



17th March, 2017

The Emission Working Group
Department of Infrastructure and Regional Development
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Subject: TIC submission to the Australian Government's Draft RIS for Vehicle Emission Standards for Cleaner Air, released 20th December 2016

The Truck Industry Council (TIC) is the peak industry body representing manufacturers and distributors of heavy commercial vehicles (that is, with Gross Vehicle Mass above 3,500 kg) or “trucks” in Australia. TIC members are responsible for producing or importing and distributing 17 brands of truck for the Australian market, totalling more than 32,000 units sold each year. In 2016 TIC members supplied to market over ninety eight (98) percent of all new on-highway trucks above 4.5 tonne Gross Vehicle Mass (GVM) sold in Australia.

Further, TIC also comprises of two dedicated engine manufacture members and one dedicated driveline manufacture member who supply major engine and driveline systems for both on highway and off highway “truck” applications.

In this submission TIC will respond only to issues that relate to road transport vehicles and specifically heavy road transport vehicles (that is, with GVM above 3,500 kg and in particular those with a GVM over 4.5t). TIC has specifically not made comment with regard to Light Vehicle emissions, however some parallels and comparisons have been drawn between Heavy and Light Vehicle emissions in this submission.

Executive Summary:

TIC is fully supportive of a government regulated move to Euro VI for Heavy Vehicles in Australia providing that:

1. There is a practical and realistic introduction timeline for regulation implementation that is in-keeping with past arrangements/precedents between industry and government.
2. That equivalent alternative standards from both Japan and the USA are included in the emission regulations.

TIC believes that the adoption of Euro VI and equivalent Japanese and USA regulations, will be essential for the voluntary introduction of advanced safety features and CO₂ reducing technologies by truck OEM's, these features being impractical/impossible to add to aging ADR80/03 (Euro 5 and equivalent) trucks.

TIC supports the governments basic cost assumptions and modelling that has been used in the Draft RIS. However TIC does make the point that the Cost vs Benefits outcome detailed in the Draft RIS for Heavy Vehicles is a quite marginal, with a net positive benefit of \$2.64 billion over 24 years. And the

Draft RIS for Heavy Vehicles estimates the “break even” point is a long way out, at year 20. The lack of short term health benefits must be considered by government with regard to industries request for regulation implementation timing and the addition of alternative standards. TIC is also disappointed that the RIS does not offer suggested incentives (Federal and State) that could offset the cost burden and/or productivity losses associated with the introduction of Euro VI and equivalent standards.

TIC’s requested timeline:

- 1st January 2021 for NEW Models (assumes ADR80/04 is gazetted by end of 2017), three (3) full years before introduction
 - 1st January 2023 for ALL Models (assumes ADR80/04 is gazetted by end of 2017), two (2) full year phase in. Justification:
 - RIS Cost to Benefit is at best marginal – no significant short term community health benefits
 - Allows truck OEM’s a phased introduction of ADR80/04 and alignment with ADR35/06 (ESC) who’s implementation timing is yet to be decided
 - 1st January introduction, mid-year introduction NOT favoured by the Heavy Vehicle industry
- Alternative standards have formed part of ADR70, ADR80/00, ADR80/01/02 and ADR80/03 and alternative standards must be allowed in ADR80/04. Further, TIC recognises the base regulation, Euro VI Step C that has been nominated in the Draft RIS for Heavy Vehicles has both an advanced OBD and an “on-road, real drive” test cycle. These are key requirements that are also found in the two alternative standards requested by TIC, these being:
- Japanese: pPNLT OBD II (2017)
 - USA: US-EPA 13 to 17

TIC notes that the Draft RIS fails to detail that the main contributor to Heavy Vehicle on-road emissions is the 44.7% of the current Australian truck fleet that has little or no emission regulation. The RIS also fails to offer any solution/incentives to hasten the retirement of these older more polluting vehicles.

The Draft RIS while acknowledging that only 30% of emissions in urban environments are from Light and Heavy on-road vehicles fails to make any recommendations to other government departments as how to review or improve the other 70% of emission sources, TIC feels that this is a key failing for a review that is continually sold as a “whole of government” review of air quality.

The Draft RIS also fails to acknowledge the issues of in-service compliance, enforcement, tampering and emission defeat devices, nor does the RIS make any recommendations for further review or actions that could address these issue. Again TIC sees this as a failing for a review that is offered as a “whole of government” solution for better air quality.

Finally, TIC requests that Government allow industry and stakeholders a further review and consultation period/forum of this “to be revised” Draft RIS, before the final version is published. This will ensure that the issues that have been raised in this submission by TIC and no doubt issues raised by other stakeholders in their submissions, have been adequately addressed in the final version of the RIS.

General comment on the Draft RIS for Euro VI Vehicle Emission Standards for Cleaner Air:

TIC notes that the Benefit-To-Cost (BTC) analysis in the Euro VI heavy vehicle RIS details a \$264 million benefit from 2016 to 2040 (a period of 24 years), this is a very marginal cost benefit. In fact the RIS details that the cost “breakeven point” is not achieved for 20 years, until 2037. Further, the RIS details seven (7) possible scenarios where the Benefit-To-Cost (BTC) ratio for heavy vehicles is negative, one where the BTC is zero and eight (8) scenarios where the BTC is positive. Therefore there is an almost a 50% chance that the BTC for implementing this regulation could negatively impact truck operators and the Australian economy.

The Benefit Costs detailed in the RIS are all theoretical avoided health costs that will accrue over time, while Burden Costs (due to payload losses and higher purchase prices for ADR80/04 trucks) are direct “bottom line” financial losses for truck operators from the date of vehicle purchase. The specific point that TIC wishes to make is that the cost benefits and actual health benefits for Australian’s detailed in the Euro VI Draft RIS are at best marginal and that government must consider this when working with industry to develop the implementation timing and the allowance of alternative standards, for ADR80/04 (Euro VI, Step C and alternative standards).

Cost assumptions in the Draft Euro VI RIS:

TIC generally accepts that methodology, assumptions, estimates, variances and scenarios detailed in the Draft Euro VI RIS, however TIC makes the following comments with regard to heavy vehicle maintenance costs.

For the purpose of the Euro VI RIS, TIC believes that there are two categories of maintenance cost that need to be considered:

1. The day-to-day operational maintenance costs, typically engine servicing
2. The long term emission system/exhaust after-treatment maintenance costs

For Type 1 maintenance costs detailed above, TIC considers that there will be no appreciable cost difference between ADR80/03 (Euro V and equivalent standards) day-to-day operational maintenance costs and the maintenance costs associated with the proposed Euro VI, Step C standard (or equivalent standards). Oil change intervals, oil type and quality, filters, etc will largely be similar/comparable.

For Type 2 maintenance costs detailed above, TIC also considers that there will be no appreciable cost differential between ADR80/03 (Euro V and equivalent standards) emission system maintenance costs and the maintenance costs associated with the proposed Euro VI, Step C standard (or equivalent standards). However, TIC feels that there is a fundamental costing flaw/omission in the current (and previous) vehicle emission RIS in that the maintenance costs required to ensure that the vehicles emission system continues to perform as designed (ECE/ADR certified).

It appears that the RIS calculations make the assumption that the vehicle’s emission system continues to perform at new vehicle “day one” emission levels over the life of the truck without any maintenance. This is simply not correct. All truck and/or engine manufactures will detail (typically in the vehicle’s owner or service manuals) the maintenance required to ensure continued emission performance of the truck. This maintenance may include the servicing, cleaning and replacement of components or systems on the engine/truck. Based on TIC member feedback, the approximate average cost to maintain a Euro VI, Step C, or equivalent truck/engine emission system to statutory requirements is AU\$5000/10 year period. As detailed above similar maintenance cost would be expected for ADR80/03 (Euro V) or ADR80/01/02 (Euro IV) trucks. These Type 2 maintenance costs have typically not risen over subsequent emissions changes (Euro 4 to Euro VI and equivalents) due primarily to advancements in the technologies used to treat exhaust emissions.

In summary, the emission system/exhaust after-treatment maintenance cost differential between ADR80/03 (or even ADR80/01/02) and the proposed move to Euro VI, Step C, will be negligible. However this and previous RIS’s appear to have overlooked the maintenance costs required to ensure that a vehicles emission system is maintained at a level to ensure emission performance/levels used in the RIS Benefit-To-Cost (BTC) calculations over the “projected life” of the truck as used in the RIS calculations.

Euro VI, much more than a win for noxious heavy vehicle emissions:

TIC believes that the Euro VI RIS fails to acknowledge the additional benefits that will be realised from a move to Euro VI and equivalent emission standards.

Australia principally is a “technology taker” in the automotive industry with much of the “smarts” found in today’s cars and trucks developed offshore. In the truck industry this development typically

happens in Europe, Japan and the USA and is then adapted for use in Australia. Increasingly vehicle technologies and systems are integrated into the electrical architecture of a truck and engine. For example Electronic Stability Control (ESC) will take over control of engine and braking functions to reduce the likelihood of a heavy vehicle roll-over, Autonomous Emergency Braking Systems (AEBS) take control of brake, transmission and engine functions to slow or stop the vehicle when danger is detected ahead of the truck, or Lane Keep Assist Systems (LKAS) similarly over-ride steering and brake controls to keep a truck tracking within lane markings. To achieve these levels of automation and safety many components and systems in the truck need to communicate with each other and in many cases this cannot be achieved with the aging electrical architecture found in existing Euro V truck models. This reality has encouraged some TIC members to expedite their product plans, moving to selected Euro VI and equivalent models with these added safety features and benefits for their Australian customers. Currently four (4) TIC members supply some Euro VI, or equivalent, models in Australia, with at least two (2) more brands releasing Euro VI, or equivalent, models in Australia this year.

A further benefit of a move to Euro VI and equivalent engines/trucks will, in time, be improved fuel economy, a financial benefit for owners and operators that will also reduce CO₂ emissions from heavy vehicles. The USA have introduced mandated fuel economy savings for trucks sold in the US domestic market from 2014 and similar measures are being developed in Japan and Europe. A move to Euro VI and equivalent emission standards in Australia will allow these fuel saving technologies to be brought to the Australian. Adding these fuel saving technologies to our current Euro V engines is either impractical or impossible due to the now quite dated base vehicle technology and/or electrical architecture. The only practical pathway to allow the introduction of such technologies into Australia is for the introduction Euro VI, Step C and equivalent alternative standards from Japan and the USA.

Alternative Standards:

TIC calls upon government to add recognised and equivalent international emission standards to ADR80/04 for heavy vehicles as an alternative means of demonstrating engine emission compliance. Alternative standards have formed part of ADR70, ADR80/00, ADR80/01/02 and ADR80/03 and must be added to ADR80/04.

In 2016 new truck sales (vehicles above 3.5t GVM) in Australia totalled 32,964 vehicles. By region of origin these Heavy Vehicles were sourced from:

- 50% Japan
- 32% Europe
- 3% USA
- 15% Australia
- <1% Other

By engine exhaust emission standard Heavy Vehicles sold in Australia in 2016 were certified to the following standards:

- 94.8% Euro V/VI
- 3% Japan NLT/PNLT
- 2.2% USA EPA07

While representing the majority of Heavy Vehicles sold in the Australian market, the Euro emission standard/s fall short of being the only emission standard used by truck manufacturers to comply (certify) their engines for the Australian market.

When broken into market segments the case for alternative standards becomes even stronger with: 13% of Medium Duty trucks (8.0t to 16.5t GVM) using the Japan NLT/PNLT standards for compliance and 9% of Heavy Duty trucks (>16.5t GVM) using the USA EPA07 (8%) and Japan NLT/PNLT (1%) standards for compliance.

If government were to take the unprecedented action of not allowing alternative emission standards from Japan and the USA for Heavy Vehicle certification in Australia, then the cost to develop and

certify trucks for the Australia market would rise significantly for the trucks affected. Truck OEM's would be forced to develop and certify models to the European standard, rather than using approved engines from their own domestic markets of Japan and the USA. Product choice would also be negatively affected (a reduced choice for consumers/operators), with the likelihood that domestic Japanese and USA models would be deleted from sale in Australia due to the cost and effort required to re-engineer and re-test to only the European emission standard. A good example is the Japanese alternate fuel and powered trucks currently offered in Australia, CNG and Hybrid (diesel/electric) Light and Medium trucks. Approximately six models from three manufacturers are currently offered in the Australian market, sales per year are less than 100 trucks in total. All these CNG and Hybrid models are Japanese domestic models tested and certified to the Japanese domestic emission standard (not Euro standard) that have been adapted/modified for sale in Australia. Additionally, USA companies such as Parker Runwise and Wrightspeed have advanced hybrid engine technologies developed exclusively for US EPA certified engines. Due to the very low sales volumes, truck manufacturers could not justify a development and certification program to certify these engines/trucks to the Euro emission standard. Hence these advanced CO2 reducing technologies/trucks could not be brought to Australia, stifling growth of these alternative fuelled and powered Heavy Vehicles in our country.

Finally, as mandated Heavy Vehicle greenhouse gas reductions (CO2 reductions) in Europe, Japan and the USA will be based upon the noxious emission standards in each of these regions, mandated domestic greenhouse gas reduction technologies would not find their way to Australia from Japan and the USA, if these regions are forced to use the Euro emission standard for engine certification for Australian models. That is, greenhouse gas reductions designed for the Japanese domestic market using the Japanese domestic noxious emission standard as the "base standard" will not come to Australia in a Euro certified engine developed only for the Australian market. Equally, greenhouse gas reductions designed for the USA domestic market using engines certified to the US domestic noxious emission standard as a "base standard" will not find their way to Australia in a Euro certified engine developed only for the Australian market.

TIC has identified suitable and not suitable, equivalent Japanese and USA engine emission standards that should be added to ADR80/04 as an alternative certification path for truck and Heavy Vehicle engine manufacturers. A comparison, with Heavy Vehicle Euro VI Step C, is detailed in the below table. Standard's "short falls" have been highlighted in RED text. TIC believes that the standards highlighted in Green fill are equivalents to Euro VI, Step C and must be included in ADR80/04.

Comparison of Euro 6 and potential alternative Japanese and USA exhaust emission standards							
Emission Standard	Euro VI Steps "A and B"	Euro VI Step "C" (2017)	Japan PNLT (2009)	Japan pPNLT OBD I (2015)	Japan pPNLT OBD II (2017)	US-EPA 2010	US-EPA 2013 to 2017
Test Cycle	WHTC*	WHTC*	Japanese (2005)	WHTC*	WHTC*	US-EPA	US-EPA
Transient Test (TT)	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Steady State Test (SST)	Yes	Yes	No	Yes	Yes	Yes	Yes
Test Limit NOx (mg/kWh)	SST - 400 TT - 460	SST - 400 TT - 460	TT - 700	SST - 400 TT - 400	SST - 400 TT - 400	SST - 268 TT - 268	SST - 268 TT - 268
Test Limit PM (mg/kWh)	SST - 10 TT - 10	SST - 10 TT - 10	TT - 10	SST - 10 TT - 10	SST - 10 TT - 10	SST - 13 TT - 13	SST - 13 TT - 13
On-road Real Drive Test	No	Yes (up to 7 years)#	No	No	Yes (up to 7 years)#	Yes (5 years)**	Yes (5 years)**
OBD Level	Basic	Advanced	Very Basic	Basic	Advanced	Semi-Advanced	Advanced
Comments	Not accepted by DIRD	DIRD Baseline	Not equivalent	Not equivalent	TIC requested equivalent standard	Not equivalent	TIC requested equivalent standards

Notes:

TT – Transient Test cycle

SST – Steady State Test cycle

*WHTC - World Harmonised Test Cycle (Global test cycle)

** EPA On-Road Real Drive Test is a mandated test regime for engines in trucks certified to US-EPA 2010-onward. Tests are conducted in the USA only for a period of up to 5 years from first registration of a vehicle. Pass/Fail criteria is determined by US-EPA, Not To Exceed (NTE) limits. The 5 year testing duration applies irrespective of the production life of the engine/truck.

Euro VI, Step C, On-Road Real Drive Test, test period is determined by vehicle category and is the lesser of: N1 (NB1): 5 years/160,000km, N2 (NB2) and N3 (NC) up to 16t GVM: 6 years/300,000km, N3 (NC) over 16t GVM: 7 years/700,000km. On-Road Real Drive Test limits increase slightly year-on-year allowing for some emission system degradation over the mandated test period. An engine/truck manufacture can cease the above testing within 5 years of "end of production" for an engine/truck model.

OBD Level definitions used above -

Very Basic - OBD system that may or may not have a NOx sensor. Engine is not de-rated if a fault is detected, however engine cannot be restarted (once stopped using ignition key), until OBD fault is cleared. Fault history is logged in engine/vehicle ECU.

Basic - OBD has mandated NOx sensor. Engine is de-rated if a fault is detected. Full engine rating gained only when OBD fault is cleared. Fault history is logged in engine/vehicle ECU.

Semi-Advanced – A “Basic” OBD with some additional advanced features added.

Advanced - OBD has mandated NOx sensor and other sensors and software designed to prevent unauthorised tampering, defeat devices and defeat software. Engine is de-rated if a fault is detected. Full engine rating gained only when OBD fault is cleared. If tampering fault is detected, only OEM can clear OBD fault. Fault history is logged in engine/vehicle ECU and may be relayed to OEM if fault/tampering is detected.

Further Comments, Alternative Standards - The Japanese alternative standard required by TIC to be adopted in ADR80/04 is pPNLT, OBD II, 2017. This Japanese standard is in fact based on the Euro VI, Step C, standard and will be phased into the Japanese domestic market from late 2017 onward. The only difference between the Euro 6, Step C, standard and the pPNLT, OBDII, 2017 standard is the limit value for NOx. The Japanese standard limit for NOx is 400mg/kWh for the Transient Test Cycle, as opposed to 460mg/kWh for the Transient Test Cycle for the Euro VI standard. That is, the Japanese standard is a more stringent standard.

The USA alternative standards required by TIC to be adopted in ADR80/04 are the USA-EPA 2013 to 2017 standards. The noxious emission test and limit values of these US-EPA standards are all the same (over the 5 year period 2013 to 2017) and have been detailed in the above table. While the test cycle used and the limit values required differ slightly from the Euro test, the overall outcome for Australia’s air quality and environment will be similar to that of adopting the Euro VI, Step C, standard. Comparing, the US-EPA standard limit for NOx is 268mg/kWh for the both the Steady State and Transient Test Cycles, as opposed to 400mg/kWh for the Steady State Test Cycle and 460mg/kWh for the Transient Test Cycle for the Euro VI standard. That is, the USA standard is a significantly more stringent NOx standard. The US-EPA standard limit for PM is 13mg/kWh for the both the Steady State and Transient Test Cycles, as opposed to 10mg/kWh for both the Steady State Test Cycle and Transient Test Cycle for the Euro VI standard. That is, the USA standard is not quite as stringent for PM as the Euro standard.

Significantly this group of US-EPA emission standards all require a similar advanced OBD and On-Road Real Drive test requirements to those required in the Euro VI, Step C, standard.

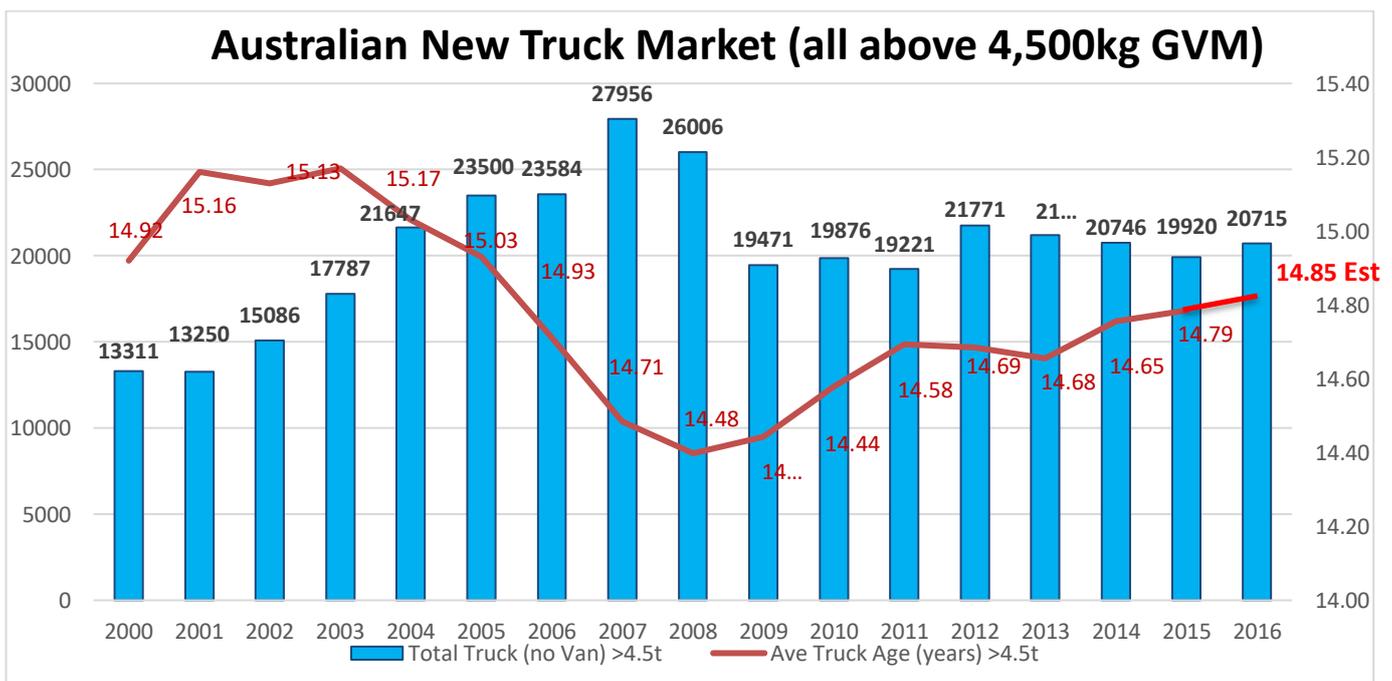
Off-road vehicle emissions:

TIC notes that the Draft Euro VI RIS details that on-road motor vehicle emissions are the source of approximately 30 percent of particulate emissions in urban environments (RIS Page 12). However given the government’s rhetoric that the review of vehicles emissions is taking a “whole of government” approach, TIC is disappointed that there are no recommendations in the RIS for the review and/or regulation of the major contributor (70 percent) of particulate emission sources found in the urban air shed. This RIS would be a document in which to detail “whole of government” recommendations for the review and further action of emissions from, off-road engines found in the construction and earth moving industries, rail, coastal shipping, building generator sets, aviation and airport ground equipment, as well as domestic sources such as wood fires, power garden equipment, recreational and sports equipment, as well as other emission sources including mining, motor sport, hazard reduction burns, etc. TIC believes that the lack of recommendations, given the said “whole of government” approach to vehicle emissions, is a key oversight/failing of the Draft RIS. Yet again on-road vehicles are to be regulated to the latest world class emission standards, while the majority of emission sources in urban environments escape with little or no regulation, a situation that will continue to see Australia trail other western countries by years, if not decades.

On-road vehicle emissions:

TIC detailed in our submission (14th April 2016) to the Australian Government’s Vehicle Emission Discussion Paper – February 2016 that the take-up rate of new trucks with increased safety features and cleaner emission standards was quite poor and that this slow take up of new trucks has led to an aging of the Australia truck fleet. Graph 1 below details that new truck sales above 4.5t GVM have fallen year-on-year since 2012, only increasing slightly in 2016. Sales are considerably lower now than at the market peak 10 years ago. However Australia’s freight task continues to grow, predicted to double up to 2030 (NTC 2016), these two factors has led to the continual aging of the Heavy Vehicle fleet (the RED line on Graph 1). Note: New Truck Sales from TIC T-Mark data, Heavy Vehicle average fleet age from ABS Motor Vehicle Census data.

GRAPH 1



The upshot of our aging truck fleet with regard to Heavy Vehicle emissions is shown in Graph 2. It can be clearly seen that a significant portion of our truck fleet meets no emission regulation (pre-

1996 trucks), or only basic emission regulations (ADR70/00, 1996 to pre-2003), in total these trucks represent 44.7 percent of trucks on Australian roads. Note: Graph 2 was developed using ABS Motor Vehicle Census data.

GRAPH 2

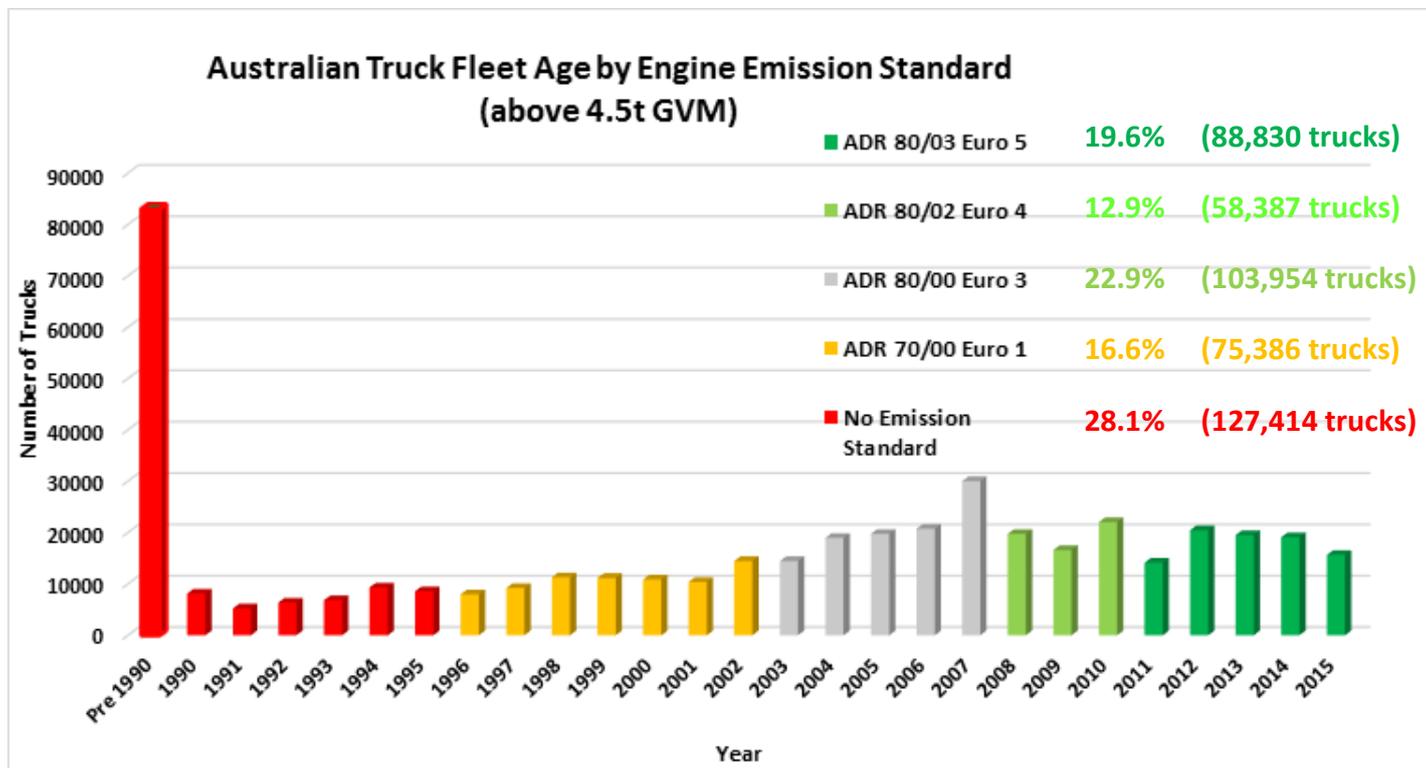


Table 1 details the relative emission performance of these trucks, PM and NOx emissions compared to Euro 6 (for the Stationary/Steady State test cycle).

TABLE 1

Noxious Emission Comparison Euro 0 to Euro 6 Stationary Test

Year	Emission Standard	Typical NOx	Typical PM	Percentage	Number of Trucks
Pre-1996	None (Euro 0)	x125	x120	28.1%	127,414 trucks
Pre-2003	ADR70/00 (Euro 1)	x50	x50	16.6%	75,386 trucks
Pre-2008	ADR80/00 (Euro 3)	x55	x14	22.9%	103,954 trucks
Pre-2011	ADR80/02 (Euro 4)	x20	X2	12.9%	58,387 trucks
2011 to 2021	ADR80/03 (Euro 5)	x5	x2	19.6%	88,830 trucks
2021 and beyond	ADR80/04 (Euro 6)	x1	x1	<0.5%	

It is clear to see from Table 1 and Graph 2 that the “elephant in the room” for PM and NOx pollutants/emissions from on-road Heavy Vehicles is the 44.7 percent of Australia’s existing pre-2003 trucks. This point is not clearly made in the Draft RIS. Nor does the RIS offer any plan to hasten the retirement rate of these highly polluting trucks. TIC again points out that the retirement rate of these pre-2003 trucks is slowing due to the poor take-up of new vehicles and our ever increasing freight task. As part of the “whole of government” vehicle emission standards review, TIC requests that all government departments with a responsibility for ensuring cleaner air quality for all Australians (particularly the Departments of Environment and Infrastructure and Regional

Development) acknowledge the major sources of on-road Heavy Vehicles emissions and recommend measures in the RIS that will adequately deal with the relative emission intensities from all sectors of Australia's on-road Heavy Vehicle fleet, existing and new.

Incentives to increase the retirement rate of pre-2003 vehicles must include:

- A Heavy Vehicle Road User Charging (RUC) scheme that incorporates an Environmental Levy based on the environmental performance of the trucks. Put simply, the more polluting (noxious emissions) a truck, the higher the RUC it must pay. This incentive should be a RIS recommendation to the Federal Government's Department of Environment and to the Transport and Infrastructure Council of COAG.
- Government should look at developing/adopting a simple rating scheme that could be used to rate a trucks environmental performance. A scheme that could be applied to existing and new trucks. The rating scheme could form the basis for government grants or incentives, fleet purchase decisions, freight contract negotiations, etc. This incentive should be a RIS recommendation to the Federal Government's Department of Environment.
- Low emission zones in areas of high urbanisation and Heavy Vehicle traffic densities. Similar schemes around the world have moved older more polluting trucks out of cities and towns and increased the retirement rate of older trucks. This should be a RIS recommendation to the Transport and Infrastructure Council of COAG.

Disincentive, Cost Burden, Incentives:

TIC notes that the Euro VI RIS Benefit-To-Cost (BTC) calculations account for both the increased purchase price and productivity losses (incurred due to the increased weight) of a Euro VI truck compared to a Euro V truck and as stated above, TIC does not disagree with the methodology used in the RIS. However, what is not examined in the RIS is the disincentive effect on the take up rate (sales) of new Euro VI and equivalent, trucks due to their increased purchase price and TARE weight (loss of productivity). Historically new emission standards have increase the cost and weight of trucks which has in turn led to a decrease in new truck sales in the years following a government mandated emission change. This can be clearly see in Graph 2 (ABS Motor Vehicle Census data) with the introduction of ADR80/01/02 (1st Jan 2008 ALL Models) there was a significant pre-buy in 2007 and a noticeable fall in sales in 2008 and 2009. Equally, with the introduction of ADR80/03 (1st Jan 2011 ALL Models) there was a significant pre-buy in 2010 and a noticeable fall in new truck sales in 2011. Less new truck sales leads directly to an aging truck fleet and lower take-up rates of new emission technology vehicles, resulting in the RIS estimated noxious emission savings NOT being fully realised.

TIC has provided DIRD with a separate example/scenario (based on assumptions made in the Departments Draft ADR80/04, Euro VI, RIS) that illustrates the potential disincentive/cost burden for the take-up of a new Euro VI, or equivalent emission standard, truck.

TIC requests governments, both federal and state to work collectively to offer incentives that will offset these potential disincentives for the purchase and operation of new Euro VI and equivalent trucks. TIC offers the following list of incentives that must be considered by the federal government and state/territory governments through COAG's Transport and Infrastructure Council. The states/territories are calling for and will benefit from, improved air quality and heavy vehicle safety. They in turn must "step-up" and offer incentives at a state level, particularly where they determine/control regulations governing mass and dimensional limits for heavy vehicles.

Incentives for ADR80/04 (Euro VI and equivalent) vehicles must include:

- A 500kg mass increase to the GVM of all Heavy Vehicles above 15t GVM. This additional mass could be carried on either the Front Axle/s or Rear Axle/s (or shared between Front and Rear Axles). This mass increase would offset the increase in Heavy Vehicle mass seen due to mandated emission standards that has occurred since the introduction of ADR80/03 regulations, including the proposed ADR80/04 (Euro VI and equivalent) regulations. This should be a RIS recommendation to the Transport and Infrastructure Council of COAG.

- A 100mm increase in maximum vehicle width for NC category trucks, from 2.5m to 2.6m maximum width. As has been detailed in this submission, Australia is a technology taker of Heavy Vehicle engines and emission systems. Many of these systems are developed in regions of the world that have a maximum vehicle width of 2.55m to 2.6m. The redesign, retooling and unique manufacture of these emission systems for Australia's narrow maximum vehicle width of 2.5m adds considerable cost to trucks. The Australian market is very small when compared to other markets (less than 1% of global Heavy Vehicle production) and truck manufacturers will be increasingly less willing to redesign vehicles for the Australian market only, this will lead to limited model availability and/or higher purchase prices for Australian operators/consumers. These costs could be avoided for the Australian truck buyer, owner, operator, if Australia was to move to a maximum vehicle width of 2.6m. New Zealand has recently allow an increase in maximum vehicle to 2.55m with an additional concession given to specific items that improve a Heavy Vehicles safety and/or environmental performance, to 2.6m maximum width. In their justification of these increased limits the New Zealand government acknowledged that New Zealand was a "technology taker" with heavy vehicles imported from countries or regions that have maximum vehicle widths up to 2.6m and that in allowing such vehicles to be imported without modification will lead to a greater product range/choice and/or cheaper trucks for operators/consumers. This should be a RIS recommendation to the Transport and Infrastructure Council of COAG.
- Financial incentives in the form of a direct financial rebate for the purchase of an ADR80/04 (Euro VI and equivalent) trucks should be considered. Other financial incentives could include, no interest loans, accelerated depreciation and tax concessions. Such incentives would offset the increased "up-front" purchase price increase of an ADR80/04 truck. These incentives should be RIS recommendations to the Federal Government's Department of Environment and Department of Finance.

On-going in-service compliance, tampering, enforcement:

TIC detailed in our submission (14th April 2016) to the Australian Government's Vehicle Emission Discussion Paper – February 2016 that there is little or no on-going in-service emission testing or enforcement by state jurisdictions/the National Heavy Vehicle Regulator. TIC also detailed the illegal practice of emission system tampering and companies in Australia offering products that will "defeat" a vehicles emission system. TIC is disappointed that there are no recommendations in the RIS for the review of in-service emission testing for the existing Heavy Vehicle fleet. TIC also notes that there are no recommendations in the RIS for a review of laws governing the sale and fitment of emission defeat devices and similar. TIC believes that the lack of recommendations, given the said "whole of government" approach to vehicle emissions, is a key oversight/failing of the Draft RIS. TIC believes that the following items/issues should be addressed in the RIS:

- In-service compliance is required for all vehicles operating on public roads, to ensure that vehicles continue to comply with the emission regulations that they were designed to meet, so as to ensure that the emission reductions calculated in previous vehicle emission RIS's and the Euro VI RIS are realised.
- The RIS should acknowledge that tampering/disabling/defeating a vehicle's emission system is currently an in-service reality and action must be taken to prevent such activities.
- The RIS should acknowledge that tampering/disabling/defeating of vehicle emission systems is not necessarily an illegal offence (under existing laws) and prosecution of offenders is typically difficult/impossible.
- Given the "Whole of Government" approach and that the above mentioned issues will reduce, or completely negate, the required emission performance of a Heavy Vehicle, the RIS should make specific recommendations for additional laws or regulations, or for a review/investigation by the appropriate government body/department, that will ensure that

effective in-service enforcement and prosecution of offenders can be realised (TIC does acknowledge that implementation of any recommendation/s would be beyond the scope of the ADR's). Similar laws have been formulated and implemented recently by all States and Territories making the sale, possession and fitment of devices that defeat or modify a Heavy Vehicles speed limiter (ADR65/00) a criminal offence. TIC calls for similar laws to be developed and implemented for emission tampering and/or defeat devices.

TIC does wish to acknowledge that the version of Euro VI (Step C) proposed by the Draft RIS will offer increased protection against emission tampering due to more stringent OBD requirements and the alternative Japanese and USA standards requested by TIC also have a similar level of increased OBD stringency that will offer increased protection against emission tampering. However new laws are required to ensure that offenders that do tamper with, or defeat, emission systems on any vehicle, new or old, can be effectively prosecuted.

Introduction Timing:

TIC and its members require a 1st of January introduction date, mid-year introduction is not favoured by the heavy vehicle industry.

The long standing agreement that TIC has with the Department of Infrastructure and Regional Development (DIRD) is that a full three (3) years will be allowed from the year in which a new ADR is gazetted, until the commencement for NEW Models, this is for all major regulation changes. An engine emission change is the most significant change that can be made to a heavy vehicle, entailing considerable redesign of all major systems within the truck. This three year timeline was used for the introduction of ADR80/00, ADR80/01/02 and ADR80/03.

TIC requests that a further two (2) years is allowed for the commencement of ALL Model introduction of ADR80/04 (Euro VI and equivalents). TIC notes that this is one (1) year longer than has typically been requested by TIC and its members in the past, however TIC feels that there is significant justification for the additional year for this regulation change.

Firstly, the Benefit-To-Cost (BTC) analysis for Euro VI RIS is very marginal, there is no immediate benefit to air quality or the health outcomes. Secondly, the Vehicle Safety Standards branch of DIRD is developing revisions to ADR35 that will require the mandated fitment of Electronic Stability Control (ESC) to most/all heavy vehicles, from a yet to be determined date. ESC is another major regulation change that will require significant design and development costs for truck manufacturers, but with an, as yet, unknown timeline. To allow the most cost effective introduction for both Euro VI and equivalents and ESC for both TIC members and truck customers/operators, a two year "window" between the introduction of NEW Models and ALL Models is required. Thirdly, unlike previous emission regulation changes in Australia, a number of Euro VI, or equivalent, models have already been introduced into the Australian market and many more will be released before the legally required ADR introduction date. These trucks are offering air quality improvements now, well before the mandated introduction of ADR80/04.

Summarising TIC's requested timing, assuming that ADR80/04 is gazetted before the end of 2017:

- 1st January 2021 for NEW Models, three (3) full years before introduction
- 1st January 2023 for ALL Models, two (2) full year phase in

For every year, or part of year, that the ADR gazettal is delayed, beyond the end of 2017, would see these dates push out by one (1) full calendar year, mid-year introduction cannot be accepted.

Fuel Standards:

Australian Diesel Standard – Firstly, there has been some discussion and comment about the Cetane Number currently specified in the Australian Diesel Standard, with some Light Vehicle manufacturers apparently requesting that the Australian Diesel Standard be revised with the intent that a higher Cetane Number is specified. TIC's position is that a move to Euro VI and equivalent emission standards for Heavy Vehicles does not require a change to the Cetane Number currently specified in the Australian Diesel Standard. TIC notes that a higher Cetane Number would not have any

detrimental effect on a Heavy Vehicles engine performance, reliability, or durability. That is, a move to a higher Cetane Number for Australian diesel could be accepted by all TIC member truck and engine manufacturers. However a higher Cetane Number is not a TIC request/requirement. Further, TIC is concerned that a mandated move to a higher Cetane Number for Australian diesel will increase the cost of diesel and hence increase the running costs of trucks and make road transport more expensive, for no net benefit for Heavy Vehicles.

Secondly, TIC requests that the Australian Diesel Standard is revised to allow up to seven (7) percent bio-diesel (currently capped at a maximum of five (5) percent), this would bring the Australian Diesel Standard in line with the UN-ECE Diesel Standard and allow an increase to renewable fuel component of Australian diesel.

Bio-diesel – Many TIC members get requests from truck owners and/or operators who wish to use bio-diesel in their vehicles. Modern diesel engines require very exact fuel specifications, poor, inconsistent, “unknown” fuels present a very high risk to engine performance, reliability, and durability. Fuels of an unknown quality and standard cannot be recommended for use in a modern diesel engine by truck and/or engine manufacturers, the commercial/liability risks are far too great. The lack of Australian standards for bio-diesel blends, B6 to B99, is significantly hampering the uptake and use of renewable bio-diesel fuel blends in Australia. TIC requests that government develop a series of bio-diesel standards that are aligned with existing UN-ECE bio-diesel standards. This action should start with an Australian standard for B20.

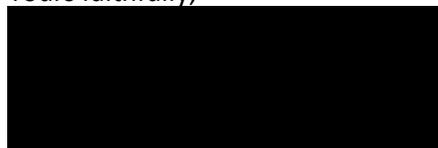
Natural Gas – For the same reasons detailed above for bio-diesel fuel blends (engine performance, reliability, and durability) absence of an Australian Automotive Natural Gas standard is significantly hampering the uptake and use of Natural Gas trucks, both Compressed Natural Gas (CNG) and Liquefied Natural Gas (LNG) trucks in Australia. Australia has the largest reserves of Natural Gas in the world and yet the use of CNG and/or LNG in the road freight sector is almost zero. TIC requests that government develop an Automotive Natural Gas standard that is aligned with international standards, specifically UN-ECE and USA Natural Gas standards.

Further review:

TIC and its members request that the Federal Government Department/s responsible for the development of the ADR80/04 (Euro VI and equivalent) Heavy Vehicle RIS allow industry and stakeholders a further review and consultation period/forum of the “to be revised” Draft RIS for Vehicle Emission Standards for Cleaner Air, before the final version is published. This will ensure that the issues that have been raised in this submission by TIC and no doubt issues raised by other industry groups and stakeholders in their submissions, have been adequately addressed in the final version of the RIS.

I trust that you find TIC’s submission acceptable and that the issues that have been raised in this document will be considered in the review and formulation of any changes to the regulations that govern Heavy Vehicle exhaust emissions and related government policy in Australia.

Yours faithfully,



Mark Hammond

Chief Technical Officer