East Hampshire District Council

Roadmap to Net Zero for Council Operations 2025 – 2035

Initial Outline Options Document

FINAL

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Executive Summary

East Hampshire District Council has set itself a target of reaching net-zero[1] carbon by 2035 across its operational activities. It established its baseline in 2022/23 of 7423.12 tCO_2e.

The 2023/24 audit showed a slight increase in emissions overall to 7474.76 tCO_2e, (although there were reductions in some areas – see appendix 3). Therefore, calculations for the Roadmap have been taken at the slightly higher value of the 2023/24 audit.

This report examines the potential "roadmap" of opportunities and options that EHDC could take to move towards and reach its net-zero target. The report is a broad study of possible options and does not look at the detailed practicalities of any of the options beyond a broad estimates of carbon reduction and, where they can be estimated, the costs that options are likely to involve. More detailed technical studies would be required to fully understand the business case(s) for the delivery of an option.

Due to the nature of the service that EHDC provides to the residents of East Hampshire it is subject to changes such as increased development and other operational pressures which can also have an impact on the carbon emissions of the council. Whilst it is not possible to fully predict these changes, some options have considered this. Similarly, some options can have a carbon reduction potential and increase at the same time e.g. moving from gas as an energy source to electricity. Where this is the case a net-saving has been used.

The Council's biggest areas of emissions sit outside of its direct control, within the two large external contracts of waste collection and leisure provision. Whilst some carbon savings can be made within these areas, reaching net-zero by 2035 within these contracts may not be possible.

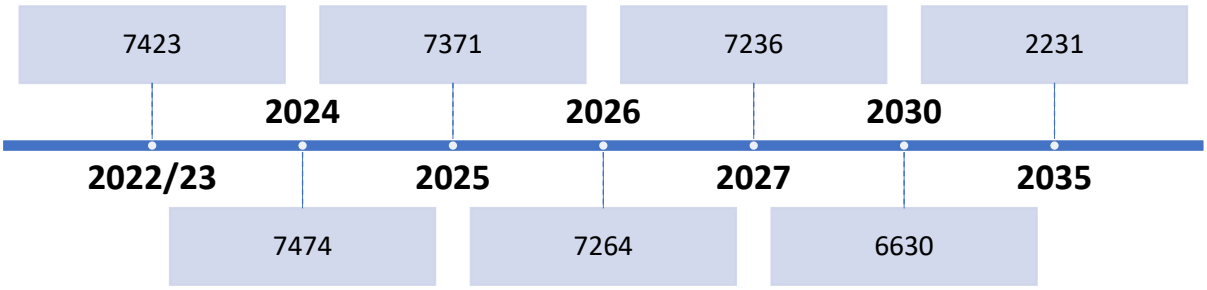
The study shows that even with the delivery of all of the potential options the Council might only be able to reduce its carbon emissions by 70% by 2035 (see Figure 1).

However, at the time of writing not all technological improvements and advances are fully realised, and some areas of reduction might increase and/or new opportunities may arise before 2035.

Even if all the actions suggested in the report were taken the council would not achieve net-zero without some form of offsetting (or insetting). The estimated remaining emissions will be around 2231 tCO_2e, the majority of which will be within Scope 3.

[1] net zero means cutting carbon emissions to a small amount of residual emissions that can be absorbed and durably stored by nature and other carbon dioxide removal measures, leaving zero in the atmosphere.

Figure 1 Timeline showing total tCO_2e remaining after reductions



1. Background

1.1. East Hampshire District Council established its baseline carbon emissions as 7,423.12 tCO_2e in 2022/23, this increased slightly to 7474.76 in 2023/24.

1.2. 95% of this 7474.76 tCO_2e is within its two large service contracts related to waste collection and leisure provision. 2% is within areas such as Well to Tank and Transmission and Distribution. The remaining 3% covers all other areas.

1.3. EHDC has a target to reach Carbon Net Zero by 2035 across its operational carbon footprint. This is an ambitious target, to achieve it will require an organisational focus across all levels of officers and members. Given the nature of the target, the overall timeline and the potential intervention points, a significant proportion of this target may not be achievable until the end of the period. It is also possible that some offsetting (or insetting) will be required to achieve net-zero.

2. Introduction

2.1. This report follows an initial broad assessment of opportunities that are available to EHDC to support its stated goal of reaching net-zero by 2035. It makes no specific decisions about which options are the 'right' ones but presents opportunities that save carbon. Future changes in markets, technology and other factors may present different or additional options before the 2035 deadline and it is recommended that some form of review or horizon scanning such as funding opportunities form a part of any plan going forward.

2.2. Carbon savings and costings are broad estimates, and further work would be required to fully understand the potential of each opportunity. The complexity of some of the options will require detailed technical knowledge or more complex assessments than has not been possible at this stage.

2.3. The next stages of this work will be to consider some of the opportunities in more detail if deemed appropriate (and time and technical skills allow for this), or to explore further options.

3. Methodology

3.1. This report and accompanying spreadsheet are based around a number of options and opportunities to reduce EHDCs corporate carbon footprint. It only examines those areas that are included in the Council's carbon audit and is based on the figures from the most recent year (2023/24).

3.2. Calculations and methodologies follow the same basic principles used in the audit and are based upon the Greenhouse Gas Protocol[2]. Conversion factors, used to calculate activities giving rise to carbon emissions e.g. the burning of gas for heat, are those issued by the UK Government[3] and align with the date of the carbon audit.

[2] https://ghgprotocol.org/
[3] https://www.gov.uk/government/collections/government-conversion-factors-for-company-reporting

3.3. Where future carbon emissions estimations have been made the same conversion factors have been used, with the exception of grid electricity which is known to be decarbonising over time (see section 4 below). In this case the UK governments 'green book'[4] valuations have been used.

3.4. Where the effects of an option on carbon emissions overlap or have a net effect e.g. the removal of gas would likely lead to increased electricity usage this has been factored into the calculations as far as is possible.

3.5. All calculations are estimates and subject to change over time which could be caused by several factors e.g. changes to the conversion factors, changes to technology improving carbon reduction potential. Any actual projects taken forward should be subject to a proper business case which looks in detail at the potential carbon emissions savings and other relevant factors e.g. financial.

3.6. For ease of reading estimates of carbon reduction have been rounded to whole numbers in this report.

4. Grid Decarbonisation

4.1. During the lifetime of the Roadmap electricity from the grid will become less carbon intensive, as more carbon neutral sources of generation (wind, solar, nuclear) come on stream. Within its 2023/24 carbon footprint the council used 1,953,256 kWh of grid electricity. This represents 449 tCO_2e. By 2035 with grid decarbonisation with the same level of usage this will have dropped to 48 tCO_2e. Similarly in 2024 a kWh of gas is roughly similar in carbon terms to a kWh of electricity. The carbon intensity of gas will not change to the same degree and so a kWh of electricity will be about 12% the carbon intensity of a kWh of gas by 2035. Thus, replacing gas with electricity power means a greater carbon saving than just reducing usage by 2035.

4.2. In presenting the options below, grid decarbonisation has not been factored into the basic carbon savings, but a broader assessment has been made of grid decarbonisation impact and presented separately when factoring in all of the potential options.

5. Green Electricity Tariff

5.1. In 2023/24 the Council was on a tariff that included some green elements but was not based on fully renewable energy sources. At the start of the 2024/25 year the Council switched its energy provider to one offering a supply sourced only from renewable or zero carbon energy (wind, solar, nuclear, tidal). For the purposes of the GHG Protocol this is classed as zero carbon and will have an impact on the emissions of the core estate for as long as it is maintained. This tariff does not apply to the leisure estate or streetlighting and therefore calculations within the roadmap reflect this and assume that the green tariff will be maintained at least until 2035.

[4] https://www.gov.uk/government/publications/valuation-of-energy-use-and-greenhouse-gas-emissions-for-appraisal

5.2. Grid decarbonisation (see section 4) will continue to have an impact on the leisure estate and streetlighting. In addition, grid decarbonisation means that over time the carbon benefit of such a tariff will diminish (as the carbon content of the grid reduces).

5.3. A green tariff should not be seen as a sole alternative and continuing to reduce usage, improve energy efficiency and implementing further renewables where possible is still important as this will lower costs across all time periods and offset the likely marginally higher cost of the green tariff.

5.4. The implementation of a green tariff does not have a direct impact on reducing Well to Tank (WtT) and Transmission and Distribution (T&D) emissions, and as some options will result in an increase of electricity usage the WtT and T&D emissions will rise slightly by approximately 175 tCO_2e.

6. **The Opportunities**

6.1. Details of the opportunities below are based upon analysis of EHDC's current carbon audit, and conversations with EHDC officers in selected areas of the Council's operations where there are potential or existing opportunities to reduce carbon or undertake associated works which whilst carbon might not be the main driver it nevertheless has a potential carbon benefit.

6.2. The calculations within the opportunities are based upon the 2024 carbon audit, industry information and nationally accepted data (see methodology above).

7. Built Estate Consolidation

7.1. EHDC is currently within a programme of consolidating its operational built estate. Having moved from an aging energy inefficient head office to a more modern building and installing solar pv on this building it is also looking towards both the potential sale and/or leasing of other buildings that it currently owns. The Council anticipates that some of this will take place between now and 2026, with further tranches happening between now and the 2035 target. This would reduce operational carbon for the council across gas, as well as water supply and disposal. Due to uptake of a green tariff, there would be not additional carbon saving from electricity assuming that this is maintained. A total amount of 42 tCO_2e would be expected to be saved from this. It should be noted however that in some cases this would remain within the overall East Hampshire area carbon footprint if assets were transferred to community groups or other entities and continued to be used in a similar manner to how they are now.

7.2. There are some alternatives to building sale or ownership transfer. For example, several of these buildings are public toilet blocks that do not use gas. For some of these blocks it might be possible to install solar pv (subject to formal survey) to cover the electrical use (in the event the green tariff was not maintained). Not all the blocks would be suitable due to shading and other factors, and in some cases to provide an adequate supply of energy an array larger than the available roof space of the block would be required and would therefore require a solar canopy or similar.

The suitable sites are also all within car parks, so installation of canopies could also be considered to provide additional energy for other uses. To provide sufficient energy for the blocks that are suitable an estimated £114k would be required. It is also recommended that energy efficiency improvements are considered at all sites to reduce overall energy use before undertaking installation of solar pv.

Year	tCO2e saved	Estimated Cost (£)	Comments
2025	0.52	0	Impact of Green Tariff already accounted for.
2026	40.3	0	Impact of Green Tariff already accounted for.
2035	0.759	0 (114k)	Impact of Green Tariff already accounted for. Alternatively, a proportion of the carbon from electricity could be saved by improving energy efficiency, installing solar pv etc.

8. Leisure Contract

8.1. There are several potential opportunities within the leisure contract for reducing emissions and a positive direction is already being taken with regards to this, with the Council's contract partner, Everyone Active. The current contract has another 18 years to run so the option to use a tendering or contract negotiation process to leverage carbon savings are limited. However, the current partners appear to be working well together to achieve energy and carbon savings.

8.2. A solar PV system is due to be installed on Alton Sports Centre. This 374 kWp system would likely lead to carbon savings of 67 tCO_2e as well as savings in energy costs.

8.3. A proposed extension design at Whitehill and Bordon Leisure Centre is aiming to be energy neutral against the current facility and should therefore have no detrimental impact on the facilities carbon footprint if this is achieved.

8.4. The most significant opportunity however is with the Council's oldest leisure centre, The Taro Centre, in Petersfield. This facility has boilers that are coming to the end of their life and due to be replaced. The existing building is also of an age where it could benefit from other improvements to its energy efficiency e.g. insulation upgrades. The Taro Centre currently uses 45% of the gas consumption within the leisure contract. Refurbishing this centre and moving from gas boilers to alternatives such as air source heat pumps, coupled with other improvements across the leisure estate could make considerable carbon savings. A 50% reduction in gas usage across the leisure contract would save 657 tCO_2e, although there would be a potential increase in electricity usage of approximately 272 tCO_2e, so a net saving of 385tCO_2e. This saving could be optimised with a green tariff across the leisure estate.

8.5. The costings for this would require further investigation, including full technical assessments. The Council is currently looking at this and considering the preparation of a bid for the Public Sector Decarbonisation Scheme to provide funding to help support the delivery of a project.

Year	tCO2e saved	Estimated Cost (£)	Comments
2030	385	1.5m	PSDS funding available to support part of this cost.
2026	67	tbc	Alton Sports Centre Solar PV
tbc	tbc	tbc	Wider energy efficiency improvements

9. Removal of Gas Across Remaining Core Estate

9.1. Following the consolidation of the core estate the council would be left with a limited number of buildings that use gas as an energy source (mostly for heating and hot water). The replacement of gas as an energy source with electricity would give a saving of 28 tCO_2e, if carried out in 2027. The timing of this would depend on the age of the existing boilers and heating infrastructure and would require a detailed assessment to provide realistic costings. By moving primary energy source from gas to electricity would also benefit from the Green Tariff and there would be no compensatory carbon impact from this so long as the tariff is maintained.

Year	tCO2e saved	Estimated Cost (£)	Comments
2027	27.89	0.5m – 1m	

10. Electrification of pool vehicles

10.1. The Council owns and operates several small light cars and vans of varying sizes and ages. Currently they are either petrol or diesel powered. It is normal for this type of vehicle to be replaced after a set period of time, normally based upon its use/purpose, condition, mileage and age. The Council should replace these vehicles with electric equivalents when they next come to the end of their working life. It is assumed that this could be achieved by 2030 at the latest (when the sale of new petrol or diesel light vehicles will cease anyway). A saving of 22 tCO_2e would be achieved by this, and there would be no compensatory increase in electricity use to 'fuel' these vehicles, assuming that the green electricity tariff is maintained. The cost of this would be minimal (against the cost of petrol and diesel). Similarly, the appropriate charging infrastructure would be required in order to ensure that these vehicles can be charged when needed.

Year	tCO2e saved	Estimated Cost (£)	Comments
2030	22		Replacement should be within existing cost envelope; however consideration will need to be given to cost of charging infrastructure.

11. Waste Contract

11.1. The waste contract represents the biggest single source of carbon within the Councils operational footprint. It is also an area where increasing service demand through the building of new homes (which require a waste collection service) and the current and potential increases in materials collected at kerbside could lead to a potential increase in that carbon footprint.

11.2. The current contract is operated as a joint venture and emissions fall within Scope 3 of the Council's carbon footprint. For the purposes of this work it has been assumed that this arrangement is going to continue, however it is noted that the current contract is due for review in 2026 (and at subsequent future dates) which could affect where carbon emissions are allocated within scopes.

11.3. There are some significant opportunities within the contract to potentially leverage change and potentially reduce the carbon footprint of the service. Firstly, the current contract is due to be reviewed 2026. There is an opportunity within that to extend the contract with the current incumbent for a further 10 years or seek an alternative option. Part of those discussions are likely to include the provision of a food waste collection service from 2026 (or shortly thereafter[5]). The Council in conjunction with WRAP have looked at various options for reconfiguring the current collection arrangements and most of these represent a reduction in carbon.

11.4. The current vehicle fleet is also coming to the end of Its working life and will require replacement soon. There are several factors involved in this decision, including the provision of slightly smaller principal vehicles (from 26 tonne to 18 tonne) to reduce damage and access issues. There will also be a requirement for additional vehicles to cover future food waste service (this may not happen at the same time as replacement of the current vehicle stock). Currently the Council has around 18 principal collection vehicles and some other smaller vehicles for collection at hard-to-reach properties, supervisors and other roles. This could increase to around 27 principal vehicles with future changes to service provision.

11.5. There are a range of alternatives in the marketplace at this present time including some electric vehicles. However East Hampshire is a very rural district, and these sorts of vehicles may not yet be suitable. Furthermore, the availability of charging infrastructure at the vehicle depot needs to be a consideration in addition to the capital outlay of the vehicles themselves. Given the usage of the vehicles even if they were suitable, they would need to be able to be fully recharged overnight (between approx. 5pm and 6am). This would require significant grid capacity that may not be available at this time. The Council intends to move to a 5 year fleet renewal in the future, so there is a further opportunity to consider this before the 2035 deadline. Additionally, the Council is considering the location and requirements of its current and future depot, and this will likely be a consideration in terms of the type and fuel source of any future vehicles.

[5] This depends on a number of factors including (but not limited to) agreement with the waste disposal authority, provision of suitable vehicles and the supply/distribution of suitable containers for residents.

11.6. The waste team raised the possibility of hydrogen powered vehicles as something it was considering. Whilst there are a limited number of hydrogen refuse vehicles in the UK at this time, they would also require some additional infrastructure to provide the refuelling rigs and the fuel itself. In addition, depending on how the hydrogen is derived it can have a carbon cost, so whilst the combusting of hydrogen for fuel does not produce carbon, the generation of hydrogen in the first instance can (see Appendix One).

11.7. The waste team also mentioned the possibility of Hydrogenated Vegetable Oil (HVO) being used as an alternative fuel source. This is technically considered a biofuel for the purposes of calculating carbon emissions and has a significantly lower emissions factor than conventional diesel fuel. It can also be utilised with limited or no retrofitting of vehicles. However, at the present time supplies of HVO from sustainable sources are limited and could present cost implications and other environmental issues depending on the source of the HVO e.g. palm oil, and non-sustainable HVO may also have a negative carbon impact.

11.8. It is likely that further carbon savings will be achieved from changing the vehicle fleet at some future point before the 2035 target, however at this time it is difficult to quantify the scale of this transition and the timing. An estimate of a further 756 tCO_2e has been included (based on the 2022 WRAP report) in the calculations.

Year	tCO2e saved	Estimated Cost (£)	Comments
2032	156 - 3696	tbc	Based on WRAP 2022 report
2035	756	tbc	Additional saving by changing vehicle type / fuel source (based on WRAP 2022 report)

12. 75% business Mileage Reduction from Grey Fleet (Internal Combustion Engine Vehicles)

12.1. The government has pledged to reinstate the target of 2030 for the sale of new ICE vehicles previously pushed back by the previous administration to 2035. This will have a natural impact on the removal of existing ICE vehicles from UK roads and grey fleets.

12.2. Grey fleets are those vehicles that are privately owned by staff that are then used for work purposes and a claim for mileage for that use is submitted. Typically, cars in a grey fleet are of an average age of 8.2 years, which compares to around 2 years for leased vehicles. Consequently, they are also likely to be of a lower safety (e.g. NCAP) rating and are likely to be emitting higher levels of other gases e.g. NOx. They are also potentially more expensive for the Council than other alternatives.

12.3. It is not currently known what the split of petrol / diesel / hybrid / EV is within the grey fleet although in 2023/24 91,797 miles were claimed for business travel. To properly understand the impact of such a change (and correctly measure the existing carbon footprint) this data should be collected when receiving mileage claims.

12.4. Reducing emissions by 75% from ICE vehicles in the grey fleet would require several different but related actions. Firstly, seeking alternatives to travel than using staff members own vehicles such as telephone or video conferencing, bus or rail travel or the use of pool or hire vehicle could help reduce this source of emissions. It should be noted that the rural nature of East Hampshire means that rail and bus travel is limited for some destinations. Similarly, the natural replacement of vehicles in the grey fleet, particularly after 2030 will help to lower emissions.

12.5. It is understood that the Council is also considering a salary sacrifice scheme to help accelerate the uptake of electric vehicles by staff.

12.6. This option would save around 18 tCO2e.

Year	tCO2e saved	Estimated Cost (£)	Comments
2035	18	0	Needs proper auditing of mileage claims to understand actual carbon footprint and savings

13. Impact of All Opportunities

13.1. The following graphs show the impact of the opportunities. Figure 2 shows the impact of the above opportunities cumulatively on total carbon emissions, and the remaining emissions and their broad locations within the operational footprint. Figure 3 shows the impact of those opportunities by the scope of emissions.

Figure 2 - Carbon Reduction Opportunity Impact

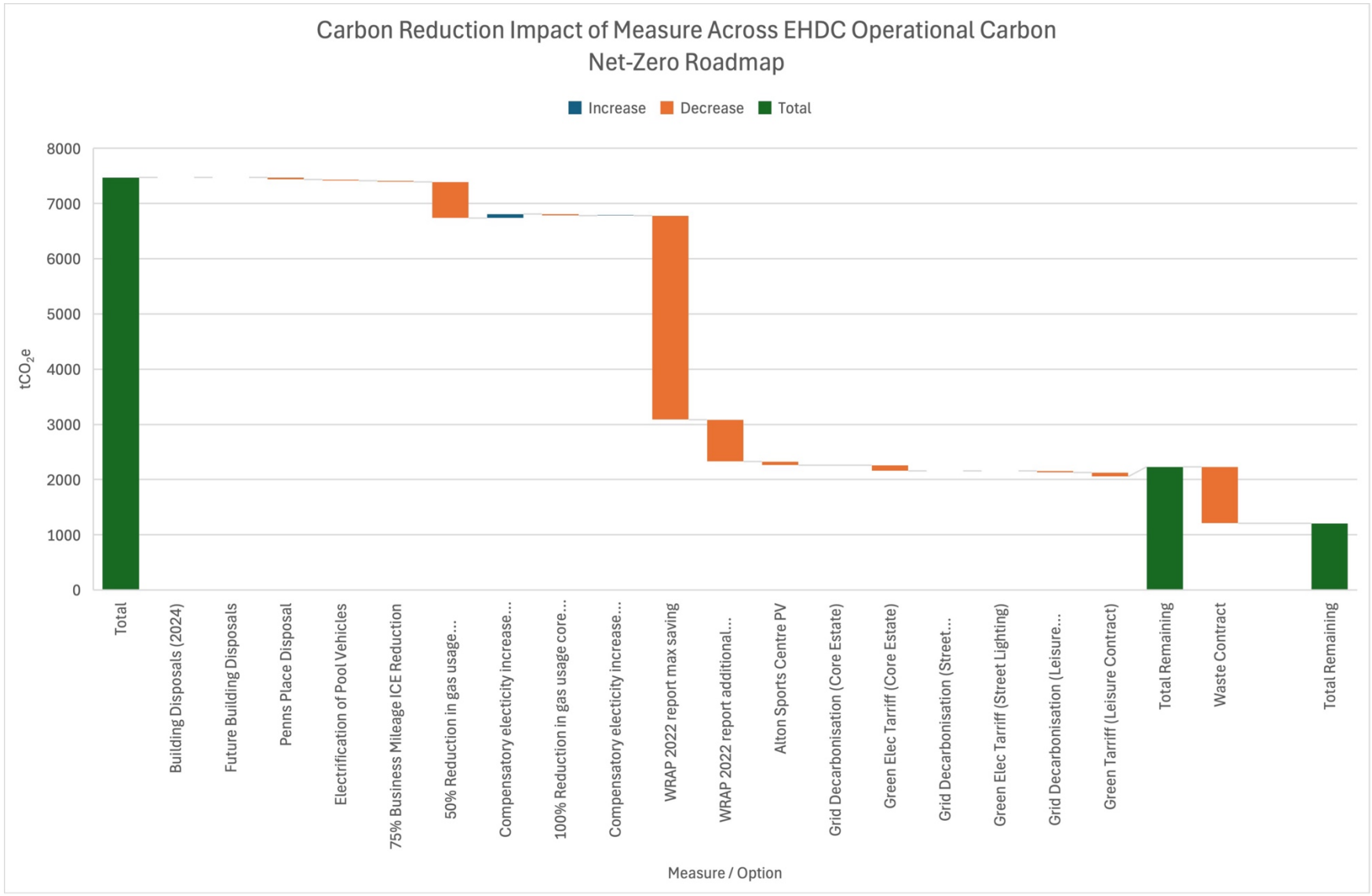
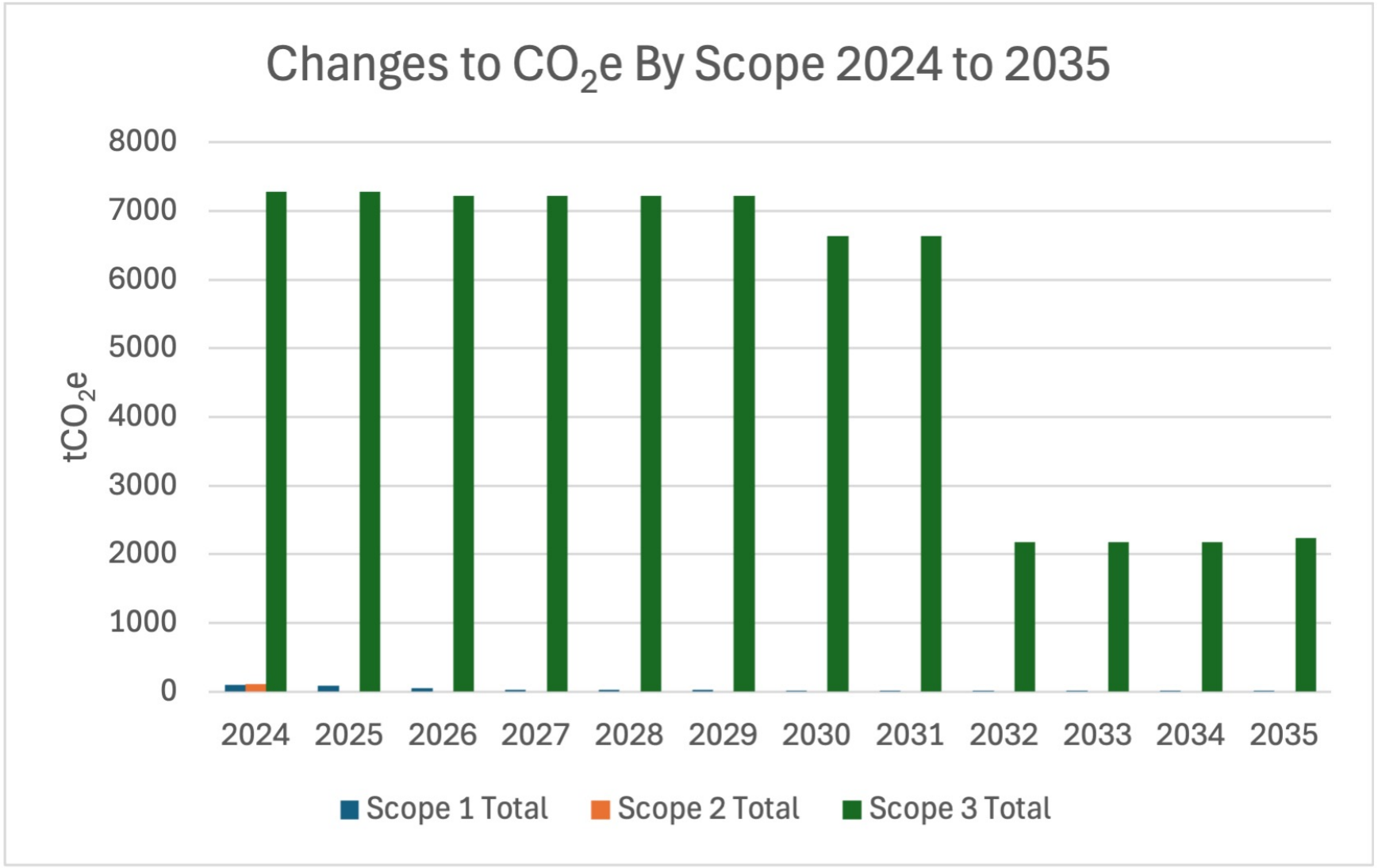


Figure 3 Changes to Carbon Emissions by Scope Over Time



14. Offsetting

14.1. As can be seen from Figures 2 & 3 there is likely to be a residue of carbon emissions that will remain even if all options are delivered.

14.2. Whilst some options may indeed deliver greater savings that they have been predicted to it is still likely that the potential for offsetting or a similar scheme might be required.

14.3. The current offsetting market is in a state of flux with some schemes having been shown to have not delivered on the offsetting savings that they were predicting. At this point it is difficult to predict what sort of schemes might exist in 2035 and whether they would be suitable for EHDC to use. Therefore, a further review of offsetting or other alternatives should take place at a later date.

14.4. Similarly exporting excess energy generated back to the grid e.g. from solar pv, does not automatically incur a 'carbon credit'. The grid is utilised by many end users managed by suppliers and operators. The suppliers and operators buy and sell electricity to users. Unless there is a specific agreement between an exporter and supplier/operator the latter can sell the excess renewable energy generated to whoever they choose. It is therefore the ultimate end user (and not the generator) who will benefit from the "green" tariff and lower carbon energy.

14.5. Exceptions to this would be where there is a specific "sleeving agreement" or "private wire" arrangement.

14.6. A sleeving agreement is where a generator agrees with a supplier/operator that the energy generated by them is to be "used"[6] specifically by another user and can therefore potentially be used as a carbon credit by the generator but not the end user. A private wire arrangement is literally a separate distribution network from the main national grid system.

14.7. Sleeving agreements generally will have a surcharge placed on them by the supplier/operator. Private wire agreements are generally more flexible but are only practical over relatively short distances.

14.8. Sleeving and private wire can be complex and vary considerably depending on individual circumstances; therefore it is difficult to provide detail without a specific project to consider.

[6] "Used" is notional

Appendix One – Hydrogen Sources

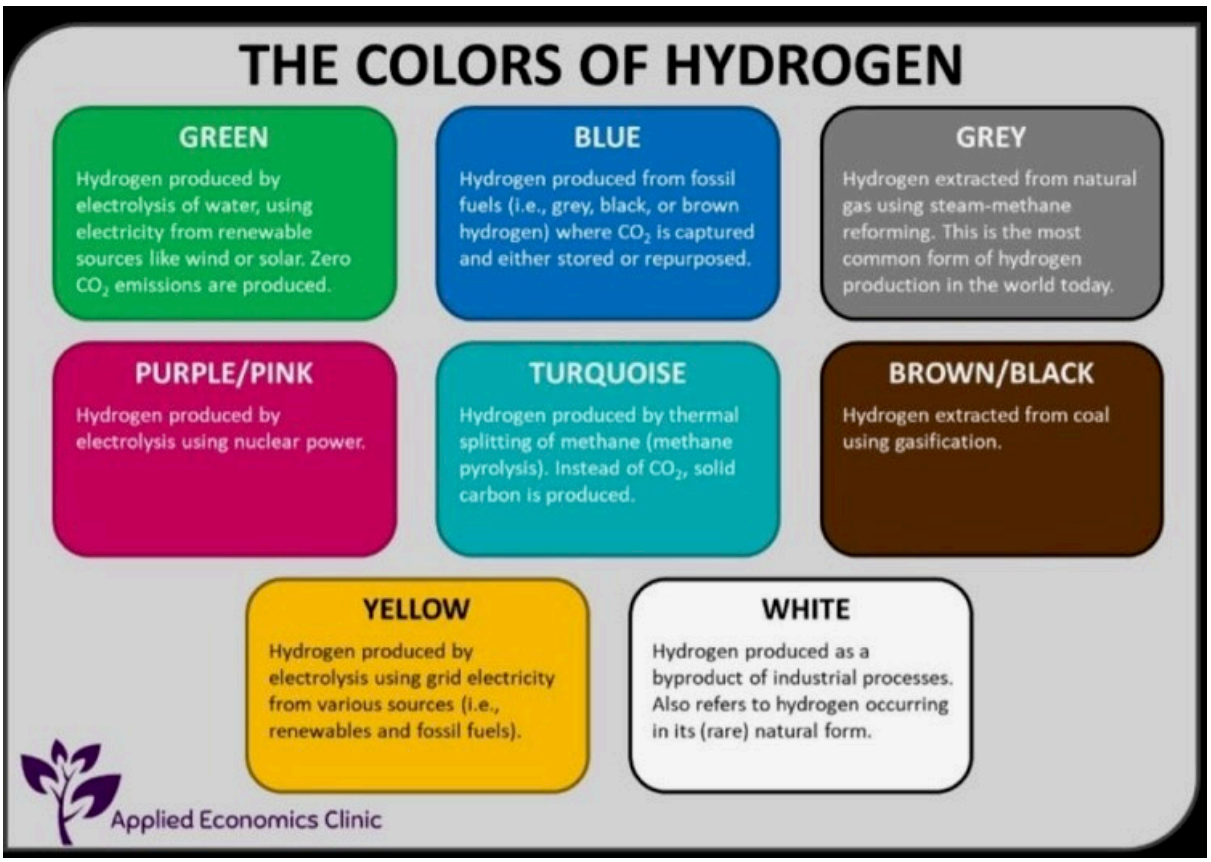


Figure 4 - Sources of Hydrogen and their carbon implications

Appendix Two – Summary of All Options

Year	tCO2e saved	Estimated Cost (£)	Comments
Building Consolidation			
2025	0.52	0	
2026	40.3	0	
2035	0.759	0 (114k)	A proportion of this could be saved by improving energy efficiency, installing solar pv etc.
Leisure Contract			
2030	385	1.5m	PSDS funding available to support part of this cost.
2026	67	tbc	Alton Sports Centre Solar PV
tbc	Tbc	tbc	Wider energy efficiency improvements
Removal of Gas Across Core Estate			
2027	27.89	0.5m – 1m	
Electrification of Pool Vehicles			
2030	22		Replacement should be within existing cost envelope; however consideration will need to be given to cost of charging infrastructure.
Waste Contract			
2032	156 - 3696	tbc	Based on WRAP 2022 report
2035	756	tbc	Additional saving by changing vehicle type / fuel source (based on WRAP 2022 report)
75% business Mileage Reduction from Grey Fleet (Internal Combustion Engine Vehicles)			
2035	18	0	Needs proper auditing of mileage claims to understand actual carbon footprint and savings

Appendix 3 – Summary of the 2022/23 & 2023/24 Carbon Audits

Year		**2022/23**	**2023/24**
		tCO2e	tCO2e
Scope 1	Gas	45.53	68.34
	Refrigerants	-	-
	Fuel (Pool Vehicles)	24.21	22.41
	Total	**69.74**	**90.75**
Scope 2	Electricity	83.32	102.42
	Total	**83.32**	**102.42**
Scope 3	Business Travel	29.21	24.21
	Leisure Contract	1,604.05	1,622.90
	Waste Contract	5,474.00	5,474.00
	Street Lighting	12.57	13.77
	RegenCo & EHCS	0.79	0.76
	Water (Supply & Treatment)	1.16	1.36
	WtT / T&D EHDC	37.74	40.25
	WtT / T&D Leisure Contract	106.09	99.82
	WtT / T&D Street Lighting	4.43	4.51
	Total	**7,270.06**	**7,281.59**
Total	**Gross Emissions tCO2e**	**7,423.12**	**7,474.76**
	Change over previous year		0.6957%
	Change over base year (2022/23)		0.6957%
Intensity	FTE Employees	268.85	265
	tCO2e per FTE	27.61	28.21