

# The National Electric Vehicle Strategy - a unique opportunity to improve the safety of vehicles on Australian roads

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## Submission on the National Electric Vehicle Strategy consultation paper

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This document represents the views of the authors. It does not represent the views or policies of any organisation.

### Key point

We are very concerned with the apparent suggestion, on page 11 of the Consultation Paper, that some safety regulation (ADR) concessions may be appropriate for electric vehicles. If anything, extra safety requirements should apply to EVs, as explained below.

### Introduction

In the early 1990s the Australian New Car Assessment Program (ANCAP) commenced independent consumer crash tests of popular vehicle models and published the results. Since then the requirements for a top safety rating (5 stars) have gradually increased and new safety technologies have been encouraged. This has strongly influenced the choice of vehicles by fleets and consumers and has raised the level of safety of vehicles on Australian roads (Paine and others 2015). Despite this there are many 1 or 2 star-rated cars on Australian roads that are older than 15 years. Typically these older vehicles have twice the risk of serious/fatal injury to occupants compared with a 5-star model. In other words, one out of two occupants who are killed in a 1 or 2 star vehicle would likely have survived in a 5-star vehicle.

The government's Electric Vehicle Strategy provides a unique opportunity to replace these older, less-safe vehicles with much safer electric vehicles - provided that appropriate safety requirements are applied to the changeover.

*As former members of the ANCAP team with extensive experience in vehicle safety, we offer the following advice on the National Electric Vehicle Strategy consultation paper.*

## ANCAP Safety Ratings

Since the 1990s ANCAP has rated dozens of vehicle models that meet the Australian Design Rules for Vehicle Safety (ADRs) but provided poor occupant protection in ANCAP crash tests, with 1 or 2-star outcomes.

Over the past three decades ANCAP has been the key driver in reducing the risk of serious/fatal injury to car occupants and vulnerable road users as well as encouraging the uptake of leading safety features in Australia and New Zealand. For example a key safety feature strongly encouraged by ANCAP since 2004 are head-protecting side airbags. Mainly through the ANCAP requirements for a 5-star rating nearly all new vehicles sold in Australia over the past decade have inflatable side curtains that protect extremely well in a severe side impact. ADRs only recently required these life-saving features on new vehicles.

Similarly ANCAP has encouraged vehicle designs that are much less likely to seriously injure pedestrians if they are struck by the front of a vehicle. There is a global regulation on pedestrian protection (UN Regulation 127/GTR 9) but the ADRs do not mandate it in Australia.

Furthermore, in recent years the ANCAP star-rating system has encouraged the fitment of advanced crash-avoidance systems such as autonomous emergency braking (AEB), speed assist systems (SAS) and lane support systems (LSS). Despite their proven effectiveness and widespread fitment to most new vehicles (again, mainly through ANCAP requirements for 5 star ratings) none of these features are required by current ADRs (AEB will be phased in from 2023 under ADR 98). Where a safety requirement is mandated in the ADRs it is generally many years (often over a decade) after ANCAP began encouraging the feature, as indicated in the table in the appendix.

This difference between ADRs and ANCAP is highlighted in the Australian Government's National Road Safety Strategy 2021-30:

*"In addition to mandating vehicle safety technology through ADRs, the Australasian New Car Assessment Program (ANCAP) rating system, through consumer driven choice, encourages vehicle brands to include the latest vehicle safety technology as soon as the technology becomes available or lose competitive advantage to other brands."*

## Second-hand imports

Australian regulations effectively discourage the importation of second-hand vehicles for commercial purposes, although personal imports are allowed. While it is tempting to relax the requirements for imported electric vehicles there are good reasons to apply strong safety requirements for these cases.

New Zealand has allowed the importation of second-hand vehicle for decades. Most vehicles are sourced from Japan. Over the longer term this policy has likely increased the number of less-safe vehicles on New Zealand roads because

many second-hand imports do not have the latest safety features, as encouraged by ANCAP (which only rates new vehicle models). On its Vehicle Safety website the NZ Transport Agency states that *"41% of New Zealand's light vehicles have 1 and 2-star safety ratings. That's approximately 1.65 million vehicles, out of 4 million in the fleet."* The Agency has cautionary advice for second-hand imports:

*"If you've purchased a used import, there may be a significant difference between the safety rating of your vehicle and the rating for a similar model on the ANCAP website...Used imports from Japan may be assembled to different standards, and are [might be] tested by JNCAP which uses different tests and speeds and has different criteria for structural integrity..."*

The Agency also points out that Used Car Safety Ratings (UCSR), that assign a safety rating based on crashes in Australia and New Zealand, are unlikely to apply to second-hand imports due to specification differences. Therefore UCSR are not appropriate for assessing the safety of second-hand EVs imported into Australia.

The same concerns apply to **new** electric vehicles imported into Australia with concessional ADR requirements and no ANCAP safety rating.

### Global NCAP

For more than a decade ANCAP has worked with the London-based Global NCAP. The experience with Global NCAP is that many vehicles sold overseas, outside of Europe and North America, lack safety features common in the UK and Australian market, such as airbags, ESC and AEB.

Global NCAP recently updated its "Global Fleet Safety Guide and Safer Vehicle Purchasing Policy". That document outlines the concerns about the safety of new vehicles in some regional markets, the need for mandating priority regulations and the importance of NCAPs in raising the level of safety of new vehicles (both ICE and EVs).

In the absence of ANCAP-level safety requirements there is a high risk that imported new and second-hand electric vehicles will have much lower protection than modern Australian vehicles, most of which have 4 or 5-star safety ratings from ANCAP.

### EV Conversions

In Australia there is a small market for conversion of old cars to electric. These often get media attention - for example, supporting the "battler" who is looking for a cheap electric vehicle. These promotions tend to completely ignore safety.

While these conversions have a place, in our view, they should not be encouraged through financial or other incentives unless a high level of safety can be demonstrated.

## Safety requirements for electric vehicles

In 2010 ANCAP organised crash tests of a Mitsubishi iMIEV at a government test facility in Japan (tests supervised by Michael Paine). This was one of the first consumer crash tests of a fully electric vehicle. The outcomes of these crash tests and associated research are set out in an international conference paper (see Paine & others 2011). This included post-crash safety precautions for rescue personnel.

Subsequent research by NCAPs and others has demonstrated that extra safety requirements should apply to electric vehicles. Some of these are set out in EuroNCAP Technical Bulletin TB011 "Testing of High Voltage Electric Vehicles":

Recent safety ratings by ANCAP and Euro NCAP demonstrate that modern electric vehicles can meet the demanding requirements for road user protection and crash avoidance/mitigation. Last month ANCAP issued a media release *"Three new EV models bring five star safety"*. This shows that EVs can provide the same or better safety than most new ICE cars on sale in Australia today.

## Conclusions

It is positive to see initiatives that encourage the uptake of electric vehicles in Australia. However this should not be at the expense of foregoing the high safety performance of current new vehicles in Australia. There are numerous overseas EVs that achieve 5-star NCAP ratings and these should be encouraged through the EV initiatives. Importantly EVs that do not meet 4 or 5 star ANCAP ratings should be discouraged from being imported into Australia.

We are very concerned with the apparent suggestion, on page 11 of the Consultation Paper, that some ADR concessions may be appropriate for electric vehicles if this means exemption from safety-related ADRs. If anything, extra safety requirements should apply to EVs, as we have shown above.

The Electric Vehicle Strategy should encourage the replacement of older, less-safe ICE vehicles with electric vehicles that are likely to achieve high safety performance in ANCAP tests. In this way the overall safety of the Australian vehicle fleet will be improved. For example, instead of "Cash for Clunkers" (initiatives to remove older, less-safe vehicles from the road) it would be "Subsidised Electric vehicles for Clunkers".

We strongly support this quote from the ANCAP media release (7/9/22):

*"Today's results demonstrate why ANCAP is encouraging all levels of government to ensure subsidies and incentives for alternative-powered vehicles are only provided to models offering the highest levels of safety"*

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## About the authors

Michael Paine

Michael is a Chartered Professional Engineer who has worked in the vehicle safety field for more than forty years. From 1996 to 2017 he provided technical support to the Australasian New Car Assessment Program (ANCAP), including technical assessment of more than 400 crash tests and developing policies and

strategies for improving vehicle safety. Michael is a technical consultant to Global NCAP.

#### Lauchlan McIntosh

Lauchlan was the inaugural Chairman of the Australian New Car Assessment Program for over 20 years, a past Board member and Chairman of Global NCAP and the Towards Zero Foundation, a past President of the Australasian College of Road Safety and Intelligent Transport Systems Australia. The views here are his own.

#### David Paine

David has over 20 years experience in the field of road safety particularly in the areas of advanced driver assistance systems (ADAS), vehicle occupant protection and pedestrian protection. This includes supervising testing and carrying out assessments for the ANCAP, CREP and MACA programs and researching vehicle safety features.

David has advised the NSW STAYS SAFE Committee and Victorian Parliamentary Road Safety Committee on vehicle safety and has worked with state road authorities on research and trials of emerging vehicle safety technologies.

## Appendix

### Timing of vehicle safety requirements in Australia

| Test Procedure   | ANCAP Tests Commenced                            | ADRs (cars)  |
|--|--|--|
| Offset crash test (40% frontal)<br>(frontal airbags, seat belt pretensioners, crash structure) | 1993 (60km/h)                                    | ADR73/00: 2000 for new models, 2004 for existing models (56km/h) |
| Barrier Side Impact (side structure )  | 1999 (50km/h)                                    | ADR72/00: 2000 for new models, 2004 for existing models (50km/h) |
| Side Pole Impact (head-protecting side airbags)  | 2000 (5-star requirement from 2004)              | ADR85:2017 for new models, 2021 for existing models              |
| Pedestrian Protection<br>(simulated head, hip and legs impact car at 40km/h)                   | 2000 ( 5-star requirement from 2012)             | ADR: none (global regulation not implemented)                    |
| Electronic stability control   | 5-star requirement: 2008                         | ADR 31/02 : 2013   |
| Seat belt reminders  | 5-star requirement: 2013* (encouraged from 2005) | ADR: none  |
| Autonomous Emergency Braking   | 5-star requirement: 2018*                        | ADR98: 2023 for new models, 2025 for existing models             |
| Speed Assistance Systems   | 5-star requirement: 2018*                        | ADR: none  |
| Lane Support Systems   | 5-star requirement: 2018*                        | ADR: none  |

\* Part of "Safety Assist" requirements introduced when ANCAP aligned with Euro NCAP in 2018. In effect vehicles must score points in all four categories to reach 5-stars.

