

Low Emissions Commercial Vehicle Workshop



Friday 2nd December 2016

LowCVP workshop objectives

- Creating opportunities for low carbon commercial vehicles
 - How to define a LCCV
 - Creating and supporting policies for LCCV
 - Promoting LCCV
 - Coordinating Carbon and Air Quality agenda (CAZ, LEZ, ULEZ etc)
- LoCITY project progress and engagement
- Sharing partner activity and priorities
- Supporting DfT and UK government
- Reinvigorating DfT ministerial task force

- Identify LowCVP Commercial vehicle activity for 2017/18
- Creating the Low carbon commercial vehicle community!

Agenda

When?	What?	Who?
10:30	Welcome & workshop objectives	AE
10:35	History and Background	AE
10:40	HGV Retrofit Technologies Scheme	BR
11:00	Gas and urban delivery vehicle testing	BR
11:20	Extension to the Plug-In Van Grant	BR
11:40	LoCITY project on technology viability	SC/AE
12:25	LoCITY project on driver/fleet manager training	SW/BR
12:45	Lunch	
13:30	Clean Air Zones Consultation & CVRAS proposals	AE
14:00	Complementary Activities, e.g. HE, DfT, ETI, EST, TfL	JK/FW/RB...
14:30	LowCVP 2017/18 Work Programme ideas	BR
15:00	Ministerial HGV Task Force priorities	AE
15:30	AOB & Close	

LowCVP and HGVs – history (& links)

- **2003** – LowCVP commercial vehicle group created
- **Sept 2010** LowCVP HGV Work programme reports presented to DfT
 - [Market background study](#)
 - [Technology Roadmap](#)
 - [Technology Testing study](#)
 - [Technology accreditation](#)
 - [HGV Simulation tool](#)
- **2011** – [LowCVP report on recommendations to accelerate the market for Low Carbon HGVs](#)
- **July 2011** – Ministerial HGV Task force called (P. Hammond)
- **July 2011** – [Auto Council Commercial and Off-highway Technology Roadmap](#)
- **2012** – LowCVP reports published into public domain (see website/links)
- **March 2012** - TSB Low Carbon Truck trial announced
- **July 2012** – LowCVP Board decision to focus on Task Force and not re-create CVWG
- **Sept 2012** – Task Force agrees to support initial study into **Barriers and Opportunities for Low Carbon HDV technology** – SMMT/TKTN/LowCVP
- **Nov 2012** - Task Force to convene to discuss findings (S. Hammond)
- **Dec 2012** – [Report](#) published by LowCVP/TKTN/SMMT
- **Dec 2012** – Sherpa Group met to plan actions following report.

Task Force Report

- Joint report published 3rd Dec '12
- LowCVP
- Transport KTN
- SMMT
- Supported by:
 - FTA, RHA, CILT, DfT
- Available on LowCVP website

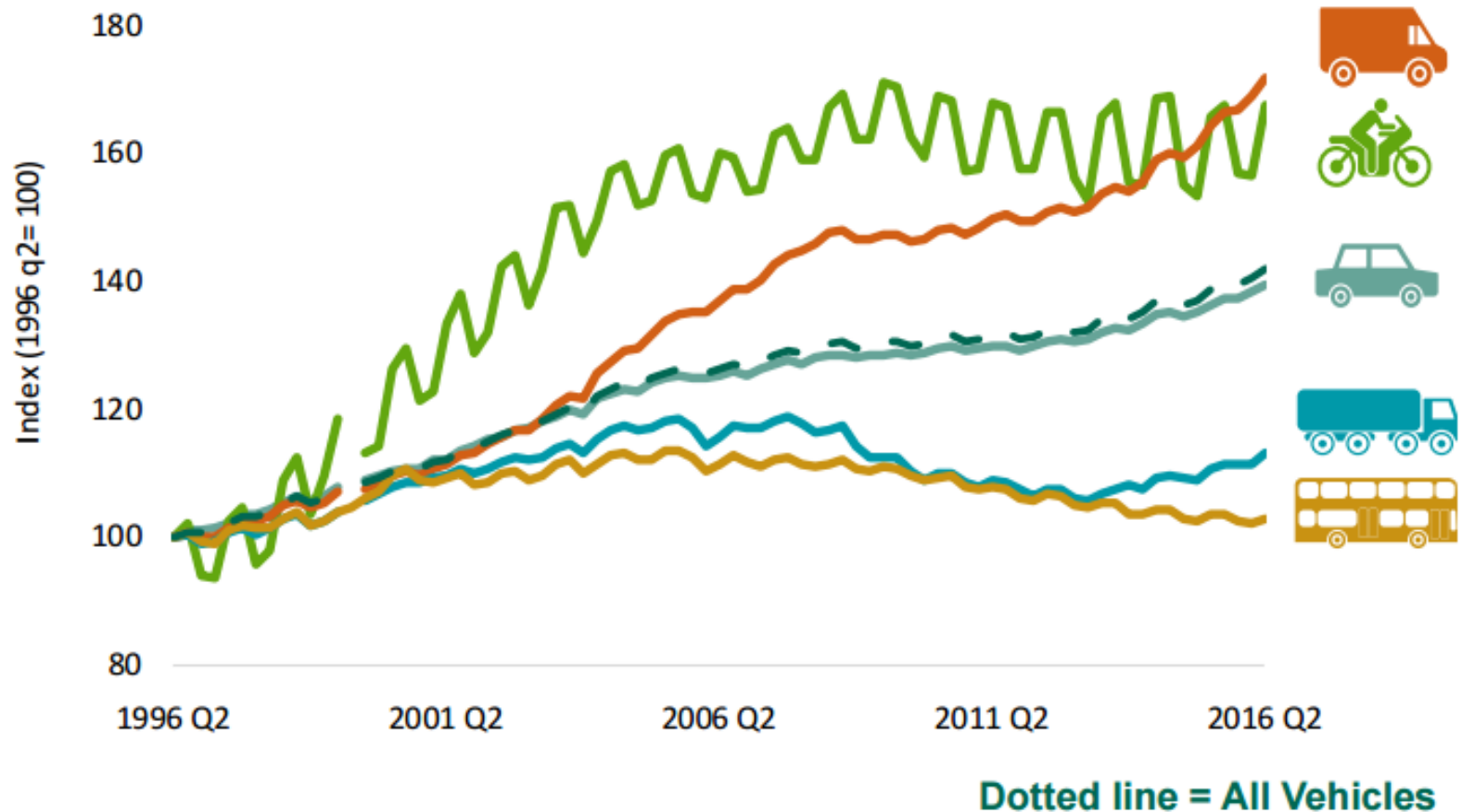


Key actions/successes from 2012

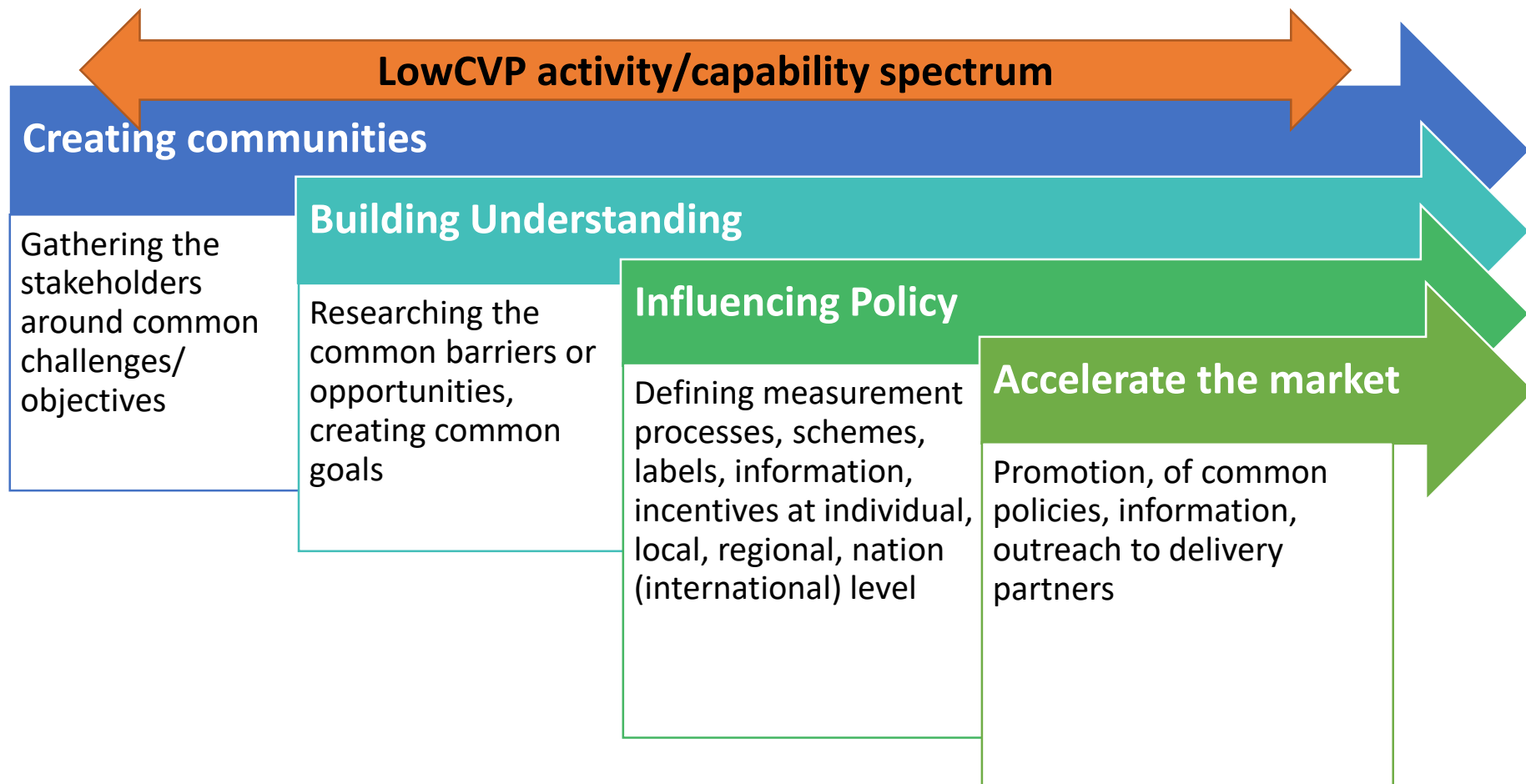
- Accreditation scheme for retrofit technology
 - LowCVP scheme launched Jul 2016
- Support for Gas Trucks
 - Low Carbon Truck Trial 2012-16
 - Support for Methane fuel (duty to 2024)
 - Evidence for GHG emission of Gas trucks (today)
 - Allowance for weight penalty (in progress)
 - Infrastructure support
- Direct incentives for lower carbon Urban Trucks
 - Innovate funding (project evaluation now)
 - Grants for Ultra Low emission trucks (PIVG) (OLEV Nov16)

Commercial goods vehicles: The next big (low) carbon opportunity?

Figure 5: Licensed vehicles by type, GB: Q2 1996 - Q2 2016

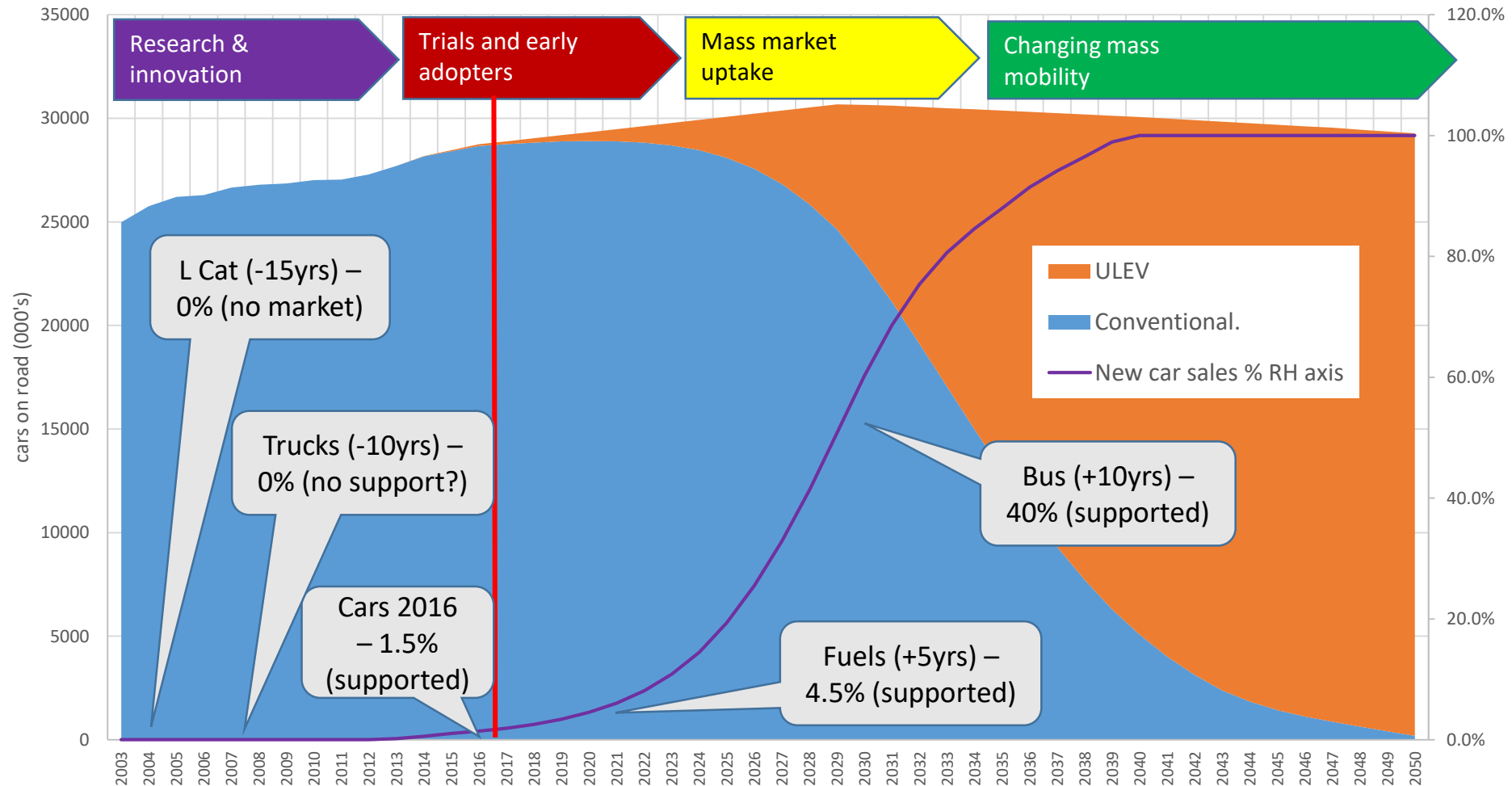


How the LowCVP operate

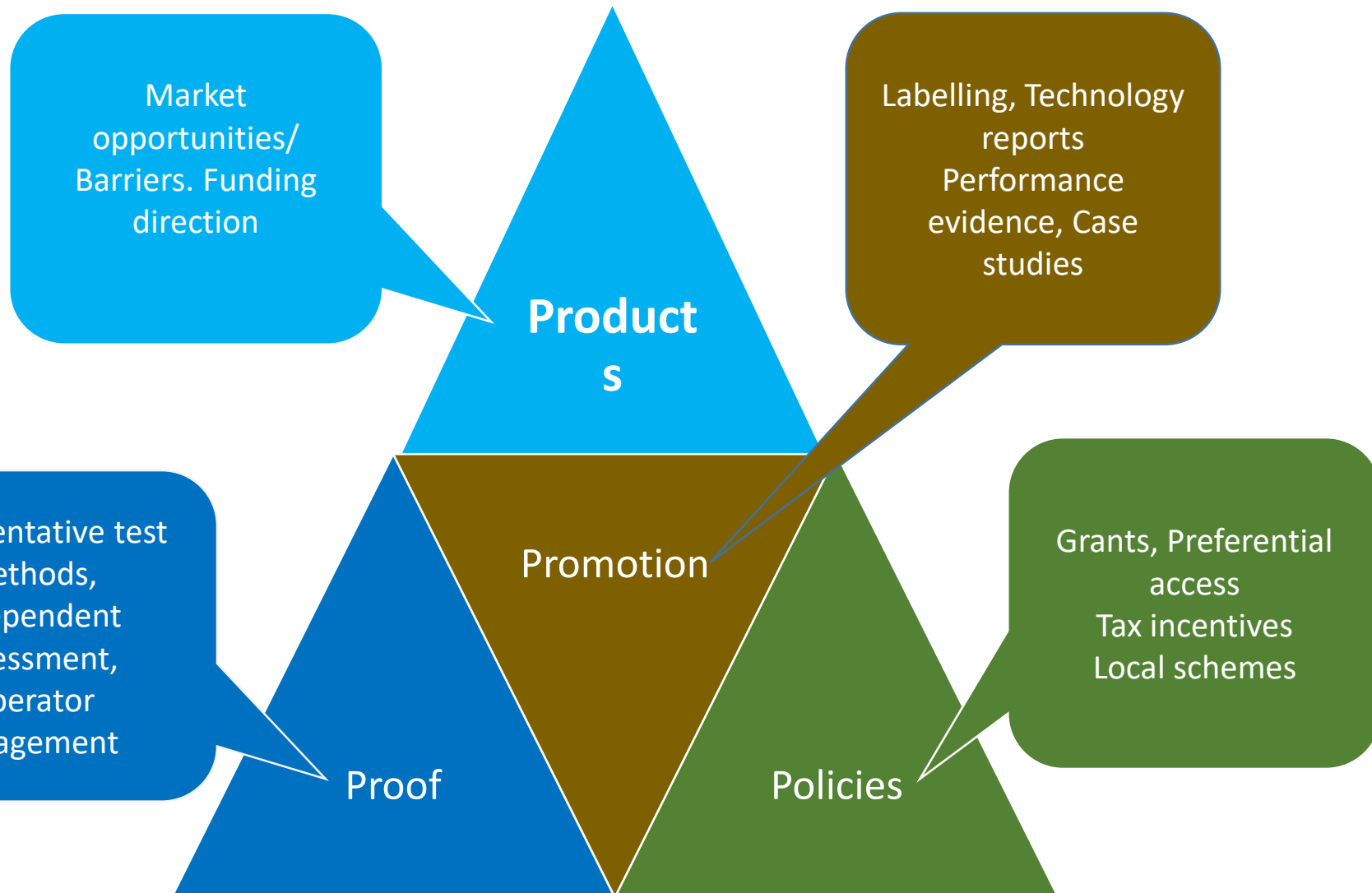


Where are we on the transition to ULEVs

ULEV and Conventional vehicle parc transition



Supporting products – LowCVP's role



HGV Retrofit Technologies Scheme

- In 2010, LowCVP, with DfT and other stakeholders identified a need for a scheme to provide confidence to operators that **after-market, low carbon/fuel efficiency aids** would deliver real savings under their real-world conditions.
- In 2012 LowCVP published a report identifying **the need for an independent accreditation scheme to unlock the potential for significant uptake of retrofit technologies to reduce carbon in the existing fleet of HGVs.**
- Over the last few years the European commission research group has been working on methods to report and potentially ultimately legislate, CO2 from HDV's (focus is now on VECTO the EU simulation tool likely to form part of future type approval process).
- In 2014, OLEV part-funding allowed LowCVP and its members to develop a solution for the UK which aims to relate to the EU activity and strategic direction, but “unlock” the market in the near term. Development of **Long Haul, Regional Delivery and Urban Delivery test cycles** (track-based with PEMS).
- Scheme launched by Minister at LowCVP Conference, June 2016.**
- New, **City-Centre Delivery** cycle now also developed.

Test Method		Test Results	
Technology	Technology A	Approved Test Results	Harbin-Helix Ltd
Test Method	1. Track Test (L4)	Test Results	Test Results
Test Method	2. Urban Delivery (L4)	Test Results	Test Results
Test Method	3. Regional Delivery (L4)	Test Results	Test Results
Test Method	4. Long Haul (L4)	Test Results	Test Results

Overall Assessment	
Test Cycle	20%
Long Haul	20%
Regional Delivery	20%
Urban Delivery	20%
City Centre Delivery	20%



- Other UK initiatives include **FORS, ECO-Stars, LCRS, LoCITY.**
- Smartway** scheme in North America could be useful model to build support mechanisms around the accreditation scheme?

Use of the scheme

- Innovate and innovate projects
- OLEV plug in Truck / Plug in Van N2/N3 categories
- Clean Vehicle Retrofit Accreditation (CAZ)
- Other government projects
- Media??

Discussion topics...

- Does more need to be done to promote and embed the Scheme?
- If so, what?
 - Group tests? Tyres? Aero aids?
 - Link to funding mechanisms?
 - Joint recognition, e.g. with Smartway/Energo-Test?
 - Incentivize via operator recognition schemes?
 - Further technical development? Cycles? Emissions? Costs?
- Labels for Trucks

Gas and urban vehicle testing

Track-based, real-world cycles with KI normalisation of cycles – urban, regional and long haul. **As per accreditation scheme.**

PEMS emission measurement on candidate vehicle (with diesel fuel flow meter).
Measuring CO₂, CO, NO_x (NO & NO₂ preferred), THC (CH₄ preferred).

Control vehicle to ensure day to day repeatability, and used to correct FC and CO₂ for changes in ambient conditions between baseline and test days.

e.g. if test vehicle has 10% lower CO₂ g/km than baseline vehicle, but control vehicle also gave 2% better FC on test day than on baseline day, corrected saving would be 8%.



Vehicle and technology selections

Funding (DfT) for gas vehicle tests sufficient for 7 vehicles/technologies. We have tested (alongside diesel-only equivalents where appropriate):

- **4 Dedicated Euro VI Natural Gas Vehicles** – Two 40t artics, 18t rigid & 7t van.
- **1 LCTT Euro V DF (natural gas)\conversion.** To benchmark with LCTT.
- **1 Euro VI DF (natural gas) conversion** (on 44t artic).
- **1 Euro VI DF (LPG) conversion** (44t artic).

Funding for urban delivery tests (TfL) covered an additional 3 vehicles (alongside diesel-only equivalents where appropriate):

- **1 Plug-In Hybrid (7.5t).** & **1 7.5t Euro VI Diesel as comparator.**
- **1 pure EV (2.2t Van) & 1 Euro 6 diesel van as comparator.**
- **1 CNG van (7t) & equivalent Euro VI diesel van, on additional (city-centre) cycle.**

What we now know about gas vehicles...

- No methane slip issue for dedicated gas.
- But efficiency losses, so overall GHG impacts similar to diesel.
- Current dual fuel systems (NG and diesel) exhibit high levels of methane slip, enough to increase GHG impacts.
- Dual fuel diesel and LPG has no methane slip, low efficiency losses, but quite low substitution rates so quite modest GHG benefits.
- Small Euro VI diesels emit N₂O in sufficient quantities to increase GHG impacts by 1 – 2%.
- Dedicated gas vehicles generally produce lower NO_x than Euro VI diesels.
- Dual fuel Euro VI vehicles tested, increase NO_x and/or other regulated pollutants slightly.



What we need to look out for...



- **New technologies.**
 - Higher powered dedicated gas (2016-18)
 - High efficiency, high substitution rate OEM dual fuel (2017?)
 - Euro VI compliant after-market dual fuel solutions (2019?)
- **N₂O for Euro VI diesel trucks and artics > 7.5t.**
- Potential for bio/renewable methane and bio-LPG (and biodiesel)
- The published report!

What we now know about urban vehicles...

- The EV and hybrid/RE in EV mode both show GHG savings (on grid average electricity) of around 60% on the city-centre cycle. 30-40% savings on urban cycle.
- Both have zero emission range of >150 km on CC cycle, >100 km urban delivery.
- Zero pollutant emissions in EV mode, of course.
- Dedicated gas van showed very low levels of NO₂.



Plug-in van grant extension...

- In November, OLEV announced that the PIVG is to be extended to N2 and N3 vehicles (i.e. HGVs).
 - Up to £20,000 Grant for N2, N3
- Eligibility guidance at <https://www.gov.uk/government/publications/plug-in-van-grant/plug-in-van-grant-vehicles-list-and-eligibility-guidance>
- Only new 'vans' are eligible, includes pre-registration conversions only.
- For N2 (3.5 – 12t) and N3 (> 12t), vehicles must produce “at least 50% less greenhouse gas emissions (GHG) than an equivalent conventional Euro VI vehicle of the same load carrying capacity ***“as measured by the LowCVP HGV test procedure.”***”
- Full electric vehicles must have range > 60 miles [100 km]. Plug-in hybrids must have electric range of > 10 miles [20 km], as per vans. **(cycle not yet defined, suggest City, Urban, Rural combined (max speed 84km/h))**
- Other conditions, e.g. top speed, warranty, electrical safety, also as per vans.

- Clearly, not all the details have yet been worked through, so there is an opportunity for us to fill in some of the gaps.
- What are the main gaps?
- 100 km is a good enough starting point for a daily duty cycle?
- Should we use only the city-centre cycle (which will be most advantageous to EVs) or only the urban delivery cycle (which has a VECTO equivalent), or a combination of the two? Plus Regional (which runs up to 50mph)
- Should the cycle(s) be different for N3 vs N2?
- Should we use the track-based procedure, or dyno (WHVC?) for measuring N₂O, or combine the two?

LoCITY fleet guidance

Near term viability of alternative fuels and retrofit equipment for commercial vehicles

LowCVP Commercial Vehicle Working Group
stakeholder workshop

Steve Carroll/Andy Eastlake

2nd December 2016



- LoCity Technical Research Project Introduction
- Project Shaping Opportunities
- Workshop themes
 - Vehicle technology inclusion criteria
 - Low emission vehicle availability and evidence base
 - Job types for London commercial vehicles

- Five year TfL programme to increase the availability and uptake of low emission commercial vehicles and associated infrastructure in London.
- Technical research and support tool development (Cenex/LowCVP)
 - Trusted
 - Evidence based
 - Alternative fuels and powertrains
 - Emission and cost savings
 - Endorsed by industry



Examples of Previous Tools/Information



Select Vehicle

Small Van Large Van

Small Van
2.2t GVW van such as Transit Connect, Citroen Berlingo, Nissan NV200 etc

Select your driving habits

Select Pre-defined Driving Habit ?

Or choose your own
All driveways must add up to 100%

Urban / Inner-City 0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

Rural / B-road 0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

Motorway / A-road 0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

The Low Emission Van Guide

UPDATED NOVEMBER 2016

Helping van operators to reduce costs and emissions

LowCVP Low Carbon Vehicle Partnership

Connect Collaborate Influence

cenex



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Low Emission Van Hub



A low emission van is one that operates using efficient technology or alternative fuels rather than diesel. Low emission vans can help lower the running cost and environmental impact of your fleet. Click on the links below to download the guide and estimate savings using the VC3.

The Low Emission Van Guide

Helping van operators to reduce costs and emissions



Van Cost & Carbon Calculator



Find out about Low Emission Vans



Battery



Plug-in Hybrid



Biodiesel



Natural Gas / Biomethane



LPG



Hydrogen

Your Whole Life Cost and Well-to-Wheels Carbon Savings Compared to a Diesel Small Van

Electric Small Van

Saving:
£3,890 and 6.4 Tonnes CO₂

Electric Battery Lease Small Van

Saving:
£2,267 and 6.4 Tonnes CO₂

Diesel Start-Stop Small Van

Saving:
£-80 and 0.6 Tonnes CO₂

Biodiesel (B30) from UCO Small Van

Saving:
£-118 and 4.6 Tonnes CO₂

Your selections

- Urban / Inner-City: 40%
- Rural / B-Road: 40%
- Motorway / A-Road: 20%
- Driving Style: Normal
- Payload: 50%
- Annual Mileage: 10000 miles
- Years Ownership: 5 years

Fuel costs

Diesel: £0.96 (£/lmp)

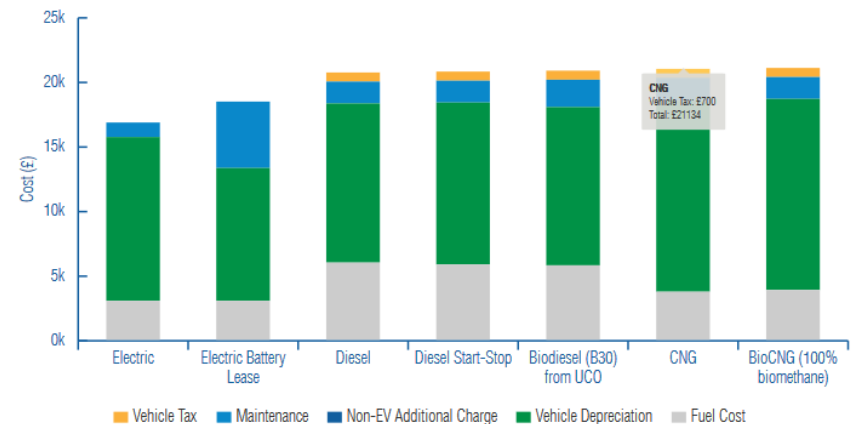
Biodiesel from UCO: £0.90 (£/lmp)

Blue-blend 30%

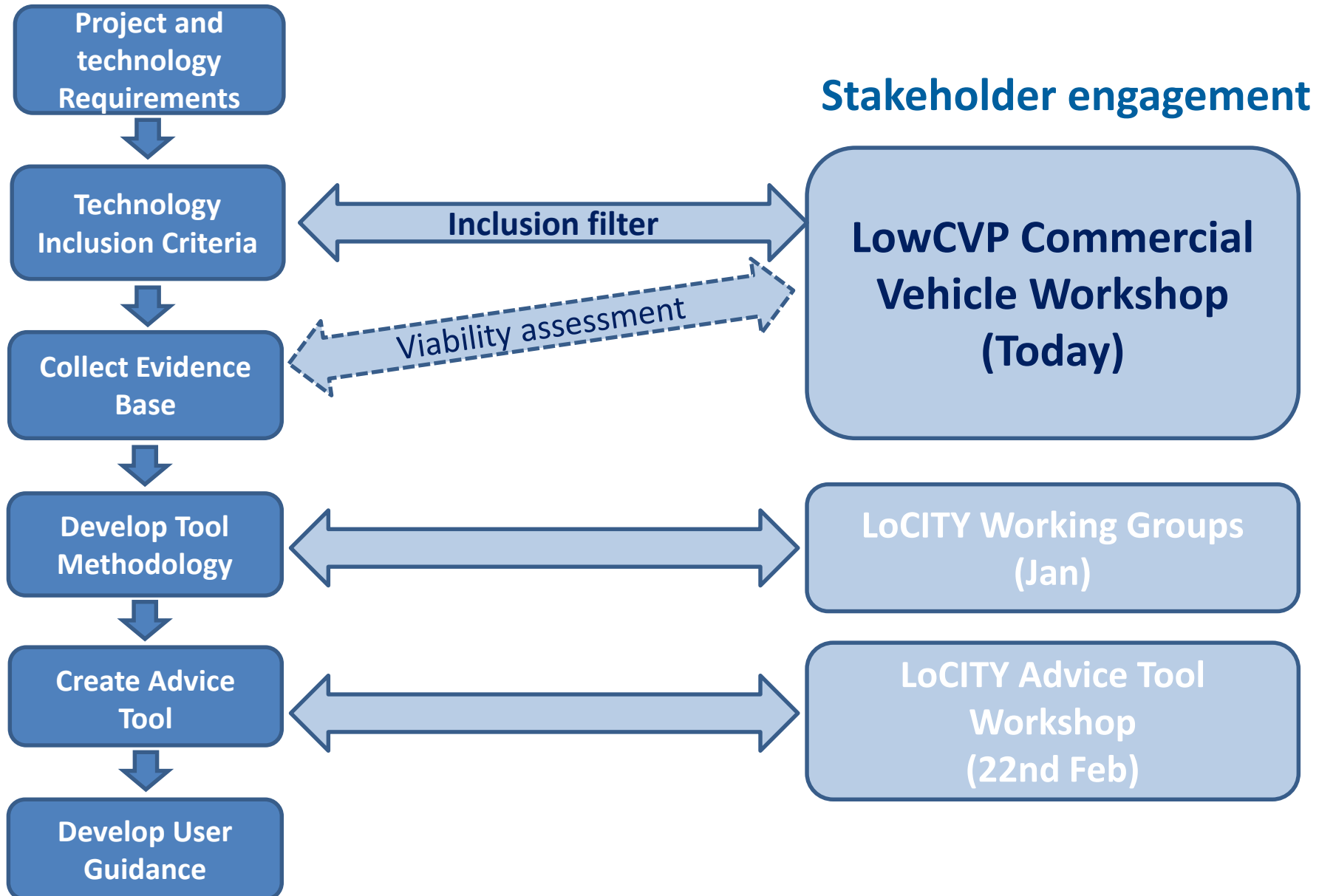
Natural Gas: £0.65 (£/kg)

BioCNG: £0.65 (£/kg)

Small Van Whole Life Cost



Technical Research Programme



Main theme	Workshop details	Register interest
Assessment criteria	<ul style="list-style-type: none"> - LowCVP Commercial Vehicle WG - 2nd December 2016 - IMechE Offices 	
Tool Methodology	<ul style="list-style-type: none"> - LoCity Working Groups <ul style="list-style-type: none"> • HGV (19th Jan 2017) • Waste & Construction (23rd Jan 2017) • Van (25th Jan 2017) • 4Ps (26th Jan 2017) 	enquiries@locity.org.uk
Advice Tool Workshop	<ul style="list-style-type: none"> - 22nd February 2017 - Venue TBC 	Liam.knott@cenex.co.uk

Workshop activity

Identifying the Technology *(what's worth looking at)*
Building the Evidence base *(how do I prove it?)*
Identifying the Applications *(what does it work on?)*





Workshop Themes – Inclusion filter

- Better than the current Euro VI /6 conventional
- Robust independent evidence of performance
- A significant application identified/trialled

Project requirement	Ideal Pass / fail criteria
Provide motive power	Stored energy is used to power the vehicle. Alternative to diesel fuels and power trains.
Mature proven technology type	<ul style="list-style-type: none">➤ 2 separate fleet deployments➤ 6 months minimum deployments
Independent evidence base	<ul style="list-style-type: none">➤ Independent verification report of reliability and in-fleet performance➤ Independent emission test results CO2/PM/NOx/HC
Similar or better AQ emissions performance	➤ +5% or better change from diesel
Similar or better TTW CO2 performance	➤ +5% or better change from diesel
Similar or better WTW CO2 performance	➤ +5% or better change from diesel
Similar or better whole life cost performance	<ul style="list-style-type: none">➤ Cost information available➤ +5% or better change from diesel

What's worth looking at?

Using the principle of “readiness level” ([TRLs MRLs](#) defined by LowCVP/Auto council)

Commercial Readiness Level – 3 stages identified

Concept Ready

First prototype on road
Test and Development
Mule vehicles
Owned/operated by supplier

Trial Ready

Bespoke builds
Non commercial
Special order or IVA
Supported by supplier

Customer Ready

Certified/proven
Production ready
Commercially available
Customer owned/operated



How can I prove it?

Carbon saving evidence - independent testing

Air Quality improvement - independent testing

Commercially available – Price/Lease rate

In use robustness – Trial data, Customer testimonials

Durability – trial evidence, test data

Certification

Project requirement	Evidence
Provide motive power	
Mature proven technology type	
Independent evidence base	
Similar or better AQ emissions performance	
Similar or better TTW CO2 performance	
Similar or better WTW CO2 performance	
Similar or better whole life cost performance	

Where does it work?

Drive cycle or job description, typical vehicle type, useage,

Job Type	Detailed
Job type	<i>Parcel delivery, service engineer, etc.</i>
Category / Industry	<i>Construction & waste, vans, HGV</i>
Daily / annual mileage patterns	<i>10,000 MPA, 5 days per week</i>
Road types	<i>% Heavy congestion % Urban % B-road, free flowing % A-road, motorway/dual carriageway</i>
Average payload	<i>Light, half payload, always full</i>
Vehicle life	<i>5 years</i>
Vehicle type	<i>e.g. 3.5t Van, Small Van, Mercedes Axor 44t</i>
Typical MPG	<i>10 MPG</i>

Your turn!

Who am I and what is my/the technology

Is my technology, **Concept**, **Trial** or **Customer ready**?

How can we prove it?

Where, on what cycle, does it work?

How can we prove it

How can CENEX contact me

Who else may have some good ideas, should CENEX talk to?

Thinking Caps on.



Thank you for your participation



LoCITY

DRIVING

LoCITY Driving



BACKGROUND TO LoCITY

Low emission
vehicle availability
and affordability

Operator
knowledge and
decision making

Existing projects
and funding
streams

Increase uptake
of low emission
vehicles

Facilitate the
roll-out of fuel
infrastructure

Improve
knowledge to
inform buying
decisions

Ensure planning
activity supports
vehicle uptake



COURSE PROGRAMME

- Lesson 1: Fuel efficiency and air quality
- Lesson 2: Vehicle checks and journey planning
- Lesson 3: Fuel efficient driving techniques
- Lesson 4: Journey planning exercise
- Lesson 5: Value of design and technology
- Lesson 6: Monitoring and managing driving performance
- Lesson 7: Alternative fuels in commercial vehicles



COURSE OBJECTIVES

- Understand strategies to reduce emissions improve air quality
- Increase knowledge and awareness of fuel consumption and costs
- Understand how vehicle checks and maintenance reduce emissions
- Apply fuel efficient driving techniques designed to improve efficiency
- Demonstrate the benefits of journey planning
- Understand how in-vehicle technology improves driving performance
- Improve your knowledge of alternative fuels in commercial vehicles



LoCITY

DRIVING

Lesson 7

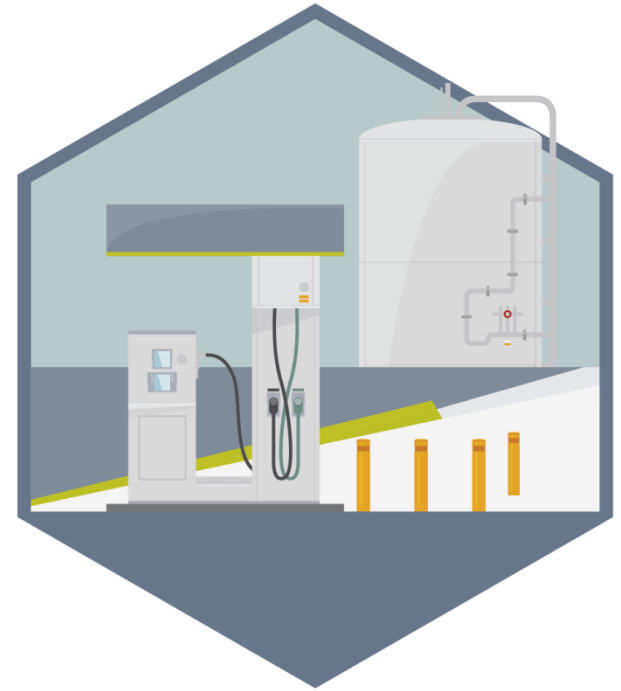
Alternative fuels in commercial vehicles



LESSON 7 OBJECTIVES

This lesson will cover the:

- Main fuels and technologies that will displace use of petrol and diesel engines
- Overview for each alternative fuels and their benefits for drivers, operators and society
- Benefits and limitations of cleaner fuels with regard to performance, cost and availability
- Barriers to move from conventional vehicles to cleaner fuelled vehicles



Typical myths about alternative fuels

What are the key myths about using alternative fuels?

- Hydrogen fuelled vehicles cannot use the Blackwall Tunnel
- Electric vehicles are actually dirtier than diesel vehicles
- Natural gas is the answer to all our fuel problems since there's so much of it available
- Alternative fuels are too costly and are not available for use in commercial vehicles
- Plug-in vehicles might be good for the environment, but if everyone has one, and tries to use it at the same time, the country's power grid won't be able to handle it





Thank you



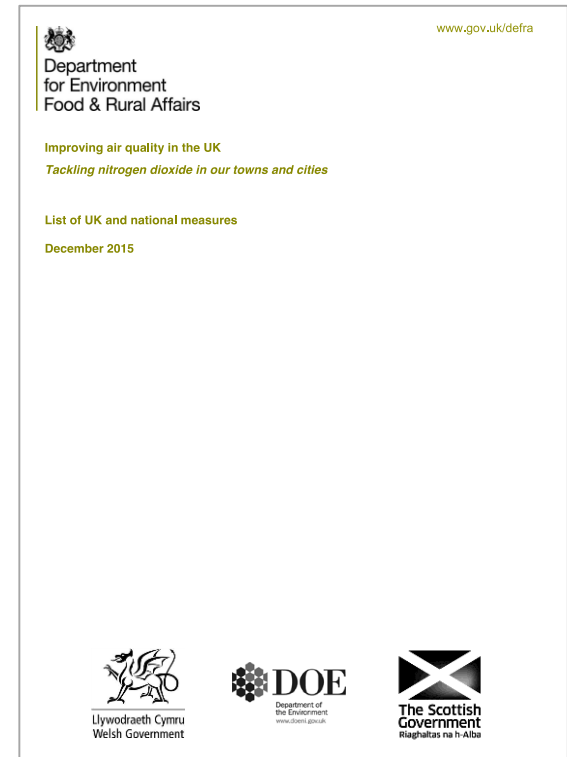


Lunch!

Work-in-Progress: Clean Vehicle Retrofit Accreditation Scheme

- Road transport is a key source of elevated NOx emissions in cities, leading to breaches of the EU limit value for NO2.
- Defra published an air quality plan in to reduce NO2 levels in cities and town in the UK to meet compliance by 2020.
- Intends to introduce '**Clean Air Zones**' in 5 regions – charge operators access unless compliance with NOx emissions standards – purchase new vehicles or retrofit.

NO₂ Action Plan States – 'The Department of Transport has commissioned the Low Carbon Vehicle Partnership to develop a new Clean Vehicle Retrofit Accreditation Scheme. This will ensure there is a robust system in place providing independent evidence that any future vehicle retrofit technology scheme will deliver significant NOx emission reductions and air quality benefits. The scheme will cover a range of vehicles – buses, coaches, trucks, vans, mini-buses and taxis, and will facilitate the development of an approved list of suppliers and technology.'



Clean Vehicle Retrofit Accreditation Scheme Proposal

- To develop an **independent certification scheme** to aid vehicle operators' decisions on which retrofit NOx abatement technologies can achieve relevant emission performance standards. Two tier approach recommended:
 - 1) For potential use with Clean Air Zones - targets aligned to Euro VI/6
 - 2) For optional clean vehicle retrofit funding schemes with less onerous targets to be adopted in non-CAZ or non charging CAZ cities.

Overarching Objectives

- To set emission based performance criteria for retrofit technologies which can reduce NOx emissions for **Buses, Coaches, Trucks, Mini-buses, Vans and Taxis**.
- To ensure **no negative impacts on other air pollutants** notably particulates and NH₃, and **greenhouse gas emissions** – CH₄, N₂O and CO₂ – set appropriate emission standards.
- To prepare a set of **vehicle emission test procedures** to qualify retrofit equipment performance against proposed emission standards
- To maximise the use of **existing and established processes** and tests
- To source **industry feedback** on proposed accreditation scheme design and implementation.

Proposed CAZ Emission Limits & Test Procedures for Vehicles Class Covered Under CVRAS

	<i>Bus</i>	<i>Truck</i>	<i>Coach</i>	<i>Mini-bus and Van</i>	<i>Taxi</i>
<i>AQ Emission Limits</i>	<i>NO_x - 0.5 g/km</i> <i>NO₂ - 0.3 g/km</i> <i>PM - 20 mg/km</i> <i>NH₃ – 10 ppm</i>	<i>NO_x - 0.5 g/km</i> <i>NO₂ - 0.3 g/km</i> <i>PM - 20 mg/km</i> <i>NH₃ – 10 ppm</i>	<i>NO_x – 0.5 g/km</i> <i>NO₂ – 0.3 g/km</i> <i>PM - 20 mg/km</i> <i>NH₃ – 10 ppm</i>	<i>NO_x - 0.25 g/km</i> <i>NO₂ - 0.1 g/km</i> <i>PM - 10 mg/km</i> <i>NH₃ – 10 ppm</i>	<i>NO_x - 0.25 g/km</i> <i>NO₂ - 0.1 g/km</i> <i>PM – 10 mg/km</i> <i>NH₃ – 10 ppm</i>
<i>GHG Emission Limit</i>	<i>No more than 1% increase in well-to-wheel primary CO₂ eq emissions (CO₂, CH₄, N₂O)</i>				
<i>Not to Exceed NO_x Limits (Individual drive cycle phases)</i>	<i>Rural– 0.4g/km</i> <i>Outer London- 0.5g/km</i> <i>Inner London– 0.7g/km</i>	<i>City - 0.7 g/km tbd</i> <i>Urban – 0.6 g/km</i> <i>Regional – 0.5 g/km</i> <i>Long Haul– 0.4g/km</i>	<i>Inner London– 1.0/km</i> <i>Outer London– 0.7g/km</i> <i>Long Haul – 0.4 g/km</i>	<i>tbd</i>	<i>tbd</i>
<i>Vehicle Emission Drive Cycle</i>	<i>LowCVP UK Bus Cycle</i>	<i>LowCVP (VECTO based) Truck Cycles</i> <i>NB new LowCVP/TfL urban van cycle to be added</i>	<i>VECTO based Coach and UK Bus Cycles</i>	<i>World Harmonised Light Duty Test Cycle. (option for LowCVP/TfL truck cycles)</i>	<i>PCO-CENEX London Taxi Cycle or (optional WTLC)</i>
<i>Vehicle Testing Method</i>	<i>Chassis Dynamometer</i>	<i>PEMS on Track or Chassis Dynamometer</i>	<i>Chassis Dynamometer or PEMS on Track</i>	<i>Chassis Dynamometer</i>	<i>Chassis Dynamometer</i>

Final emission limits to be confirmed – CO₂ eq likely to increase to 3%, but aim to keep CO₂ less than 1%

In Use Verification & Enforcement

- It is important to ensure the **durability of retrofit technology** and effective operation.
- Euro VI/6 has durability standards, notably OBD

Recommendations:

1. The technology supplier could be required to **demonstrate methods of in use verification**
 - On board diagnostic to ensure correct injection of urea
 - Warning light to driver to indicate poor performance of abatement system
 - GPS and recording of vehicle operation in EV mode (PHEV)
 - NOx sensors to demonstrate removal efficiency of after-treatment system
2. DfT/Defra could undertake **spot vehicle emission testing** to identify non-conformance with and financial penalty for operators who fails to maintain retrofit equipment to certified emission performance standards.
3. Option for new emission **roadside sensors** to “catch” gross polluters

CVRAS Summary

- Retrofit technology has important role to play in reducing road transport NO_x emissions and helping to meet NO₂ limit values.
- It is essential that retrofit technologies cause no adverse impacts to air pollution and GHG emissions.
- LowCVP has proposed CAZ emission limits for various vehicle classes and developed a robust methodology to accredit retrofit technology suppliers.
- Collaborated with multiple stakeholder to develop our CVRAS proposals.
- Mechanisms must be in place to ensure retrofit equipment durability combined with enforcement.
- Awaiting further notice of when and how the scheme could be adopted by DEFRA/DfT.

Emission Control Zones

TFL

- LEZ current
 - (Euro 4 PM)
- ULEZ
 - – Euro VI/6
- Congestion Charge
 - ULEVs exempt
- Emission surcharge
 - Older than Euro IV/4
- Low Emission neighbourhoods

DEFRA

Clean air zone
Euro VI/6

Non charging CAZ

OLEV

ULEV lanes
ULEV's

euro VI/6

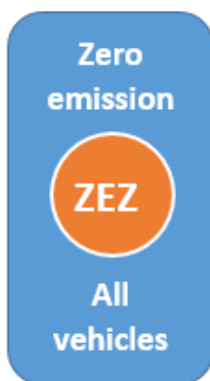
A common framework (for the common man)

Timing	LOWCVP proposal	Vehicle class	DEFRA term	TfL term
Future requirement	ZEZ – Zero emission operation zone	ZE vehicles and ZEC only with geofence and monitoring	n/a	n/a
2020	ULEZ (ultra low emission zone)	ULEVs only (requires - low real world NOx and low CO2) – Possible retrofits for Low CO2 and Euro VI	n/a	n/a
2019	LEZ (Low emission zone)	Low emission vehicles (LEV) Euro 4 petrol, Euro 6/VI diesel – Retrofits to Euro VI	CAZ - charging	ULEZ
2017	CAP (Clean Air partnership area)	Clean vehicle initiative (CVTF proven technology)	CAZ – Non charging	T charge, LEZ, Low emission neighbourhoods

CURRENT



SUGGESTIONS





Complementary activities

Activity in promoting the use of low emission vehicles

Roger Barrowcliffe -
clear.air.thinking@gmail.com

HE perspective

- Strategic need and ambition to reduce NO_x emissions on motorways and trunk roads
- Immediate requirement to offer viable mitigation solutions for new schemes
- Biggest problems occur on urban motorways

Possible Solutions for Problem Roads

- Incentive scheme for faster uptake of Euro VI HGVs on designated roads – stalled through State Aid barrier
- Incentive scheme for ultra low emission vans and small lorries – aiming for demonstrator projects to start asap.

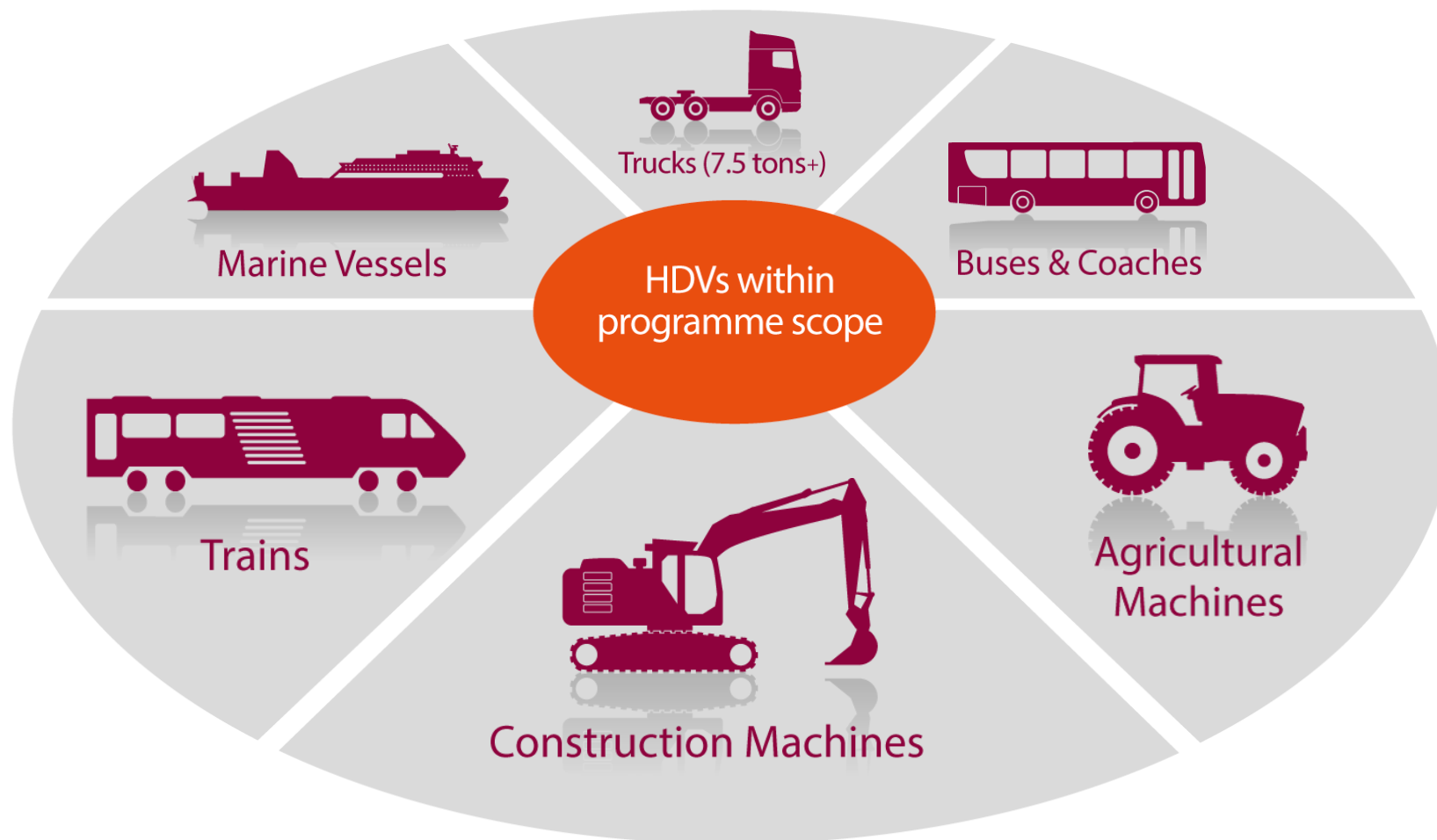


1. Freight Carbon review
2. Driver License derogation
3. [Weights and dimensions consultation](#) closed (LowCVP response available to members)
4. [Biofuels consultation](#) close 22 Jan
5. [Motor fuel GHG reporting consultation](#) close 22 Jan
6. [Autumn Statement](#) spending announcement
7. Air quality update ([High court judgement](#))





HDV Programme Overview





HDV Activities at the ETI



The ETI is attempting to demonstrate 30% improvement in fuel efficiency before aerodynamic and light-weighting advances



Natural gas and bio-fuels could supplement liquid fuel given compatible vehicles and subject to lifecycle emissions analysis



On board storage requirements are challenging as is the ability to support off-highway duty cycles



Hydrogen storage density coupled with fuel cell robustness are major challenges for HDVs



HDV Activities at the ETI

HDV Efficiency

£40M+ Technology
Development and
Demonstration Programme

2012 – 2019

Gas as a HDV Fuel

Strategy Phase

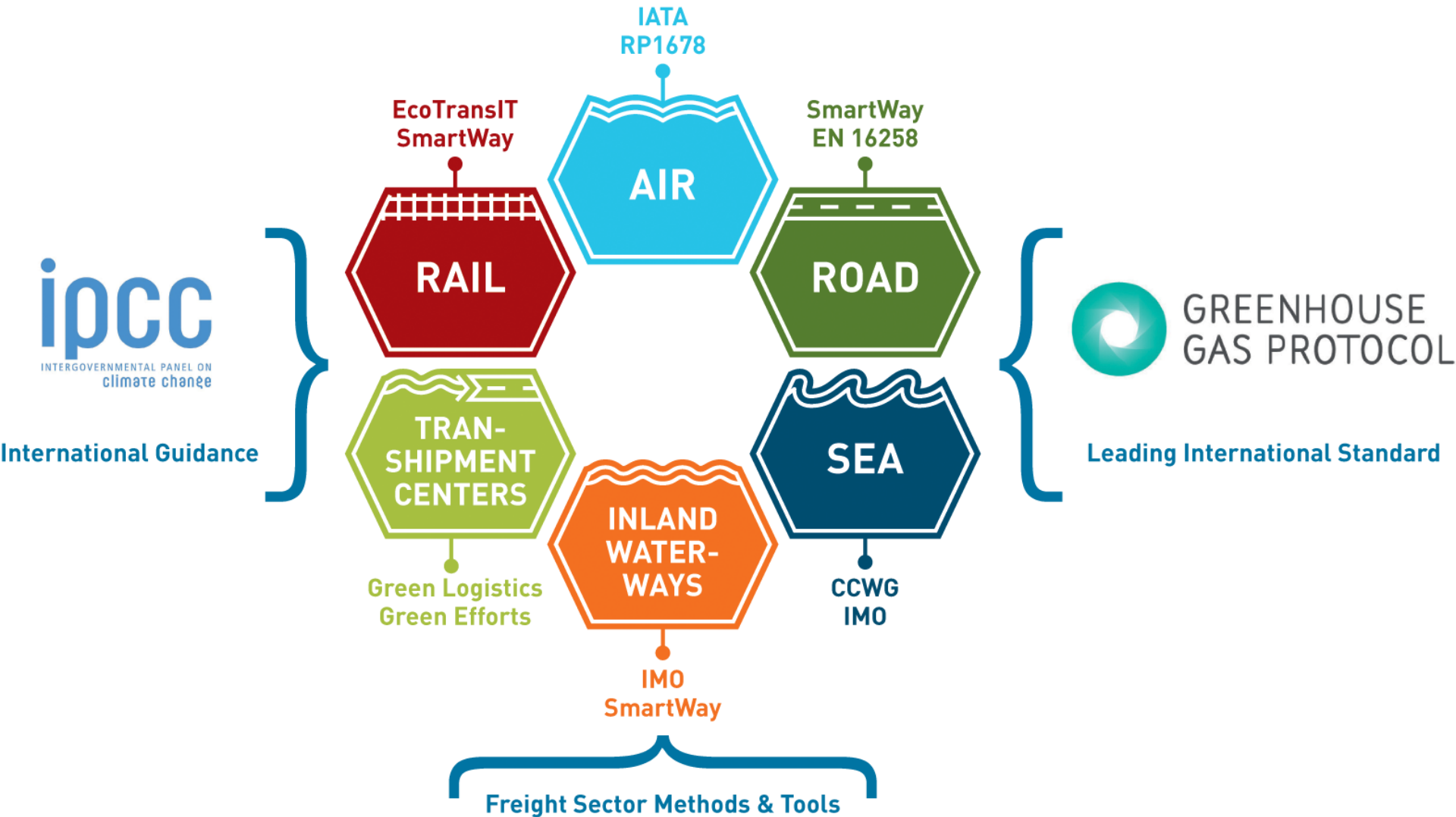
2013 – onwards

Exploitation Activities

2015 - onwards

EST – GELC (Global Emissions Logistics Council)

Colin Smith <Colin.Smith@est.org.uk>





Commercial vehicles - barriers

Creating Communities

Building Understanding

Influence Policy

Accelerate Market

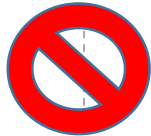
Current

Lower
Carbon
Commercial
vehicles

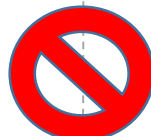
Current
position:
conventional Diesel
fleet



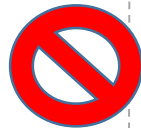
No
incentive
for LC
urban truck



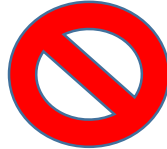
Lack of
consistent
evidence of
LC
technology



Limited
evidence
of Gas
trucks



GHG risk
from clean
AQ
retrofits

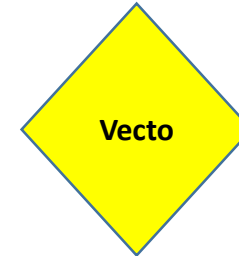


No
definition
of ULEV
truck



Evidence,
support and
recognition
of LC fuels

Activity



Goal

5% of New
CV market
is ULEV

GHG
saving
from LC
fuels in CV
(RED 10%)

2015/16

2016/17

2017/18

2018/19

2019/20



Commercial Vehicles – Activity*LowC^{VP}

Low Carbon Vehicle Partnership

Creating Communities

Building Understanding

Influence Policy

Accelerate Market

Current

Lower
Carbon
Commercial
vehicles

Current
position:
convention
al Diesel
fleet

*Retrofit scheme**City cycles**Gas testing**HGV project group*

Activity

*RCV/Ancillary cycles**Define and support ULEV
truck scheme market**Innovate testing support?**WTW assessment for trucks**LC truck promotion**Project dissemination role**Creating CVWG community*

Vecto

ULEZ,
CAZ

Goal

5% of New
CV market
2020 is
ULEV

GHG
saving
from LC
fuels in CV
(RED 10%)

*** TO BE REFINED AT WORKSHOP 2 DECEMBER 2016**

2015/16

2016/17

2017/18

2018/19

2019/20

- Some topics already mentioned could be fruitful avenues for LowCVP activity:
 - N₂O assessment of N3 Euro VI?
 - Further development of the gas vehicle evidence base, e.g. new technologies?
 - Technical/policy/relationship development of accreditation scheme?
 - Refinement of PIVG testing?
- Other topics?
 - Drive & duty cycle(s) for RCVs?
 - Benchmarking of existing fleet and definition of a “low emission truck”?
 - VECTO validation and usability?
- What are the priorities?
- What else should we be looking out for?



Next steps

- LowCVP Commercial vehicle working group
 - 3 or 4 meetings per year
- LoCITY engagement / overlap
 - LowCVP to discuss with TfL/LoCITY team
- LoCITY / CENEX workshop End Feb 22nd or 23rd
- Ministerial meeting
 - When to request (suggested April at earliest)
 - What to cover?
- LCV 2017 – possible LowCVP led/coordinated “Low Carbon Truck Stop”
 - Discussed potential for other shows/events to reach the market better

How to become engaged – [Join LowCVP](#)

- Membership support
- Contribute to meetings
- Contribute to projects
- DfT funds relate to work!
- Government use LowCVP
- LowCVP coordinate activity

Help us maintain momentum

How to Join the LowCVP



If your organisation has a stake in the UK's move to low carbon vehicles and fuels and agrees with the Partnership's membership principles and commitments (as below), it can become a member of the Low Carbon Vehicle Partnership.

[LowCVP Online Application Form](#)

Why Join LowCVP?

LowCVP members have the opportunity to:

Connect	With privileged access to information, you'll gain insight into low carbon vehicle policy development and into the policy process.
Collaborate	You'll benefit from many opportunities to work – and network – with key UK and EU government, industry, NGO and other stakeholders
Influence	You'll be able to initiate proposals and help to shape future low carbon vehicle policy, programmes and regulations



Thank You. Have a safe, low emission journey home.