Submission No 35

INQUIRY INTO HEAVY VEHICLE SAFETY AND USE OF TECHNOLOGY TO IMPROVE ROAD SAFETY

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TRUCK INDUSTRY COUNCIL
SAFER GREENER ESSENTIAL

Inquiry into heavy vehicle safety and use of technology to improve road safety

Joint Standing Committee on Road Safety (Staysafe)
NSW Parliament
February 2018

MODERNISING THE NEW SOUTH WALES TRUCK FLEET

1. The Truck Industry Council.

The Truck Industry Council is an independent, not-for-profit peak industry organisation representing the united views of truck manufacturers, truck importers, heavy vehicle engine companies and major component suppliers to the Federal Government, State and Territory Governments, Local Government, Industry and Business associations and the general public.

Membership of TIC is inclusive of all truck manufacturers and importers/distributors in Australia and currently consists of:

- 9 truck manufacturers/distributors representing 17 brands
- 4 engine and component suppliers.

TIC members are responsible for locally manufacturing or importing and distributing more than 32,000 trucks sold each year. In 2017, TIC members supplied to market over ninety-nine (99) per cent of all new on-highway trucks above 4.5 tonne Gross Vehicle Mass (GVM) sold in Australia. In 2018, the truck industry is designing, engineering, testing, developing, and manufacturing trucks at three major locations in Australia. The companies involved, and their locations, are:

  - VOLVO GROUP AUSTRALIA, manufacturing Volvo and Mack brand trucks at Wacol, Queensland;
  - PACCAR AUSTRALIA, manufacturing Kenworth trucks at Bayswater, Victoria;
  - IVECO TRUCKS AUSTRALIA, manufacturing IVECO trucks at Dandenong, Victoria.

These three plants meet the specific requirements of Australian operators who work in conditions unique to anywhere else in the world and with truck importers ensure the efficient transportation of the nation's growing freight task. The three plants combined produce about 50% of all heavy duty trucks sold in Australia.[1]

2. Submission Aim.

The primary aim of this submission is to advocate to the New South Wales (NSW) Government:

- Australia (and New South Wales) has an old truck fleet which is not as safe as it could be given the advent of today's modern truck safety technologies; and
- The virtues of modernising the State's old truck fleet by means of accelerating and promoting the adoption and take up of the more advanced contemporary safety technologies found in today's trucks.

This submission acknowledges the New South Wales Government's strategic objectives for road safety and identifies initiatives the Government can pursue to deliver on the objective of reducing heavy vehicle fatalities through the take up of safer vehicle technologies.

[1] Source: TIC T-Mark Truck Market historical sales data for full calendar year 2016 above 16 tonne GVM.

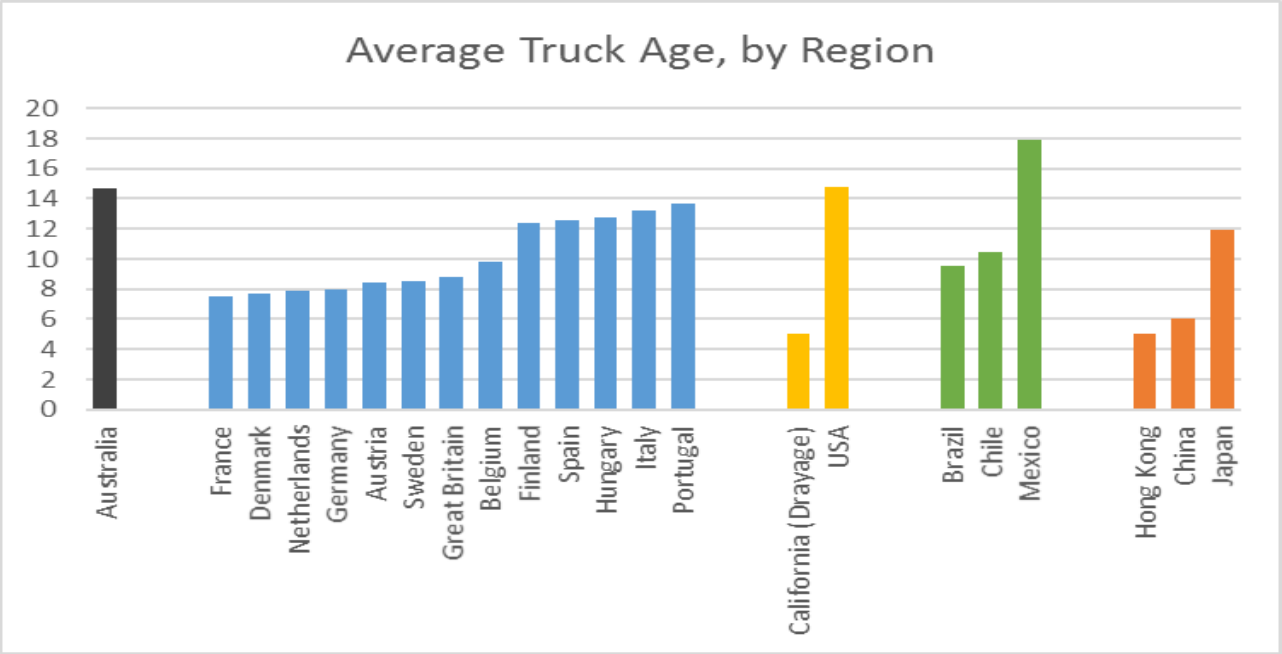
3. A Contributing Factor: Australia (including NSW) has an old truck fleet.

Australia, including NSW, has an old truck fleet.

The average age of the Australian Truck Fleet in 2017 was:

- 14.9 years average age (vehicles above 4.5t GVM – ABS Motor Vehicle Census Jan 2017).

Graph 1 compares the average age of Australia with other regions and countries in the world:



Graph 1
Source: Appendix A; Mov3ment Pty Ltd

The average age of trucks in Australia is approximately twice that key European countries and almost three times the age of the truck fleets in Hong Kong, China and the State of California in the USA. As will be explained later in this submission, the age of the truck fleet is crucial to the "take-up" of new safety and environmental technologies in heavy vehicles.

The average age of the NSW Truck Fleet in 2017 was:

- 14.0 years average age (vehicles above 4.5t GVM – ABS Motor Vehicle Census Jan 2017).

This is slightly younger than the national average, but not substantially different.

NSW supports a large amount of heavy vehicle "through" traffic being the centre state of the three east coast jurisdictions on Australia's busiest road freight corridor. As such it is worth reviewing the truck fleet age of vehicles likely to be using NSW roads.

The average age of the Truck Fleet in the States and Territories adjoining NSW in 2017 was:

- VIC 15.6 years average age (vehicles above 4.5t GVM – ABS Motor Vehicle Census Jan 2017).

- QLD 13.8 years average age (vehicles above 4.5t GVM – ABS Motor Vehicle Census Jan 2017).
- ACT 11.2 years average age (vehicles above 4.5t GVM – ABS Motor Vehicle Census Jan 2017).

The fleet age in Queensland is marginally younger than the NSW age but essentially in-line, while the Australian Capital Territory result is substantially younger than the national average and a pleasing result. Of concern though is the age of trucks in Victoria, higher than both the NSW and Australian averages.

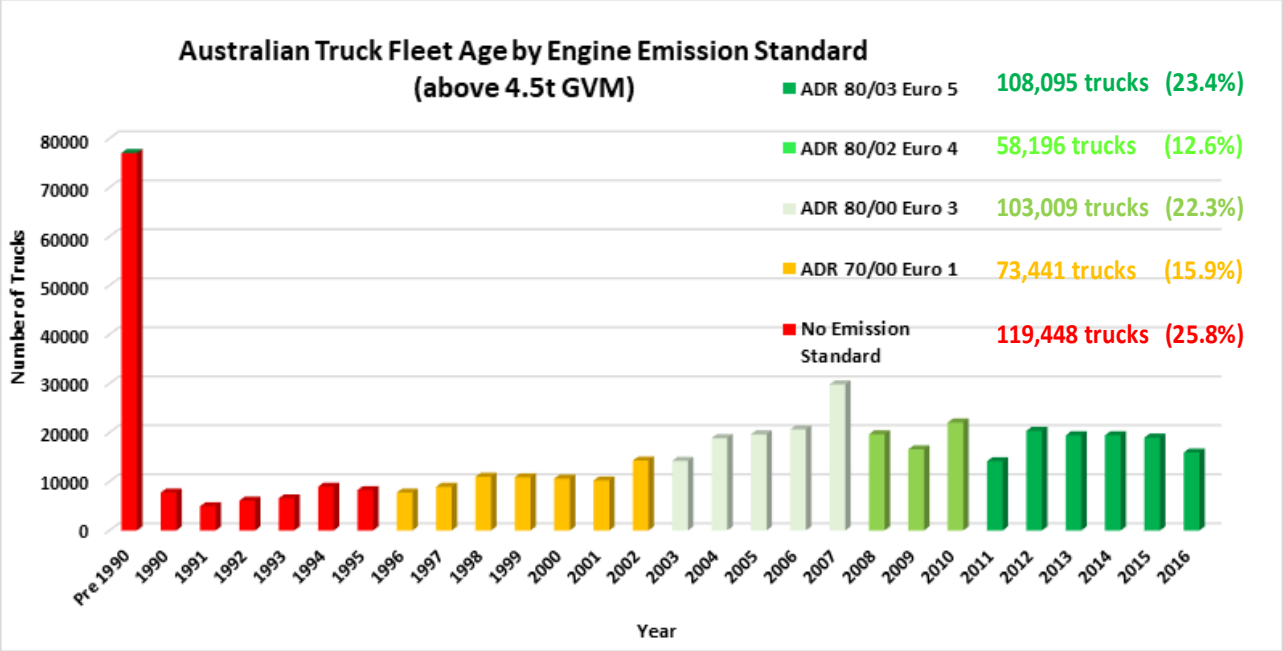
These results combined with the amount of "through" traffic that NSW roads support highlight why the national truck fleet age must be of concern to the NSW government.

As a useful measure TIC analyses the Australian truck fleet based on the engine exhaust emission standard of the truck, with the following Australian Design Rules (ADR) used as benchmarks:

- Pre-ADR70 (no emission standard), these are pre-1996 trucks
- ADR 70 (Euro 1 and equivalents), 1996 to pre-2003 trucks
- ADR 80/00 (Euro 3 and equivalents), 2003 to pre-2008 trucks
- ADR 80/02 (Euro 4 and equivalents), 2008 to pre-2011 trucks
- ADR 80/03 (Euro 5 and equivalents), 2011 to current trucks
- Beyond ADR 80/03 (Euro 6 and equivalents), many TIC members are voluntarily selling trucks in the Australian market that exceed the current ADR emission standards.

This method of analysis has proven beneficial because it has allowed TIC to calculate the cost associated with public health outcomes caused by the poor emission performance of older trucks, in line with world's best practice. These emission break points are also typically associated with other major vehicle changes/upgrades, such as the introduction of new safety systems and technologies. Reviewing Australia's truck fleet in this manner shows that almost forty-two percent (41.7%) of the nation's truck fleet above 4.5t GVM was manufactured before 2003 when basic, or no, exhaust emission regulation existed. This figure consists of 119,448 pre-1996 trucks (no emission standards) representing 25.8% and 73,441 trucks, or 15.9% being trucks manufactured between 1996 to pre-2003 (elementary emission control systems employed). These trucks are 12 month fully registered vehicles operating on our roads many in urban operations, not seasonal farm trucks and the like. In this regard Australia, including NSW, compares unfavourably with the rest of the world in terms of fleet age. The above is visually represented in Graph 2 and while the numbers are national averages, they will not differ appreciatively for NSW due to the very similar truck fleet ages (NSW vs Australia).

The New South Wales Government's objective of reducing fatal and serious injury crashes within its jurisdiction is in part not being achieved given the inherent problem associated with an old NSW and Australian truck fleet. An older truck fleet means that technology advances found in more modern trucks such as safety and intelligent transport systems are not being introduced into the Australian market in a timely manner. The result of which is the New South Wales Government's inability to meet its own objectives in terms of road safety. By way of examples, the protracted take-up rates of advanced truck safety technologies will be detailed in the "Safer Trucks" section of this submission.



Graph 2
Source: ABS, Sept 2017

That is not to say that an older truck is unsafe, a properly maintained truck is safe, however the point needs to be made that Australian trucks are not as safe, (nor environmentally friendly, or as productive) as they could be when compared to a more modern truck. The adoption rate of these more advanced trucks with their significantly improved safety features in Australia is poor and thus the old, less safe, truck fleet.

4. Safer Trucks

Monash University Accident Research Centre (MUARC) suggests the need for a "safe systems" approach in order to stem road trauma. This systems approach comprises:

- Improved road safety management;
- Safer roads;
- Safer road users;
- Improved post-crash response systems; and
- Safer vehicles.

The Truck Industry Council (TIC) has a role to play in the fifth component to this system, that of "safer vehicles".

Australia, as stated above, has an old truck fleet and by default the question can be posed, "Does Australia have the safest truck fleet possible?"

The answer is simply "no", our nation's truck fleet could be safer and the safety of trucks remains a major concern for the public and government authorities.

Truck safety can be broadly categorised into four main areas:

1. Safety systems, technologies and vehicle types/combinations that prevent, or reduce the likely incidence of crashes;
2. Safety systems or technologies that lessen the severity of a crash for some, or all, of the persons involved;
3. Safety systems or technologies that prevent, or reduce the likely effects of driver fatigue and/or distraction (and hence prevent, or reduce the likely incidence of crashes);
4. Heavy vehicle roadworthiness (ensuring that a truck is maintained in a condition as recommended by the original equipment manufacturer, such that all systems operate as intended).

The age of the Australian truck fleet impacts on all of the above four categories and when these four safety conditions are measured against the age of a truck one can gain a clearer picture of the safety performance of the Australian heavy vehicle fleet.

1. Safety systems, technologies and vehicle types/combinations that prevent, or reduce the likely incidence of crashes:

   Anti-Lock Brake Systems (ABS) was the most recent safety system introduced by government in Australia, with the mandating of ADR35/05 from 1st November 2016. The ADR35/05 RIS estimated that 57 lives per year could be saved with the fitment of ABS. ABS was offered by truck manufactures as standard fitment across most models from 2008 onward, some 8 years before it was as mandated requirement. Due to the early, voluntary, adoption of ABS by TIC members it is estimated that 95 percent of the Australian truck fleet will have ABS fitted before 2035, based on current take-up rates/fleet age. This is a considerably better outcome than if ABS had only been introduced when mandated by the ADR. In this situation a 95 percent fitment rate would have been achieved by approximately 2045. This case demonstrates the importance of early, voluntary, adoption of new safety technologies.

   The voluntary adoption of new technologies is very much dependant on the availability of the technology, the cost to bring the technology to market and any negative impacts that technology may have, such as adding weight to the truck that in turn reduces the vehicles effective payload and profitability for its owner/operator. In the case of ABS detailed above, the technology was available having been introduced by truck manufactures in other international markets, in some cases decades earlier, the cost-up was not significant (only a few hundred dollars) and the weight increase was negligible, only a few kilograms. Hence the voluntary adoption of ABS was viable. On the other hand FUPS, detailed in Point 2 below, added over 100kg to the front axle of a truck (which was already on the maximum statutory weight limit) and the cost was typically over $1000 per truck. It took front axle mass concessions from the States and Territories and the mandating of FUPS under ADR84/00 before significant fitment was realised. In the case of many new and emerging technologies, including all four detailed in Point 3 below, the technology is integrated only into new Euro 6 and equivalent model trucks in overseas markets. Australia is a taker of advanced truck technologies with new truck sales in this country accounting for just one percent of global new truck sales; we pick-up technologies developed for larger markets, primarily Europe, Japan and the USA. These markets moved to Euro 6 and equivalent emission technologies up to 10 years ago and have developed advanced safety technologies only to suit their Euro 6 and equivalent trucks. The Australia government is still debating the uptake of Euro 6 and equivalent emission systems. This debate and the continued delay

by government to mandate ADR80/04 (Euro 6 and equivalents) is stalling the voluntary adoption of many advanced safety systems and features that cannot be adopted to our aging ADR80/03 (Euro 5 and equivalent) model trucks. Australia must adopt ADR80/04 sooner, not later, if it is to realise the full potential of the advanced safety features that have been developed for other international markets.

Research by the National Transport Commission (NTC) into more efficient Performance Based Standards (PBS) heavy vehicle combinations has shown that such combinations have significant safety benefits. The NTC's report, "*Assessing the effectiveness of the PBS (Performance Based Standards) for safer vehicles, August 2017*" details an 86% reduction in crashes for PBS vehicles for the same distance travelled when compared to conventional "prescriptive" heavy vehicle combinations. However, despite the significantly improved safety performance of PBS vehicles, their uptake continues to be stifled by State based road access restrictions.

Similarly, accident statistics show that the safety performance of B-double combinations per tonne of freight moved is significantly better than semi-trailer combinations. However, NSW-RMS data shows that approximately 50 percent of all freight movements of articulated vehicles on the Hume highway through Marulan are completed by semi-trailers. Moving freight from semi-trailer combinations to B-double combinations is a logical step in reducing road fatalities and injuries.

2. Safety systems or technologies that lessen the severity of a crash:

The most recent safety system designed to lessen the severity of a crash between a truck and a light vehicle was the introduction of ADR84/00 Front Underrun Protection System (FUPS) by the Australian government, from 1st January 2012. A FUPS prevents/reduces the likelihood of the occupants of a light vehicle becoming trapped underneath a truck and will ensure that the safety features of the car are correctly deployed in the event of a truck/light vehicle crash. The ADR84/00 RIS estimated that in 2017, eleven lives per year could be saved with the fitment of FUPS, if the entire truck fleet above 12t GVM were fitted with FUPS. TIC estimates that due to the current take-up rates/fleet age, just over 20 percent of the Australian truck fleet was fitted with FUPS in 2017, a saving of only 2-3 lives. In fact, TIC estimates that a 95 percent fitment rate of FUPS will not be achieved before 2039 based on current take-up rates/fleet age. This is a less than optimal safety outcome.

3. Safety systems or technologies that prevent, or reduce the likely effects of driver fatigue and/or distraction:

Truck manufacturers are committed to building safer trucks making road travel safer for all users. Advanced technologies are now available to assist truck drivers. For example, Lane Departure Warning Systems (LDWS) warn a driver when a truck is drifting out of its chosen lane. Autonomous Emergency Braking Systems (AEBS) automatically apply a truck's brake systems to prevent, or at least significantly reduce, rear-end collisions. Electronic Stability Control (ESC) systems reduce the possibility of skidding, jack-knifing, or roll-over of a truck. Whilst emerging technologies such as driver Fatigue Warning Systems (FWS) monitor the driver and alert him/her when the onset of fatigue, or distraction, is detected. In the Monash University Accident Research Centre (MUARC) Report No. 324, September 2014 "*Potential Safety Benefits of Emerging Crash Avoidance*

Technologies in Australasian Heavy Vehicles" it was estimated that 104 lives could be saved per annum if the above four advanced safety features were implemented.

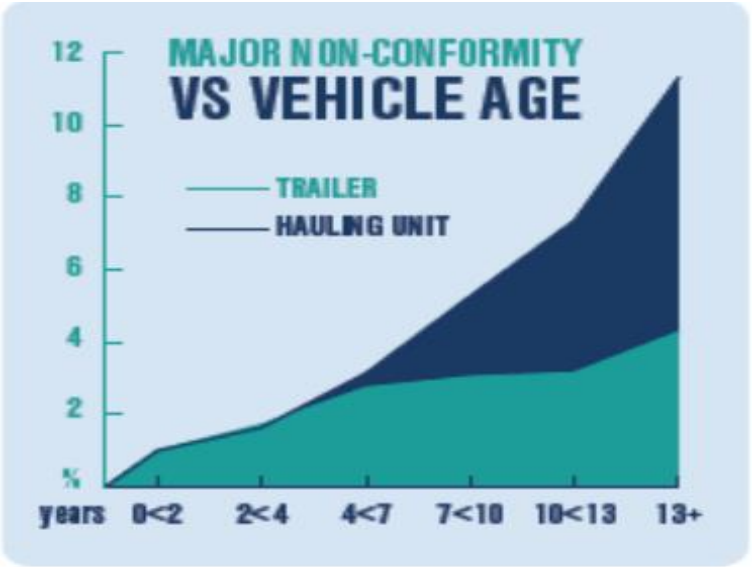
• Autonomous Emergency Braking Systems (AEBS):	67 lives saved
• Lane Departure Warning Systems (LDWS):	16 lives saved
• Electronic Stability Control (ESC):	11 lives saved
• Fatigue Warning Systems (FWS):	10 lives saved
TOTAL	104 lives saved

TIC's own analysis shows close correlation with the total number of lives that could be saved nationally if these advanced safety systems were implemented. While ESC is currently progressing as an ADR draft (35/06) that should see ESC mandated on Prime Movers by 2021, the other systems have no implementation plan or timing. Noting though, that both AEBS and LDWS are on the Department of Infrastructure and Regional Development's Future Work Program. However, if the Electronic Stability Control draft ADR and RIS process timeline was applied to AEBS and LDWS implementation then these safety features would have a potential enforcement date of 2024/25. In TIC's view this is two years too long, the delay being due to the current RIS justification process, that is far too onerous due to Federal processes. The States and Territories need to pressure the Federal Government to simplify the RIS process for safety related vehicle regulations, in particular allowing overseas accident data and analysis to be used for the Australian RIS justification process. A target timeline for a completed ADR and RIS, for at least AEBS, should be 12 months (and not the 3 years that ADR35/06 and RIS for Electronic Stability Control took).

Even more sobering is the potential timeline for the take up rate of these technologies in the Australian truck fleet. With current take-up rates/fleet age applied, it would take until 2049 for 95 percent of the fleet to be fitted with ESC and the year 2052 for 95 percent of the fleet to be fitted with AEBS and LDWS (assuming an ADR enforcement date of 2024). Fatigue Warning Systems (FWS) is not even under consideration at present. In simple terms the 94 lives saved per year (10 lives saved by FWS not considered/counted) would not be realised until sometime beyond 2052, with only incremental benefits being achieved until then.

4. Heavy vehicle roadworthiness:

The National Heavy Vehicle Regulator's (NHVR) has been tasked with improving the roadworthiness of the heavy vehicle fleet and enforce consistency, although it does not have authority in either Western Australia or Northern Territory. From August through to November 2016, the NHVR coordinated the first ever roadworthiness check of the Australian heavy vehicle fleet, with the exception of Western Australia. The results of non-conformance (defects) to the Heavy Vehicle Inspection Manual were recorded for several thousand heavy vehicles. Graph 3, following, details major defects in the trucks (hauling units) and heavy trailers surveyed.



Graph 3

Relative rate of major non-conformity by vehicle age. **Source: NHVR NRBS overview fact sheet 2, May 2017**

The NHVR's survey data conclusively shows that truck roadworthiness non-conformance (defects) typically rise exponentially according to the age of the vehicle, this rise becomes quite significant beyond 5-6 years of age (pre-2012/13 trucks). To put this into perspective, pre-2012/13 trucks account for all trucks prior to the current ADR 80/03 (Euro 5 and equivalents) emission standard, this is 80 percent of the current truck fleet that fall into the high defect rate category, due to the age profile of the Australian fleet. This is a significant issue, one that could be largely addressed by renewing Australia's truck fleet. The impact on heavy vehicle accident rates and potential lives saved due to improved heavy vehicle roadworthiness has not been evaluated as part of this submission. This remains an area of continued study by the States, Territories and the NHVR.

5. Policy Options.

As can be clearly seen from the proceeding information, the truck fleet age is a significant contributing factor in the take-up rate of advanced safety features across the Australian heavy vehicle park. Policy options to modernise the nation's truck fleet require the New South Wales Government to take actions within its own jurisdiction and just as importantly encourage the Federal Government to develop policy that will result in a more modern and safer truck fleet for New South Wales and importantly, adjoining States.

<u>New South Wales Government Policy Options</u>

- The New South Wales Government to work within COAG towards providing vehicle rebates and reduce uniformly federal and state taxes (registration charges and stamp duty) for new ADR 80/03 and later; alternatively powered and fuelled trucks; and trucks possessing modern safety technologies.

- The New South Wales Government to work within COAG towards implementing measures to offset the operator mass losses of a new truck (higher TARE weight due to mandated and safety and emission devices fitted to new trucks) by allowing higher axle masses for new ADR 80/03 and later; alternatively powered and fuelled trucks; and trucks possessing modern safety technologies.

- COAG to work towards a determination where the Road User Charge for operators is based upon a Mass, Distance, Location charge for the vehicle/freight movement combined with an Environmental and Safety levy for the truck. As an interim measure, the New South Wales Government could consider emission and/or safety zones in key geographical regions, or on key road transport routes that would see older, less safe, trucks banned from operation, or charged a financial premium to access such roads. In turn encouraging truck operators to update into more modern, safer and environmentally friendly trucks.

- The New South Wales Government to work within COAG to review current Australian heavy vehicle mass and dimensional regulations and adding these regulations to the National Road Safety Strategy 2011–2020 (and subsequent strategy) aligning same with international standards.

- The New South Wales Government to work within COAG to remove regulatory barriers preventing the uptake of Higher Productivity Vehicles, for example, B-triple, A-double and PBS in combination with the uptake of specific vehicle advanced safety features.

- The New South Wales Government to work within COAG to implement methods to incentivise the transition from semi-trailer to B-double combinations, for example, reduced registration charges for B-double vehicles with advanced safety features.

- The New South Wales Government to work within COAG for the timely implementation of ADR80/04 (Euro 6 and equivalents), allowing for the voluntary uptake of advanced safety features beyond those mandated by the ADR's.

- The New South Wales Government to work within COAG for the timely implementation of an ADR for heavy vehicle Autonomous Emergency Braking Systems, in line with the current UN-ECE regulation and pending USA-FMVSS regulation.

<u>Federal Government Policy Options</u>

- Accelerate the introduction of safer (and greener, cleaner) technologies by encouraging the purchase of new trucks through the provision of:

  (1) A thirty (30) per cent investment allowance that offsets the costs associated with the purchase of a new ADR 80/03 diesel only truck and a fifty (50) per cent investment allowance that offsets the costs associated with the purchase of a new ADR80/04, alternatively fuelled or powered truck for pre-ADR 70/00 (pre-1996) truck owners or;

  (2) A fifteen (15) per cent investment allowance that offsets the costs associated with the purchase of a new ADR 80/03 diesel only truck and a twenty-five (25) per cent investment allowance that offsets the costs associated with the purchase of a new ADR80/04, alternatively fuelled or powered truck for ADR 70/00 to ADR 80/00 (Euro 3, pre-2008) truck owners.

  (3) Acknowledging that some operators will not be in a position to purchase a new vehicle, the federal government could consider providing a fifteen (15) per cent investment allowance towards the purchase of used ADR 80/02 and ADR 80/03 emissions-controlled trucks.

9. Conclusion.

The choice is not whether Australia uses trucks, they are essential to our standard of living, the choice for the Australian people is whether we have the most modern, safest, fleet possible. The implications are profound: Australians can have safer trucks on the road or we can continue with an old Australian truck fleet.

Obtaining the support of the New South Wales Government in promoting a more modern truck fleet by means of incentives (financial and operational) for operators to upgrade their fleets will speed up the introduction of safety technologies and the road safety related benefits that would accrue from a more modern Australian truck fleet.

Australians want to be sure that trucks on the road today comprise a modern truck fleet. Settling for less would be to agree that it was acceptable to go to a hospital and receive treatment from 15 year and older medical technology.

We wouldn't settle for that and nor should we accept an old Australian truck fleet.

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Appendix A. Average Age of Heavy Vehicles above 4.5t GVM

Country			Data Source/Comments
	2014	2015	
Germany	**6.7 (Includes LCV's, <3.5t GVM)**	N/A	ACEA Vehicles in Use 2009-2014. Published 2016
Austria	**7.05 (Includes LCV's, <3.5t GVM)**	N/A	ACEA Vehicles in Use 2009-2014. Published 2016
Sweden	**7.07 (>3.5t GVM)**	N/A	ACEA Vehicles in Use 2009-2014. Published 2016
France	**7.3 (>3.5t GVM)**	N/A	IHS Automotive
Netherlands	**7.4 (>3.5t GVM)**	N/A	ACEA Vehicles in Use 2009-2014. Published 2016
Denmark	**7.5 (>3.5t GVM)**	N/A	ACEA Vehicles in Use 2009-2014. Published 2016
Great Britain	**7.6 (>3.5t GVM)**	N/A	ACEA Vehicles in Use 2009-2014. Published 2016
South Africa	N/A	9.8 (Includes LCV's, <3.5t GVM)** **8.9 (>3.5t GVM)****	NAAMSA January 2017 2016 December data
Belgium	**9.4 (>3.5t GVM)**	N/A	ACEA Vehicles in Use 2009-2014. Published 2016
Japan	**11.8 (>3.5t GVM)**	**11.9 (>3.5t GVM)**	JAMA January 2017
Hungary	**12.6 (>3.5t GVM)**	N/A	ACEA Vehicles in Use 2009-2014. Published 2016
Spain	**12.8 (>3.5t GVM)**	N/A	ACEA Vehicles in Use 2009-2014. Published 2016
Finland	**13.7 (>3.5t GVM)**	N/A	ACEA Vehicles in Use 2009-2014. Published 2016
Turkey	**13.7 (>3.5t GVM)**	N/A	ACEA Vehicles in Use 2009-2014. Published 2016
Australia	**13.8 (>3.5t GVM)** 14.7 (>4.5t GVM)	**13.9 (>3.5t GVM)** **14.8 (>4.5t GVM)**	Australian Bureau of Statistics
USA	N/A	**14.8 (>6.35t GVM)** 11.4 (2.72t to 6.35t GVM)	IHS Automotive/As at 30th June 2015
Italy	**14.6 (>3.5t GVM)**	N/A	ACEA Vehicles in Use 2009-2014. Published 2016
Portugal	**14.7 (>3.5t GVM)**	N/A	ACEA Vehicles in Use 2009-2014. Published 2016
Estonia	**17.1 (>3.5t GVM)**	N/A	ACEA Vehicles in Use 2009-2014. Published 2016
Poland	**20.7 (>3.5t GVM)**	N/A	ACEA Vehicles in Use 2009-2014. Published 2016