

Powering future vehicles strategy - Regulatory Impact Assessment

Purpose and Intended Effect of the Powering Future Vehicles Strategy

Purpose

1. The Powering Future Vehicles Strategy ('the strategy') sets out targets for Government for low carbon vehicles and establishes new structures to take forward implementation of the strategy. It sets out the Government's framework for the UK's shift to low-carbon vehicles and fuels, to promote the development, introduction and take-up of new vehicle technologies and fuels, and to ensure the full involvement of the UK automotive industry. Background to the strategy and key elements of the Government's role are set out in the Annex.

Objective

2. The UK has a legally binding commitment under the Kyoto protocol to reduce greenhouse gas emissions by 12.5% by 2008-2012 against 1990 levels and a domestic goal of reducing CO₂ emissions by 20% by 2010. Road transport is responsible for 22% of the UK greenhouse gas emissions and is a significant source of regulated emissions.

Risks

3. Whilst all the changes that global warming could bring are not fully understood, there are widespread concerns about climate change. It is likely to have far reaching effects on all aspects of the world's environment, economy and society and the risks generated by the combustion of fuel are becoming increasingly apparent. The strategy seeks to add to measures already in place to counter climate change by reducing emissions of carbon dioxide from transport.

4. It is expected that EU production of oil will fall in the future, and that transport fuel demand will grow strongly, while oil production will become increasingly concentrated in the Middle East. This could create a risk to the supply of energy. The development of new alternative fuels could help alleviate this risk.

5. There are considerable uncertainties about which technologies will prove most effective and about the development of regulatory requirements. There are also risks associated with developing new technologies in a rapidly changing area. New technologies will require the development of new supply chains but may risk damaging existing ones. An extended network of stakeholders with shared goals, such as with the Low Carbon Vehicle Partnership will help minimise these risks.

Setting The Targets

6. The strategy is not setting targets for industry. The Government is setting targets for itself which are intended to send strong signals to the market about the Government's priorities, to indicate the focus of fiscal incentives and, generally, to drive forward the change to a low carbon transport economy.

7. Following consultation, the strategy sets out the following targets:

- 10% of new car sales for cars to emit 100g/km CO₂ or less by 2012

- a framework target for sales of ultra-low carbon cars by 2020 - the precise nature and level of the target to be quantified within one year on the basis of advice from the Low Carbon Vehicle Partnership
- 600 low carbon buses per annum in operation by 2012 with low carbon defined as 30% below current average carbon emissions
- targets - the nature and level of which to be based on advice from the Low Carbon Vehicle Partnership - to be set for the manufacturing and supply chain

No targets are to be set for light or heavy goods vehicles until better data becomes available.

All target levels are to be reviewed in 2005.

(i) 2012 target for new car sales

8. The strategy sets the headline target of 10% of new car sales in 2012 to be low carbon with the definition of low carbon set as emitting 100g/km CO₂ or less.

Definition of Low Carbon

9. The target for low carbon cars is most appropriately defined in terms of g/km CO₂. This data is collected on an EU wide basis and appears on the registration document of every new car in the UK. Delivery of the target can therefore be measured in a straightforward and administratively cost effective way. 100g/km CO₂ is a robust definition of 'low carbon'. This compares with the existing EU Voluntary Agreement target of 140g/km CO₂ fleet average by 2008 and the new low carbon VED band for cars not exceeding 120g/Km introduced in Budget 2002. A lower than 100g/km would make the target difficult to achieve. Modelling of lower than 100g/Km definitions of carbon predicts negligible numbers of cars meeting that standard.

2012 CO₂ Emissions Baseline

10. Modelling has provided a median 2012 CO₂ emissions baseline scenario that assumes the EU voluntary agreement of 140g/km CO₂ new sales fleet average is met in the UK and that efficiency gains drop back to historic trends post-2008. This 'business as usual' scenario predicts that by 2012, 8% of cars will be below 100g/km CO₂

(ii) 2020 target for ultra-low carbon vehicles

11. The strategy sets a framework target for low carbon transport that will foster innovation and the rollout of new technologies and place the UK as a world leader in the development of these technologies. The precise target, to be set within a year, will be of a similar magnitude to the 2012 new car sales target.

12. The uncertainties relating to technological development between now and 2020 and the lack of robust data means that any target set now may have to be revised repeatedly in the future. Nevertheless, a 2020 target sends out a clear signal that the Government's long-term objective is to move towards a low carbon transport system, utilising emergent technologies beyond those that are currently on the market. Deferring the target for a year will allow it to take account of information on life cycle analysis carbon emissions for European vehicles expected to come out of a number of studies in 2003. The precise target and exact meaning of 'ultra-low carbon' will be quantified within a year on the basis of advice from the Low Carbon Vehicle Partnership.

(iii) 2012 target for buses

13. The strategy sets a target for low-carbon buses of 600 new bus registrations per annum (about 20%) in operation by 2012 with low carbon defined as 30% below current average carbon emissions. The strategy expects these vehicles to be used in city centres where air quality is worst. The Government will also encourage bus operators to participate in the 'Project' mechanism of the UK Emissions Trading Scheme.

14. The bus industry is currently focussing on a number of other objectives. In addition, universal data on fleet emissions is not available. Nevertheless buses are high-profile vehicles, many operating in congested urban areas where their environmental performance is important. And buses, being depot based, can be useful in trialling and demonstrating new fuels such as hydrogen. Hybrid technology is likely to be applied to buses and this technology should enable fuel and CO₂ reductions of around 30% within 10 years.

(iv) Light Goods Vehicles

15. No target is set for light goods vehicles (LGVs) although the Government is committed to consider the most appropriate approach for this complex sector as soon as data becomes available on CO₂ emissions for individual vans.

16. Estimates of fleet wide fuel consumption in the UK suggest that vans are one of the fastest growing emitters of CO₂ in the transport sector. However, there is no CO₂ data on individual vans. This could begin to be measured and collected from 2006. In the meantime, the development of low-carbon LGVs will be encouraged. The Government will ask the Low Carbon Vehicle Partnership to support this work, keep progress under review, and recommend a target as soon as practicable.

(v) Heavy Goods Vehicles

22. No target is set for heavy goods vehicles (HGVs) but the Government is committed to continuing to press for carbon savings from this sector of the vehicle fleet and encouraging their participation in the project mechanism of the UK Emissions Trading Scheme.

23. Fuel cost are already a major concern in heavy goods vehicle sector and hence a powerful driver for more efficient and therefore lower-carbon vehicles. Data on HGV CO₂ emissions is not currently available and there are no proposals to produce such data.

Options

24. Three options have been considered within the 8% to 12% target range included in the draft strategy for the 2012 target for sales of low carbon vehicles.

- Option 1: target of 8%: An 8% target has attractions given the high degree of sensitivity of the outcomes to the assumptions about efficiency gains; the current lack of documented evidence on the impact of tax mechanisms on purchasing decisions. However, adopting a target at the bottom of the consultation range would not be seen as challenging, as it represents the predicted 'business as usual median 2012 baseline scenario
- Option 2 : target of 12%: Given the uncertainties in the assumptions a 12% target at the top of the range is likely to be too optimistic.
- Option 3: target of 10%: A 10% target is challenging but deliverable.

Costs

Cars

25. The prospective cost in terms of the additional resource cost of fiscal incentives and other Government measures to incentivise consumers to switch to low-carbon vehicles in greater numbers is difficult to estimate on present information. The Government started using the potentially most important tools for incentivising low-carbon vehicles relatively recently - graduated VED started in 2001, and the new CO₂-linked structure of company car tax came into force in April 2002. The scale of impact on car purchase decisions is being monitored, but it is not yet possible to quantify the behavioural linkages in detail.

26. Nevertheless there is a strong case for Government to create the right framework for industry to drive the necessary changes. Targets are a powerful way of signalling commitment to achieving a long-term goal although they need to be flexible where the future is uncertain. The targets will be reviewed in 2005 and can be revised to continue to be challenging but achievable. And Government action to help meet the target will be subject to cost-benefit analysis of the action and subject to review.

27. Some modelling has been carried out on the potential revenue costs of vehicle excise duty if there is a low carbon car VED band and the target is met. This is the reduction in revenue due to cars being more efficient, and hence consuming less fuel. It does not include the costs of any of changes to fuel duty or VED rates that might be used to cause a shift in consumer and producer behaviour. In addition, there will be a reduction in revenue from company car tax as cars become more efficient.

28.

PFV target	Long run reductions in VED revenue in £m, using 2000 rates in base case	Long run reductions in real fuel duty revenue in £m, using 2000 rates in base case
8% in 2012	0	0
10% in 2012	16	300
12% in 2012	27	450
8% in 2012 plus extra to 2022 (i.e. 16%)	42	750
10% in 2012 plus extra to 2022 (i.e. 20%)	52	1050
12% in 2012 plus extra to 2022 (i.e. 24%)	63	1350

Buses

29. The additional cost of hybrid buses over conventional buses could initially be an additional £50k (or 50%) per vehicle. £30m per annum would therefore represent the maximum needed to support the target of 600 buses per annum. In fact the true cost could be significantly lower given cost reductions. Additionally fuel consumption would be improved, but this factor is reduced

because of the bus Fuel Duty Refund in operation. This however is being reviewed, as announced in the Budget, and this could significantly affect the financial characteristics of bus operation making fuel costs more important. The Government would also encourage bus operators to participate in the Project mechanism of the UK Emissions Trading Scheme and continue to press for carbon savings through other mechanisms.

Benefits

30. The suggested benefits of the strategy will be the reduction of greenhouse gas emissions, local air quality improvements, opportunities for the UK's automotive industry and benefits to consumers.

31. Commitments under the Kyoto protocol and domestic objectives to reduce CO₂ emissions together with the significant proportion of greenhouse gas emissions that road transport contributes underlies the strategy's aims in moving to a low carbon transport system. CO₂ savings have been analysed on the basis of the 'business as usual' 2012 baseline scenario and estimates made of the carbon savings from meeting the 10% 2012 new cars target. The analysis also seeks to illustrate the carbon savings which could result if the PFV strategy succeeded in generating a 'step-change' in car technology. For the purposes of illustration a scenario has been analysed where the 2012 target is met and the reduction in emissions per new car from 2002 to 2012 is repeated from 2012 to 2022. The modelling assumes that the car stock as a whole will reflect the make up of new car sales after around 15 years (the long run).

Scenario (% of new cars with emissions under 100gCO ₂ /km)	Long run average emissions factor, gCO ₂ /km	Long run % reduction in car CO ₂ emissions
8% in 2012 (baseline)	128	0%
10% in 2012	126	2%
12% in 2012	124	3%
8% in 2012 plus extra to 2022 (i.e. 16%)	121	5%
10% in 2012 plus extra to 2022 (i.e. 20%)	119	7%
12% in 2012 plus extra to 2022 (i.e. 24%)	117	9%

32. It is estimated that targets of 8%, 10%, and 12% of new cars to emit less than 100gCO₂/km by 2012 could save, in the long run, 0MtC, 0.4MtC and 0.6MtC respectively. As illustrated above, if these targets were somehow to lead to a change in the market such that emissions were further reduced to the point that 16%, 20% and 24% of new cars emitted less than 100gCO₂/km, then an extra saving of around 1MtC could result in each case.

33. Air quality in the UK is better now than for many years and will continue to improve. Improvements in transport emissions have contributed to this achievement. Nonetheless road transport is still responsible for a significant proportion of the emissions of particles and nitrogen dioxide where it will be most difficult, at certain heavily trafficked locations, to meet health based objectives in the Air Quality Strategy and EU binding limits.

34. Developments in conventional vehicle technology will reduce car emissions further in the second half of this decade. However, in some busy urban areas further improvements will be

necessary. Future vehicle technologies and fuels which the strategy aims to promote, in particular hybrid electric vehicles and fuel cells, are likely to start entering the market in material numbers. Hybrid vehicles can offer twice the fuel efficiency with air pollution benefits. Fuel cell vehicles will take longer to produce than hybrid technologies although fuel cell buses look likely to reach the commercial market sooner than cars or HGVs. Hydrogen produces zero tailpipe emissions although this has to be set against the energy used in producing the fuel. It is difficult to make any predictions about the scale of local air quality improvements given the uncertainties about future technological developments.

35. The strategy aims to ensure that UK industry is fully engaged in the new vehicle technologies and to encourage consumer take-up. The setting of challenging targets helps promote progress towards a low carbon transport system. The UK Automotive industry can take full advantage of these opportunities to gain a competitive edge in the world market.

36. Consumers will share the benefits of lower carbon emissions and reduced air pollution, and of new technologies and fuels with their potential to deliver greater fuel efficiency, lower running and maintenance costs, and quieter engines.

Consultation

37. In December 2001, the Government published its draft Powering Future Vehicles strategy. It invited comments from all stakeholders - the fuel and automotive industries, health and safety bodies, environmental bodies, and consumers - on the strategy and the structures proposed to implement it, and specifically invited views on:

- a target of sales of low carbon vehicles rising to between 8% and 12% of new sales, over the next decade;
- whether there should be specific targets for buses and other public service vehicles; (and light and heavy goods vehicles)
- whether there should be targets for manufacturing and for the supply chain and, looking further ahead
- the value of setting a target for fuel cell vehicles by 2020 of a similar magnitude to the target for low carbon vehicles; and

38. The consultation responses broadly welcomed the Government's proposed approach including the setting of targets.

Securing Compliance

39. A compliance regime does not form part of this strategy.

Monitoring and Evaluation

40. Progress against the targets will be monitored but this does not require any new mechanisms to be put in place beyond what is proposed as part of the Strategy.

Impact on Small Businesses

41. There are opportunities and risks for small businesses involved in the automotive industry in the uncertainties about the way future technologies and fuels may develop. All small businesses can share the benefits described above. Changes in fuel prices or vehicles will also impact but it is too early to say what these might be.

Recommendation

42. That targets be set as proposed in paragraph 7 above.

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<http://www.roads.dft.gov.uk/cv/index.htm>

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Declaration

I have read the Regulatory Impact Assessment and I am satisfied that the benefits justify the costs.

David Jamieson
Parliamentary Under Secretary of State
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ANNEX

Background

The UK has a legally binding commitment under the Kyoto protocol to reduce greenhouse gas emissions by 12.5% by 2008-2012 against 1990 levels and a domestic goal of reducing CO₂ emissions by 20% by 2010. Road transport is responsible for 22% of the UK greenhouse gas emissions and is a significant source of regulated emissions

New fuels and vehicle technologies will be coming onto the market but it is not the Government's role to choose 'winning' technologies, or second-guess industry's investments or consumers' choices. It is Government's role to ensure that the right action is taken at the right time to facilitate the development of these future fuels and vehicles, and to facilitate the necessary infrastructure to support the take-up of new fuels and technologies.

The key components of the Government's role as reflected in its Powering Future Vehicles strategy are to:

- **promote research, development and demonstration of new vehicles and new fuels** - strengthen the links and synergy between the 'Foresight Vehicle' programme and the New Vehicles Technology Fund and establish a new programme for hydrogen and other low carbon fuels.
- **ensure that UK industry is fully engaged in the new vehicle and fuel technologies** - establish the Low Carbon Vehicle Partnership to maximise the potential for UK business to gain competitive advantage from the strategy.
- **ensure that all decisions and regulatory arrangements take full account of environmental and health and safety matters** - ensure standards for vehicles, fuels and infrastructures continue to deal rigorously with health, safety and environmental concerns.
- **set technical standards and testing procedures for vehicles, fuels and distribution infrastructure speedily and professionally** to support the introduction of new vehicles, fuels and fuel distribution infrastructure.
- **facilitate the quick and smooth development of any new fuel distribution infrastructure which may be needed** - ensure that planning requirements and legal standards are appropriate and working to remove market barriers.
- **set the right fiscal regime for vehicles and fuels** - continue to support the move to a low carbon transport system.
- **encourage consumer take-up of new vehicles and fuels** - including action to overcome financial and other market barriers through appropriate fiscal measures and other mechanisms.
- **ensure that transport is able to engage in the UK's emissions trading scheme** - develop projects through which carbon saving created by the take-up of new technology vehicles and new fuels can be brought within the scheme.
- **work proactively with partners in the EU and beyond** to secure the development, introduction and take-up of new low carbon vehicles and fuels.
- **make fullest use of new vehicles and fuels in the Government's own vehicle fleets** - maximise the use of new vehicles and fuels in Government vehicle fleets and encouraging other public authorities to do the same.
- **set targets which will help promote the country's shift to low-carbon vehicle technologies and fuels** - set targets that are feasible but challenging which, with the other positive actions in the strategy and the full engagement of industry in the low carbon agenda, will promote progress towards low carbon vehicles and fuels taking into account the environmental benefits of bringing forward cleaner technologies, and the associated costs of doing so.
- **ensure effective links between Government departments and programmes, in carrying through the *Powering Future Vehicles* strategy** - better integrate Government aid programmes, in particular a closer and more systematic link between the 'Foresight Vehicle' programme and the New Vehicle Technology Fund, to facilitate rapid development, demonstration and commercialisation of low carbon vehicles.