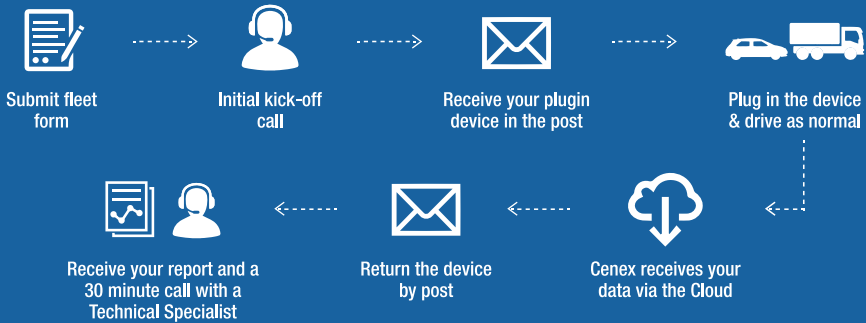




## Cost-effective Low Emissions Analysis from Real-world Data Capture

CLEAR Capture uses a simple, cost effective, plugin device that gathers real world vehicle drive cycle data. Using this data, Cenex provide fleet managers with reliable, accurate **whole life costs, operational performance** and **emissions savings** comparisons of switching from a conventional vehicle to an ultra-low emissions vehicle (ULEV).



Unlike other fleet assessments, CLEAR Capture is accurate as the analysis uses real-world fuel and energy consumption data based on independent testing and vehicle monitoring by Cenex (for ULEV fuel consumption data) and Emissions Analytics (fuel consumption from conventional vehicles). Manufacturers fuel consumption data is not used, thus the analysis is directly linked to the specific fleet vehicle and its duty cycle.

Cenex uses this data to calculate the total **cost of ownership** and **emission savings** potentially gained from switching to an ultra-low emission car or van



Compare a car or taxi against EV, PHEV and REEV



Compare a Van (up to 2.2tonnes GVW) against an electric model (or gas or biofuel if required)

*CLEAR Capture has been deployed in the following projects:*



*Deployed in an assessment of the airside and landside fleet*



*Deployed in a project led by the EST to assess the use of electric vans on the UKs motorways*



*Deployed in an OLEV funded H2 Vehicle Trial*

# What's included in a CLEAR Capture analysis?

	Mercedes C300 (Diesel)	Electric Vehicle (EV) *	Range Extended Electric Vehicle (REEV) *	Plug-in Hybrid Electric Vehicle (PHEV) *
Purchase cost (£) <sup>1</sup>	£30,221	£24,479	£30,771	£34,166
Plug-in grant discount (£) <sup>2</sup>		£4,500	£4,500	£2,500
Fuel cost (£) <sup>3</sup>	£5,535	£2,731	£4,789	£8,797
Road tax (£) <sup>4</sup>	£650			
Maintenance cost (£) <sup>5</sup>	£3,603	£1,355	£2,132	£3,322
Resale value (£) <sup>5</sup>	£7,650	£2,854	£6,141	£8,652
Non-EV additional charge (£) <sup>6</sup>				
Total cost of ownership (£)	£32,359	£21,211	£27,050	£35,132
Total cost per mile (ppm)	51.3	33.6	42.9	55.7
Whole life cost savings (£)		£11,147	£5,308	-£2,773

## Total Cost of Ownership Model

Total cost of ownership will be analysed for options identified in the Suitability Assessment to give an accurate indication (using bespoke fleet operational data, real world performance data, service and maintenance costs) of low emission vehicle performance in the fleet. In the example, Fully Electric, Range Extended and Plug-in Hybrid were identified as suitable alternatives and therefore used in the comparison. The total cost of ownership will be presented both as a table with figures and as a column chart.

## Air Quality Assessment

The emission performance will be analysed for the current operational vehicles compared side-by-side with the low emission alternatives identified by the Sustainability Assessment. Using bespoke fleet operational data, real world performance data and actual service and maintenance costs, the figure we produce will be as close to the actual figures as possible. The report will include tailpipe and well-to-wheel CO2 savings as well as NOx. This process will give the client an accurate estimate of emissions savings.



## Comparator Vehicle Make & Model

Vehicle reg. number  
Data date range

**Average daily mileage**  
Days per week usage

**Extrapolated annual mileage**  
Average journeys per day  
Average journey mileage  
Average daily driving time  
Average journey driving time

Average daily % charge used  
Average daily battery capacity used

## Mercedes C300 (Diesel)

BJ16 XEN  
24/11/2016 to 23/12/2016

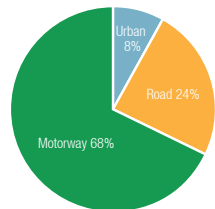
**53 miles**  
4.6 days (out of 7 days)

**12,623 miles**  
3.5 journeys  
15.2 miles  
1 hour and 11 mins  
20 mins

**In an EV:** 77%  
**In a REEV:** 95%  
17.2 kWh  
18.5 kWh

## Driving Habitat Distribution

Your driving pattern will be analysed and separated into three segments, Motorway, Road and Urban. This breakdown is a quick and easy way of seeing whether your drive cycle is suitable for electrification. Driving cycles that are largely dominated by motorway mileage, tend to suite traditional internal combustion engines, whereas driving cycles dominated by road or urban styles, tend to be more suitable for electrification.

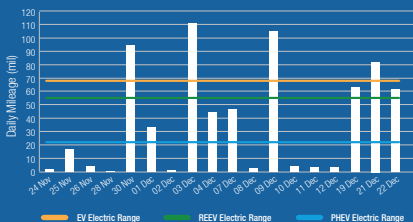


*Note: Not always the case, but is useful as a rule of thumb.*

## Vehicle and Drive Cycle Statistics

The report begins by outlining the vehicle under assessment along with drive cycle statistics such as average daily mileage, frequency the vehicle is used, journeys per day and average journey mileage etc. This will help you understand how you are using the vehicle.

## Daily Distance Pattern



## Daily Distance Pattern/Charging Profile

Using the data gathered from our telemetry device, Cenex will monitor your driving style and calculate the realistic mileage you could expect from a full charge in each of the identified alternative vehicle types (in this case, EV, REEV, PHEV). When plotted onto a graph showing the vehicles daily mileage, this highlights how often the vehicle would need to be charged, had the journey been done in the alternative vehicles. For this particular example, the vehicle would need charging on four of the 18 days assessed.