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A plan to reduce road transport greenhouse emissions by 2030

In 2022 Australia legislated a greenhouse gas emission goal of 43 per cent below 2005 levels by 2030 – only six years away! It is improbable that the Federal Government will exclude road transport from its plans to reach this goal. Substantial voluntary greenhouse gas reduction would benefit the sector by helping to reduce operating costs and make it less vulnerable to government policy changes that are likely to force substantial reductions anyway. It is always better to plan for change than to complain about it when it hits!

The road freight transport sector uses about 85 per cent of Australia's diesel fuel. That is because diesel is the most perfect fuel for trucks, except for its greenhouse gas emissions. The predicted greenhouse gas emissions trajectory of four classifications of vehicles is shown in Figure 1.

The projections show growth in fuel usage for articulated trucks and rigid trucks over the next six years. As the median age of the heavy vehicle motor fleet continues to increase, there is no prospect that alternative fuel technologies becoming available for new motor trucks will make any significant difference to the total use of diesel fuel by heavy vehicles in the next six years. Therefore, changing the trajectories in Figure 1 requires us to focus on how to reduce fuel usage by in-service heavy vehicles.

Articulated trucks carry the most freight, travel the longest distances, have the highest fuel usage per truck type yet make up the smallest proportion of motor truck vehicles. The effort to improve fuel economy in the road freight transport sector should focus on articulated freight vehicles because they use the most diesel fuel and there are fewer of them compared to rigid freight trucks.

Here is my six-point plan to promote substantial reductions in greenhouse gas emissions by the road freight sector:

1. Promote Fuel Efficiency – Introduce a new National HV Accreditation Scheme (NHVAS) module called Fuel Efficiency. This module should be based upon the 'operator module' in the USA EPA's Smartway scheme, which is described in Figure 2. Operators can achieve a ranking from Level 5 to Level 1 (best) based upon proven tonne-kilometre fuel economy, and low gaseous emission performance. The purposes would be to promote good practice by Australian operators that reduces costs, provide a reliable ranking that will advantage operators in the marketplace, and identify to the community tangible action by the road transport sector to reduce emissions. Government policies could also favour achievers in the NHVAS Fuel Efficiency Module. It is beyond industry associations to establish an Australian 'smartway', although they could help, and the best place for it, in my opinion, is within the NHVAS.

2. Ensure Trailers Run Full – A national freight scheduling marketplace is needed that facilitates freight sharing between operators to help fill trailers both ways. While freight marketplaces currently exist, none are focused on increasing utilisation of freight vehicles. There are no public statistics I know of that estimate vehicle freight space utilisation. Such information could come from the NHVAS Fuel Efficiency module mentioned previously. A freight scheduling marketplace could be a useful partner program to the NHVAS Fuel Efficiency module.

3. Fix the Electric Trailer Problem - Federal and State/Territory governments should urgently sort out how to allow electric drive axles to be legally used on heavy trailers. Under current rules, trailers cannot have driven axles. A new ADR (design rule) will probably be needed, and a new registration category will also be needed. An electric drive axle and battery on each semi-trailer could produce a 'hybrid' semi-trailer combination that could improve the fuel economy of the prime mover by 25 per cent, by reducing low-range gear use. Drive axle kits could be retrofitted. The control system could utilise existing CAN bus braking signals. Batteries could be charged by retardation-energy, solar panel installations at depots (and on trailers), battery swaps at half-way sites and at electric chargers. Further, an electric trailer could improve safety by providing more balanced tractive effort and non-brake retardation.

4. Incentivise Electric-Drive Trailer Use - Governments should incentivise the Australian trailer industry to develop electric trailer options. Australia has a substantial trailer manufacturing industry and has more heavy trailers per prime mover than any other country. We are well placed to develop electric trailer technology locally. And become world leaders. Incentives will probably also be needed for operators to uptake electric trailers because of additional weight and cost.

5. Normalise High Productivity Vehicle Use – The Performance-Based Standards Scheme (PBS) has spurred the uptake of high-productivity freight vehicles. It has given confidence to road agencies and transport ministers that new configurations can be safely used. In the first stage, a path for approval of 4-, 5- and 6-axle tipping dog trailers was created. In the current stage a path for approval of A-doubles and super B-doubles to operate on Level 2B routes has been achieved, as has a path for 20-metre super semi-trailers on Level 1 routes. The next stage should be normalisation of these vehicle types in regulations, so they can travel under notice if they meet a specification..

6. Introduce a Master Driver Accreditation – There should be a master driver accreditation to provide a career path for truck drivers, and to promote and recognise excellent driving performance over several years of driving experience. The truck driver can make a 5-10 per cent improvement in fuel economy. Fuel-efficient driving performance should be one element of this accreditation. Such an accreditation should be developed by an industry association that is focused on individual membership in the road transport sector.

The challenge is substantial, and action is needed now. The road transport sector could realistically save $1.5B per annum in 2030.

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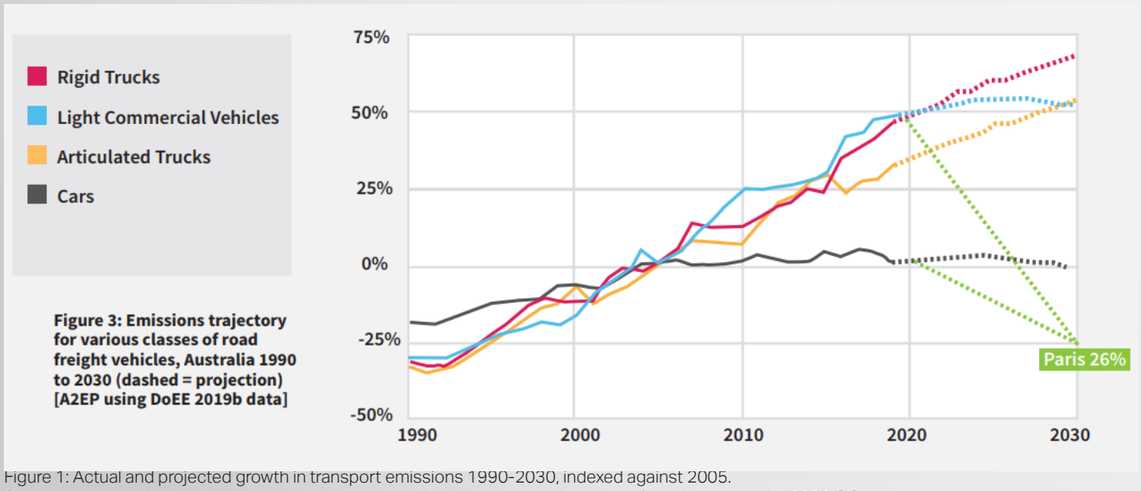

Figure 3: Emissions trajectory for various classes of road freight vehicles, Australia 1990 to 2030 (dashed = projection) [A2EP using DoEE 2019b data]

Figure 1: Actual and projected growth in transport emissions 1990-2030, indexed against 2005.
Source: Australian Energy Alliance - A roadmap to accelerate energy productivity in freight transport by 2030, [1].

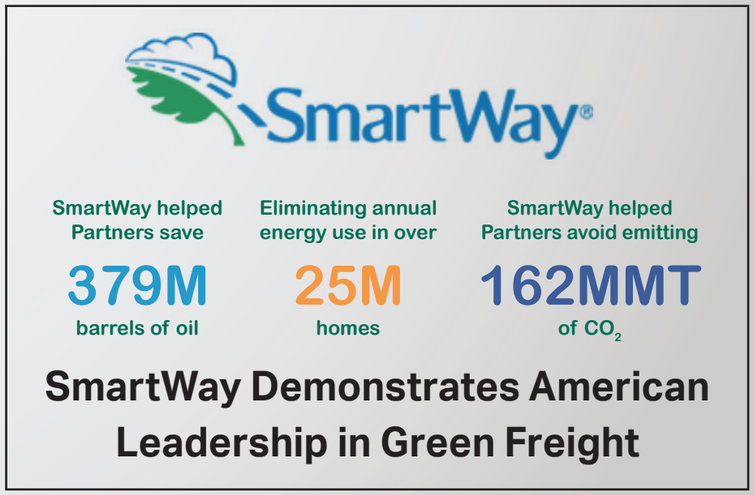

Figure 2: Description of the benefits for Smartway operators. [2]: https://www.epa.gov/smartway.