

Carbon Impact Assessment

Vehicle Fleet Carbon Emissions

1. Like many other organisations, the Council has traditionally relied on diesel to fuel its fleet. The Carbon emissions from fleet fuel use is a significant contributor to the Council's operational footprint.

Carbon Footprint Scopes

2. To calculate the Council's carbon footprint, three scopes are defined for reporting purposes:
 - Scope 1 – These are all direct emissions released from the activities of an organisation. For example, fuel combustion from fleet vehicles;
 - Scope 2 – These are any indirect emissions from electricity purchased and used by the organisation. For example, the emissions linked to the lighting in the Civic Offices;
 - Scope 3 – These are any other indirect emissions from the activities of the organisation, occurring from sources that we do not own or do not control. This is the greatest share of the carbon footprint, covering emissions such as those associated with our leisure centres or community centres.

Fuel emissions have dropped since 2019/20

3. The Council uses 2019/20 as the baseline year for measuring its carbon footprint. Total vehicle fuel emissions for 2019/20 were 989.4 tCO₂e. This is made up of 925 tCO₂e scope one emissions and 64.4 tCO₂e scope three emissions. The only aspects that come under scope three is the fuel from the airport operations and the grounds maintenance work the Council does on behalf of Hampshire County Council. Overall, vehicle fuel emissions reduced by 126.8 tonnes to 862.6 tCO₂e between 2019/20 and 2021/22. There are a number of reasons that contributed to this drop in emissions:
 - One less vehicle in the fleet;
 - Greater bio-fuel content in fuel: Since 2020 the standard forecourt diesel we use has had a bio-fuel content;
 - Less fuel was used overall: Potential that our newer Mercedes refuse trucks have better mpg than old Dennis trucks;
 - Impact of start of Hydrotreated Vegetable Oil (HVO) trial: HVO was used in our garden waste vehicles in February and March 2022.

Hydrotreated Vegetable Oil (HVO)

4. HVO takes feedstock such as vegetable oils and waste fats and processes them into a very clean burning fuel. The main benefits of HVO are:
 - It reduces scope one CO₂e emissions by approximately 98%;
 - HVO can be used in normal diesel engines without the need for modification and it can even be mixed with diesel in the event of significant supply or cost issues.
5. The only infrastructure required for HVO is a double lined storage tank to ensure no leakages on site, and a power supply to this tank. This infrastructure is already in place at the Depot.

Fuel emissions are still the biggest contributor to our carbon emissions

6. Whilst the reduction is positive, it's important to remember that 809.3 tCO₂e of total vehicle fuel emissions in 2021/22 still accounted for a significant proportion of the Council's operational emissions:

- 65% of the 1246.32 tCO₂e Scope one emissions;
- 51% of the 1578.03 tCO₂e combined Scope one and Scope two emissions.

7. This is more than the emissions generated by powering or heating our buildings.

Impact of current Hydrotreated Vegetable Oil (HVO) use

8. In addition to the use of HVO in the garden waste vehicles, our small vehicle fleet transitioned to the fuel in April 2022, following a change to legislation which stopped the use of Red Diesel in certain non-road going motor vehicles.

9. It is anticipated that this will further reduce the Council's 2022/23 carbon footprint by 184 tCO₂e.

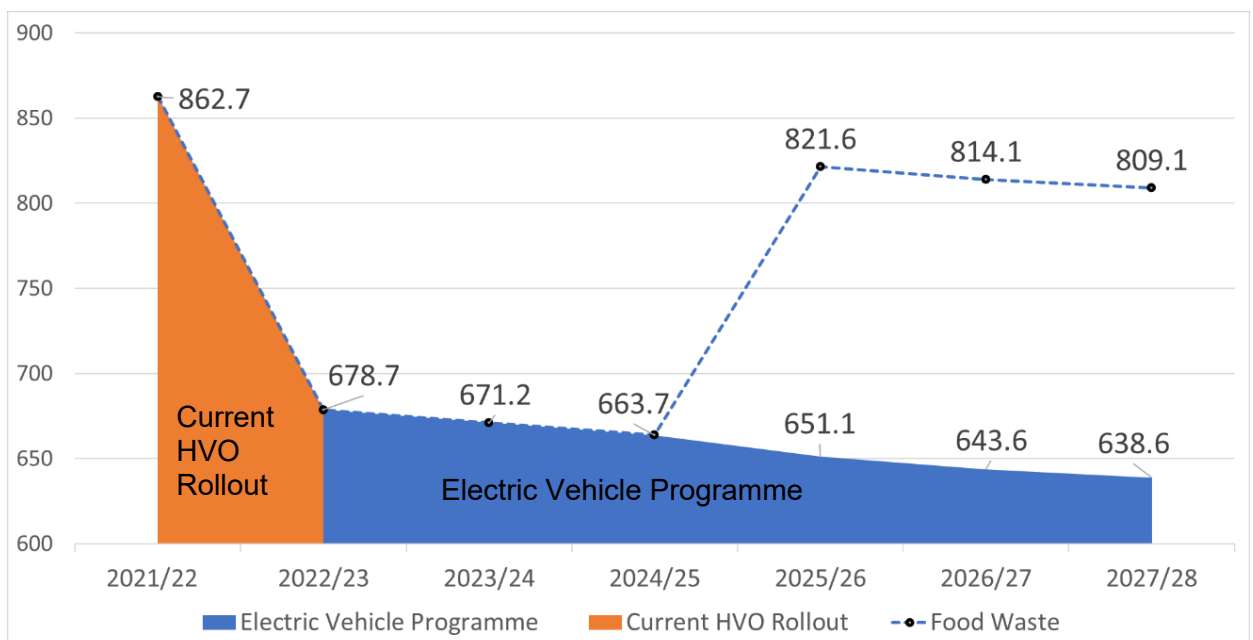
10. In 2021 the price of HVO was 12% more than the price of diesel. This has increased to 30% in 2022 with the average additional cost over diesel being 46 p/litre.

11. The additional cost of running these fleets on HVO rather than diesel in 2022/23 is estimated at £34,162. The use of HVO in these vehicles has been factored into budgets for 2023/24.

Effect of the Proposed Vehicle Replacement Programme on the Council's Carbon Footprint

12. Figure one below shows projections for the fleet fuel carbon emissions from 2021/22 up until 2027/28.

Figure 1: Fuel Emissions Projection



13. The proposed 5-year vehicle replacement programme would span from 2023/24 to 2027/28. In the figure above, the modelling includes the retention of the current HVO rollout (garden waste and small vehicle fleets) levels to help ensure that the carbon savings from the HVO rollout to date are not lost.

14. It is estimated that the proposed vehicle replacement programme would see the fuel emissions decrease by 40.1 tCO₂e over the 5-year period to 638.6 tCO₂e. This would be due to the introduction of 15 electric vans and an electric 5 tonne HGV.
15. The dotted line in the graph shows the Council's fuel emissions assuming that Food Waste collections start in 2025/26. Based on findings from collections modelling it is estimated that Food Waste collections would cause an increase of around 170.5 tCO₂e in the Council's fuel emissions.
16. Therefore, based on the proposed vehicle replacement programme and the assumption that Food Waste collections start in 2025/26 powered by diesel, and the current HVO use in the garden waste and small vehicle fleet is maintained, the Council's fuel emissions would reduce from 862.7 tCO₂e in 2021/22 to 809.1 tCO₂e in 2027/28. This would be a decrease of 6.2% over six years.

Hydrotreated Vegetable Oil (HVO) Options

17. The difference in price between HVO and diesel as of February 2023 is significantly higher than what was seen previously in December 2021 when the decision was made to introduce HVO into the garden waste fleet.
18. One future area which may be a viable HVO option is Food Waste. To mitigate the anticipated increase in emissions caused by the introduction of Food Waste in 2025/26, HVO could be used to power that part of the fleet. This would cost the Council an estimated additional £31,732 per annum but save 168 tCO₂e per annum.
19. If HVO is used in the food waste fleet the Council's fuel emissions would only increase by 2.5 tCO₂e from 651 to 653.6 tCO₂e in 2025/26. The infrastructure is in place to support this at the depot.
20. March 2023 has seen the price of HVO decrease and our fuel supplier predicts that the price will continue to fall in 2023. The Council's Transport Manager is looking at securing a fixed price for 12 months in partnership with other authorities so that the Council can receive best value.

Solent Airport HVO

21. An opportunity has been identified to run the Solent Airport airside vehicles on HVO. This costs the Council an estimated additional £460 per annum over diesel and means that all vehicle operations conducted at Solent Airport are on HVO. This saves an estimated 2.5 tCO₂e pa and results in a 4.4% reduction in the airport's carbon footprint.

Annual Updates on HVO use

22. Annual updates to HVO rollout will be undertaken. This is to reflect changing:
 - Legislation and guidance;
 - Market volatility e.g., cost difference between diesel and HVO;
 - Council's progress to carbon neutrality.