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Submission re Energy Efficiency and Summary

The Railway Technical Society of Australasia (RTSA) is a technical society of Engineers Australia. It has over 800 members and has made frequent submissions to Government. The RTSA supports the 27 page submission to the present inquiry by Dr Philip Laird of the University of Wollongong with the support of the CRC in Railway Engineering and Technologies. The following is mainly a summary of this 27 page submission.

General comments on energy

The importance of energy and the impact of it's utilisation on sustainable development cannot be over-emphasised. Energy is involved in every aspect of human activity including industry, commerce, domestic requirements and transport.

It is therefore incumbent on Government and Society that we use energy efficiently. Accordingly, investment in research and development that will reduce energy use is supported (eg a new Energy R and D Corporation). The Commission is invited to explore the proposition that Australia should reduce its domestic energy use (ie energy use in Australia excluding that directly involved in producing exports) per capita, and, ways of achieving this.

Reduced domestic energy use would also reduce greenhouse gas emissions. Here it is of interest that Canada has a One-Tonne Challenge which calls on all Canadians to reduce their annual greenhouse gas emissions by one tonne per annum. Australia could consider a similar challenge for all Australian's to reduce their energy use.

It is submitted that more disclosure of timely information on energy use by both government and industry would be in the national interest. One way to achieve this would simply be for government, through legislation, to require disclosure in the relevant annual reports. Put simply, if you are not measuring energy use, or the cost of energy is perceived to be so cheap, then there is little or no incentive for energy conservation.

Transport

'Transport accounts for 41% of Australia's final energy usage, mostly in road transport.' Our energy usage is now 24% above 1990 levels, and by 2010 could be as high as 44%.

As part of the challenge to reduce domestic energy use per capita - including in transport - the RTSA suggests that with the relevant policy levers this would give real incentives to cut waste and improve energy efficiency in moving people and freight.

Questions relating to 'cost-effective energy efficiency improvement in the transport sector' lead not only to questions of (efficient) conversion of energy into effort but also efficient use of energy for a given transport task. Ultimately the conversion of energy and the levels of energy use (as an input for a given transport task) revolve around the pricing inequities between rail infrastructure and road use. For although rail is clearly energy-efficient in the line haul freight task compared with road (about 3 tkm/MJ rail and about 1.2 tkm/MJ for road (where MJ=Megajoule and 1 litre of diesel = 41.77 MJ Full fuel cycle)), pricing mechanisms conspire against rail to perpetuate and encourage overuse of road transport.

Line haul pricing frameworks that ignore the social costs of trauma accidents and costs of pollution end up promoting 'technical efficiency' improvements in the production process (such as higher road mass limits, use of longer road vehicles and support for infrastructure capacity upgrades) rather than addressing the most appropriate mode of transport.

In another submission to the Commission in its inquiry into National Competition Policy, the RTSA (May 2004, page 8) noted estimates of external costs of road and rail freight transport (comprising accidents, air pollution, noise, congestion, greenhouse gases and unrecovered road system costs) as follows in cents per net tonne kilometre.

	Road Cost (Qld Transport (2003) Rail Studies)	Road Cost (ARTC Track Audit)	Rail Cost (Qld Transport (2003) Rail Studies)	Rail Cost (ARTC Track Audit)
Rural	1.673¢	1.123¢	0.094¢	0.04¢
Metro	1.906¢	1.326¢	0.128¢	0.074¢

References:

1. Queensland Transport (2003) Rail Studies, "Land Freight External Costs in Queensland"
2. ARTC Track Audit Appendix A, page 24 data

Australia continues to have the highest road-freight-activity per capita nation in the world. There is scope for appreciable savings in diesel by rail winning more land freight. This

will require more efficient and competitive rail freight operations as well as transport policy reform by Government. In turn, this will require more investment in interstate mainline track linking Melbourne, Sydney and Brisbane with some straightening of existing track as well as consideration of an Inland Route linking Melbourne, Parkes and Brisbane.

In regards to the existing route, the RTSA proposes the construction of 200 km of new track between Campbelltown and Junee in five locations to replace 260 kilometres of old track with 'steam age' alignment to cut freight train transit times down by 1hr 45 min, reduce fuel use per 'standard' freight train by about 1300 litres, and cut other train operating costs along with reducing track maintenance costs. Such an investment would also complement the construction of 121 kilometres of rail deviations at 14 locations between Maitland and Brisbane noted on page 37 of the AusLink White Paper released in June 2004.

The RTSA supports the Draft Proposal of the Commission in its Discussion Draft report on National Competition Policy in regards to freight transport, and particularly that CoAG should drive a reform agenda in this area.

Urban Passenger Transport

The greatest potential for saving liquid fuel in Australia is in moving people in major Greater Metropolitan Regions in a more energy efficient manner. Or, argued cogently by Prof Peter Newman and others (see, for example, the book *Back on Track* cited in the main submission), reducing excessive automobile dependence. This will require better urban public transport (upgraded existing infrastructure with some new tracks and as well as improved service delivery well in some cities (particularly Sydney)) along with improved road pricing.

In relation to urban transport, market failures are also evident. Although, on average, public transport is nearly two times more energy-efficient than private transport (rail 0.65, buses 0.71 and cars 0.36 passenger-km/MJ), public transport is disadvantaged compared with private transport by a range of taxation measures (fringe benefits tax), expenditure and other policies that encourage private use. Although engine technologies continue to deliver marginal improvements in vehicle energy efficiency, these are offset by increased use of larger private vehicles (including sports utility vehicles) through market failure.

At the same time 'economies of density', in which public transport networks are 'connected up' through effective interchanging and use of real time information systems,

remain undiscovered. Intensification of public transport services (and land use planning) allied with demand management policies offer the prospect (initially) of much higher levels of energy efficiency use than looking at conversion technologies.

Clearly these market failures create high economic, social and environmental costs. The Bureau of Transport and Regional Economics (BTRE) in a 2003 paper *The economic consequences of the health effects of transport emissions in Australian capital cities* gave mid-range estimates of the health related costs of air pollution from motor vehicles in Australia's capital cities. The mid-range estimate, for the year 2000, was \$3.3 billion. The BTRE effectively attributes air pollution costs to PM10 (particulate matter of size less than 10 microns) levels. In a further 2003 BTRE paper (*Urban pollutant emissions from motor vehicles: Australian trends to 2020*) estimates are given of both PM10 emissions in Australia's capital cities and the kilometres driven for various types of motor vehicles. Analysis of this data shows, in part, that the average health cost of air pollution from operations of cars (and other small passenger vehicles) in Australia's capital cities is 1.8 cents per vehicle kilometre. To recover this cost through fuel taxes would require, assuming an average fuel use of 11.4 litres per 100 km, a fuel levy of about 16 cents per litre.

The RTSA supports the Draft Proposal of the Commission in its Discussion Draft report on National Competition Policy in regards to Passenger Transport, and particularly that CoAG should drive a reform agenda.

Other comment

Various Non-Governmental organisations in Australia have expressed some concern about transport policy. By way of example, the Chartered Institute of Transport in Australia found it necessary to issue a sternly worded statement at its 1998 National Symposium regarding the oil situation: *"Our greatest ever source of cheap energy may soon contract and the 'Petroleum Age' in which we live now can be seen to be approaching an eventual end. ...The Symposium heard that a clear consensus is emerging that cheap oil production outside the Middle East will begin permanent decline around the year 2000, to be followed by permanent world decline within 15 years. ... 'More of the same' in our current transport plans and ways of thinking is no longer tenable. ..."*

With recent international events and oil prices, this warning is now more relevant.

Also, as found by the Institution of Engineers, Australia (1999) we have major problems in major cities, and, there is a need to respond to the challenges. In part:

A Taxation and fiscal policy instruments should encourage sustainable transport. At present, these measures encourage car and truck use.

B There is a strong case for increased investment in transport infrastructure that is more sustainable and uses less energy. Where market forces fail, government should intervene.

A ten point transport pricing plan

The BTRE has more than once examined reducing energy use and greenhouse gas emissions from transport, including in 2002 with *Greenhouse policy options for transport - Australian trends to 2020*. Here, optimal road pricing was held to offer the best way forward.

This view was shared by the Parry Inquiry (NSW Ministry for Transport, 2003) that noted, inter alia (p72) *"The thinking underlying the support for road use pricing is that road access is currently 'too cheap' (as distinct from the general cost of motor vehicle use), as motorists are not directly bearing all of the costs associated with their decision to make a journey. For example, driving a vehicle is associated with costs such as congestion, road wear and tear, pollution and accidents."*

Optimal road pricing and other measures could well include:

1. Instigate road user charges (initially reinstatement of tolls and removal of toll rebates).
2. Remove the Queensland Fuel Subsidy Scheme.
3. Impose congestion charges for the CBD of Sydney and Melbourne (starting with say \$5 for a road vehicle to enter the Sydney CBD during weekdays).
4. Restore fuel excise indexation.
5. Ensure that the third determination of heavy vehicle road user charges (by the National Transport Commission) recovers the full road system costs from heavy vehicles.
6. Increase annual registration fees for heavier four-wheel drive vehicles.
7. Support previous recommendations into inquiries into road pricing and urban transport.
8. Increase rail fares with proceeds going to a better rail system.
9. Improve land transport data, and raise the level of public debate re transport pricing.
10. Ensure that airports and seaport are not in receipt of hidden subsidies.