

Chapter 6

Committee view and recommendations

Introduction

6.1 EVs are at the forefront of a major transformation of the world's transport sector. Global EV sales are growing rapidly, driven by government policy in large consumer markets in Europe, Asia and North America. Vehicle manufacturers are leading the transition, investing heavily to expand their EV offerings and improve EV driving range and performance. The technological disruption is also providing opportunities for new business models and companies to emerge.

6.2 The widespread use of EVs in the Australian transportation fleet would provide significant economic, environmental and health benefits. While the Committee is cognisant that transitioning to EVs presents challenges on a number of fronts, the Committee is of the view that the benefits of EVs substantially outweigh these challenges.

6.3 However, the uptake of EVs in Australia is slower than in other countries. The expense of EVs, compared with internal combustion engine (ICE) equivalent vehicles, and concerns about the driving range and lack of recharging infrastructure for EVs are key factors hindering motorists purchasing these vehicles.

6.4 The Committee has included battery electric vehicles (BEVs), plug-in hybrid electric vehicles (PHEVs) and fuel cell electric vehicles (FCEVs) in its definition of EVs. In terms of technology development, the Committee notes evidence provided that FCEV development has progressed more slowly than BEVs and PHEVs and there may now be an acceptance that BEVs and PHEVs will become the dominant technology longer-term. The Committee also notes the preference of most vehicle manufacturers for battery technology, and that the uptake of FCEVs may be further disadvantaged by the lack of refuelling infrastructure.

6.5 The evidence to the Committee is that, in the absence of any change to regulatory settings, EV uptake in Australia will be constrained and will continue to lag behind other comparable nations. Slow uptake will result in EV manufacturers not prioritising the Australian market and fewer EV models being available to Australian motorists. It will also delay the realisation of substantial economic, environmental and health benefits.

6.6 The Committee has also heard that the transition to EVs presents opportunities for EV manufacturing and associated businesses in Australia. These opportunities include harnessing existing manufacturing capability and developing new manufacturing fields for Australian industry.

6.7 In this Chapter, the Committee outlines its recommendations for measures to support and accelerate the uptake of EVs, as well as measures to support and develop EV manufacturing and associated business opportunities.

Development of a national EV strategy and targets

6.8 The Committee has carefully considered whether there is a role for updated regulatory settings to increase the uptake of EVs in Australia. On balance, the Committee is of the view that a status-quo approach is detrimental to Australia's interest. It is clear to the Committee that policy leadership from government would provide an important signal to the market of Australia's support for EVs and thus promote confidence for both business and consumers.

6.9 The Committee welcomes the announcement by the Council of Australian Governments' (COAG) Transport and Infrastructure Council for a Senior Officials' Committee to develop a program of work to address the barriers and challenges in EV uptake. However, the Committee believes the Australian Government should also develop a comprehensive national EV strategy to ensure Australia takes advantage of opportunities EVs present, while also responsibly managing the risks.

6.10 The Committee further recommends that the Australian Government establish an inter-governmental taskforce to take responsibility for the implementation of the national EV strategy. The role of the inter-governmental taskforce will be to ensure that there is a nationally consistent approach to EV policy and to identify areas of regulatory reform. The Committee's view is that the National Transport Commission should provide an annual report detailing areas for regulatory reform to COAG's Transport and Infrastructure Council for implementation by the inter-governmental taskforce

6.11 The evidence to the Committee highlighted economic, environmental, and health benefits from a transition to EVs, and opportunities to enhance Australian industrial capabilities in research and development – in the resources, automotive and transport sectors. It highlighted that there are a host of challenges and risks which need to be considered so the approach must be comprehensive and integrated.

6.12 Addressing these risks and challenges will require effective national standards and regulation in regards to charging infrastructure and electricity grid integration, building and construction, public safety, consumer protection, processes for disposal and/or re-use of batteries, and skills training.

6.13 The Committee notes that the pace of change and technology is largely driven by overseas developments. Lithium ion battery technology is under continuous attention for re- development and that alternatives to lithium iron – such as solid state batteries – are being actively pursued.

Recommendation 1

6.14 The Committee recommends that the Australian Government develop a national EV strategy to facilitate and accelerate EV uptake and ensure Australia takes advantage of the opportunities, and manages the risks and challenges, of the transition to EVs.

Addressing these risks and challenges will require effective national standards and regulation in regards to charging infrastructure and electricity grid integration, building and construction, public safety, consumer protection, processes for disposal and/or re-use of batteries, and skills training.

Recommendation 2

6.15 The Committee recommends that the Australian Government should take a national leadership position in establishing an inter-governmental taskforce to lead the development and implementation of a national EV strategy.

6.16 The Committee has heard that establishing national EV targets provides leadership to consumers and businesses and assures vehicle manufacturers that a local market exists. Countries with the highest EV uptake all have national targets as the overarching part of their strategy. National targets could provide international vehicle manufacturers with confidence that the Australian EV market will grow and encourage them to make a broader range of models available, specifically more affordable models. For consumers, national targets offer confidence that a critical mass of EVs will be reached and that supporting infrastructure will be available as the number of EVs grows.

6.17 Accordingly, as part of the national strategy, the Committee recommends setting national targets focused on passenger vehicles, light commercial vehicles and metropolitan buses. There are various views on the pace of the adoption or targets and Committee considers that percentage of vehicles sales by 2025, rather than a longer term target for the complete phase out of ICE vehicle sales is more appropriate. In the Committee's view, consideration of short-to-medium term targets could demonstrate the government's commitment to accelerating EV uptake. The Committee is hopeful that the initial targets will provide the momentum required to increase EV sales to a point such that targets will no longer be required. Targets will also bolster the business case for expanding domestic EV manufacturing and supply chain activities.

Recommendation 3

6.18 The Committee recommends that the Australian Government consider establishing national EV targets for light passenger vehicles, light commercial vehicles and metropolitan buses.

Government fleet targets

6.19 Motor vehicle sales and leases of motor vehicles to the government sector at a national, state and local government level make up a significant proportion of the total Australian motor vehicle fleet. The Committee recognises that a higher portion of EVs in government fleets would help stimulate growth in the sector and encourage

manufacturers to bring a greater range of EV models to Australia. It would also help to underpin a larger second-hand EV market, and in turn, create a larger pool of more affordable EVs for consumer and small business.

6.20 The Committee is encouraged by the ACT Government's action in mandating 50 per cent zero emissions vehicles by 2019-20 and 100 per cent by 2020-21, and the United Kingdom Government's commitment to 25 per cent ultra-low emissions vehicles in the government fleet by 2022.

Recommendation 4

6.21 The Committee recommends that the Australian Government consider establishing a national EV target for the Government fleet.

Measures to support EV uptake

6.22 The evidence suggests that the price of EVs will continue to fall as production expands and battery prices decline. Evidence to the Committee suggested that EVs would reach price parity around the mid-2020s, and becoming cheaper than combustion engine (ICE) equivalents thereafter. Some commercial vehicle classes are expected to reach price parity sooner than passenger vehicles, with the lower operating cost making the whole-of-life cost cheaper than an ICE equivalent. At the same time the effort required to get achieve that should not be underestimated.

6.23 The Committee notes that in some international jurisdictions, direct financial incentives have been provided to motorists in order to promote the uptake of EVs. The Committee does not propose the implementation of such subsidies in Australia.

6.24 The Committee has heard evidence on a range of program initiatives and the intersection and overlap with tax and financial measures that could support demand for EV's but has not committed to any specific proposal or package of measures.

Public charging infrastructure

6.25 Readily available and easily accessible public charging infrastructure is a key to accelerating the uptake of EV passenger vehicles in Australia. While the Committee understands that the majority of charging of EVs is likely to occur at residential properties overnight, a comprehensive network of public charging infrastructure is required to address range anxiety, support longer distance travel and will provide confidence for consumers that they will be able to charge their vehicle when required.

6.26 The Committee supports the initiatives underway in Queensland, the ACT, Western Australia and NSW which are increasing public charging infrastructure, as well as plans for a fast charging network on federal highways. However, the Committee is concerned that, at present, there is no integrated plan for the rollout of public charging infrastructure. For this reason, the Committee recommends that as part of the national strategy, the Australian Government, along with charging infrastructure operators, develop a comprehensive plan for the rollout of a national public charging network.

6.27 The Committee recognises that highway fast charging will be important in addressing motorist's range anxiety. Government funding can play a major role in

supporting more expansive coverage, particularly in areas that may not be a commercially viable for the private sector at present.

6.28 The Committee notes the benefits of workplace charging, not only in providing access to charging facilities for those who are unable to install home charging facilities, but also in shifting electricity demand away from the early evening peak to the middle of the day, when solar PV is expected to provide surplus generation. The Committee agrees with the evidence provided that making sure EVs do not overload the electricity network at times of peak demand will also be important for maintaining grid stability and preventing price spikes.

Recommendation 5

6.29 The Committee recommends that the Australian Government coordinate with operators in the charging infrastructure industry to develop a comprehensive plan for the rollout of a national public charging network.

Vehicles emissions standards

6.30 While Australia has long had vehicle emissions standards in place, the standard for light vehicles in Australia are based on a European standard (Euro 5) which has now been superseded. Further, the Committee understands the current Australian vehicle emissions standards do not include a specific standard for carbon dioxide (CO₂) emissions.

6.31 The Committee understands that modelling undertaken for the Ministerial Forum on Vehicle Emissions estimated that phasing in an efficiency target for new light vehicles from 2020 of 105 grams of CO₂ per kilometre would deliver \$13.9 billion in net economic benefit out to 2040. Further, evidence to the Committee indicates that Australia's less stringent vehicle emissions standards may result in vehicle manufacturers not prioritising the Australian market for EVs. The Committee is therefore recommending that the Australian Government introduce more stringent vehicle emissions standards.

Recommendation 6

6.32 The Committee recommends that the Australian Government introduce more stringent vehicle emissions standards, and establish a new CO₂ standard, informed by those implemented in other developed countries and the findings of the Ministerial Forum on Vehicle Emissions.

Consumer education

6.33 Throughout the inquiry, the Committee heard that consumer concern about the driving range of EVs is hindering the uptake in Australia. The Committee understands that these concerns will be allayed with the introduction of newer EV models with greater range and the continuing roll out of charging infrastructure.

6.34 The Committee is of the view that, as part of the national strategy, the Australian Government should also undertake an education campaign to familiarise motorists with the capabilities and benefits of EVs.

Recommendation 7

6.35 The Committee recommends that any national strategy by the Australian Government should develop a consumer education campaign to raise awareness of the capabilities and benefits of EVs.

6.36 The Committee notes the establishment of the United Kingdom's EV Experience Centre and the EV Discovery Centre in Toronto, Canada. Such centres provide an excellent opportunity for consumers to experience, and become familiar with the benefits of, EVs. The Committee notes in particular the proposal by the Australian Industrial Transformation Institute, Flinders University, for a pilot EV experience centre, or 'Future Mobility Centre', at Tonsley in South Australia.

6.37 The Committee also support other means of increasing awareness and education of the public of EVs. In particular, the Committee supports a Formula E event being hosted in Australia. The Committee also notes the possible flow-on benefits that such an event would have in relation to the hosting of associated EV activities.

Recommendation 8

6.38 The Committee recommends that the Australian Government work with the state and territory governments to bring a Formula-E Championship race to Australia.

Developing an EV industry in Australia

6.39 One of the highlights of the Committee's inquiry was the opportunity to undertake site visits to companies involved in the manufacture of EVs and EV components. With the closure of manufacturing plants for ICE vehicles, the Committee believes that there are significant opportunities in the research and development, systems and manufacturing of EVs and EV components for Australian companies. In the Committee's view, this is an area where the Australian Government should be providing policy leadership through the development of an EV manufacturing roadmap.

Recommendation 9

6.40 The Committee recommends that the Australian Government develop and implement a comprehensive 10-year EV manufacturing roadmap, also covering research and development, vehicle and system design and manufacture batteries, telematics, supply chain and component manufacturing.

Procurement policy

6.41 Beyond the provision of grants, the Committee believes that the Australian Government can provide support to businesses in the EV industry through its procurement decisions and spending.

6.42 The Committee heard, for example, that public transport procurement has significant potential to support local EV manufacturing. 'Local benefits' or 'local content' provisions in government procurement policies would provide further support to local industry. On this point, the Committee notes the Commonwealth Procurement

Rules provide that, in considering value for money for procurements above \$4 million, Commonwealth officials are required to consider the economic benefit of the procurement to the Australian economy.

6.43 The Committee acknowledges the significant government fleet procurement, and particularly public transport fleet procurement, activity which occurs at local, state and territory government level, and recommends the Australian Government, coordinate federal, state and local government EV fleet and electric bus *and truck* procurement through the inter-governmental EV taskforce (Recommendation 2), informed by the national EV strategy (Recommendation 1) and EV manufacturing road map (Recommendation 9).

Recommendation 10

6.44 The Committee recommends the Australian Government coordinate federal, state and local government EV fleet, truck and electric bus procurement through the inter-governmental EV taskforce (Recommendation 2).

Research and training

6.45 EV manufacture, supply and value-chain activities present potentially significant areas of industry and economic benefit for Australia. Evidence to the Committee highlighted the breadth of research activity which is already being undertaken within Australia in relation to EV design and engineering. Further, the Committee heard that battery composition research; mining, refinement and processing of component minerals for batteries; and battery manufacture, are all promising areas for further research and development.

6.46 The Committee strongly supports increased research into these areas and recommends that the Australian Government provides grant funding accordingly.

6.47 The introduction of EVs into the Australian vehicle fleet will result in a fundamental change in the skills required for vehicle servicing and maintenance. To this end, the Committee supports the development of specific training qualifications for EV service technicians, as well as funding for apprenticeships and traineeships, to provide a workforce of technicians for EVs.

Recommendation 11

6.48 The Committee recommends that the Australian Government works with state and territory governments through the COAG Industry and Skills Council to establish national training arrangements for automotive service technicians in relation to electric vehicles.

Recommendation 12

6.49 The Committee recommends that the Australian Government, in conjunction with industry stakeholders, fund apprenticeships and traineeships in the local EV and associated manufacturing sector.

Regulatory reform*Charging and electricity infrastructure*

6.50 The Australian Government will have an important role in ensuring the electricity network is capable of managing the variable demands EVs will place on it. To this end, the Committee recommends that a 10-year plan be developed in consultation with Australian Energy Market Operator, Infrastructure Australia, business, industry, and other relevant stakeholders outlining electricity network infrastructure upgrades needed to manage the demand from an increasing EV fleet.

Recommendation 13

6.51 The Committee recommends that the Australian Government work closely with electricity market agencies, states and other relevant stakeholders to prepare a 10-year plan detailing priority electricity network infrastructure upgrades needed to manage demand from EVs.

6.52 In addition to a plan to ensure grid stability, the Committee is of the view that the impact of distributed energy resources, (DER) such as home solar photo-voltaic arrays and EV batteries, will need to be considered.

6.53 The Committee notes that the Australian Energy Market Operator (AEMO) is currently working on a DER register. In the Committee's view the work on the DER register needs to be completed as a matter of urgency.

6.54 In parallel with the DER register, the Committee is of the view that work needs to start immediately on mechanisms and strategies for AEMO to be able to access and direct DER to charge or discharge to meet operational requirements.

6.55 The Committee notes that AEMO is currently working on updating its Integrated System Plan (ISP). In the Committee's view, the ISP needs to take specific account of the need for the grid to support increased uptake of EVs.

Recommendation 14

6.56 The Committee recommends that the Australian Government work closely with the Australian Energy Market Operator (AEMO) to:

- **Expedite the establishment of a register of distributed energy resources (DER);**
- **Develop a strategy for AEMO to access and direct the DER to charge or provide electricity to the grid to meet operational requirements.**

Building codes

6.57 The Committee has heard that current tenancy laws and building codes impede the installation of home charging infrastructure, in particular for those who rent and those who live in apartments. The Committee is encouraged by international examples which have made it easier for apartment dwellers and renters to install EV charging equipment.

6.58 Many existing buildings in Australia do not have the electrical infrastructure to support the required demand for electricity expected from rising EV numbers. There exists an opportunity to future-proof new and renovated buildings for the expected increase in demand for home charging equipment by ensuring the electricity infrastructure is in place to support charger installation.

6.59 The Committee has heard specific evidence that in order to avoid over-engineering the electricity transmission system, changes to the electrical wiring requirements for new and renovated buildings should encourage installation of smart load management systems as a means of calibrating EV energy demands with supply.

Recommendation 15

6.60 The Committee recommends that the Australian Government work with state and territory governments, through COAG and the Building Ministers Forum, to explore necessary amendments to the National Construction Code to render all new dwellings 'electric vehicle charger ready'.

Recommendation 16

6.61 The Committee recommends that the Australian Government work with Standards Australia to amend AS/NZS3000:2018 *Electrical installations: Wiring Rules* to the following effect:

Where a smart load management system is not implemented, assume all the electric vehicle chargers will be running at full capacity all the time. Where a smart load management system is implemented, assume electric vehicle charging load will be effectively limited by the parameters of this system.

Standards

6.62 It is clear to the Committee that it is an opportune time to establish national standards in relation to various aspects of EVs in order to provide uniformity and certainty for motorists, vehicle manufactures and charging infrastructure providers. Some key standards identified to the Committee included: a national charging standard; a signage standard; safety standards, including minimum noise at low speeds and advanced driver assistance systems standards; and battery system standards.

Recommendation 17

6.63 The Committee recommends that the Australian Government work closely with Standards Australia to establish a series of national standards in relation to EVs.

6.64 The Committee notes evidence called for the gross vehicle weight (GVM) for passenger car licences to be increased from 4.5 to 5.5 tonnes. The Committee understands that this change would accommodate a reduction in payload due to the weight of batteries. While the Committee, in principle supports such an increase, the Committee is mindful that issues such as the towing weight allowable for EVs and licensing requirements would also need to be considered as part of any such amendment.

Senator Tim Storer
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