Imperial College London

Revolution: the Road to a Low Carbon Future

Ms. Caroline Watson

Wednesday, 09 June 2010 - 16:00

Location: Room 601, Skempton (Civil Eng.) Bldg, Imperial College London

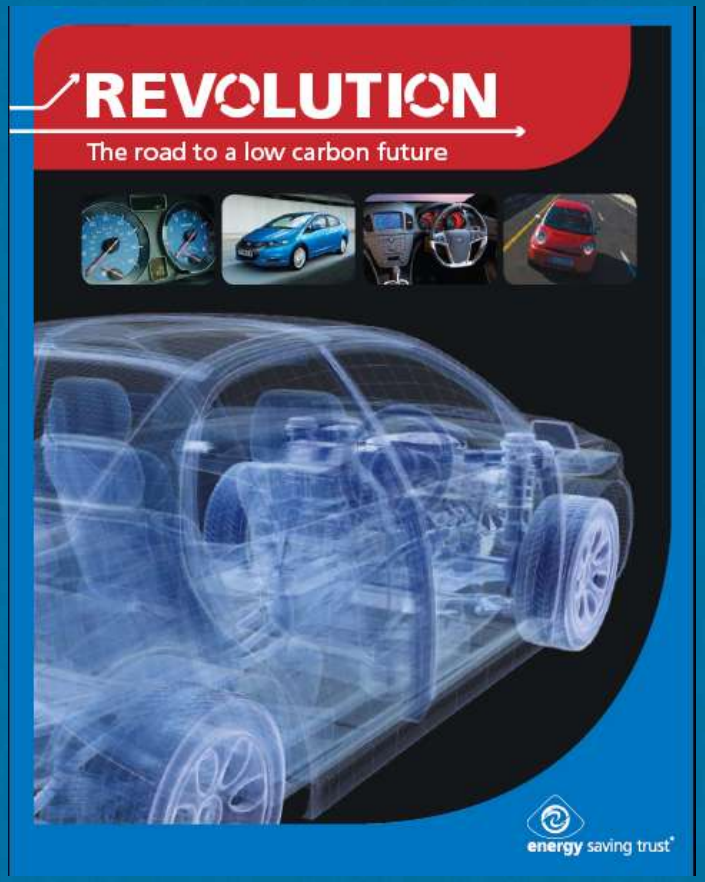
Abstract
Caroline Watson will present recent research entitled: 'Revolution: the Road to a Low Carbon Future'. The study examines a range of policy scenarios and their projected impacts on the uptake of low carbon cars. The econometric modelling compares sales of a range of advanced technologies, including hybrids, plug-in hybrids, electric cars and hydrogen, to sales of conventional petrol and diesel cars. The analysis includes policy scenarios specified to a high level of detail, including tax, grants, fuel prices, EU legislation and battery costs.

Biography
Caroline Watson is Transport Strategy Manager at the Energy Saving Trust. Her previous research studies include most recently 'flying in the face of climate change: exploring the paradox of climate-concerned frequent flyers'. She previously worked with Ecolane consultancy to analyse the accessibility of CO2-emission information on car manufacturer websites. Caroline has a background in environmental policy – previously working at the Environment Agency and as a researcher to a Member of the House of Commons Environment Select Committee.

Revolution: the Road to a Low Carbon Future

Caroline Watson
Transport Strategy Manager

9th June 2010



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Energy Saving Trust: what we do

- Independent
- UK-wide
- Established by government in 1992
- Promote and enable action to reduce CO_2
- Free advice to save energy, water and reduce waste
- Funded by UK government, devolved governments and private sector

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Our transport programmes

In England we deliver 3 programmes for DfT

Department for Transport

- Fleet advice
- Consumer transport advice
- Smarter Driver training

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Research

Flying in the face of Climate Change

CO_2 internet survey

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Policy Background

- CO_2 emissions from transport need to come down to meet climate change targets
- EU New Car CO_2 legislation 95g/km 2020 – need for advanced technologies
- Labour, Conservative and Lib Dems all support EVs as means to reduce CO_2
- Grant programme for ULCCs and Plugged in Places

Revolution: the Road to a Low Carbon Future

We commissioned original Market Transformation Model in 2006.

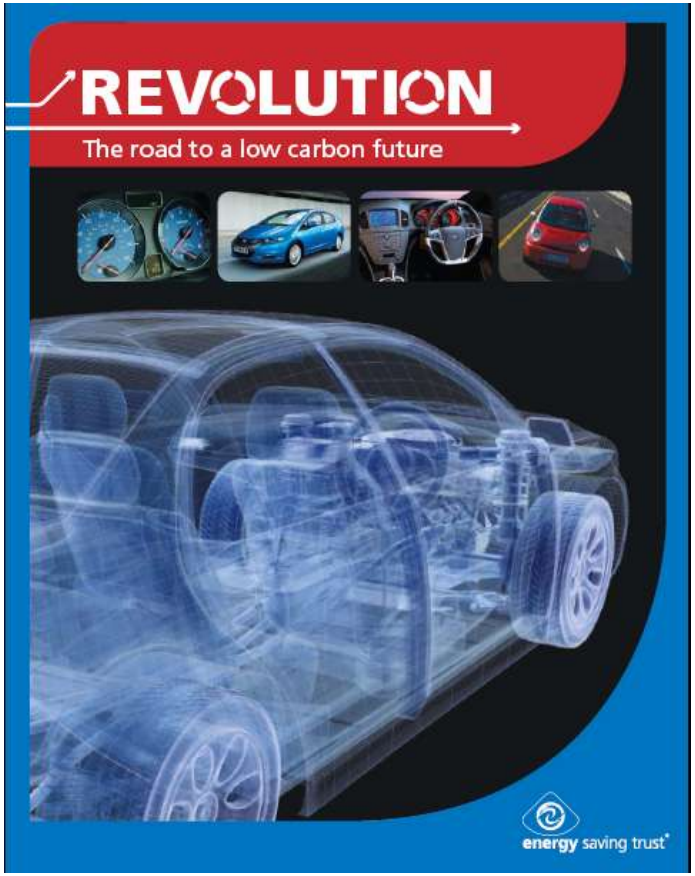
Updated 2009.

Projects the uptake of low carbon vehicle technologies up to 2030

Explores impacts of various policy scenarios

Vehicle data - Ricardo

Modelling - Element Energy



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How the model works

1. The buyer chooses which car to purchase based on a number of attributes (cost, comfort, acceleration etc)
2. The model assigns a value (co-efficient) that the consumer places on the attributes (based on a consumer survey)
3. Combining the attributes and co-efficients provides a measure of utility
4. The model then predicts market uptake share based on the utility of each car

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Technologies considered

- Petrol
- Diesel
- LPG
- Petrol Stop-start
- Diesel Stop-start
- Petrol hybrid
- Diesel hybrid
- Plug-in hybrid electric vehicle
- Range extended electric vehicle
- Battery Electric
- Hydrogen fuel cell

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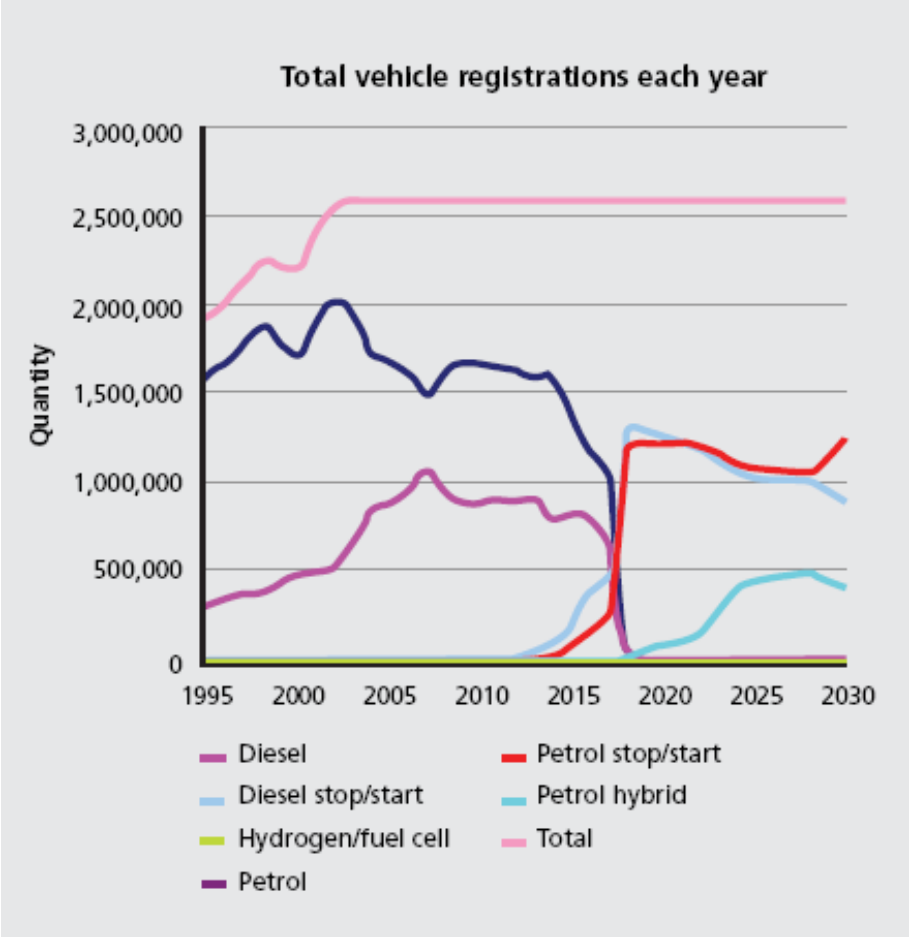
Policies and variables we can model

- Grants
- Fuel price
- Battery price
- Company car tax and capital allowances
- Road pricing
- Industry regulation (ie. EU new car CO_2)
- Consumer value of CO_2
- Low carbon vehicle public procurement
- Refuelling infrastructure support
- Packages of policy measures

Base case with no new car CO_2 legislation or grants



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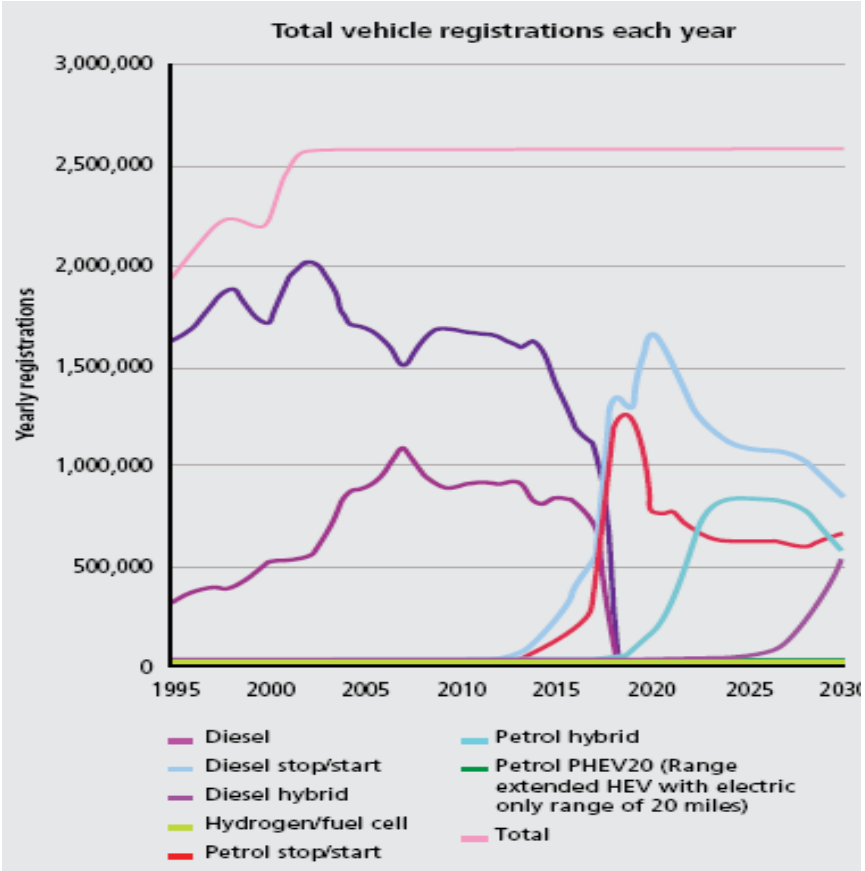
EU New Car CO_2 Legislation



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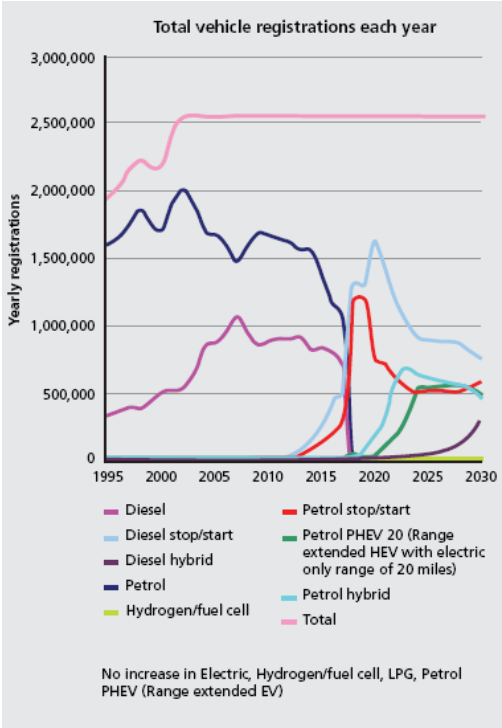
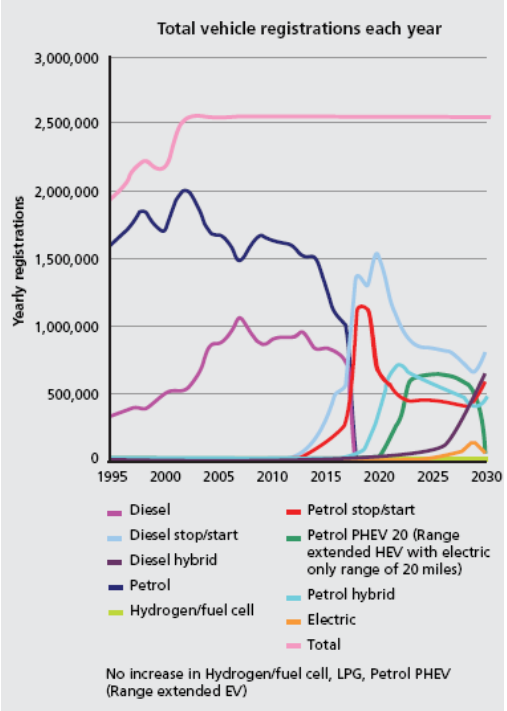
Package of measures

£5000 grant, EU targets, 10% year on year reduction in battery cost





£5000 grant, EU targets, £100kwh battery cost

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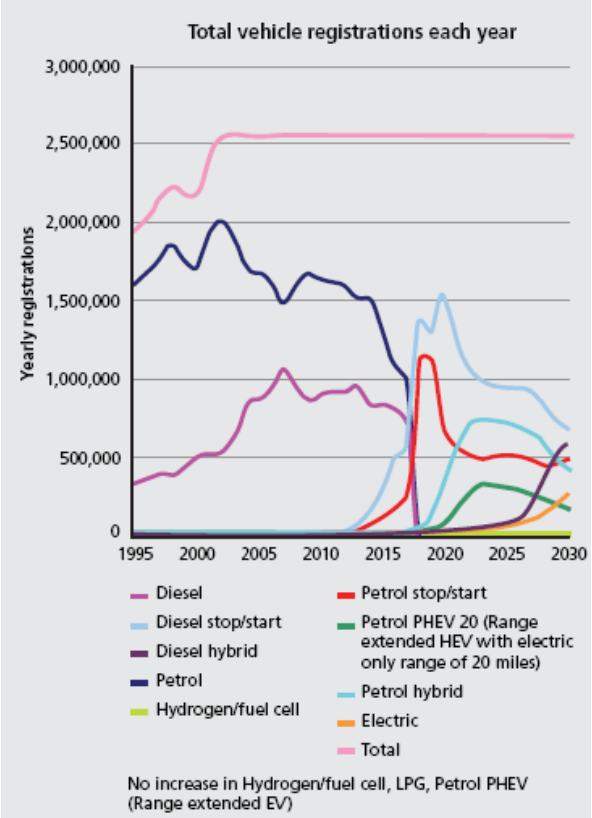
DECC fuel price scenario



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Conclusions

- Reducing upfront cost is vital
- Battery cost reductions and fuel prices biggest impact on take up
- Even if costs are equal preference is for technologies consumers know and trust

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