

Council Fleet Decarbonisation

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Local Authority Challenges and Opportunities

69% of councils in the UK have declared a **climate emergency** and have a Climate Action Plan.

Fuel and energy costs have risen significantly over time, as have other fleet operating costs.

Service delivery e.g. transport, waste, street cleansing, housing etc.

9 cities in England and 4 in Scotland will have **Clean Air Zones** to improve local air quality.

All new cars, vans, and HGVs up to 26t must be **zero emission vehicles** from 2035.

Funding for electric vehicle transition - vehicles, chargers, depot power supply.

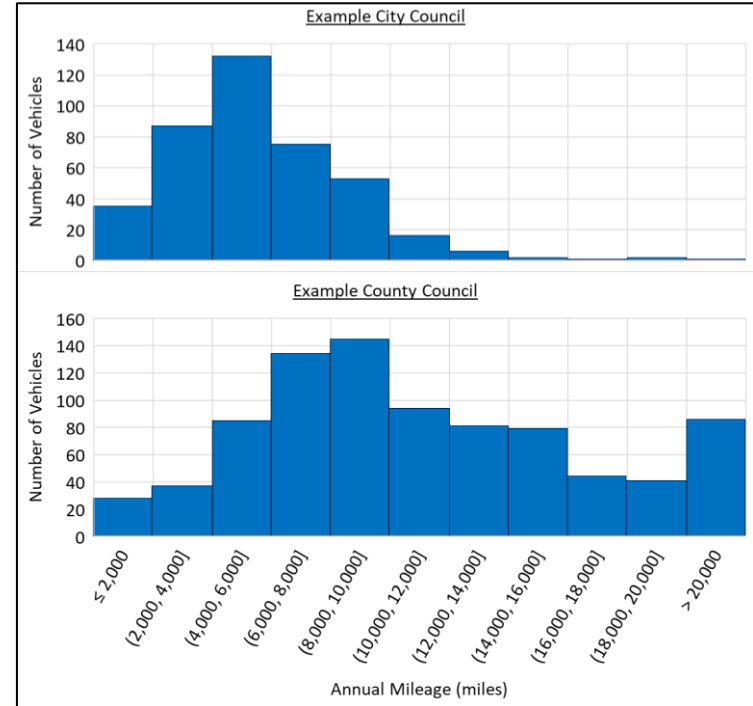
Typical Local Authority Fleet Operations

- **Cars, vans, and HGVs** including minibuses, tippers, refuse collection vehicles, sweepers etc.
- **Back to base** operation across relatively few depots.
- Most vehicles operate **five days a week on a single shift** (stored overnight at the depot or occasionally at home instead).
- **Ownership periods of five to ten years** (only one or two replacement cycles left to 2035).



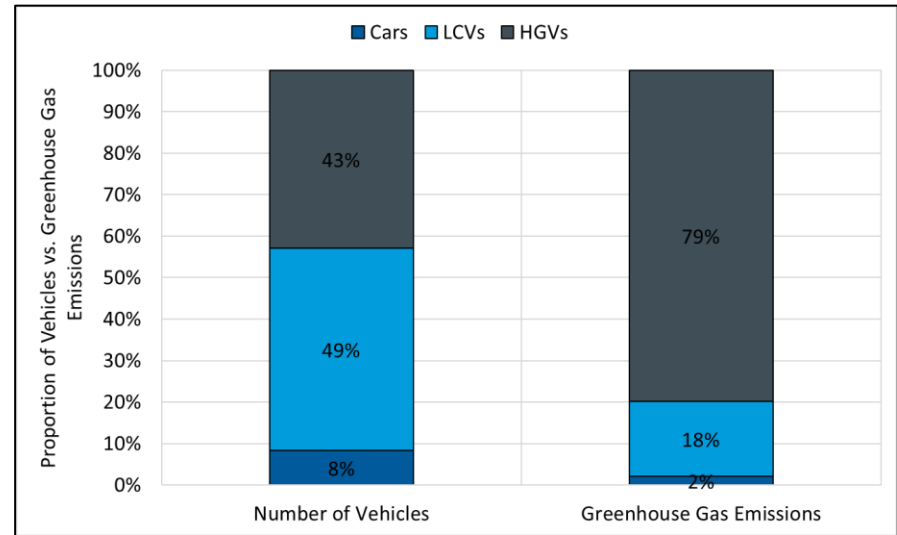
Typical Local Authority Fleet Operations

- **Local authorities have relatively low annual mileages.**
 - An example city council could have annual mileages of up to 14,000 miles (average daily mileages of less than 54 miles).
 - An example county council could have annual mileages of up to 40,000 miles (average daily mileages of less than 150 miles).



Contribution to Fleet Greenhouse Gas Emissions

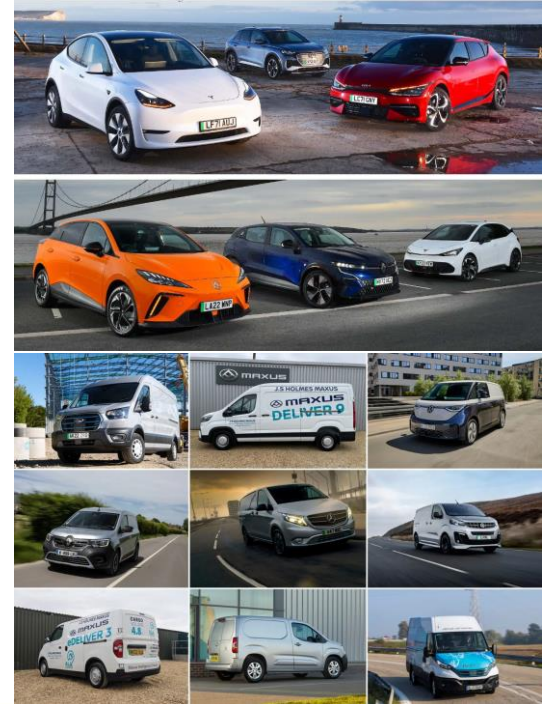
- Before considering the transition to zero emission vehicles, you should **first baseline your fleet energy consumption and emissions.**
 - In this example 57% of the fleet are cars and LCVs but they only account for 20% of the fleet greenhouse emissions.



- **HGVs are often most critical for achieving net zero fleet strategies and determining the long term infrastructure needs of local authorities.**

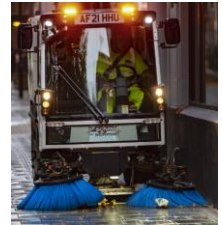
What Electric Options Are Available – Cars & LCVs

- **Over 1.1m battery electric cars and 39,000 vans on the road (16.5% of car sales in 2023).**
- 94 variants of electric car available (£26-£50k), electric vans are available from all major OEMs.
 - 21-87 kWh, 100-350 miles WLTP range.
 - Large vans can still be range constrained.
 - **7 kW or 11 kW AC onboard charger, 50-225 kW DC charging capability.**



What Electric Options Are Available – HGVs

- Battery electric trucks are available from all major OEMs and low volume suppliers in the most common vehicle configurations.
- **200-300 kWh – suitable for many, but not all duty cycles.**
- **22 kW or 44 kW AC, and / or 40-160 kW DC (some vehicles are DC only).**
- Lower market maturity – vehicles are expensive to buy, total cost of ownership can still be higher than diesel, daily energy consumption depends on many factors, and need a robust charging strategy / infrastructure plan.



Other Options to Consider

- **Hydrogen (Now)**
- H₂ Diesel ICE and Fuel Cell Vehicles from low volume suppliers.
- **Hydrogen (In the Future)**
- Fuel Cell Vehicles from OEMs – demonstrators soon, product late 2020s



- **Renewable Fuels***
 - Hydrotreated Vegetable Oil (HVO): drop-in alternative to diesel made from waste oils and fats like used cooking oil. Used by several councils.
 - Biomethane: Limited use in council fleets since 2020.

* See [Renewable Fuels Assurance Scheme](#) | [Fuels](#) | [Zemo Partnership](#) for approved suppliers

Electric Vehicle Charging Requirements

- **7 kW AC chargepoints are sufficient for the majority of electric car and small van charging at local authority depots.**
 - 22 kW AC chargepoints have a small cost premium but can provide more flexibility and interoperability with larger vehicles.
- **Even larger battery vehicles can be charged at lower power if they have long dwell times, some DC rapid / ultra-rapid charging may still be required.**



Electric Vehicle Charging Requirements

Average Charging Power* (16h Charge)	25%	50%	75%
60 kWh battery e.g. car	1 kW	2 kW	3 kW
300 kWh battery e.g. HGV	5 kW	10 kW	15 kW

Average Charging Power* (2h Charge)	25%	50%	75%
60 kWh battery e.g. car	8 kW	16 kW	23 kW
300 kWh battery e.g. HGV	39 kW	78 kW	116 kW

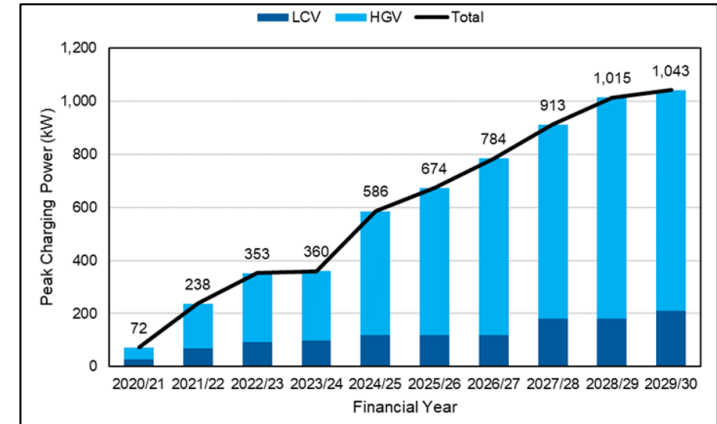
- The tables above show the average power required to charge a 60 kWh and 300 kWh battery electric vehicle in 25% increments.
- This shows that a charging power of 22 kW is sufficient to meet most needs**, with only the 300 kWh battery charged in 2 hours needing more power.

* Note – this is the theoretical minimum charging power but actual charging power / time varies by several factors including ambient temperature, state of charge, and the control strategy of the vehicle / charger.

Depot Power Supply Considerations

- **Electric vehicle fleets can require MWs of additional power if not managed correctly.**

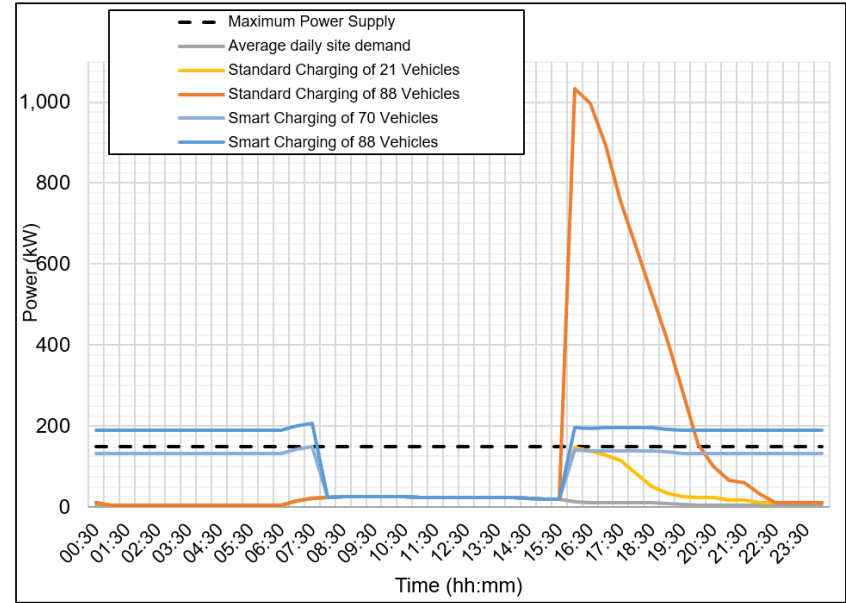
- Although cars and vans may account for most of the chargepoints at a depot, HGVs can require most of the power (if services are co-located).



- **To avoid an overprovision of charging infrastructure it is therefore important to:** determine daily energy and power requirements based on your duty cycles, select the most appropriate chargepoints, optimise your charging strategy, and investigate load management options.

Depot Power Supply Considerations

- **Load management systems can control the time and power of charging to reduce peak power.**
 - Some low mileage vehicles may not even need to charge everyday.
- Worked example on the right:
 - 21 electric vehicles can be charged with standard charging.
 - 1,033 kW would be required if all vehicles charged at full power at once.
 - **Far more electric vehicles can be charged with load management by charging over the entire 16h between shifts but at lower power.**



Key Points – Practical Implementation

- **Baseline your daily energy consumption** based on your duty cycles and shifts.
- **Assess your options** – what zero emission vehicles options are available to meet your needs. Do you also need to consider using renewable fuels as an interim option?
- **Trial electric vehicles** if you haven't already!
 - Some vehicles may be fit for purpose but you may not be ready or able to deploy them at scale, trialling or rotating electric RCVs across all suitable rounds can help you plan your future vehicle and infrastructure needs.
- **Develop a full and detailed infrastructure strategy:**
 - Select the lowest power chargepoint that meets your requirements.
 - Optimise your charging strategy and consider using load management systems.
 - Engage with your DNO early to get accurate budget estimates based on realistic peak power requirements.
 - Install chargepoints in phases, but plan for and make provision for future chargepoints.

Thank you for listening

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