

Electric Vehicle Systems and Technology

Vehicle Emissions Working Group Submission: In Relation to Questions 26, 27 and 28 only

Introduction

Governments have the accountability for setting the parameters within which business and the economy must operate, and as such actions of Government are potentially the most significant determinant of the future shape of the economy.

As changes in knowledge allow changes in the economy, Governments have a role to understand, evaluate and manage these changes. The development of the modern Electric Vehicle is one such change which now needs to be addressed by government to ensure that the maximum benefits can be accrued to society, as early as possible, and at the minimum cost.

The following three questions capture the three most important issues requiring government action today, and as follow are our additions to the discussion.

In Relation to Question 26 (Measures to Improve Consumer Awareness)

The adoption of Electric vehicles is at an early stage in Australia, and is relatively less progressed than in other similar countries. It is not clear whether this is due to consumer awareness or consumer perception, however both will benefit from public leadership by government.

Recommendation: The Australian Government should issue a statement that, as a matter of Policy, it now supports the rapid and widespread adoption of electric vehicles.

Such a statement would be a significant first step and would address both the issues of awareness and perception to a significant degree. The subsequent inclusion of EVs as a major element of its Environment, Infrastructure, Planning, and Innovation policy frameworks would further support the adoption of EVs and deliver a consequent and significant reduction in fleet air emissions.

Further, to give more weight to Policy, governments can lead by example. Given that Australia now has no indigenous vehicle manufacturing to protect, local, state and federal government should move to adopt EV's such as the Nissan Leaf or similar for general staff use, as a matter of policy. ICE vehicles should be restricted to those applications where they are strictly necessary. If, for example, the Prime Minister's vehicle was an EV such as a Tesla or similar, this would provide a very strong message.

In Relation to Question 27 (Measures to Encourage Supporting Infrastructure)

The key unresolved infrastructure issue is the absence of a single unified technical standard for EV fast-charging at public charging stations. The standards in use presently (by default) include proprietary ones, standards established on a regional basis, and some variants which are an attempt by manufacturers to add a measure of interoperability between essentially different devices.

Almost no technically-based consumer product or service can endure in the absence of defining technical standards, whether they be in relation to complex matters such as telephone communications or electric power distribution, or the seemingly trivial ones such as petrol-pump nozzles sizes. The matter of EV charging fits somewhere in the middle of this range, and is no less-critical to the mass adoption of this technology.

Candidates for such an Australian Standard would likely include standards like the Japanese originated CHAdeMO, or the newer SAE Combined Charging Solution (SAE Combo) standard. Whilst likely to generate lively debate among the various proponents and technologists, the actually standard finally selected is not as important as the fact that one has been selected. Controlling AC or DC battery chargers has been a known technology for more than a century, and is not complex. Selecting a standard is even less complex, and the time to do this is now, while the investment in cars and charging stations is still small.

Very little can be more damaging to the development of a new market than the legitimate and obvious concern that early adopters – the ambassadors of change – will lose their investment as a result of rapid standards obsolescence. A wait-and-see approach to this critical decision is passively destructive, and will delay the adoption of this environmentally critical technology in Australia.

Recommendation: The most critical issue which our Government must act on, and something which only a government can do, is to mandate a national standard for vehicle charging, with which all vehicles sold must be compatible, and with which all public charging stations must also be interoperable.

The adoption of an Australia Standard for EV Charging would ensure that:

- 1. Early investors are protected, and investment is not discouraged.*
- 2. All public charging stations would be compatible with any new vehicle, regardless of origin, so that the functional operating range of all electric vehicles is maximized from the day of purchase, improving utility and encouraging adoption.*

In Relation to Question 28 (Adaption of Fuel Standards)

Whilst this question has likely been framed in relation to liquid fuels, it is important to relate it also to electric vehicles and electricity.

Electricity as a fuel can be directly generated from clean renewable resources, or by environmentally damaging ones such as coal or hydrocarbons. Consumers, however, such as the users of EVs, cannot be easily informed as to the relative cleanliness of the source of the energy they buy and use in their vehicles.

Energy Source Labeling – where the suppliers are required to publish the energy mix of the sources of the electricity they supply – would allow consumers a choice. If EV charging station or electricity retailers were required to display the source of their electricity supply – eg. 100% solar, or 80% coal and 20% hydro, or whatever was the actual mix – the consumer could select a supplier based on a signal other than price.

As the quality of electricity is standardized, this distinction (environmental impact) is important for both suppliers who want a market advantage, and consumers who want to manage their environmental impact. Given the very large adoption of home solar systems, the Australian consumer has already demonstrated their willingness to invest in a cleaner environment, so the basis for this proposal is sound.

Recommendation: The Australian Government should mandate that suppliers and retailers of electricity publish their energy sources and accurately indicate the carbon equivalent of each kWh of energy they supply.

The adoption of Energy Source Labeling would, over time, provide a significant improvement in the mix of power utilized, as it would potentially provide a market-based financial incentive for the further development of clean energy sources. It would also maximize the improvement in air quality that will be brought about by the adoption of electric vehicles, as that change occurs.