

future climate

AUSTRALIA

VEHICLE FUEL EFFICIENCY MEASURES DISCUSSION PAPER

SUBMISSION

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EXECUTIVE SUMMARY

- *Change is both an imperative and inevitable, as are measures complementary to the CPRS due to the existence of serious potential market failures*
- *A package of harmonized, consistent, supply- and demand-side measures for passenger vehicles represents a significant opportunity for the automotive industry, technical and manufacturing capability in Australia and GHG reduction*
- *Mandated targets for passenger vehicles represent the largest opportunity of any single measure, and should be prioritised in the absence of agreements to implement a more diverse package of measures relating to passenger vehicles*
- *Other measures outside of those relating specifically to passenger vehicles should be considered for immediate implementation, due to their (relative) lack of implications for the Australian manufacturing industry*

1. GENERAL COMMENTS ON THE PACKAGE OF MEASURES

THE IMPERATIVE FOR & CERTAINTY OF CHANGE

The need for action to mitigate greenhouse gas (GHG) emissions has generally been accepted by the community. In response, the Australian Government has committed to introduce an emissions trading scheme in the form of the Carbon Pollution Reduction Scheme (CPRS).

With reference to the CSIRO Fuel for Thought report¹, oil price shocks and energy security concerns will ultimately drive change, however the consistency of outcomes with the objective of GHG reduction is not a given (e.g. Coal-To-Liquid, Tar Sands etc).

As was also evidenced by the CSIRO report, the effects of carbon pricing and oil price shocks on the economy will be minimised through the uptake of more fuel efficient technologies.

Change is inevitable and predictable, and with this certainty comes opportunity for those prepared to embrace it, or costs for those who resist.

There is an obvious role for government in recognising the inevitability of this change, and facilitating it in a manner that provides certainty for industry, least cost to the economy, and sustainable outcomes once realised.

THE NEED FOR COMPLEMENTARY MEASURES

Effectiveness of the CPRS is contingent upon market function, and by extension the existence of market failures necessitates the design of complementary measures.

¹ <http://www.csiro.au/resources/FuelForThoughtReport.html>

Documented market failures of relevance to the issue of vehicle fuel efficiency include the following:

- Vehicle buying behaviour:
 - The prioritisation of vehicle features without direct relationship to economic outcomes over fuel economy (e.g. vehicle styling)
 - The ‘over-discounting’ of fuel economy relative to purchase price, whereby the difference in purchase price between two otherwise similar vehicles will be disproportionately weighted in favour of capital cost rather than payback²
- “Time inconsistent” preferences, e.g. hyperbolic discounting, where the consumer’s discount rate appears to fall the further in the future the decision is to be made; for example, faced with a choice of \$50 today versus \$100 next year, evidence suggests a large fraction of consumers will choose \$50 today, but faced with a choice of \$50 five years from now and \$100 six years from now, these same consumers will choose the \$100 option³
- Information gap on carbon pricing input into transport fuels (which forms only a minor component of transport fuel price, compared to the more significant inputs from oil prices, excise and road-user charges)
- Transportation choices generally requiring complementary products that necessitate large *non-recoverable* investments, and investments that cannot be made by individual consumers, e.g. when different vehicles or different infrastructures are required³
- The social value created by a firm offering a sufficient level of refuelling availability, or a broad array of innovative alternative fuel vehicle types, outweighing the private value it can recover in sales - consequently the firm has too little of an incentive to overcome potentially large upfront and non-recoverable investments³
- Vehicle-fuel compatibility (or the availability of refuelling infrastructure), which is a classic ‘chicken and egg’ situation
- Risk aversion on behalf of both vehicle manufacturers and consumer/buyers, whereby uncertainty with regards future economic benefit outweighs capital cost/investment in new technologies

² “Car buyers and fuel economy”, Turrentine, T.S. and Kurani, K.S., Energy Policy v.35, 1213 – 1223, 2007.

³ “A Low Carbon Fuel Standard for California Part 2: Policy Analysis”, Institute of Transportation Studies, University of California, Berkeley, 2007, http://www.energy.ca.gov/low_carbon_fuel_standard/UC_LCFS_study_Part_2-FINAL.pdf

- Other information gaps that prohibit the market from making informed decisions (e.g. greenhouse gas/fuel economy performance of vehicles in vehicle data or general advertising)

SOCIAL EQUITY

Various studies have found that the likely impacts of the CPRS will be felt disproportionately by lower income households. A significant input into this outcome is the cost of transport, as lower income households are often located on the city-fringes or in regional areas, which are poorly serviced for public transport^{4,5}.

This issue is compounded by the inability of these households to adapt to rapid change in the surrounding economic climate, e.g. oil price shocks, or the impact of carbon pricing. Vehicle choice is constrained due to a lack of economic empowerment, entailing that within the CPRS these households will be in possession of 'stranded assets' that are more often the subject of lobbying on behalf of large 'energy intensive trade exposed industries'.

Put more simply, these households:

- rely more heavily on cars
- own older and often larger cars
- are less able to turn them over for newer, more efficient models, and
- are only able to choose replacement vehicles from those made available in the second-hand market (a significant proportion of which are ex-fleet which has an inbuilt bias towards large cars).

This will necessitate measures be designed:

- To address market failures that directly relate to these equity issues (e.g. second-hand car market vehicle options)
- In conjunction with transition arrangements to assist disadvantaged households (i.e. similar to the transition arrangements advocated for the local manufacturers)

AUTOMOTIVE INDUSTRY RISK / OPPORTUNITY

The Australian automotive industry is at a cross-road:

- In two cases out of three parent / local organisation have financial woes

⁴ "Carbon use in poor Victorian households by local government area", Unkles, B. and Stanley, J., Brotherhood of St. Lawrence, 2008,

http://www.bsl.org.au/pdfs/Unkles&Stanley_Carbon_use_poor_Vic_households_by_LGA.pdf

⁵ "Assessing the costs of alternative development paths in Australian cities", Trubka, R., Newman, P. and Bilsborough, D., Curtin University, 2008,

http://sustainability.curtin.edu.au/local/docs/Curtin_Sustainability_Paper_0209.pdf

- Credit market paralysis entailing drastic reduction in development budgets
- Market shifts away from traditional locally-manufactured product (large passenger vehicles) at a time when the market is contracting due to recession and credit costs/restrictions
- A historical commitment to products (large passenger vehicles) that are not consistent with market trends
- Fuel price pressures and future energy security concerns promoting rapid change in buyer priorities and preferences

As a result, it would be no surprise if the local industry adopted an adversarial stance against any robust measures proposed, and instead advocated more broadly for assistance and protection, which would ultimately be in the interests of overseas shareholders of parent organisations alone.

In parallel with this, we have already seen the push by some manufacturers to promote biofuel as an option, despite the fact that:

- It offers poor, if any, greenhouse benefit
- It is not widely available
- It competes with food for arable land

This may largely be driven by the very small cost of adaptation of modern engines to run on biofuels, where investment in fuel-efficiency technologies though ultimately essential, may be avoided in the short-term. On this basis it is possible that we could see support for the introduction of potentially disastrous fuels in terms of GHG outcomes, such as those derived from coal or tar sands.

Conversely, for those interested in a more constructive dialog, a world of opportunity exists:

- Green Car Innovation Fund along with other industry assistance/supply-side measures
- Australia's natural advantage in light alloys, as an enabler for improved vehicle fuel efficiency
- Australia's natural advantages in alternative fuels such as LPG, natural gas and even potentially biofuels (particularly in second- and third-generation, for which local IP is being widely developed)
- A strong and competitive engineering development pool to draw upon, through the universities and trades-training area, research partnerships such as the Cooperative Research Centres, and a 'battle-hardened' local workforce
- Flexible manufacturing systems, combined with the ability to move quickly when compared to larger international competitors

- Certainty in terms of market shift both locally and globally – away from foreign oil reliance, towards lower carbon intensity transport technologies

One of the biggest hurdles we face is the tendency towards adopting incremental targets for greenhouse emissions that will leave us in a constant state of playing from behind at a time when radical change is essential if we are to catch up to, let alone get ahead of market trends.

The greatest opportunities therefore lie in an industry partnership to deliver a package of supply- and demand-side measures, with meaningful short-, medium- and long-term targets consistent with energy security, GHG reduction and industry development imperatives. This will only be possible with industry partners who treat the exercise as an opportunity, rather than approach in short-term survival aiming to minimise the costs of compliance.

Conversely, should the industry take the path of highest resistance, it will be in the face of certain market shifts, and ultimately to the cost of the Australian taxpayer/consumer to indulge them in this.

ADDITIONAL MEASURES

Some additional measures of relevance not raised in the discussion paper may include:

- Measures to support supply and demand for alternative fuel vehicles (e.g. flex-fuel vehicles, biofuel-capable vehicles, or electric vehicles able to recharged from renewables or from coal-based electricity), the design of which may be inconsistent with that of measures designed to address conventional fossil-fuel technology vehicles (e.g. differential charging based upon rated CO₂ emissions)
- Road-user charges based upon vehicle mass (bands) – these may address the externality of road maintenance, but also may raise issues of social equity
- Annual taxation based on vehicle rated CO₂ emissions

CONSISTENCY BETWEEN MEASURES

The design and/or implementation of measures should be mindful of the following general principles:

- Harmonisation of measures nationally and/or internationally is inherently desirable to minimise costs to industry, and by extension the consumer
- Consistency between the metrics and/or information mechanisms of different measures is necessary to avoid confusing the market
- Adoption of carbon emissions intensity (gCO₂/km) as a means for regulating/promoting vehicle attributes, thereby avoiding inevitable inconsistencies in promoting different fuel/vehicle technologies by type only

- Application of banded rather than scaled schemes, allowing for application of easily-understood ‘star-rating’ schemes – issues that should be addressed in this context include:
 - Treatment of measurement error, which may interfere with the effective enforcement of the band limits
 - Catering for inevitable performance improvements (e.g. advent of zero emission vehicles), while supporting the present market status
 - Harmonisation with international frameworks
- Coordinated implementation of a balanced supply- and demand-side measures package, to provide the appropriate industry support, best likelihood of change and least cost to industry and the consumer
- Ensuring that GHG emissions are the focus of any scheme, as air quality outcomes are regulated through Australian Design Rules

2. CO₂ EMISSION TARGETS FOR LIGHT VEHICLES

MARKET FAILURE/S

Specific market failures of relevance to this measure include:

- Vehicle buying behaviour (as outlined previously)
- Supply-constraints driven by market distortions (e.g. limited/high fuel-consumption second-hand vehicle availability/choice as a result of government vehicle purchasing policies, and a time lag in fleet turnover due to changing consumer preferences) – this is of particular relevance to the topic of social equity discussed previously
- The failure of manufacturers to prioritise fuel efficiency over other attributes, most notably engine power⁶
- The difficulty for manufacturers in estimating the potential fuel economy improvements attributable to new technologies and/or the costs associated with them⁷
- Risk aversion on behalf of manufacturers to invest in the development of new technologies (as described earlier)

VOLUNTARY TARGET EFFECTIVENESS

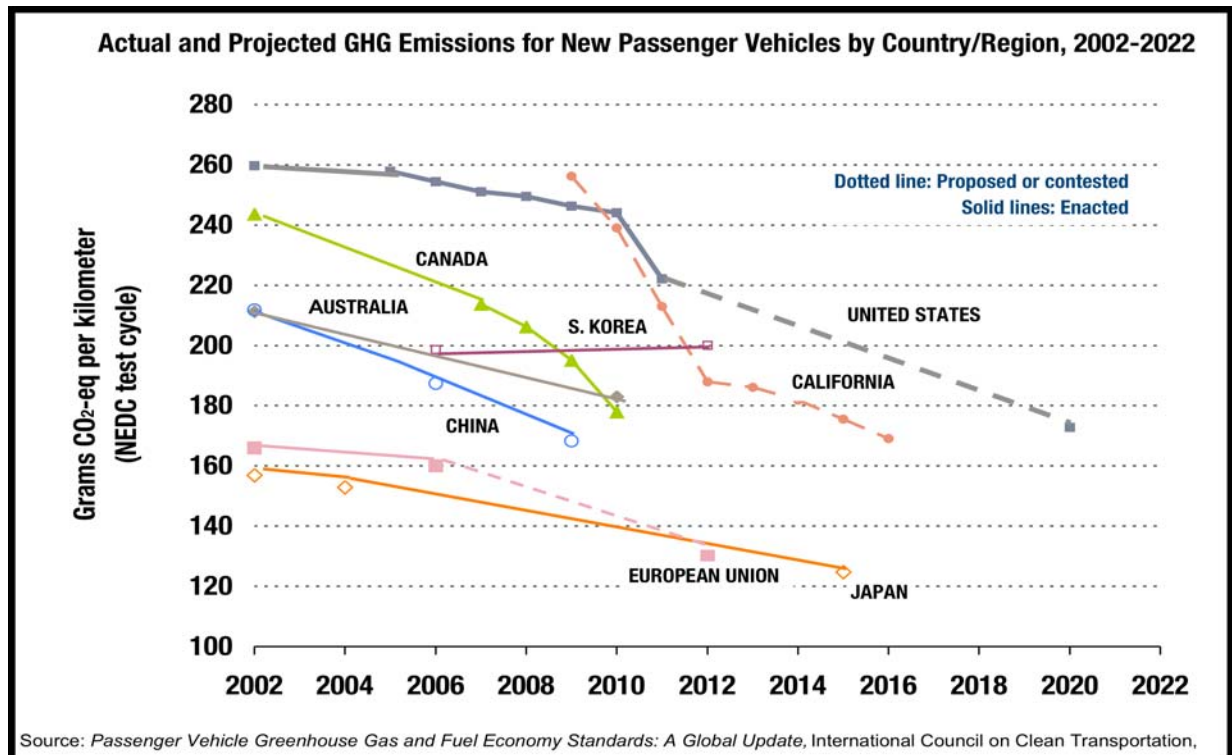
⁶ “Mazda has revealed its next Mazda6 diesel... produces 30% more power and 11% more torque while sipping the same 5.9 L/100km”, Age Drive supplement, 15 October 2008

⁷ “The King Review of low-carbon cars – Part 1: The Potential for CO₂ reduction”, UK Treasury, October 2007, http://www.hm-treasury.gov.uk/d/pbr_csr07_king840.pdf

Australia has been operating under a voluntary target since 2004 that sets what some in the industry like to describe as ‘ambitious’. The end result of this is that the average emission rating of new cars sold in Australia in 2007 was 226.1 grams/km.

Once we remove SUVs from the sales mix, the ICCT graph below shows where we sit in terms of current targets.

Whilst the average emissions rating of new cars sold in the EU is now marginally below 160 grams/km, our best performing vehicle made in Australia is the Camry at 210, with best Falcon & Commodore coming in above 240 and 250 grams/km respectively.



There is now a sub-class of vehicles appearing in the EU that is rated at below 100 grams/km.

This is evidence of where we have not benefited from overseas targets and supports the necessity for mandatory Australian targets

MECHANISM FOR IMPLEMENTATION

- Platform area rather than weight, so as to not disincentivise weight reduction
- Discussion/analysis as to why this is not a trade-off with vehicle safety measures
- Sales-weighted targets, potentially with averaging/banking/trading as per CAFE appears preferable

CONCLUSIONS

- Market failures combined with the social equity issue support the introduction of targets

- Demonstrated lack of voluntary target effectiveness indicates mandatory targets to be best approach
- Market failure with regards manufacturers estimates indicates that the design of targets should be carried out by an independent third-party with reference to overseas practices and using submissions from industry, experts, community etc
- Legislative instrument will be dependent upon preferred design

3. RESTRUCTURE STATE REGISTRATION AND STAMP DUTY CHARGES FOR LIGHT VEHICLES

MARKET FAILURE/S

- Inconsistency / lack of harmonization across jurisdictions – a market failure for the industry
- Lack of transparency with regards actual registration costs (as opposed to 'perceived' registration cost) – info gap
- Vehicle buying behaviour, particularly the over-discounting of fuel consumption savings relative to purchase price

MEASURE EFFECTIVENESS & DESIGN

- As a means of influencing the buying decision, differential stamp-duty pricing would be desirable due to its influence at the point-of-sale
- In applications where the whole-of-vehicle-life cost-of-ownership has been shown to be of influence, differential registration charging would be desirable
- The most effective scheme would therefore combine the two, as a means to address both the up-front purchasing decision and the understanding of the costs-of-ownership
- Notable has been:
 - The particular effectiveness of the UK company car scheme, which may be assumed to the relatively aggressive nature of the differential charging scheme
 - The support of the European manufacturers for a harmonised scheme

CONCLUSIONS

- Will address market failures for both the community and industry alike
- Both stamp-duty and registration differential charging desirable
- Design should allow for more aggressive treatment of company cars

- Harmonisation nationally desirable – CAF process outlined in discussion paper provides most likely avenue

4. PROVISION OF DIRECT FINANCIAL INCENTIVES/DISINCENTIVES BASED ON VEHICLE CO2 EMISSIONS

MARKET FAILURE/S

- Vehicle buying behaviour, particularly the over-discounting of fuel consumption savings relative to purchase price
- Duplication of administrative arrangements for stamp-duty/registration charging between states, resulting in market failures such as the higher cost of administration for govt and lack of a harmonized approach nationally

MEASURE EFFECTIVENESS & DESIGN

- Modelling provides the only indication of effectiveness, however UK differential charging scheme provides some indication of a likely effectiveness
- This approach is effectively a duplicate of a harmonized differential stamp-duty charging scheme, and therefore introduction should be negotiated through COAG (with preference being given to a harmonized stamp-duty scheme to minimize the costs to government)
- Revenue neutrality in the design of the scheme is desirable to minimise costs to govt and avoid allegations of revenue-raising – ‘fee-bate’ system desirable
- Market shifts will necessitate periodic redesign of the scheme details

CONCLUSIONS

- Will address market failures for both the community and industry alike
- ‘Fee-bate’ scheme with periodic reassessment
- Desirable in the absence of a harmonized differential stamp-duty charging scheme

5. DEVELOP FLEET PURCHASING FRAMEWORKS THAT INCORPORATE GREENHOUSE REDUCTION OBJECTIVES

MARKET FAILURE/S

- Vehicle buying behaviour
- Inconsistency between approaches for different fleet purchasing criteria (e.g. GVG rating vs carbon emissions vs fuel economy) – a market failure for industry
- Disconnect between organisational environment objectives/expertise and fleet management responsibilities

- Market distortions with regards approved vehicle purchasing lists for fleets, which inhibit uptake of new technologies

MEASURE EFFECTIVENESS & DESIGN

- No means to require fleets to use purchasing criteria, except for voluntary application:
 - Limited in terms of likely effectiveness
 - Inducements for fleets to use criteria could be considered (e.g. recognition, financial incentives)
 - Development of a Fleet Covenant that dictates parameters for continuous tightening of average GHG rating of vehicles purchased
- Difficulty in designing “one size fits all” framework, given differences between the service needs of various fleets – may be possible to design “passenger” and “commercial” fleet selection criteria?
- “Bread and butter” sales for locally-manufactured product, entailing negotiated outcome with industry OR high resistance to change
- Some fleets have already implemented green purchasing criteria (e.g. Qld, Tas govt’s) – may be difficult to negotiate rollback of existing schemes for a more do-able scheme agreed to by local manufacturers

CONCLUSIONS

- Likely to be less effective than previous measures, however may be desirable in the absence of an agreement to implement the former

6. INCLUDING FUEL CONSUMPTION DATA IN VEHICLE ADVERTISEMENTS

MARKET FAILURE/S

- Info gap for vehicle buyers due to:
 - Inconsistency in the provision of data (usually absent for poor-performing vehicles)
 - Showroom/windscreen stickers prohibiting a comparison between different makes/models from the same vehicle segment
- Vehicle buying behaviour

MEASURE EFFECTIVENESS & DESIGN

- Code of practice with industry appears most likely approach

- Print media only plausible model
- UK experience indicates that some consideration of the actual outcome is required (e.g. text size as a % of advert size)
- In isolation, likely to be of very limited effect compared to other measures – will still represent an improvement on GVG, which requires buyers to seek out info
- Highly complementary to other demand-side measures that draw on the same information (e.g. differential registration/stamp-duty charging), but only if consistent between measures – relatively low awareness of GVG by private vehicle buyers suggests that this sort of approach would be desirable

CONCLUSIONS

- Highly desirable if designed and implemented in conjunction with other demand-side measures
- Limited effectiveness otherwise suggests that in isolation it should be of lower priority

7. STANDARDS / LABELLING REQUIREMENTS FOR NON-ENGINE COMPONENTS WHICH IMPACT ON FUEL CONSUMPTION

MARKET FAILURE/S

- Info gap for consumers
- Lack of standardised assessment/reporting criteria

MEASURE EFFECTIVENESS & DESIGN

- Potentially significant if potential for significantly higher rate of uptake compared to vehicle fleet turnover taken into consideration
- Significant info gap exists – no way of understanding relative performance of (e.g.) different low friction tyres currently
- Harmonized approach internationally would be preferable, to reduce costs to component suppliers and improve ability for local manufacturers to export
- Selection of which components should be made on the basis of relative benefit – tyres are the most obvious example
- Code of practice could lead regulation (industry self-regulation model preferable)

CONCLUSIONS

- May be a large/easy opportunity – tyres code of practice recommended for further investigation

8. HEAVY VEHICLE ENVIRONMENTAL RATING SCHEME

MARKET FAILURE/S

- Info gap for consumers, particularly small/non-specialist fleet operators
- Lack of standardised assessment/reporting criteria

MEASURE EFFECTIVENESS & DESIGN

- Harmonized approach internationally would be preferable, particularly for a test standard
- Challenge in dealing with laden/unladen performance (in addition to usual drive cycle/service conditions differences)
- Voluntary agreement between Japanese manufacturers of light- and medium-duty trucks may be a relatively easy first step (draws upon info they already supply to the Japanese market) – incorporate into a database analogous to the GVG

CONCLUSIONS

- Light- and medium-duty trucks agreement with Japanese manufacturers may be a relatively easy/significant opportunity

9. ESTABLISH A TECHNOLOGY DEMONSTRATION SCHEME FOR AUSTRALIAN ROAD TRANSPORT FLEETS LINKED TO ACHIEVEMENT OF GREENHOUSE OUTCOMES

MARKET FAILURE/S

- Info gap for fleet operators in application/performance of new technologies
- Risk aversion on behalf of vehicle importers, fleet operators

MEASURE EFFECTIVENESS & DESIGN

- The Commonwealth Alternative Fuels Conversion Program (AFCP) has been demonstrated to be very effective at independently and transparently evaluating new technologies
- Demonstration component of AFCP has been a little less effective, due to the haphazard program reporting

- Complementary measures designed to promote awareness of program outcomes needed

CONCLUSIONS

- Desirable, except better communications plan required than that used for AFCP
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