

# **Developing a market for low carbon commercial vehicles and technology**

## **A review of Low Carbon HGV programme**

**FTA Logistics Carbon Reduction Conference**

**17<sup>th</sup> June 2010**

**Jonathan Murray, Deputy Director**

**Low Carbon Vehicle Partnership**

# *Agenda*

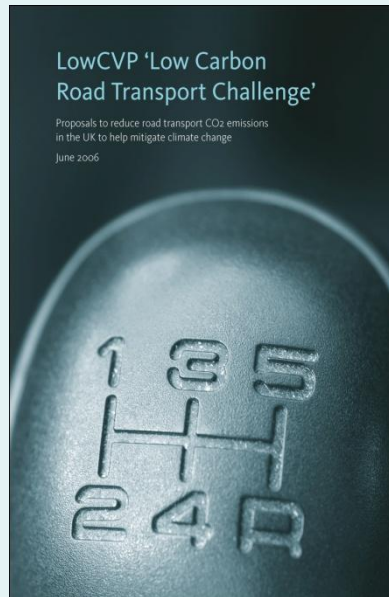
- ❑ Drivers for encouraging the take-up of low carbon technologies
- ❑ Carbon and fuel savings achievable from commercial vehicles
- ❑ The challenge of accrediting low carbon technologies
- ❑ The role for physical testing and how computer modelling can help
- ❑ What is the Low Carbon HGV programme and how HGV fleets can get involved?

# Low Carbon Vehicle Partnership

Accelerating a sustainable shift to low carbon vehicles and fuels in the UK

Stimulating opportunities for UK businesses

**LOWC<sup>VP</sup>**  
low carbon vehicle partnership



## LowCVP 'Low Carbon Road Transport Challenge'

Proposals to reduce road transport CO<sub>2</sub> emissions in the UK to help mitigate climate change  
June 2006



Fuel Economy	Low Carbon Car
<p>CO<sub>2</sub> emissions (g/km) (cycle)</p> <ul style="list-style-type: none"> <li>&lt;100 A</li> <li>101-120 B</li> <li>121-150 C</li> <li>151-165 D</li> <li>166-185 E</li> <li>186-225 F</li> <li>226+ G</li> </ul>	<b>B</b> 117 g/km
<p>Fuel cost (estimated) for 12,000 miles A full size figure is shown to the nearest 4 pence for comparison purposes. This figure is calculated using the combined drive cycle, fleet vehicle and average fuel price. Re-calculated annually, the current cost per litre is 45 pence - petrol (5p), diesel (5p) and LPG (5p) (10p/MpG 2005).</p>	<b>£662</b>
<p>VED for 12 months Vehicle Excise Duty (VED) is based on CO<sub>2</sub> emissions and fuel type of the vehicle.</p>	<b>£50</b>

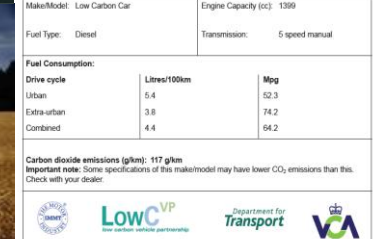
**Environmental Information**

A guide on fuel economy and CO<sub>2</sub> emissions which contains data for all new passenger car models is available at any point of sale free of charge. In addition to the fuel efficiency of a car, driving behaviour as well as other non-technical factors play a role in determining a car's fuel consumption and CO<sub>2</sub> emissions. CO<sub>2</sub> is the main greenhouse gas responsible for global warming.

Make/Model: Low Carbon Car	Engine Capacity (cc): 1399
Fuel Type: Diesel	Transmission: 5 speed manual

Drive cycle	Litres/100km	Mpg
Urban	5.4	52.3
Extra-urban	3.8	74.2
Combined	4.4	64.2

Carbon dioxide emissions (g/km): 117 g/km  
Important note: Some specifications of this make/model may have lower CO<sub>2</sub> emissions than this. Check with your dealer.



### LowCVP marketing challenge

**CARS NOT CARBON**  
A competition to promote greener motoring marketing

### Event outline

Winners to be announced at the LowCVP Annual Conference  
28th June 2007  
DTI Conference Centre, Westminster

Accelerating the shift to low carbon vehicles and fuels

## cenex

Accelerating the Shift to Low Carbon Vehicles and Fuels

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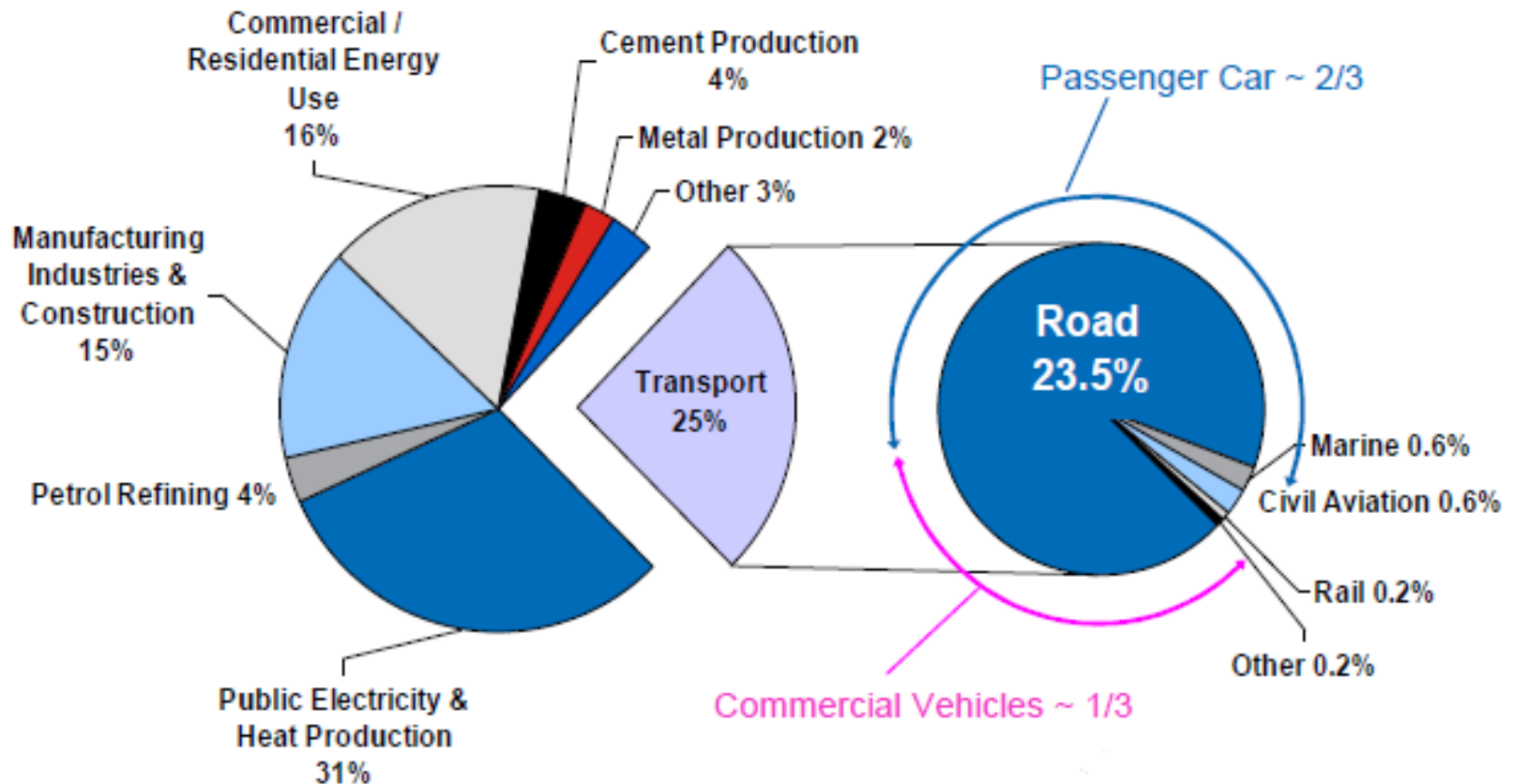
**Latest news**

LowCVP Annual Conference, 28 June, 2006, London  
 The LowCVP's fourth annual conference on June 28th will feature a high profile lineup of speakers including Transport Secretary Douglas Alexander and will focus on some of the key challenges in the sector to reduce the climate change impacts of road transport.  
 Call this number to book your place at LowCVP Conference, 28 June, London  
 02030010000  
 There will be a limited number of places for attendees at the LowCVP annual conference which will be held on 28 June 2006 at the Grosvenor Hotel, London. Places have been allocated in several years. Consider a great opportunity to increase your profile and network related to the road transport and transport related issues in a high profile setting.  
[Book your place](#)

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 The LowCVP is supported by the Low Carbon Transport Programme through a LCCD approved Energy White Paper. The LCCD sets out an overall framework through which

# Road transport accounted for 23.5% of man-made CO2 emissions in 2007 and has been increasing since 1990



Source: DfT

## ***Road freight – Low carbon technologies***

- ❑ The *Low Carbon Transport: A Greener Future* states that

“DfT aims to determine the best incentives – regulation, support for investment or best practice – to encourage greater uptake of lower carbon HGV technologies and help industry achieve significant reductions in fuel consumption and CO2 emissions from HGV operations.”

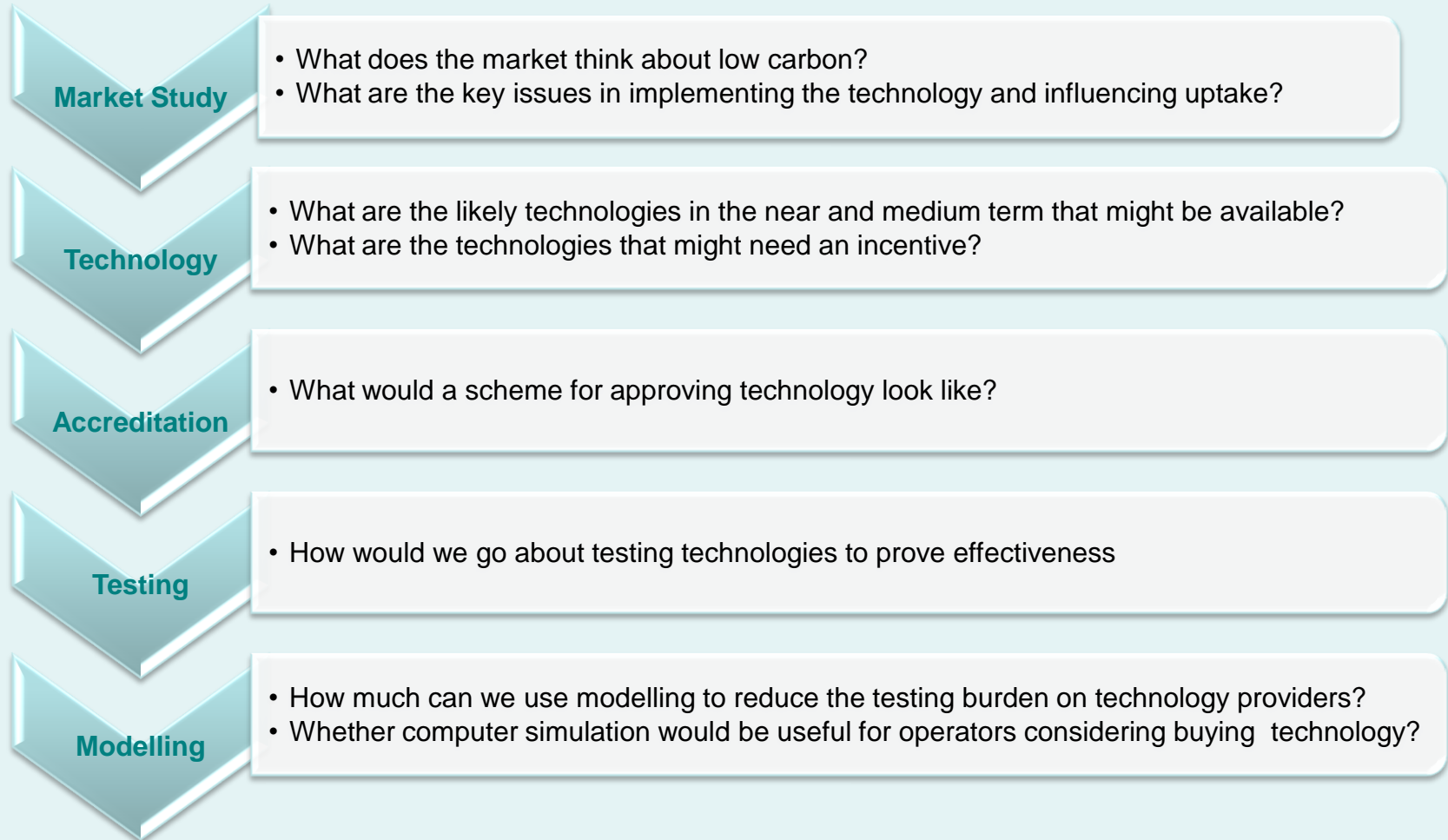
- ❑ DfT requested the LowCVP to advise them on how best this might be done.
  - LowCVP undertook the low carbon HGV programme in Dec 2010
  - Established a steering group for the project representing all key stakeholders, including FTA.
  - Aim to provide a mechanism which could be implemented by April

2011

## ***Objective of the low carbon HGV programme***

- “Develop an objective whole vehicle definition of a low carbon commercial vehicles reflecting different operational requirements which is appropriate for the basis for incentivisation through fiscal or policy measures.”
  - Confirm the technologies which should be prioritised in encouraging a reduction in carbon emissions from HGVs.
  - Determine whether it is possible to develop a performance measure or target for HGVs which could be used as well as or instead of incentivising one or more particular technologies.
  - Evaluate options to incentivise low carbon HGVs or selected technologies.

# ***Low carbon HGV work programme has five main themes***

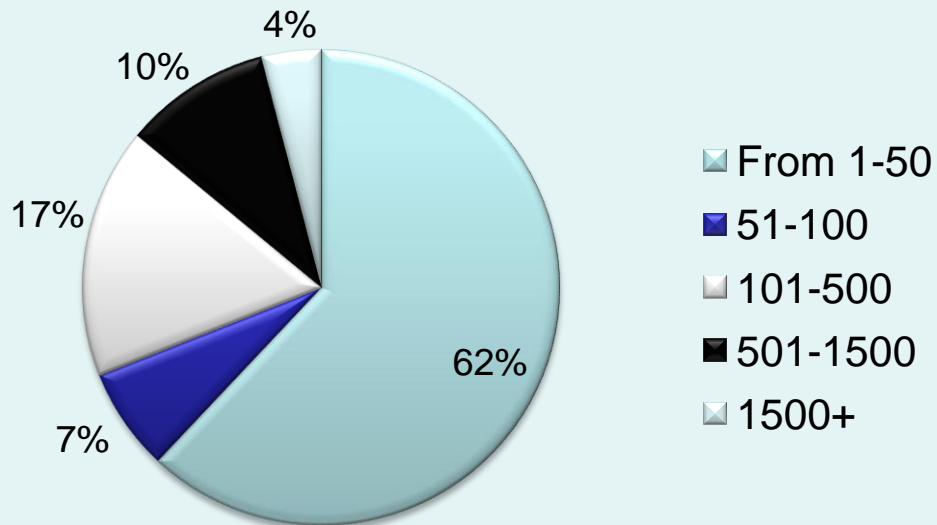


# *Fleet survey shows demand for independent verification of fuel saving claims and need for quick return on investment for fleets*

## Main Conclusions

- ❑ Generally a good understanding of technologies are available in this area.
- ❑ Practical experience of using – driven by efficiency and regulation
- ❑ Doubts over fuel savings claims made – **need for independent verification**
- ❑ Additional cost is a barrier – if short payback then will consider – otherwise subsidise.

## Operator Fleet Size

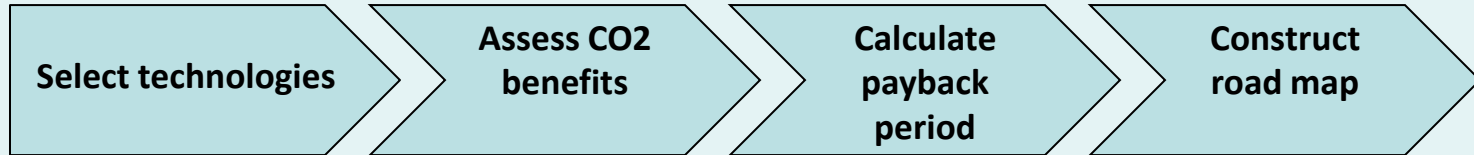


Source: AEA Technology



# Technologies were assessed through a four stage process for four types of operation

## Technology road mapping process



## Four applications



Heavy Goods



Inter city delivery



City delivery

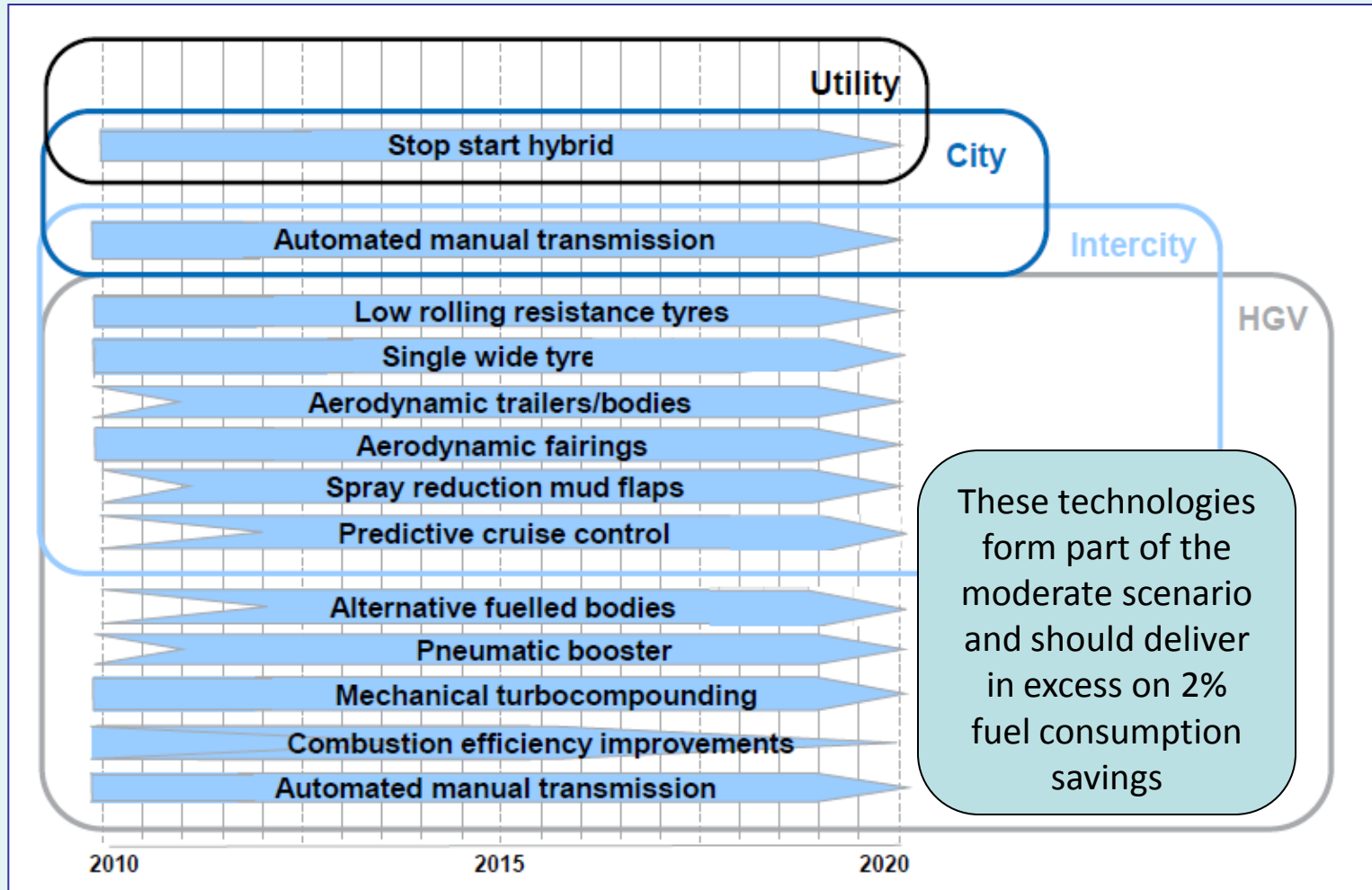


Utility

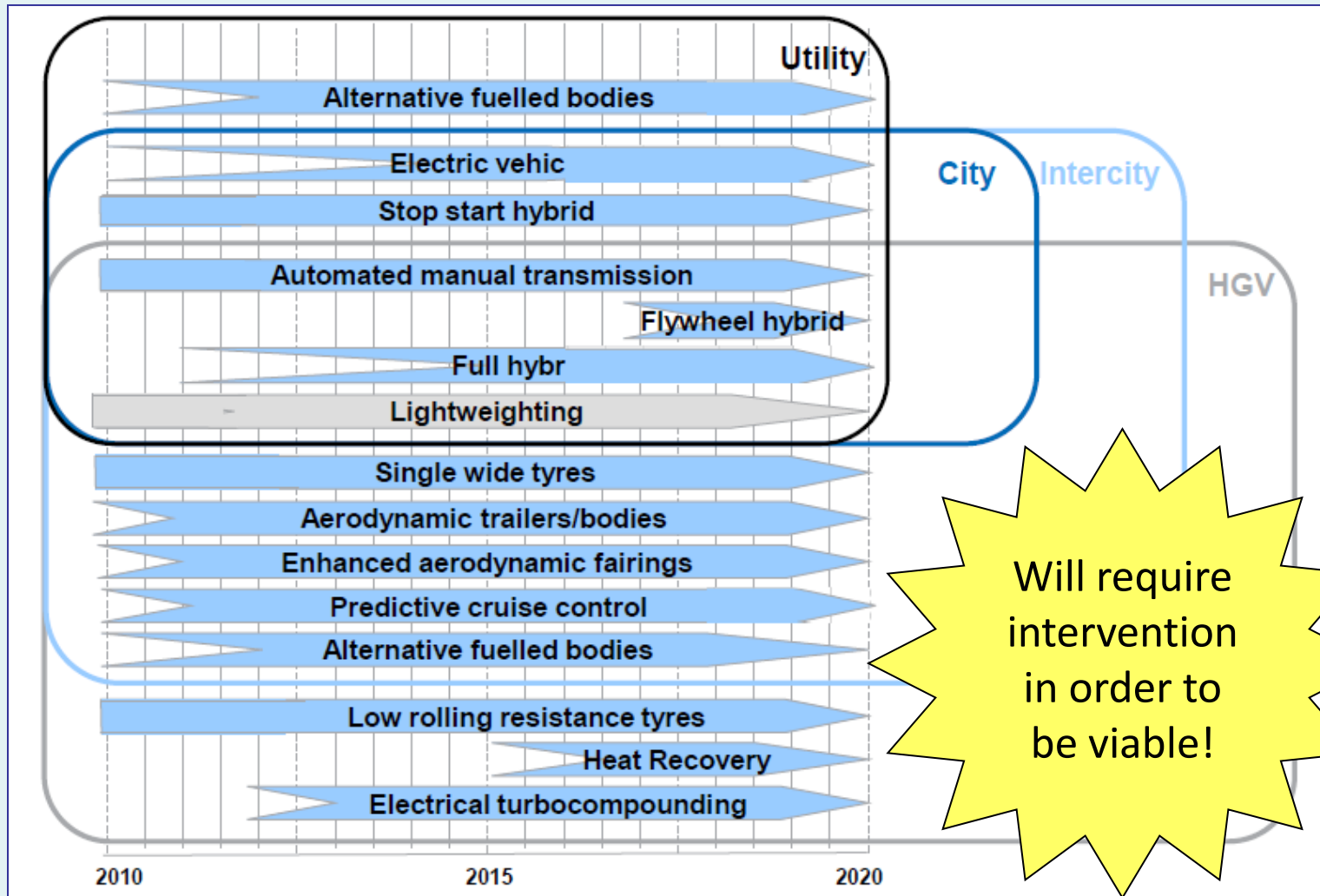
## Technology Areas

Vehicle		Powertrain		Fuel	
Aerodynamics	Fairings	Efficiency	Combustion	Alternatives	Natural gas
	Trailers		Friction		Biofuels
	Spray suppression		Acillaries		Biogas
Rolling	Low Res tyres		Gas Exchange		Electricity
Resistance	Single wide tyres		Waste heat use		Hydrogen
	Auto tyre pressure		Trans/Driveline		
Driver /	Predictive cruise	Alternatives	Fuel cells/Evs		
Control	AMT		Hybrids/ICE		

# Vehicle and powertrain technologies which are likely to be commercially viable by 2020

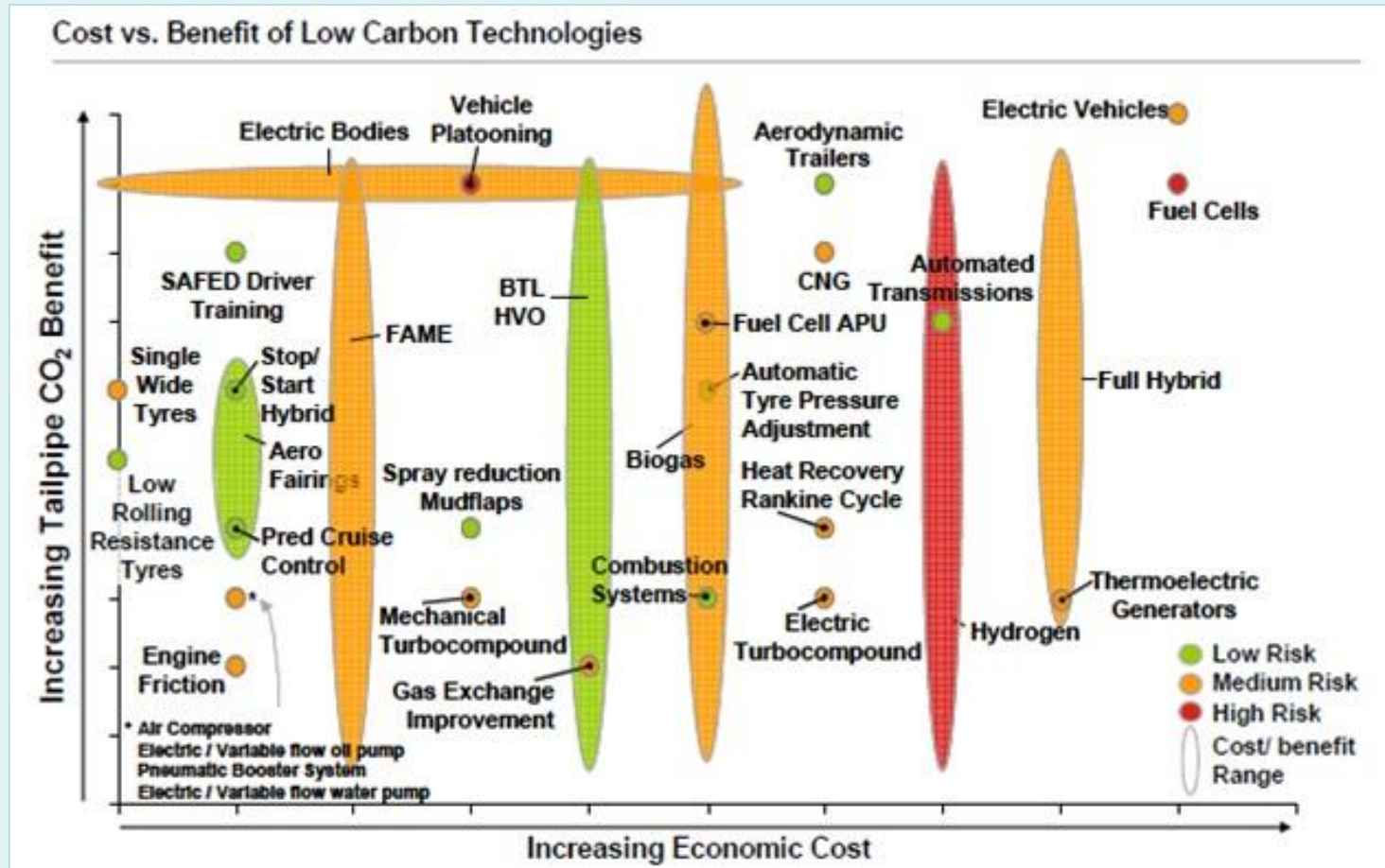


# Technologies which can deliver more aggressive fuel savings but are unlikely to be commercially viable



Will require intervention in order to be viable!

# Comparing CO<sub>2</sub> benefit with cost for medium and heavy commercial vehicles reveals application specific trade-offs



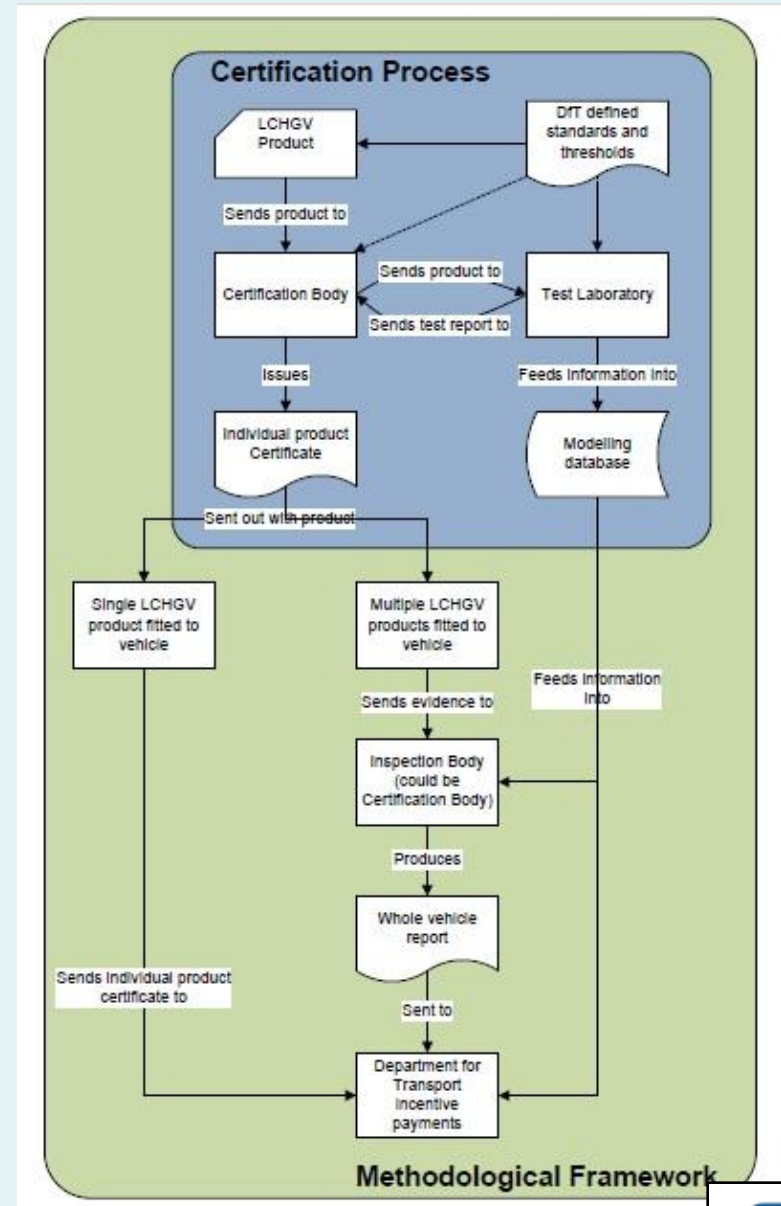
# Accreditation of low carbon technologies and HGVs

## □ Certification Process

- Designed to be cost effective by combining physical tests and computer modelling
- Requires a range of appropriate robust tests
- Computer model needs to reflect vehicle spec and driver cycle

## □ Methodological framework

- Allows for single or multiple technologies to be fitted to vehicle
- Modelling history allows process to become self validating





# *Programme of testing various technologies using different tests to determine sensitivity*



Track testing comprised a number of elements

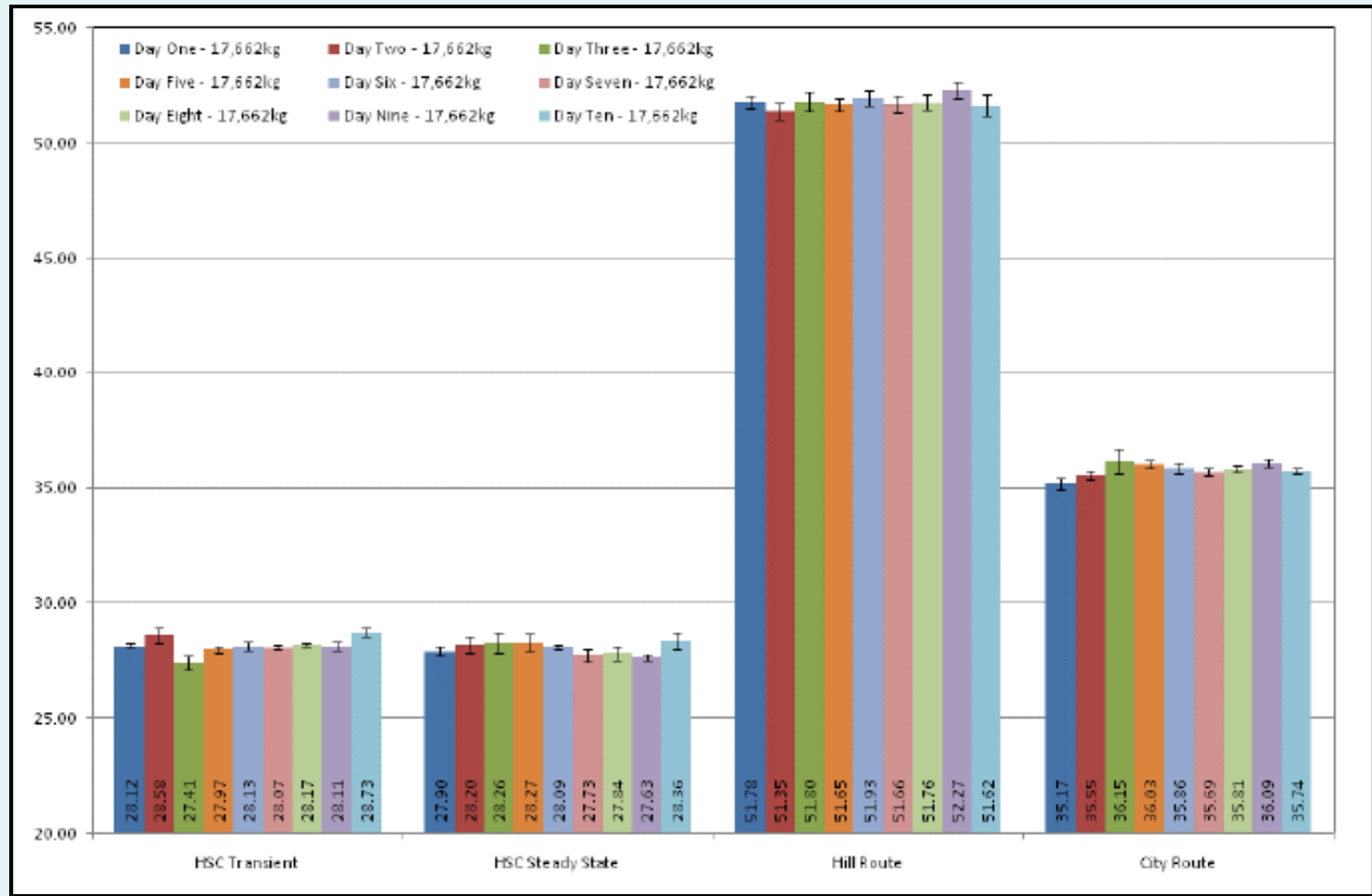
- High speed circuit
- Hill circuit
- City circuit
- 1mile straight for coast down
- Requires use of benchmark vehicle

## Chassis dynamometer

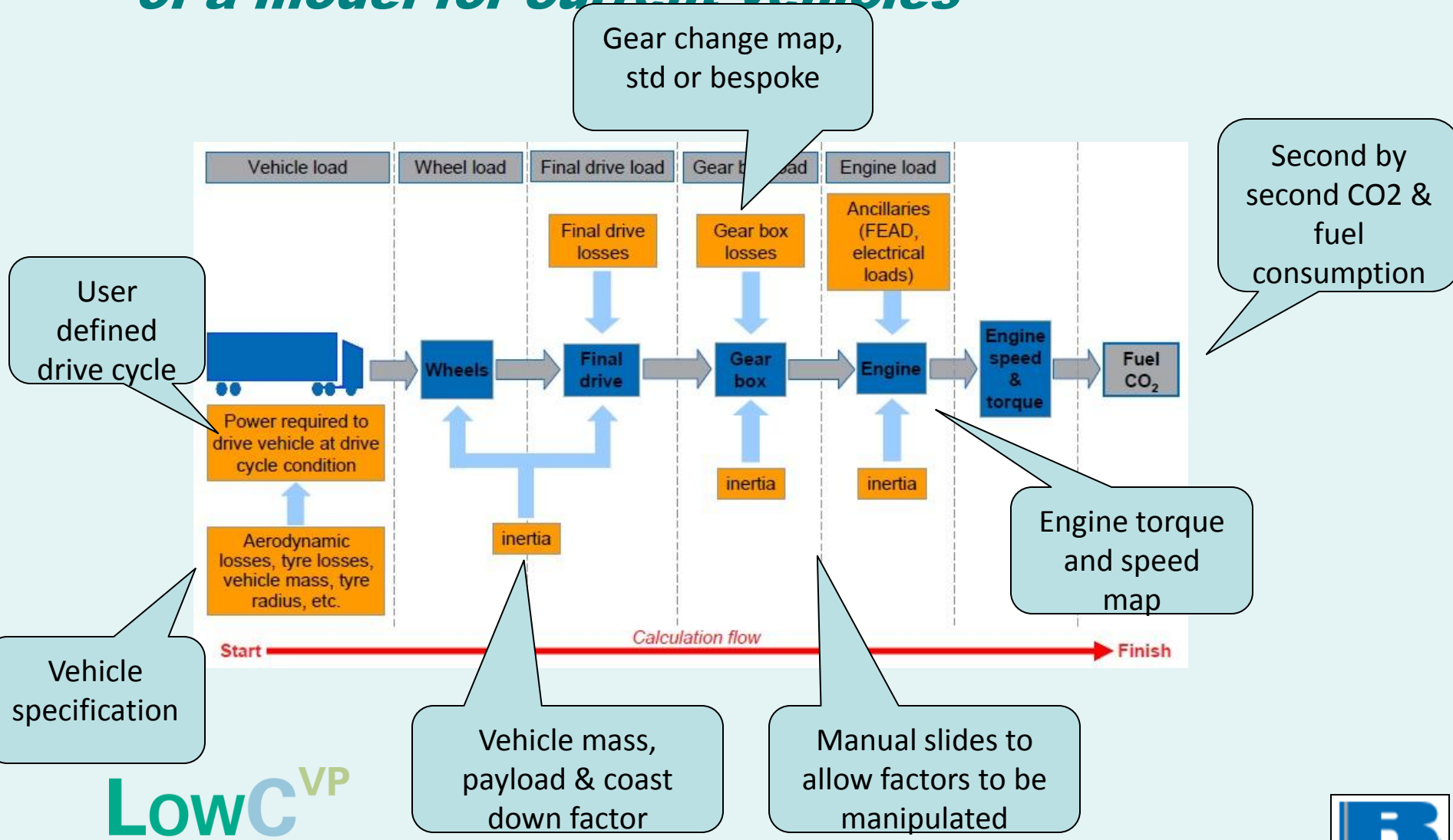
- Variable temperature emission chamber
  - Can be tailored to duty cycle within reason



# High level of confidence in repeatability, and ability to indentify changes in fuel consumption down to ~2%.



# The use of computer modelling is being investigated, initially with the development of a model for current vehicles





# ***A range of mechanisms are under consideration to encourage the uptake of low carbon technologies***

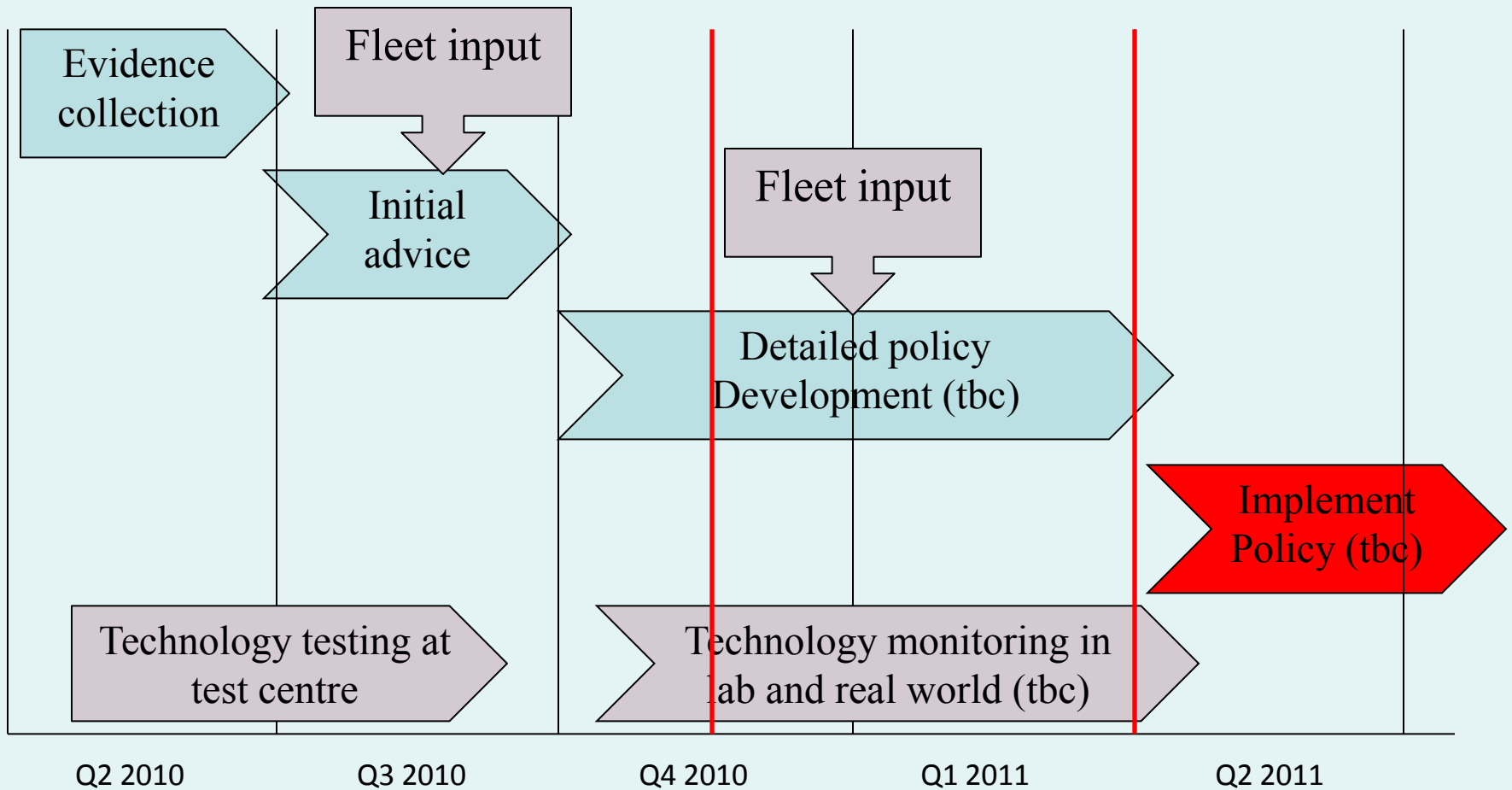
## **□ Whole vehicle:**

- Fiscal/grant schemes aimed at low emissions vehicles – would need to combine with whole vehicle accreditation and buyer information
- Most focussed on incentivising specific powertrains - many stipulate EV or Hybrid

## **□ Technology focussed:**

- ECA could be suitable model for fleet operator incentivisation – however only applies to new technology and not to organisations not eligible for tax relief – e.g. LA fleets.
- Certification schemes – e.g. Reduced Pollution Certificate for Trucks and Buses could extend to include other technologies.
- Linking to VED - need means to determine CO2 benefits and individual for each vehicle type and option combination (testing/modelling projects)
- Retrofit technologies – tax credit scheme for EV conversion kit

# Accreditation of low carbon technologies and trucks could be as early as April 2011



## *Summary*

- ❑ Road transport is an important source of carbon dioxide and fuel consumption is a major cost to the transport industry.
  - We need to reduce both.
- ❑ There are a lot of claims regarding low carbon technologies
  - Clear guidance which is backed up with evidence is needed
- ❑ Accreditation process is being developed which will use a combination of physical tests and computer modelling.
  - The aim is to be technology and cost neutral.
- ❑ Moderate low carbon technologies may be commercially viable while technologies deliver more aggressive reductions in carbon may need to be incentivised
  - Could be as early as FY 2011-12
- ❑ We are interested in hearing your views and we're looking for HGV operators to get involved.

***Thank You!***

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The Low Carbon Vehicle Partnership

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