Driving Innovation

Learning From the Ultra Low Carbon Demonstrator

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....ULCV Demo is the first major step in a journey...

2010 2011 2012 2013 2014 2015 2016 2017 2018



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Competition Targets

- Key Desired Outcomes:
 - Real World Testing through in-vehicle logging
 - Exposure to multiple drivers and drive cycles
 - Opportunity to understand customer perceptions and concerns
 - Interface challenges with Infrastructure
 - Inform future demonstrator activity within LCV IDP
- c340 passenger cars on the road for 12 months each
- EVs and PHEVs (with less than 50g CO2/km tailpipe emissions and an extended zero-emission range) and FCVs
- Total Funding Value £25.5m

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...and we will learn...

- How people drive the vehicles
 - Each vehicle will have datalogger measuring vehicle usage
 - Length of journey (time and distance)
 - Time of journey
 - Ambient temp
 - Length and time of charging & energy transferred
- What people think of the vehicles
 - Perception study to look at what people think of the cars and whether that impacts the way they use them

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...the vehicles... 😎

















































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...and where we are now...

- 25 Mitsubishi iMievs and 40 Mini Es handed to their drivers in December 2009
- Toyota Plug-In Prius handover June 2010 (20 cars)
- Smart ed handover London and Birmingham June 2010 (100 cars)
- Next handovers
 - Early July Allied Peugeots

• Early usage data results are being analysed

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...early results from the data...

- **12,874** individual journeys recorded over the period 13-Dec-09 to 12-Mar-10
- average journey distance over same period is **6.0 miles**.
- maximum individual journey distance recorded is 80.8 miles
- **41%** journeys are less than 2.5 miles



• Note - UK average car trip distance 9.3 miles (CfIT)

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...early results from the data...

Daily mileage figures show 60% of the fleet totalling less than 20 miles per day.

The occurrences of daily mileages over 70 miles suggest some users are charging more than once a day, and therefore possibly away from home.

The very limited amount of charging data received to date suggests that the average charging frequency is approximately 0.5/day, or once every other day.



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...early results from the data...

The figure below showing the amount of energy being transferred to the vehicles during a charge.

The average energy transfer per charge is approximately 8kWh.

Considering that the average daily mileage across the whole trial to date is 13.3 miles, the figure below shows that most users regularly part charge their vehicles when the battery SoC is still well above 50%.

Most daily mileages can be completed on less than 50% battery SoC.



Data from a subset of vehicles covering period 01-01-10 to 16-02-10.

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...early results from the data...

The distribution of journey start time is fairly evenly spread between 6 am and 8pm throughout the day, however noticeable peaks are present between 7am-9am and 3pm-7pm.

People used their cars frequently for their first week of ownership (approx. 4 journeys a day) before using it less over the Christmas period (approx. 2 journeys a day). After this period and the bad weather experienced in early January, people's usage of their vehicle became more regular.

On average the vehicles were parked for 97% of the time, suggesting that there is plenty of time to sufficiently charge for each journey.

There are distinctive peaks for when the EV is plugged in from 6-8pm and also from 10pm-2am. Also the amount of time the EV was plugged in is equivalent to 21.76% of the time.