LowCVP Low Carbon Vehicle Partnership
Connect Collaborate Influence

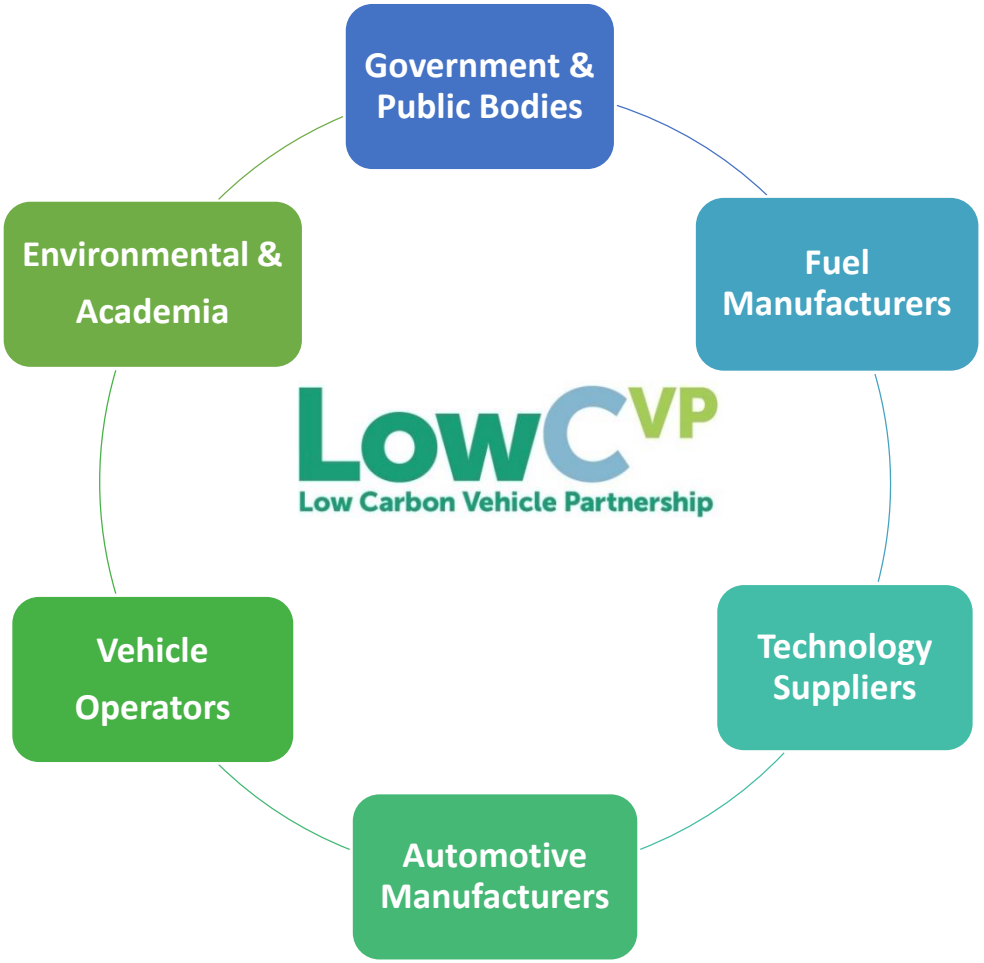
Decarbonising Commercial Vehicles

Tuesday 8th March – North East Freight Partnership

Brian Robinson

Programme Manager (Commercial Vehicles)

LowCVP is a unique stakeholder organisation. Our mission is to accelerate a sustainable shift to low carbon vehicles and fuels

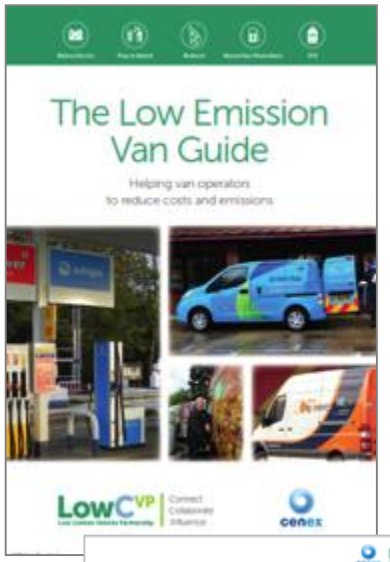


Collaborate on developing low carbon vehicles and fuels markets.

Influence Government policy.

Connect stakeholders to strengthen understanding and consensus.

Recent and ongoing Commercial Vehicle activity…



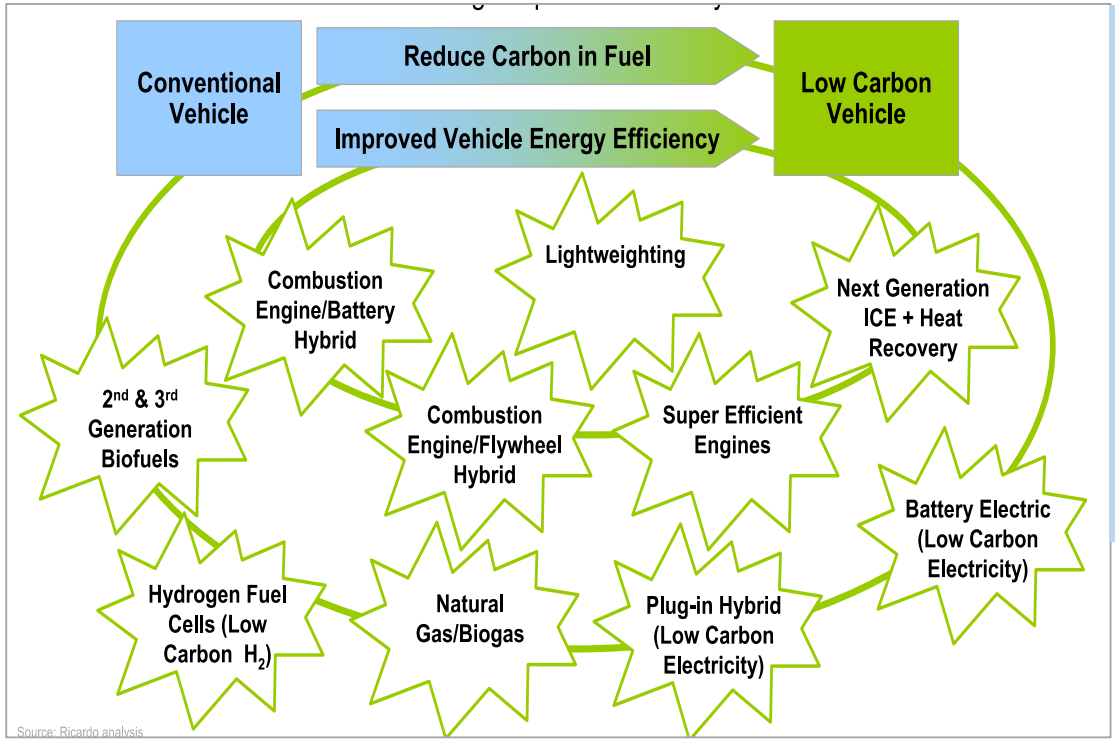
Clean Vehicle Retrofit Accreditation Scheme Independent certification for technologies that reduce NOx emissions

Fuel-Saving Retrofit Technologies Scheme GHG savings verification for aftermarket devices such as tyres, aero

HGV Emissions Testing Dedicated gas, duel fuel trucks, hybrid truck (partnership TfL)

http://www.lowcvp.org.uk/lev.htm

Multitude of Fuels and Technologies with potential… (not to mention various operational efficiency measures and modal shift opportunities)



- Duty cycle
- Vehicle capital cost
- Maintenance costs
- Reliability / performance
- Infrastructure
- Fuel savings
- Air pollution – NOx, PM
- GHG emissions – CH4, CO2, N2O
  Sustainability / supply – biofuels
- Market availability

- Range of options to consider when selecting low carbon fuels and technology for truck operations.
- LowCVP closely involved with DfT in their **Freight Carbon Review**, looking at technology and policy options out to 2030.

Urban Delivery HGVs…

Trucks operating in urban areas account for about 20% of all HGV CO2 emissions, and about 25% of urban roadside NOx:

- What are the opportunities and barriers for potentially win-win technologies such as plug-in electric vehicles?
- What about last mile alternatives to trucks and vans, e.g. cycle delivery and L-Category vehicles?
- What urban freight can sensibly be shifted to rail or water?
- What can be achieved by 2030, and what policies are needed now?

- **DfT, OLEV, TfL, Transport Scotland and many others are engaged with LowCVP to help answer these questions.**

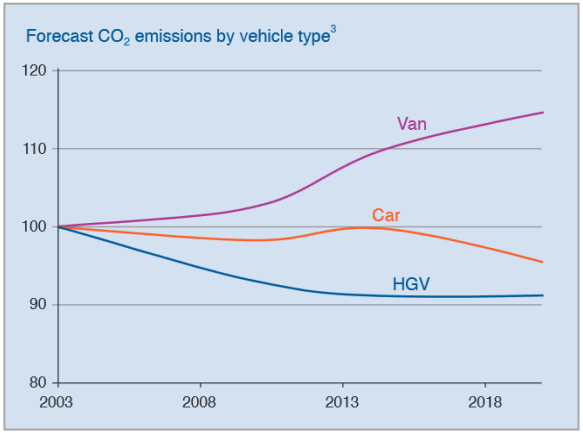
Why choose a Low Emission Van?

Better for Business

- Reducing the emissions from a van often means using less fuel resulting in **financial savings**.
- Improve an organisation's **image** and **CSR**.
- Public sector is setting vehicle procurement standards for contracted services – **competitive advantage**.
- Some cities offer financial **incentives** for low emission vehicles

Better for Local Air Quality

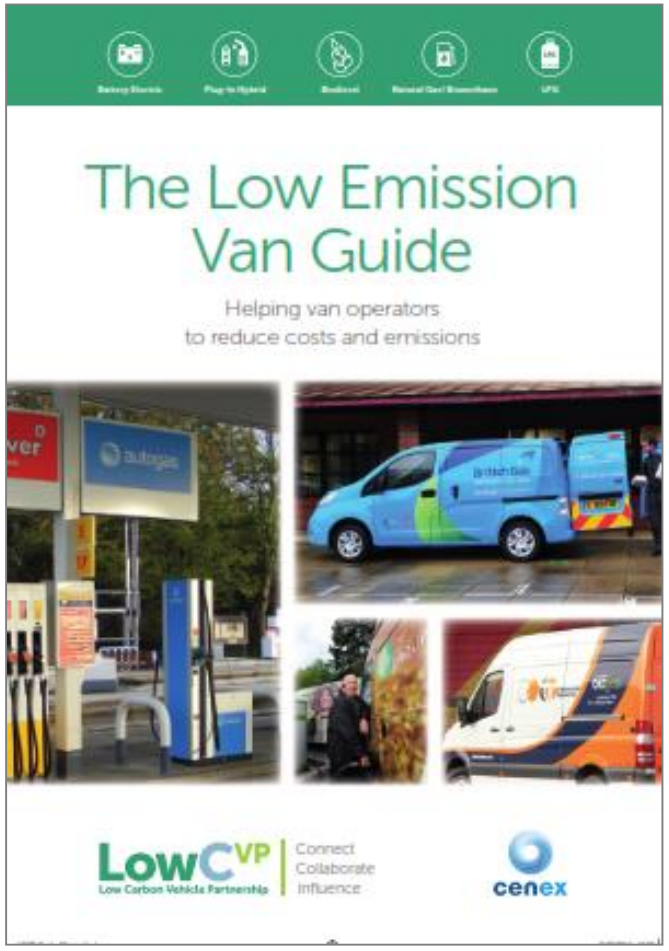
- Vans contribute to poor air quality. Stricter control of **vehicle emissions** in cities and creation of low emissions zones/clean air zones – emphasis on Euro 6 and zero emission capable.



Better for Carbon Management

- LEVs help **lower UK CO_2 emissions**, van CO_2 is rising.

More info in the LowCVP Low Emission Van Guide…



- Why choose a low emission van?
- What factors to consider?
- What incentives are available?
- Topic sheets for five technologies and fuels covering - operational, environmental, financial plus case study
- Best Practice – Making existing van operations more efficient
- What to do next? Van cost and comparison tool
- Further information

Technologies and Fuels (Vans)…

Battery Electric (BEV)

Plug-in Hybrid Electric Vehicle (PHEV)

Compressed Natural Gas/ Biomethane

Liquefied Petroleum Gas

Biodiesel

The right low emission van for you is the one that saves you money, reduces your environmental impact and does not restrict your operations.

Hybrid Trucks…

Mercedes - Fuso Canter Eco Hybrid
Geopost, DHL, Royal Mail, Tesco

DAF Hybrid Truck

Magtec Retrofit Hybrid Truck
(also offer full BEV conversion)
DHL demonstration trial

TEVVA Motors Plug-in hybrid
UPS demonstration trial

Urban Duty Cycle
Lower GHG/AQ
Zero emission capable
c30% fuel savings
High capital cost
Battery replacement
Limited models
Niche market- demos

Plug-in hybrid and electric vans…

BEV - Nissan eNV-200, Renault Kangoon, BD Otomotiv eTraffic, Mercedes–Benz Vito E-Cell, Peugot ePartner
British Gas, Dundee Council, Camden Council Gnewt Cargo, Fruit 4 London

PHEV - Mitsubishi Outlander
Environment Agency

Early market – c200-300 in operation
Model availability limited to sub 2.5T
Numerous incentives lower TCO
Highest cost savings in city operations
Barriers - range, residual value, battery life

Whole Life Cost Example

	Nissan NV200 1.5dCi Acenta (Diesel)	Nissan e-NV200 Acenta (Electric)
Vehicle	*£14,695*	*£21,720*
Plug-in Van Grant Discount		*£5,158*
Fuel costs	*£6,301*	*£1,911*
Road tax	*£900*	*£0*
Maintenance costs	*£1,716*	*£1,158*
Resale value	*£2,718*	*£3,728*
Life time cost	*£21,290*	*£15,904*
Cost per mile	*35.2p*	*26.5p per mile*
Whole life cost savings		***£5,215***
If used in the London Congestion Zone (5 days/week)		
Life time cost	*£34,244*	*£15,904*
Whole life cost savings		***£18,340***

LowCVP Low Emission Van Guide

Hydrogen demonstration vehicles…

ULEMCo EV + HFC range extender

Fife Council

Renaul Kangoon ZE + HFC range extender – La Poste France

Revolve H2 ICE

Aberdeen City Council, Commercial Group

Duel Fuel H2 RCV - ULEMCo

Fife Council

Urban Duty Cycle

H2 ICE & HFC

Lower AQ/CO2

HFC- Zero emission

H2 generation +/- CO2

High vehicle capital cost

H2 Infrastructure – high £

Mainly demonstrations

Methane gas trucks…

Dedicated - Most Duty Cycles
CNG/LNG -Scania, Iveco, Mercedes Benz
Run on natural gas & biomethane
Lower fuel costs c20%
Low NOx/PM?
Higher vehicle cost
Tail-pipe CO_2 for NG similar to diesel?
Lack of refuelling infrastructure

Dual Fuel Conversion - Long Haul
Lower CO_2 and fuel costs BUT
Efficiency highly variable?
Methane slip (GHG impact)
Challenge meeting Euro VI

Euro VI LPG DF also being tested.

Early market development (500 HGVs)
Fleets - Howard Tenens, Tesco, Sainsburys, Argos, Eddie Stobart, DHL, Waitrose, Wiseman Dairy

Biomethane renewable methane produced from organic waste
>80% lower WTW GHG emissions than diesel

DfT - Low Carbon Truck Trial
Demonstrating financial and environmental case for dedicated & dual fuel trucks.

LowCVP now running test programme to further develop the evidence base.

Biodiesel Trucks…

Duel fuel biodiesel Used Cooking Oil

United Biscuits (Low Carbon Truck Trial)

Ford transit using B20 UCO

Environment Agency

Conventional diesel vehicle or dual fuel
Drop in fuel – B20/30 or B100

Up 85% lower WTW GHG emissions using waste feed stocks eg UCO

Tail-pipe CO_2 same as diesel
Lower PM, possibly higher NOx

Barriers – limited supply UCO, vehicle warranty

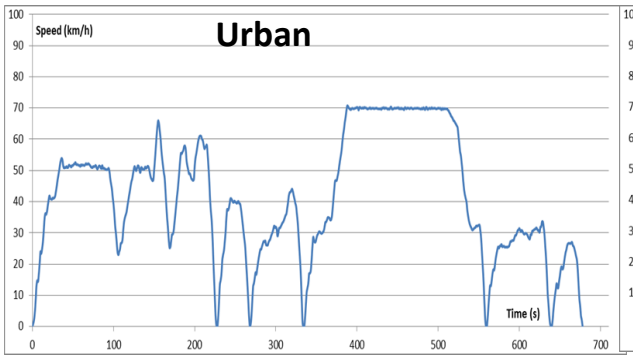
London Borough of Hackney running 42 trucks on biodiesel UCO. TfL plans to run 1/3 London buses on B20 UCO.

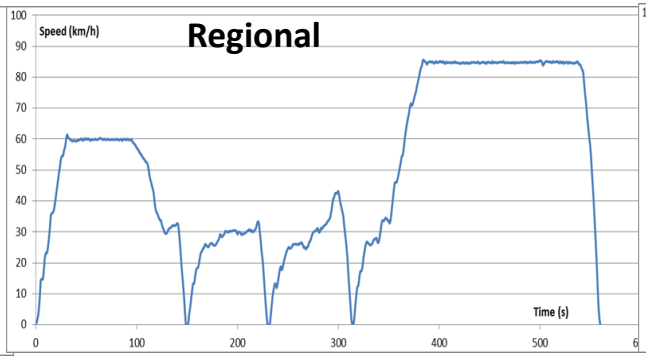
HGV retrofit technology accreditation scheme…

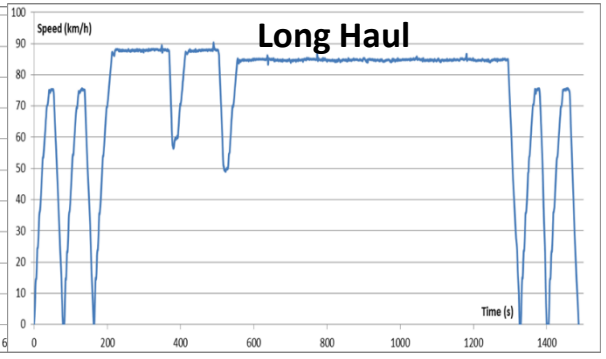
Low emission and carbon saving technologies face a major hurdle:

- Operators are highly sceptical of technology manufacturers' performance claims.
- There is no widely accepted process to test technology and validate such claims.
- Vehicles are used for a range of operations (driving cycles) and testing for every situation is prohibitive.
- **LowCVP is launching a robust, independent, credible and affordable scheme to help develop this market and support the industry.**

VECTO Truck Cycles (Millbrook Versions)







A Vision For The Next Decade?

Near term - Increasing requirement to improve air quality will help stimulate take up of low emission commercial vehicles, coupled with operators need to reduce fuel costs, lower carbon footprint and enhance corporate image.

Longer term - diesel will continue to play a key role, on going improvement in ICE efficiency + portfolio of low carbon fuels and technology options – no silver bullet!

• Increased blending with sustainable biodiesel. Introduction of advanced biodiesel beyond 2020.

• Long haul / regional delivery - dedicated biomethane trucks have a clear role, requires stimulating supply and increasing gas infrastructure. Role of natural gas and dual fuel under review.

• Cities - hybrid and electric vans & truck market will grow. Opportunities for a range of EV & hybrid architectures. Innovations in EV infrastructure could increase the range of EV vans and trucks.

• Hydrogen vans continue to be a niche market, numerous challenges. Possible growth in cities with hydrogen production opportunities. Demonstration of small fuel cell trucks likely to appear.

- **Variety of Government policy mechanisms, fiscal and non-fiscal, are required (vehicles, infrastructure, fuels) to help grow the low carbon/low emission truck and van market.**
- **Communicating the financial, performance and environmental credentials of these vehicles to fleet operators is also important to kick-start the market.**

Thank you for listening

brian.robinson@lowcvp.org.uk.