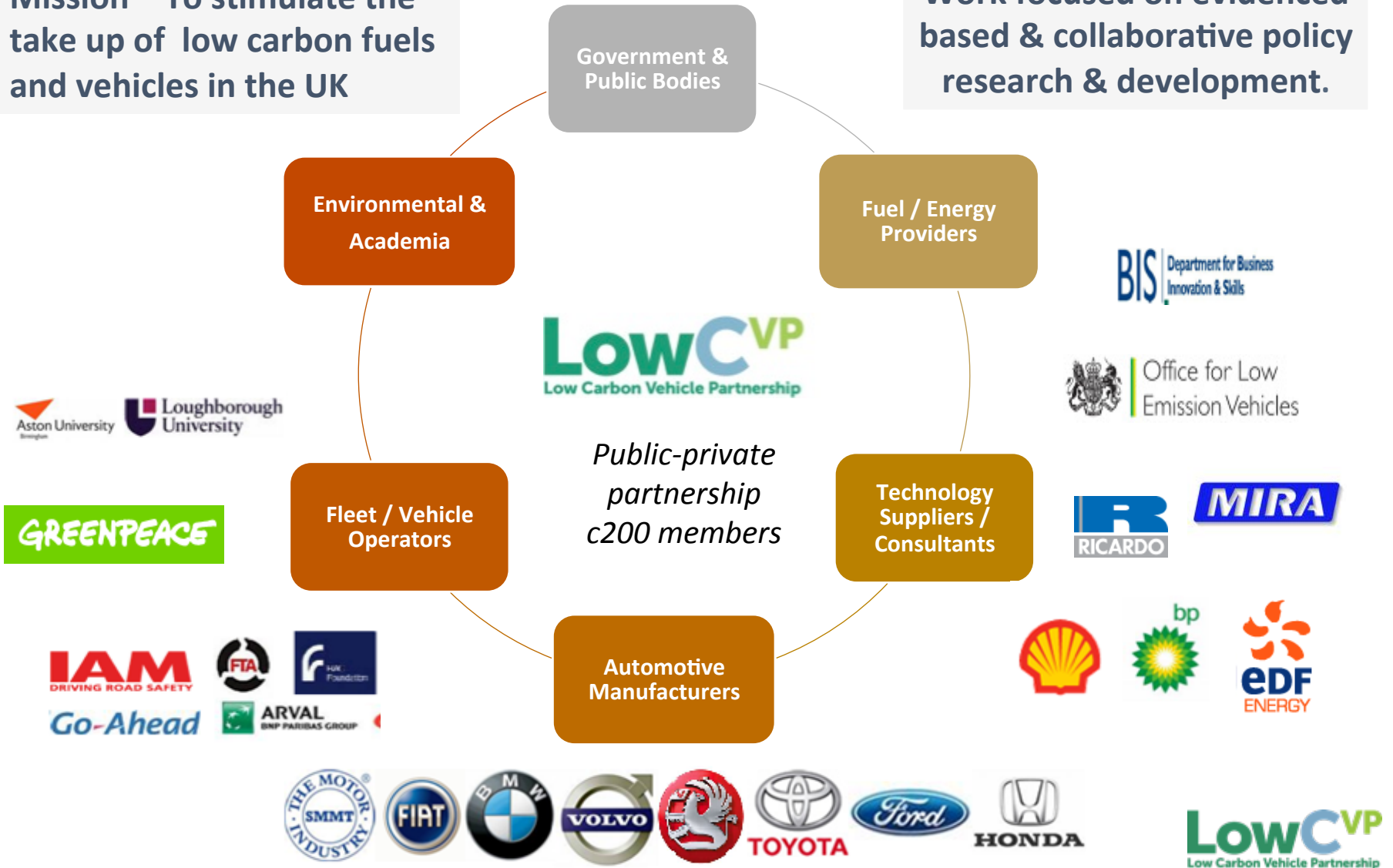




# Introduction to LowCVP

Mission – To stimulate the take up of low carbon fuels and vehicles in the UK


Work focused on evidenced based & collaborative policy research & development.



# LowCVP Commercial Vehicle Activity

**RICARDO-AEA**

Opportunities to overcome the barriers to uptake of low emission technologies for each commercial vehicle duty cycle



Knowledge Transfer Networks  
Transport

Department for Transport

The Chartered Institute of Logistics and Transport Ltd. | SMMT DRIVING THE MOTOR INDUSTRY | FIA | RHA

Report for the Strategic Task Force on Fuel Efficient, Low Emission Commercial Vehicle Technologies, funded by the Transport Knowledge Transfer Network and delivered through the LowCVP  
Ricardo-AEA/VED58189  
Issue Number 4  
Date 26<sup>th</sup> November 2012

LowCVP  
Low Carbon Vehicle Partnership

Office for Low Emission Vehicles

LowCVP Connect Collaborate Influence

Accreditation Scheme for Aftermarket Technologies  
Certificate No: CNA7-2010-C122

This is to certify that the following product(s) have been assessed under the Low Carbon Vehicle Partnership Accreditation Scheme for Aftermarket Technologies:

Manufacturer Product designation: **Super Super Aero Dealer** Product Type: **Aerodynamic Add**

Manufactured By: **Super Super Dealer Ltd.**

The product has been tested in accordance with the following standard(s) and test methods / duty cycle(s):

- LowCVP CMA7 Standard CMA7-2010-B0800
- LowCVP CMA7 Test CMA7-2010-T081: Track-based SR track duty cycle

The full reports are reported in the following Product Assessment Report:

- Product Assessment Report CMA7-2010-P0120

Product(s) savings with product fitted relative to standard vehicle (% difference, +ve indicates fuel consumption increases with product fitted):

Vehicle tested	Product description	Long Road (Heavy Medium Duty)	Regional (Heavy and Light Duty)	Urban (Heavy and Light Duty)
Mercedes-Benz	Super Super Aero Dealer	-7.8 %	-7.8 %	-5.8 %
Mercedes-Benz Sprinter	Super Super Aero Dealer	-7.8 %	-7.8 %	-5.8 %
Mercedes-Benz Sprinter	Super Super Aero Dealer	-7.8 %	-7.8 %	-5.8 %
Vehicle tested		Mercedes-Benz	Mercedes-Benz	Mercedes-Benz

Authorized signature:

Dr A. Daniels, Scheme Director  
Date: 29 August 2014

ED 60231 | Issued: 29 August 2014 | Date 31/08/2015

**RICARDO-AEA**

Provision of HGV Emissions Testing  
Final Report


Report for Department for Transport

RM4470-082025

ED 60231 | Issued: 29 August 2014 | Date 31/08/2015

The Low Emission Van Guide

Helping van operators to reduce costs and emissions



LowCVP Connect Collaborate Influence

cenex

Actively involved in TfL's LoCity programme stimulate the market for low emission commercial vehicles in London

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

**VC<sup>3</sup>**

Van Cost & Carbon Calculator

Welcome to the VC<sup>3</sup> Van Cost and Carbon Calculator tool. This tool compares the economic and environmental performance of diesel, electric, gas and plug-in hybrid technologies.

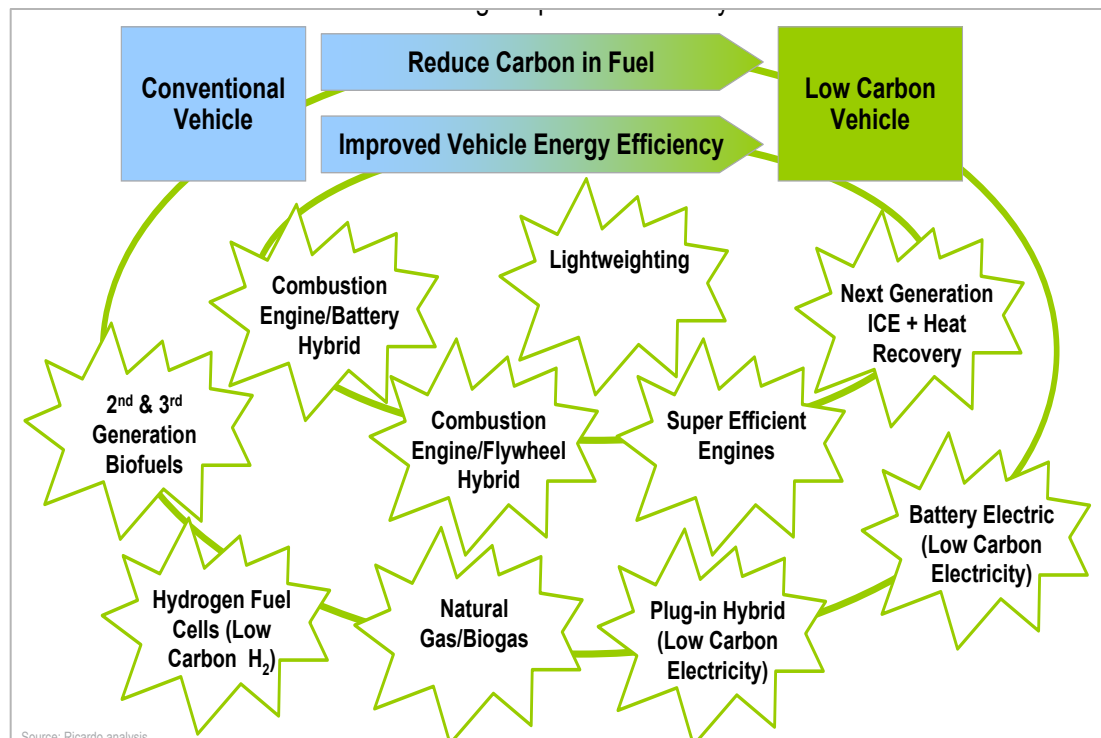
Compare Now

More Info

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



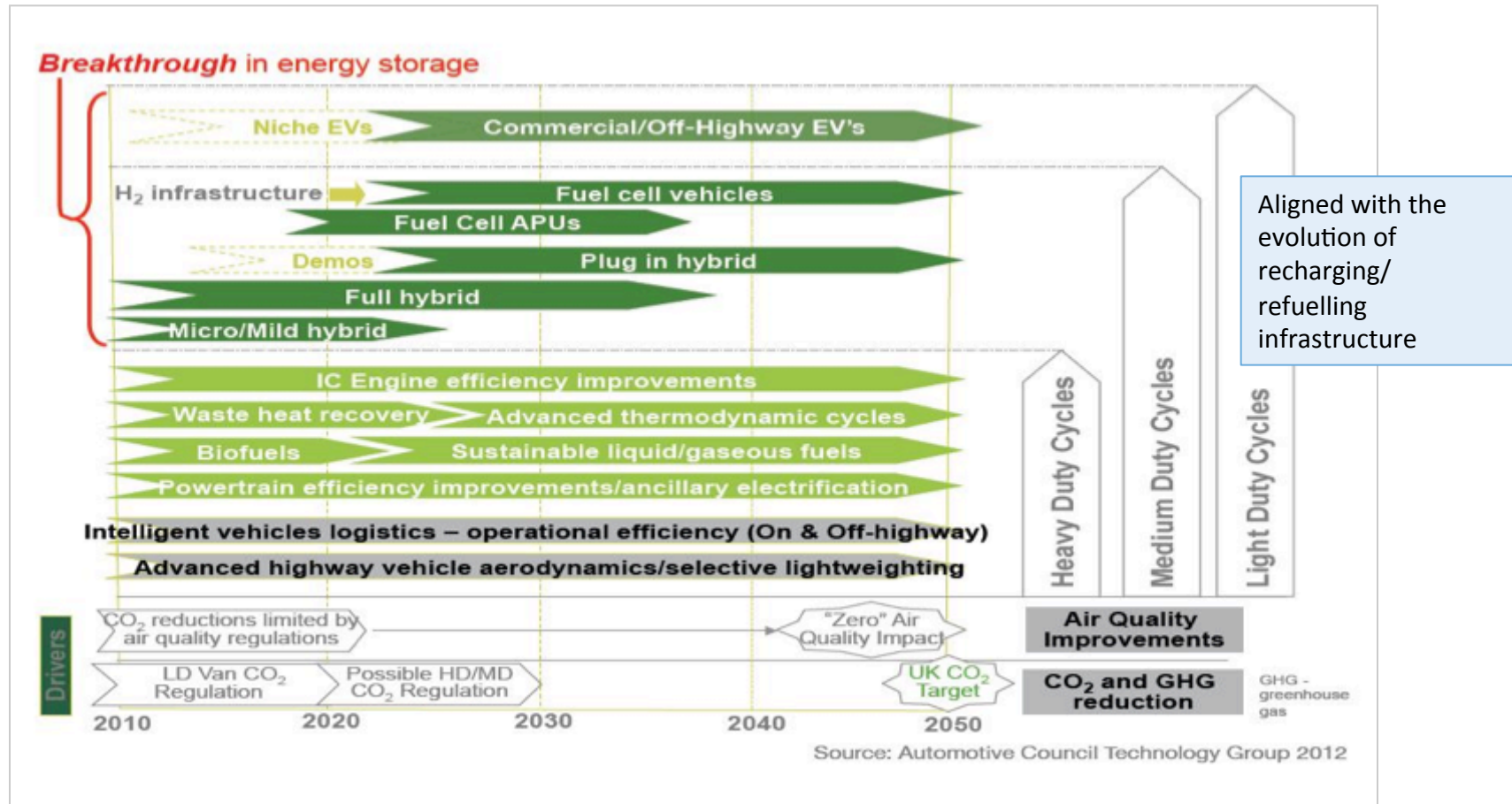
# Multitude of Fuels and Technologies to Decarbonise Commercial Vehicles



- Duty cycle
- Vehicle capital cost
- Maintenance costs
- Reliability / performance
- Infrastructure
- Fuel savings
- Air pollution – NO<sub>x</sub>, PM
- GHG emissions – CH<sub>4</sub>, CO<sub>2</sub>, N<sub>2</sub>O
- Sustainability / supply – biofuels
- Market availability

Range of options to consider when selecting low carbon fuels and technology for truck operations

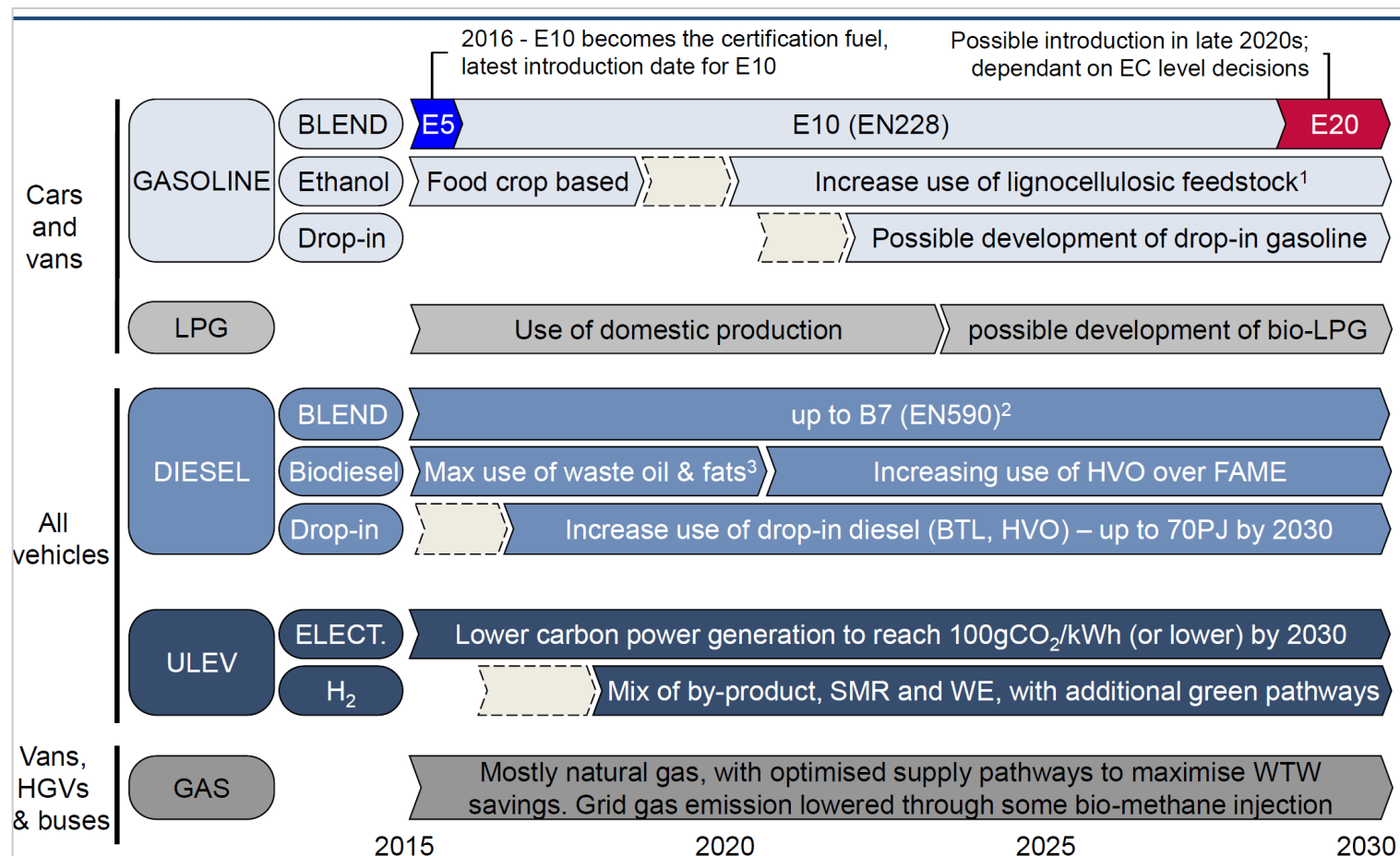
# Future Roadmap For Trucks



3000 low carbon buses operating in the UK – electric, diesel hybrid, plug-in hybrid, biomethane, biodiesel, hydrogen fuel cell. >£1m in Government subsidies to kick start the market over 6 years .



# Future Fuels Roadmap



LowCVP Fuels Roadmap, 2014

# Hybrid Trucks



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



**DAF Hybrid Truck**



**Magtec - Hybrid Truck Conversion**  
DHL demonstration trial



**TEVVA Motors Plug-in hybrid**  
UPS demonstration trial

**Urban Duty Cycle**  
Lower GHG/AQ  
Zero emission capable  
c25% fuel savings  
High capital cost,  
lower for conversions  
Battery replacement  
Limited models  
Niche market- demos

# Electric Trucks



**E Power Trucks Flex L3 – Newcastle University**



**ePower Trucks  
Braeheads Shopping Center**



**Magtec – DAF conversion to electric truck DHL fleet**

## **Urban Duty Cycle**

Zero emission

Lower fuel cost

High capital cost, lower for conversion

Range limitation

Battery replacement cost

Limited model availability

Payload constraints

Niche market



# 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

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



**PHEV - Mitsubishi Outlander**  
Environment Agency



**Iveco Daily**

## 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
<b>Whole life cost savings</b>		<b>£5,215</b>
<b>If used in the London Congestion Zone (5 days/week)</b>		
Life time cost	£34,244	£15,904
<b>Whole life cost savings</b>		<b>£18,340</b>

**LowCVP Low Emission Van Guide**

# Hydrogen Vehicle Demonstrations



**ULEMCo EV + HFC range extender**  
Fife Council



**Renaul Kangoo 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 - All Duty Cycles

CNG/LNG - Scania, Iveco, Mercedes Benz

Run on natural gas & biomethane

Lower fuel costs c20%

Euro VI

Higher vehicle cost

Tail-pipe CO<sub>2</sub> same diesel

Lack of refuelling infrastructure

## Dual Fuel Conversion - Long Haul

Lower CO<sub>2</sub> and fuel costs BUT

Efficiency of highly variable

Methane slip (GHG impact)

Challenge meeting Euro VI

Early market development (500 HGVs)

Fleets - Howard Tenens, Tesco,

Sainsburys, Tesco, Argos, Eddie Stobbard,

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.

# 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<sub>2</sub> same as diesel  
Lower PM, possibly higher NO<sub>x</sub>

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.



# Vision For The Next Decade

Near term - Increasing requirement to improve air quality will help stimulate take up 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 be 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 - 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 enable the range of EV vans and trucks to increase.
- Hydrogel 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 truck and van market. Communicating the financial, performance and environmental credentials of low carbon commercial vehicles to fleet operators is also important to kick start the market.**



# THANK YOU FOR LISTENING

FOR MORE INFORMATION OR JOINING LOWCVP

[Gloria.esposito@lowcvp.org.uk](mailto:Gloria.esposito@lowcvp.org.uk)

<http://www.lowcvp.org.uk>

