segregated waste collection is effective.

In "Carbon Neutral Plymouth" [1] the CEE recommended obtaining "reliable and up to date information on volume and composition of non-domestic waste streams to enable emissions assessment".

6.2 Waste disposal

Plymouth closed its Chelson Meadow landfill site in 2008 and no longer landfills any waste. The site was subsequently capped to reduce the escape of the methane formed from the biological components of the waste. This landfill gas has been captured and used to generate electricity for the national grid. Over the intervening years the production of landfill gas has naturally declined, as has electricity production. When gas production gets too low to produce electricity economically, the residual gas will be flared. In 2019 5.6 million m^3 of landfill gas was produced generating 6 GWh of electricity. Planning approval for a 13 MW solar photovoltaic array on the northern part of the Chelson Meadow site was granted in June 2022.

Waste previously landfilled is now treated in the Devonport Energy from Waste combined heat and power facility. The plant uses waste to generate electricity for the national grid and heat for the Devonport dockyards. The use of heat increases the efficiency of energy recovery from the waste and reduces CO_2 emissions. Further emission reduction can be achieved from reducing fossil input to the plant (i.e. reducing plastics), using more heat and installing carbon capture and storage (CCS) facilities. Increasing plastic recycling rates will assist reduction in plastics going into the energy from waste combined heat and power facility. Promoting additional heat use through extending the heat network in or outside the dockyards can also play a part. The plant produced 58 GWh of heat in in 2018, 48 GWh 2019 and 54 GWh in 2020 and 2021. Heat export figures to September 2022 are consistent with 2021. It is not known if there is an intention to increase heat use.

Ultimately, the installation of CCS is required; the proximity of the docks will help the export of the captured CO_2 for storage. The Seventh Carbon Budget [5] requires the installation of CCS on all UK energy from waste plants between 2028 and 2045 so by 2050 95% of emissions are captured.

7 F-gases

Fluorinated gases (F-gases) account for a small percentage of UK GHG emissions (2% in 2022) and, although released in small volumes, they can have a global warming potential (GWP) up to 23,000 times greater than CO_2.

The largest source of emissions of HFCs (74% in 2022) is the refrigeration, air conditioning and heat pump sector (RACHP). Emission release is due to refrigerant leakage from appliances during use and at disposal. The CCC Balanced Pathway in the Seventh Carbon Budget reduces 2022 F-gas emissions by 79% by 2050.

The National Atmospheric Emissions Inventory (NAEI) [24] provides estimates of HFC emissions. NAEI emissions have been apportioned to Plymouth based on non-domestic electricity consumption [25]. Given the range of uses (RACHP, firefighting, blowing agents/propellants, electrical switchgear, metal production, etc.), local usage will vary, and the apportioned value is therefore subject to significant uncertainty.

Although the estimated 20.3 kt CO_2e emissions from F-gases in Plymouth are a minor part of Plymouth's footprint (2%), under a net-zero scenario, the decarbonisation of other sectors means that, left unchanged, the F-gas contribution will play an increasing a role. In addition, the future deployment of tens of thousands of heat pumps across Plymouth has the potential to increase F-gas emissions. Ensuring that the release of F-gases are as near to zero as practical will be important in ensuring that Plymouth achieves the emissions reductions that the deployment of heat pumps should secure.

Emissions reduction in the F-gas sector is driven by national and international legislation and there is therefore relatively limited scope for Plymouth to accelerate emission reduction from F-gases. Local trading standards bodies enforce air conditioning inspections (which are required for any system with a rated output of over 12 kW). More proactive enforcement of these air conditioning inspections may be a route to lower emissions.

Display Energy Certificates (DEC) and Energy Performance Certificates (EPC)[n] record air conditioning equipment with capacity of over 12 kW and provide estimate of systems with lower capacities. DECs and EPCs suggest a total capacity estimate of 15,715 kW[o] (up by 13% from 13,963 in 2022). Installations with capacity above 12 kW in DECs and EPCs are in 76 organisations/buildings (see Appendix C) and total 13,356 kW (an increase of 5% over 2022), or 86% of the estimated total all AC systems in Plymouth. These figures suggest increasing penetration of air conditioning across the city over the past two years.

More detailed information on each system can be found in individual building air conditioning inspection certificates and reports.

Identifying these organisations/buildings enables a targeted approach to a year-on-year reduction in HFC leakage rates by encouraging a reduction in the requirements for air conditioning through improved building performance, minimising refrigerant leakage from existing equipment through good maintenance and encouraging the use of very low GWP refrigerants when replacing refrigerant or installing new equipment. However, it should be remembered that DEC and EPC data suggests that there are currently some 1,116 air

[n] See Buildings section for EPC and DEC references.
[o] Likely to be an upper estimate as there will be some duplication between DECs and EPC of systems below 12 kW.

conditioning units across Plymouth with a capacity less than 12 kW (up by 19% from 939 in 2021).

With most F-gas emissions coming from RACHP equipment the number, size and refrigerant type of units probably represents the best proxy measure for local emissions. However, air conditioning certification is only required every five years, giving a long-time lag. In addition, reducing these measures locally will not necessarily lead to a reduction in the apportioned NAEI emissions if non-domestic electricity consumption remains the basis for apportionment.

The identification of more specific measures for the F-gas sector is required.

8 All sectors

Current sector metrics are summarised in Table 29. Gradual progress is being made in many areas. Nonetheless, in many cases, the percentage of the trajectory towards the net zero need is still lower than it needs to be. Areas of particular concern are in two key high emission sectors; buildings (26% of GHG emissions) and transport (34% on GHG emissions), more specifically the adoption of low carbon heating in buildings and the changes needed in the vehicles in which and the way in which the city travels.

In buildings Plymouth the City Council is using its influence to roll out low carbon heat networks. When successful, these initiatives are likely to address the need for heat network connections in residential and non-domestic buildings. However, the bulk of low carbon heat measures are likely to be delivered through the replacement of individual gas boilers with heat pumps. Here there has been negligible progress. It is important that a route map is developed for heat pump deployment in Plymouth.

The electrification of transport is a key component in reducing fossil fuel use. While the uptake of electric vehicles in the city remains on an upward trend, current numbers represent only 1% of those needed. The rate of installation of new charging points has reduced in 2023 and 2024, as has kms cycled in Plymouth. These are two areas where the Council has influence.

In the waste sector (13% of GHG emissions) the city needs to further reduce waste arisings and improve recycling rates. Progress also needs to be made in developing funding applications for carbon capture and storage for the Devonport EfW plant. The facility has an edge in its proximity to the dockside which makes it well placed for CO_2 export.

The most significant remaining area where metrics are not identified is the industrial sector. Here it is important to identify were and how fossil fuels are being used and develop pathways for how these can be replaced with low carbon alternatives.

Table 29. A summary of current sector metrics

Sector	Metric	2021 level	2022 level	2023 level	2024 level	Average annual increment	Net zero need	% trajectory achieved
Power & heat	PV installations (MW)	31.3	33.0	35.3	N/A	2.0	136.3	26%
	Domestic heat network connections	2,859	3,025	3,003	2,970	37	7,483	40%
	Non-domestic heat network connections (% of floor area heated)	N/A	N/A	2%	2%	0%	22%	10%
Domestic buildings	Insulated pitched roofs	31,113	31,436	32,472	32,790	559	92,721	35%
	Insulated cavity walls	48,659	49,243	50,485	50,889	743	61,560	83%
	Insulated solid walls	17,842	18,164	18,258	18,413	190	None (discontinued)	N/A
	Heat pumps installed	162	180	217	385	74	97,390	0%
Non-domestic buildings	Buildings with EPC rating A & B	605	698	856	1,071	155	5,785	19%
	Buildings with low carbon heating	2,928	3,053	3,117	3,444	172	5,785	60%
Industry	GHG emissions (ktCO2e)	76,876	66,900	N/A	N/A	-9,976	N/A	N/A
Mobility	Miles per year (cars and taxis)	689 million	782 million	806 million	N/A	58 million	None (discontinued)	N/A
	BEV cars registered in Plymouth	455	735	1,125	N/A	335	117,320	1%
	BEV LGVs registered in Plymouth	40	55	78	N/A	19	15,100	1%
	Zero emission HGVs buses and coaches registered in Plymouth	0	1	0	N/A	0	1,281	0%
	Public and workplace charging sockets	152	292	294	306	51	2,185	14%
	Cycling activity (km cycled on major roads per year)	2.6 million	2.6 million	2.7 million	N/A	0.03 million	49.3 million	5%
	Walking (total km walked per year)	Unknown	Unknown	Unknown	Unknown	Unknown	139.4 million	Unknown
Waste	Waste arisings (tonnes)	108,162	108,261	100,070	101,655	-2,169	57,182	13%
	Domestic recycling rate	31.3%	36.7%	35.0%	36.6%	2%	57.0%	64%
	Non-domestic waste	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown
	Devonport EfW heat export (GWh)	54	Unknown	Unknown	Unknown	Unknown	Increase	Unknown
	Devonport EfW CCS	Not installed	Not installed	Not installed	Not installed	Unknown	Install	Unknown
F-gases	F-gases	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown

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Appendix A. Non-domestic EPC bands changes between years from 2021 to 2024 (as at 31st December)

EPC band	2021			2022			2023			2024		
	No of EPCs	%	No of buildings	No of EPCs	%	No of buildings	No of EPCs	%	No of buildings	No of EPCs	%	No of buildings
A+							3	0%	3	4	0%	4
A	89	2%	106	102	2%	115	128	2%	132	169	3%	167
B	418	9%	499	518	11%	583	725	13%	745	898	15%	888
C	1,403	31%	1,674	1,590	33%	1,789	1,797	33%	1,848	1,966	34%	1,945
D	1,428	32%	1,704	1,490	31%	1,677	1,605	30%	1,650	1,644	28%	1,627
E	760	17%	907	786	16%	885	793	15%	815	801	14%	793
F	194	4%	231	193	4%	217	183	3%	188	182	3%	180
G	191	4%	228	187	4%	210	183	3%	188	183	3%	181
Total	**4,483**	**100%**	**5,349**	**4,866**	**100%**	**5,476**	**5,417**	**100%**	**5,570**	**5,847**	**100%**	**5,785**

EPC band	2021 to 2022		EPC band	2022 to 2023		EPC band	2023 to 2024		EPC band	2021 to 2024	
	EPC change	Building change		EPC change	Building change		EPC change	Building change		EPC change	Building change
A+			A+	3	3	A+	1	1	A+	4	4
A	13	9	A	26	17	A	41	36	A	80	61
B	100	84	B	207	163	B	173	143	B	480	390
C	187	115	C	207	58	C	169	97	C	563	271
D	62	-27	D	115	-26	D	39	-24	D	216	-77
E	26	-22	E	7	-69	E	8	-23	E	41	-114
F	-1	-14	F	-10	-29	F	-1	-8	F	-12	-51
G	-4	-17	G	-4	-22	G	0	-7	G	-8	-47
Total	**383**	**127**	**Total**	**551**	**94**	**Total**	**430**	**215**	**Total**	**1,364**	**436**

Appendix B. Non-domestic EPC heating type between years 2021 and 2024 (as at 31st December)

Fuel	2021			2022			2023			2024		
	No of EPCs & DECs	%	No of buildings	No of EPCs & DECs	%	No of buildings	No of EPCs & DECs	%	No of buildings	No of EPCs & DECs	%	No of buildings
Biomass	13	0%	16	13	0%	15	14	0%	13	14	0%	13
Heat network	49	1%	58	62	1%	70	63	1%	60	66	1%	60
Electricity	2,392	53%	2,854	2638	54%	2,969	3,040	52%	2,889	3,364	53%	3,072
Total LCH	2,454	55%	2,928	2,713	56%	3,053	3,117	53%	2,962	3,444	54%	3,145
Non LCH	2,029	45%	2,421	2,153	44%	2,423	2,744	47%	2,608	2,890	46%	2,640
Total	4,483	100%	5,349	4,866	100%	5,476	5,861	100%	5,570	6,334	154%	5,785

Fuel	2021 to 2022			2022 to 2023			2023 to 2024			2021 to 2024	
	EPC change	Building change		EPC change	Building change		EPC change	Building change		EPC change	Building change
Biomass				1	-1		0	-1		1	-3
Heat network	13	11		1	-10		3	0		17	2
Electricity	246	115		402	-80		324	183		972	218
Total LCH	259	125		404	-91		327	183		990	217
Non LCH	124	2		591	185		146	32		861	219
Total	383	127		995	94		473	215		1,851	436

Appendix C. Buildings with AC above 12 kW capacity in Plymouth

Source	Organisation	Location	System rating kW	% of total
DEC	Derriford Hospital	Derriford Hospital, Derriford Road	3974	29.4%
DEC	University of Plymouth	Roland Levinsky, Plymouth Main Campus	1290	9.5%
DEC	Royal Mail	Plymouth Mail Centre, Breakwater Road	1275	9.4%
DEC	Royal Mail	Drake House, Breakwater Road	699	5.2%
DEC	Royal Mail	M D E C, 29 Central Park Avenue	617	4.6%
EPC	HMNB	W009, HMNB, Devonport	551	4.1%
DEC	University of Plymouth	Babbage Building, Plymouth Main Campus	508	3.8%
DEC	Plymouth City Council	Windsor House, 215 Tavistock Road	462	3.4%
DEC	Plymouth Magistrates Court	St. Andrew Street	369	2.7%
DEC	Sir John Hunt Secondary School	Lancaster Gardens	296	2.2%
DEC	Woodlands School	Tamerton Foliot Road	296	2.2%
DEC	Peninsula Radiology Academy	William Prance Road	229	1.7%
DEC	Marjon University	L Block, Derriford Road	225	1.7%
EPC	HMNB	N155, HMNB, Dockyard	183	1.4%
EPC		140-146 Armada Way	168	1.2%
EPC		St. Catherines House, 5 Notte Street	168	1.2%
DEC	Robins Hall	Gibbon Street	160	1.2%
EPC	Passenger Terminal Building	A4PM2-OT01-PA01, Millbay Docks	160	1.2%
DEC	Plumer House	Tailyour Road	132	1.0%
DEC	Plymouth Dialysis Unit	Eaton Business Park, Plymbridge Road	123	0.9%
DEC	Plymouth Combined Court	Armada Way	108	0.8%
DEC	Mount Gould Local Care Centre	200 Mount Gould Road	91	0.7%
EPC	HMNB	N215 Block, HMNB, Devonport	86	0.6%
EPC	Derriford Business Park	4a Derriford Park, Derriford Business Park	76	0.6%
EPC	HMNB	W024 Block, HMNB, Devonport	70	0.5%
DEC	Cattedown Primary Care Centre	8 Cattedown Road	52	0.4%
DEC	NHS Plymouth	4 William Prance Road	45	0.3%
DEC	Plym Bridge House	4 William Prance Road	46	0.3%
EPC	Laser Clinics UK	Unit 19a, Drake Circus Shopping Centre	45	0.3%
EPC		Unit 3, Drake Circus Shopping Centre	45	0.3%
EPC	HMNB	W015, HMNB, Devonport	43	0.3%
DEC	Womble Bond Dickinson	Ballard House, West Ho Road	40	0.3%
EPC		70 New George Street	40	0.3%
EPC	SU20	Drake Circus Shopping Centre	34	0.3%
EPC	Mary Dean Primary School	Mary Dean Avenue	33	0.2%
EPC	Costcutter Supermarket	1a Seymour Road	32	0.2%
DEC	Victoria Road Primary School	Trelawney Avenue	30	0.2%
DEC	Riverside Primary School	210 Poole Park Road	30	0.2%
EPC	Peacocks Stores Ltd	82 Ridgeway	30	0.2%
EPC	Cold Store	Estover Road	30	0.2%
EPC	Ernesettle Primary Care Centre	21 Ernesettle Green	30	0.2%
EPC		130-132 Armada Way	28	0.2%
DEC	Stoke Damerel Primary School	Collingwood Road	26	0.2%
EPC	Bon Marche	93 New George Street	26	0.2%
EPC	N214	N214, H M Dockyard	26	0.2%

Source	Organisation	Location	System rating kW	% of total
EPC		16 Mannamead Road	25	0.2%
EPC	Tamar House	Thornbury Road	24	0.2%
EPC	Park Link	City Business Park	23	0.2%
DEC	Roborough Surgery	1 Eastcote Close	22	0.2%
DEC	Plymouth City Council	Plympton Branch Library	22	0.2%
DEC	Knowle House Surgery	4 Meavy Way	21	0.2%
DEC	All Saints Academy Plymouth	Main Building, Honicknowle Lane	20	0.1%
EPC		25-27 Cornwall Street	20	0.1%
EPC		12, Whimple Street	20	0.1%
DEC	Plymouth City Council Parts	Ballard House, West Hoe Road	19	0.1%
DEC	Tamarside Community College	Trevithick Road	19	0.1%
EPC	HMNB	Building S040A, HMNB Devonport	19	0.1%
DEC		10 Horn Cross Road	18	0.1%
EPC	Fox House Retreat	8-9 Whimple Street	15	0.1%
EPC	Stoke Damerel Primary School	Collingwood Road	15	0.1%
DEC	Woodford Primary School	Litchaton Way	14	0.1%
DEC	Goosewell Primary Academy	Goosewell Road, Plymstock	14	0.1%
EPC		24 Darklake View, Estover	14	0.1%
EPC		Unit 3, 41 Estover Close	14	0.1%
EPC	Premier Plus	176 Exeter Street	14	0.1%
DEC	Plymouth City Council	Midland House, Notte Street	13	0.1%
DEC	Beechwood Primary School	31 Rockfield Avenue	13	0.1%
EPC	Town & Country Lettings	52 North Hill	13	0.1%
EPC		Unit 4, 223 Tavistock Road	13	0.1%
EPC	Units 12, 13 and 14	Endurance Court	13	0.1%
DEC	Mount Gould Hospital	Mount Gould Road	12	0.1%
EPC	Sage	59 Hyde Park Road	12	0.1%
EPC	Saltram Social Club	54 Salisbury Road	12	0.1%
EPC	Thomson	16 St. Stephens Place, Ridgeway	12	0.1%
EPC	Eggbuckland Vale Primary School	Charfield Drive	12	0.1%
EPC	Paperchase	Unit 31, Drakes Circus Shopping Centre	12	0.1%
		Total	13,536	100%