Automotive World Conference
16 September 2008

Brendan Connor, Chairman, Cenex
Geological time series show global temperature and CO2 levels are highly correlated – current CO2 concentrations are at unprecedented levels.

2°C is increasingly being accepted as “safe” level of global warming

The risk of “dangerous climate change” increases as CO2 concentrations stabilise above 400ppm. At 550ppm there is STILL considerable risk of significant harm.

Schneider, 2005, Avoiding dangerous climate change
King Review on how to decarbonise UK road transport identified critical role for automotive technologies

UK total road transport CO2 emissions

- Emissions required to meet Stern ambition of 80% reduction by 2050
- Projected emissions assuming current technologies and behaviour (Eddington)
- Clean-powered vehicles 80%
- Biofuels 10%
- Vehicle efficiency 30%
- Behaviour 10%

Achieved by EV or hydrogen

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0 20 40 60 80 100 120 140 160 180 200
2000 2030 2050
# UK Vehicle Parc CO2 Emission Profile

<table>
<thead>
<tr>
<th>Stats from SMMT and Highways Agency in 2007</th>
<th>MtC p.a.</th>
<th>UK Vehicle Parc</th>
<th>Av CO² per veh/km @ 100kph</th>
<th>AvCO² vehicle (t/v)</th>
<th>CO² emission range</th>
<th>Ownership Fragmentation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cars</td>
<td>20.2</td>
<td>30.8m</td>
<td>147gm</td>
<td>0.64</td>
<td>HIGH</td>
<td>HIGH</td>
</tr>
<tr>
<td>LGV</td>
<td>4.6</td>
<td>3.4m</td>
<td>243gm</td>
<td>1.35</td>
<td>MED</td>
<td>MED</td>
</tr>
<tr>
<td>HGV/SPV</td>
<td>8.1</td>
<td>0.7m</td>
<td>1248gm</td>
<td>13.1</td>
<td>MED</td>
<td>LOW</td>
</tr>
<tr>
<td>Buses</td>
<td>0.9</td>
<td>0.1m</td>
<td>663gm</td>
<td>9.8</td>
<td>LOW</td>
<td>V.LOW</td>
</tr>
</tbody>
</table>
The UK market for Electric and Low Carbon Vehicles - stimulated by UK Incentive Structures

- Battery powered/Plug in Hybrids electric vehicles attracting mainstream motor industry investment

- Electric vehicle incentives include:
  - Zero road tax and grants for recharging stations
  - 100% discount on Congestion Charge
  - Free or discounted parking in locations in Central London

- Wide range of electric vehicles (vans and city cars) now on sale in the UK market:
  - Modec, Smith Electric Vehicles, NICE, G Wiz, Th!nk, Vectrix,

- Cenex running demonstration projects
  - Smart EV
  - Modec
Hydrogen and Fuel Cell Projects

• The UK is developing world leading fuel cell technologies but the automotive market is > 10 years away

• In this pre-commercial period, fuel cell technologies are being used by the UK niche vehicle sector to produce innovative next generation vehicles to operate in field trials in London and in the regions

• Cenex supporting proposals for developing a hydrogen ring of hydrogen stations to build learning from vehicle demonstration

• Cenex and Intelligent Energy using EnV bike as an exemplar project to secure process for type approving hydrogen vehicles
Summary

- No silver bullets but sector specific, technology neutral approaches should be favoured
- Road Pricing and Congestion Charging Extension
- Fuel Price Impact on private motorist behaviour and on VM technology introduction
- Critical role for technology development and fleet demonstration
- UK “Electrification of Road Transport” Project
- Critical role of public procurement initiatives
  - Low Carbon Vehicle Public Procurement Programme
  - £20 m + £30m 2008/11 + £50m potentially 2011/14
Thank you for your attention

www.cenex.co.uk