



31 October 2022

Department of Climate Change, Energy, the Environment and Water

To the National Electric Vehicle Strategy Team

**Submission to the National Electric Vehicle Strategy: Consultation paper**

Please find attached a submission to the National Electric Vehicle Strategy: Consultation paper.

As the largest mutual in Australia with more than 2.7 million Members, the NRMA works with government, industry and community to advocate for continued improvements to Australia's policy settings to ensure safety, efficiency and equitability.

Through collaboration, the NRMA prioritises ensuring that mobility networks and associated infrastructure and services are considered holistically to improve planning, utilisation and productivity.

Should further information on the NRMA's submission be required, please do not hesitate to contact me at [REDACTED].

Yours faithfully

[REDACTED]

**Robert Giltinan**  
Director of Policy & Public Affairs

## Submission to the National Electric Vehicle Strategy: Consultation paper

### **1. Do you agree with the objectives and do you think they will achieve our proposed goals? Are there other objectives we should consider?**

EVs are in the final stages of transitioning to become more than a competitive rival to the mature and well-established internal combustion engine vehicle.

In the coming years, the cost and infrastructure obstacles which have kept EVs exclusive and beyond the reach of mainstream consumers are likely to disappear.

The moment has arrived for Australia to decide what role it wants to play as a manufacturer, researcher, supplier and consumer.

The NRMA has worked closely with government, industry and community over many years to improve policy settings and education pertaining to EVs. NRMA public policy documents can be found at [www.mynrma.com.au/company/public-reports](http://www.mynrma.com.au/company/public-reports).

The NRMA submits that the economic and social opportunities associated with the transition to EVs extend far beyond light vehicles and the transport sector. The NRMA supports the Australian Government's proposed objectives as they are strongly aligned to NRMA public policy and will underpin these opportunities:

- Encourage rapid increase in demand for EVs.
- Increase supply of affordable and accessible EVs to meet demand across all segments.
- Establish the systems and infrastructure to enable the rapid uptake of EVs.

The Australian Government should consider aligning the National Electric Vehicle Strategy with complementary plans and strategies, including the National Battery Strategy, to support its objectives and goals.

The NRMA commends the Australian Government's recently-announced development of a new National Critical Minerals Strategy – another complementary strategy that can play an important role bringing government and industry together to holistically consider broad-based economic opportunities.

In the case of the minerals sector, it is critical to have a strategy in place to guide and unlock the potential opportunities to enhance trade and diversify global supply chains given that we have some of the world's largest reserves to support the transition to electric transport,

### **2. What are the implications if other countries accelerate EV uptake faster than Australia?**

Benefits associated with transitioning to EVs include reducing CO<sub>2</sub> and noxious emissions, improving public health standards, lowering motoring costs, enhancing fuel and national security settings, and bolstering manufacturing and trade opportunities.

These opportunities will vary from jurisdiction to jurisdiction and are impacted by time and opportunity cost. The shift away from liquid fuel to electricity presents challenges, however it is critically important for Australia to prepare for these to minimise adverse impacts and maximise opportunity.

The rate of uptake of EVs is directly linked with many of the broad-based economic opportunities available.

In many ways, Australia is already at a disadvantage to jurisdictions that have a higher uptake of EVs and more supportive policies. Given the Australian market size for vehicles, the composition of the

Australian fleet, and the fact Australia is a right-hand drive market, incentivising supply is currently the most pressing challenge to overcome in developing a self-sustaining EV market.

A mandated CO<sub>2</sub> standard is the obvious missing link that can help supply moving forward and further strengthen market signals. The NRMA supports the introduction of a mandated CO<sub>2</sub> standard for new light vehicle sales.

Failure to implement a mandated CO<sub>2</sub> standard and reduce emissions across Australia's light vehicle fleet will undermine efforts across other sectors of the economy to decarbonise, and make Australia's international commitments to decarbonisation more difficult to achieve.

If supply constraints are not addressed, other jurisdictions will continue to be prioritised over Australia, including for industry-related private investment.

Delaying the transition to EVs will also delay realising improvements in Australian governments' health budgets and the opportunity to bolster liquid fuel security.

While subject to continuing research, epidemiological studies have presented increasing evidence over several decades of the negative health impacts air pollutants have on human beings, with motor vehicles being a significant contributor in urban environments.

The Electric Vehicle Council and Asthma Australia's Cleaner and Safer Roads for NSW report of 2019 found that emissions from internal combustion engine vehicles in Sydney/Newcastle/Wollongong creates \$3 billion in health costs every year, with more than 50 per cent of attributable pollutants coming from exhaust emissions. Similarly, past modelling by BITRE has presented the economic cost of internal combustion engine vehicles in the billions of dollars per annum.

In regard to liquid fuel, the vast majority of Australian vehicles consume petrol and diesel which are majority foreign sourced, making a key element of the economy vulnerable to price and supply shocks associated with the global oil market.

All forms of EVs reduce Australia's demand and reliance upon foreign oil as they replace the energy source with domestically produced alternatives, including renewables.

Australia currently imports more than 90 per cent of its liquid fuel need.

### ***3. What are suitable indicators to measure if we are on track to achieve our goals and objectives?***

The Australian Government would likely benefit by continually monitoring the following and reporting net CO<sub>2</sub> emissions, which will include emissions from recharging/refuelling:

- New EV sales and percentage of sales.
- EV registration information (urban vs regional).
- EV model availability.
- Public charging sites and plugs.
- Reporting of net CO<sub>2</sub> emissions.

### ***4. Are there other measures by governments and industry that could increase affordability and accessibility of EVs to help drive demand?***

## **Regulation & Taxation**

The NRMA commends the Australian Government's actions in 2022 to put downward pressure on the purchase price of EVs through the removal of FBT and the five per cent import tariff for eligible EVs. These taxation reforms will drive purchase behaviour and incentivise EV purchases through businesses.

Regulation and tax arrangements for the operation of Australia's land-based vehicles, however, have largely been designed for internal combustion engines.

Some regulations don't thoroughly consider the advantages of EVs such as less noise pollution at lower speeds, whereas others make it harder to extract the raw materials necessary for EV manufacturing, resupply, recycling and repair.

Some examples include:

- Environmental Effects Statements and Regulatory Impact Statements which don't value EV 'whole-of-life' benefits when assessing manufacturing plants and approvals.
- Building regulations which hinder the installation of charging in car park spaces in existing buildings and other planned zones.
- Lack of harmonisation of charging standards.
- Prohibition of kerbside charger installation.
- LCT arrangements.
- CBD parking levies on CBD charging sites.

In some overseas jurisdictions, there are regulation and tax settings that impact on the composition of the light vehicle fleet. Europe has higher fuel taxes (incentivising the purchase of smaller and more fuel efficient vehicles), vehicle excise duties (incentivising the purchase of low CO<sub>2</sub> emitting vehicles), and direct cash rebates for the purchase of low CO<sub>2</sub> emitting vehicles. Similarly, many jurisdictions in the United States have employed direct measures to incentivise the uptake of EVs and low CO<sub>2</sub> emitting vehicles.

## **Public EV Charging**

According to the International Clean Council on Transportation, the availability of a widespread charging network has a positive correlation with EV uptake.

Under the 'Medium Scenario' of CSIRO's 2022 postcode-level Battery Electric Vehicle (BEV) ownership projections, there is predicted to be more than 2.5 million BEVs on Australian roads by 2030.

In Norway, the ratio of DC fast chargers to BEVs is approximately 1:75; in the UK, it's approximately 1:90; and in the US, it's approximately 1:100.

The NRMA submits that Australia needs to maintain, at a minimum, its current ratio of approximately 1:130, with a potential target of 1:100.

In overseas jurisdictions, in recognition of the poor economics associated with procuring, installing and operating DC fast chargers in advance of higher levels of use, many governments provide grants and rebates to support build costs (up to 75 per cent of total capital in the UK, Canada and California).

In the medium term, there will likely be significant demand for DC fast charging and AC charging in urban areas where there is a higher density of population and a higher proportion of EV owners that do not have access to off-street parking and AC charging.

If congestion levels at individual charging sites become too high, this may deter other consumers from purchasing EVs, thereby hindering the rate of EV uptake. Congestion in a specific geographic area can be alleviated by either establishing additional charging sites or expanding the number of charging bays at existing sites. Ideally, charging sites will be established with excess space so that they can expand over time to meet increasing demand.

In addition to charging in urban areas, a continued focus on the provision of DC fast charging and AC charging throughout regional Australia is critical to ensuring that all Australians can benefit from the

transition to EVs. The NRMA supports a community-centric, data-driven approach to the planning and rollout of non-proprietary public EV charging infrastructure in Australia.

Policy and regulatory measures available often vary between vehicle categories, reflecting different use cases, regulation and demand. In addition to light vehicles, the Australian Government should identify and plan infrastructure investment to facilitate the charging of heavy vehicles and emerging mobility technology, specifically micro-mobility.

### ***Interoperability***

Public EV charging interoperability initiatives such as setting recharging plug standards, ensuring open access to all charging infrastructure, and single identification/payment methods, are important to ensure that public EV charging is compatible with the largest number of EVs. From a customer experience perspective, there are currently multiple apps and accounts required by consumers to access existing public EV chargers, and it is difficult to ascertain charging site operability and availability.

If interoperability is not prioritised, the customer experience will suffer, and EV owners and prospective purchasers will likely become increasingly concerned with charging their chosen vehicle at particular public charging sites.

### **Fleets**

Fleet purchases account for approximately 50 per cent of new vehicle sales and can act as a gateway to the establishment of a second-hand EV market. In the case of government fleets, vehicles are refreshed every three to four years, with used vehicles then made available to consumers for purchase.

The NRMA supports all Australian governments establishing EV procurement policies, including fleet targets. In addition, incentivising fleet purchases in the private sector through the provision of subsidies for bulk domestic orders is a powerful tool to drive increased supply and promote the transition to EVs.

The NRMA submits that increasing the supply of EVs through businesses, leases, government and private fleets are important measures to encourage early adoption and put downward pressure on purchase prices by stimulating new and used EV sales.

The Australian Government should also work with state and territory governments to increase the rollout of electric buses, including charging and road infrastructure.

### **Parallel Importation**

Parallel vehicle importation is effectively not permitted in Australia. In New Zealand, there are no significant provisions against the importation of new and second-hand vehicles. The NRMA would not be opposed to the Australian Government, in collaboration with industry, exploring potential changes to the *Road Vehicle Standards Act 2018* aimed at increasing vehicle choice and availability for consumers in the EV market while protecting safety and environmental standards.

### **Trade (Thailand)**

Thailand has become an increasingly important manufacturing hub for Australian-bound vehicles, particularly light commercials. Currently, around one in every four vehicles sold in Australia is Thai-made. Leveraging Australia's strong trade relationship with Thailand to further encourage manufacturing of EVs, particularly light commercials, could be critically important in realising Australia's EV ambition, particularly if the composition of the Australian vehicle fleet doesn't change dramatically.

The Australian Government may benefit by exploring further co-operation opportunities with the Government of Thailand, including strengthening co-operation on critical minerals.

## **5. Over what timeframe should we be incentivising low emission vehicles as we transition to zero emission vehicles?**

The NRMA worked closely with the NSW Government on developing its Electric Vehicle Strategy. The Strategy aims to drive sales of EVs to more than 50 per cent of new car sales by 2030–31.

A critical component of the Strategy is introducing a 2.5c/km (indexed to CPI) charge on EVs, but only from 1 July 2027 or when EVs represent 30 per cent of new vehicle sales.

The NRMA submits that EV sales could reasonably be deemed self-sustaining based on this metric. However, the Australian Government would likely benefit by continually monitoring purchase data and sentiment to ensure any incentives remain appropriate, fit-for-purpose, and supportive of maximising vehicle choice for the consumer.

Incentives should also exist alongside economic modelling that factors in the many benefits of EVs, including less pollution, improved public health, better fuel security, and manufacturing opportunities.

## **6. What information could help increase demand and is government or industry best placed to inform Australians about EVs?**

Awareness about the features and strengths of EVs and supporting infrastructure is a critical requirement for alleviating community concerns and boosting social acceptance.

A range of options exist to address and boost EV awareness and knowledge levels, including:

- Information campaigns designed to dispel myths about EVs.
- Advertising campaigns about the number and location of charging stations.
- EV events encouraging test drives and Q&As.
- Assigning education institutions to conduct consumer research for accelerating the transition.
- Promoting best practice for smart charging to ease pressure on electricity grids and reduce consumer costs.

To support the NSW Government's Electric Vehicle Strategy, the NSW Department of Planning, Industry and Environment (now NSW Office of Energy and Climate Change) entered into a partnership with the NRMA to improve consumer awareness and education pertaining to EVs.

The partnership includes developing programs, disseminating information and engaging directly with the public on matters relating to EVs.

In addition, the NSW Government entered into a partnership with the NRMA to run 20 'EV Drive Days' throughout 2022 and 2023 to give members of the public the opportunity to test drive a range of EVs. Further Information on this initiative can be found at [www.mynrma.com.au/drive-days](http://www.mynrma.com.au/drive-days).

In 2022, the NRMA also launched an online 'EV Community Forum' to give Australians a unique and interactive platform to provide information, talk about EVs, share experiences and ask questions. The Forum can be accessed at <https://community.mynrma.com.au>.

Through survey responses and less formal feedback channels, NRMA Members have highlighted the positive attributes associated with these initiatives, including improved education and increased propensity to purchase an EV.

New research from the NRMA, released in September 2022, found that more than half of the 1,200 people surveyed (55 per cent) would consider buying an EV if they were in the market for a new vehicle.

The annual survey revealed that public awareness and appetite for information on EVs is growing.

The AAA's 'real-world' test program, supported by a \$14 million funding commitment from the Australian Government, testing vehicles in real-world driving conditions is also an important tool. The program will improve consumer information on fuel consumption and environmental performance, and play an important role in driving demand for improving environmental performance among manufacturers.

While the program is initially focused on high volume vehicles, most of which feature an internal combustion engine, the AAA expects the program to adapt to new technologies over time to meet consumer demand as the market evolves.

The NRMA submits that the Australian Government should develop and rollout, including in partnership with industry, targeted information campaigns and initiatives to boost community knowledge about EVs.

### ***7. Are vehicle fuel efficiency standards an effective mechanism to reduce passenger and light commercial fleet emissions?***

To support Australian governments meeting their Net Zero 2050 commitments, the NRMA supports the introduction of a mandated CO<sub>2</sub> standard for new light vehicle sales.

A mandated CO<sub>2</sub> standard is one of only few available options in the transport sector that will ensure abatement across the whole Australian light vehicle fleet to support the broader economy in achieving Net Zero 2050.

Reducing emissions in the transport sector can be achieved more easily than in most other sectors of the economy, particularly if the energy sector (specifically, electricity generation) continues to decarbonise. Leveraging the available opportunities in this sector is critical in ensuring the broader economy can support Australia's international commitments to emissions reduction.

Standards for CO<sub>2</sub> and noxious emissions are an effective and responsible market-based mechanism to improve the environmental performance of the Australian light vehicle fleet.

In 2019, the Senate Select Committee on Electric Vehicles recommended the establishment of a new CO<sub>2</sub> standard, informed by those implemented in other developed countries and the findings of the Ministerial Forum on Vehicle Emissions (supported by analysis by BITRE).

The Australian Government's recent investment in the AAA's 'real-world' test program will complement standards associated with emissions reduction.

In addition to reducing passenger and light commercial fleet emissions, measures to improve the fuel efficiency of vehicles will save consumers money and reduce Australia's reliance on fuel importation.

### ***8. Would vehicle fuel efficiency standards incentivise global manufacturers to send EVs and lower emission vehicles to Australia?***

The NRMA commends the Australian Government's actions in 2022 to put downward pressure on the purchase price of EVs through the removal of FBT and the five per cent import tariff for eligible EVs. These taxation reforms will drive purchase behaviour and incentivise EV purchases through businesses.

A mandated CO<sub>2</sub> standard is the obvious missing link that can help supply moving forward and further strengthen market signals.

Alongside Russia, Australia is the only country in the OECD to not have in place, or be in the process of developing, a fuel efficiency standard for light vehicles. The lack of a fuel efficiency standard in Australia has been highlighted by manufacturers of EVs as one of the key barriers to importation.

New vehicle models with improved fuel consumption, lower tailpipe emissions, and those utilising alternative energy sources are not currently being prioritised for the Australian market.

A CO<sub>2</sub> standard designed for the Australian market, along with improved fuel quality standards to facilitate the introduction of the international noxious emission regulation (Euro 6), would provide an incentive for vehicle manufacturers to offer models with the latest engine technologies that are more fuel efficient.

**9. In addition to vehicle fuel efficiency standards for passenger and light commercial vehicles, would vehicle fuel efficiency standards be an appropriate mechanism to increase the supply of heavy vehicle classes to Australia?**

The NRMA supports the introduction of a mandated CO<sub>2</sub> standard for new light vehicle sales and commends the Australian Government's phased introduction of Euro VI standards for trucks and buses from 1 November 2024.

The NRMA supports government, industry and community working together to further explore opportunities to incentivise the early adoption of zero emissions heavy vehicles.

**10. What design features should the Government consider in more detail for vehicle fuel efficiency standards, including level of ambition, who they should apply to, commencement date, penalties and enforcement?**

Per vehicle kilometre travelled, Australian light vehicles emit much larger quantities of CO<sub>2</sub> given current fuel quality standards and the lack of a mandated fuel efficiency standard. The design of a mandated fuel efficiency standard should acknowledge CO<sub>2</sub> levels associated with the current Australian light vehicle fleet, but also ensure consistency with major international fuel efficiency standards.

To support Australian governments meeting their Net Zero 2050 commitments, the NRMA supports the introduction of a mandated CO<sub>2</sub> standard for new light vehicle sales with the following initial attributes:

- Phased targets designed for the Australian market, progressively reducing to ensure consistency with major international fuel efficiency standards, including USA, Japan & EU.
- Separate phased targets for Cars/SUVs (e.g. passenger and on-road SUVs) and Light commercials/4WDs (e.g. utilities and off-road 4WDs).
- Commencement of phased targets on 1 January 2025 (following the *Fuel Quality Standards (Petrol) Amendment Determination 2022*, limiting sulphur content in all unleaded fuels to 10ppm in 2024).
- Phased targets for >95 per cent of Cars/SUVs and >95 per cent of Light commercials/4WDs reducing to 0g/km by 2035.
- Overwhelming majority of manufacturer sales of new, carbon-emitting Cars/SUVs and Light commercials/4WDs in the Australian market from 1 January 2036 automatically subject to financial penalty.
- Flexibility for manufacturers to achieve mandated targets through several mechanisms between 2025 and 2035, including manufacturer- and group-wide targets.

Critically, phased targets must be ambitious to support Australia catching up with the rest of the world in a reasonable timeframe, but periodically reviewed (e.g. every three years) to ensure they remain appropriate, fit-for-purpose, and supportive of maximising vehicle choice for the consumer. Embedding a periodic review into a mandated CO<sub>2</sub> standard will ensure that EV supply is constantly incentivised while protecting consumers from potentially higher costs due to manufacturer non-compliance.

Phased targets aiming to reduce to 0g/km by 2035 (for >95 per cent of new light vehicle sales) support the submission by numerous policymakers and organisations, including the International Energy Agency, that by 2035, carbon-emitting light vehicle sales are effectively required to cease to support the broader economy in meeting Net Zero 2050.

This 15-year time period is designed to support the retiring of the overwhelming majority of carbon-emitting light vehicles sold up until 2035.



In developing a mandated CO<sub>2</sub> standard for new light vehicles, the Australian Government would likely benefit by consulting with policymakers in jurisdictions that have previously implemented a standard.

Recently, the European Union announced a commitment on a law to effectively ban the sale of new petrol and diesel light vehicles from 2035. The commitment also includes a 55 per cent cut in CO<sub>2</sub> for new light vehicles sold from 2030 compared to 2021 levels.

**11. What policies and/or industry actions could complement vehicle fuel efficiency standards to help increase supply of EVs to Australia and electrify the Australian fleet?**

The NRMA supports the Australian Government:

- Further reviewing taxation arrangements for EVs, including exempting EVs from LCT.
- Establishing EV procurement policies, including fleet targets, and equipping government car parks and buildings with EV charging infrastructure to facilitate the management of fleets.
- Providing subsidies to the private sector to incentivise bulk domestic EV fleet orders.
- Working with states and territories to streamline building approvals for EV charging infrastructure to ensure easy installation of home charging in apartments and in rental homes, as well as charging infrastructure in car parks and other public locations.
- Establishing an inter-governmental working group to develop a national plan for the rollout of charging infrastructure, and to work with energy suppliers to manage network capacity, support a co-ordinated rollout, and minimise network constraints.
- Providing low interest loans for EV home chargers, potentially through existing resources such as CEFC or ARENA funding, to assist in reducing upfront cost pressures.
- Supporting enabling works and/or provision of low interest loans for installation of highway and destination EV charging infrastructure, potentially through existing resources such as CEFC or ARENA funding to support private investment in charging sites.
- Developing education campaigns about ultra-low fuel consumption vehicles and information about EV charging infrastructure availability, as consumers informed about EVs are more likely to purchase.

**12. Do we need different measures to ensure all segments of the road transport sector are able to reduce emissions and, if so, what government and industry measures might well support the uptake of electric bikes, micro-mobility and motorbikes?**

Policy and regulatory measures available often vary between vehicle categories, reflecting different use cases, regulation and demand. While reducing CO<sub>2</sub> and noxious emissions across the light vehicle fleet will have a significant impact, the electrification of the transport sector more broadly will play a major role supporting Australian governments meeting their Net Zero 2050 commitments.

In this regard, the NRMA supports the NSW Government's Zero Emission Bus Transition Strategy and the ACT Government's Zero-emission Transition Plan for Transport Canberra.

The NRMA also acknowledges likely changes to Australian Design Rules to support the provision and importation of a greater number of heavy vehicles. While safety should always be the number one priority, ensuring that regulations don't hinder the adoption of new and beneficial technologies is critically important for domestic manufacturing, investment, exportation and importation.

To further support emissions reduction for heavy vehicles, the Australian Government may benefit by exploring opportunities to provide low interest loans for the purchase of zero emissions heavy vehicles, potentially through existing resources such as CEFC or ARENA funding, to assist in reducing upfront cost pressures.

The identification and planning for infrastructure investment to facilitate charging of heavy vehicles is also required, including at depots, hubs and rest stops.

Similarly, charging options for emerging mobility forms, specifically micro-mobility, will likely be required as the technology continues to evolve. While safety should always be the number one priority, it is likely that emerging mobility forms will support public transport networks, providing affordable alternatives to private vehicle travel.

The NRMA supports government, industry and community working together to further explore opportunities to incentivise the early adoption of zero emissions heavy vehicles and the safe use of emerging mobility forms.

### ***13. How could we best increase the number of affordable second-hand EVs?***

The NRMA commends the Australian Government's actions in 2022 to put downward pressure on the purchase price of EVs through the removal of FBT and the five per cent import tariff for eligible EVs. These taxation reforms will drive purchase behaviour and incentivise EV purchases through businesses.

The NRMA supports all Australian governments establishing EV procurement policies, including fleet targets. Government fleets are refreshed every three to four years, with used vehicles made available to consumers in the second-hand market.

The NRMA submits that increasing the supply of EVs through businesses, leases, government and private fleets are important measures to encourage early adoption and put downward pressure on purchase prices by stimulating new and used EV sales.

### ***14. Should the Government consider ways to increase the supply of second-hand EVs independently imported to the Australian market? Could the safety and consumer risks of this approach be mitigated?***

Parallel vehicle importation is effectively not permitted in Australia. In New Zealand, there are no significant provisions against the importation of new and second-hand vehicles. The NRMA would not be opposed to the Australian Government, in collaboration with industry, exploring potential changes to the *Road Vehicle Standards Act 2018* aimed at increasing vehicle choice and availability for consumers in the EV market while protecting safety and environmental standards.

### ***15. What actions can governments and industry take to strengthen our competitiveness and innovate across the full lifecycle of the EV value chain?***

## **Research & Skills**

The transition to a vehicle marketplace where EVs are the substantial share will have a disruptive effect on the internal combustion engine industry and its component suppliers. Existing suppliers should be encouraged to investigate where their existing operations can be modified to meet new demands.

Many overseas jurisdictions provide business development and research support to expand their domestic EV industries. Grants, incentives, tax credits and subsidies are available for plant construction, component development, primary research, testing, training, and battery production, enhancement and recycling.

Upgrade and modernisation grants can help facilitate viable industry transition programs. Equally, the workforces situated in traditional internal combustion engine supply industries should be encouraged or incentivised to retrain if related employment opportunities emerge.

The NRMA submits that the Australian Government provide modernisation grants and employee retraining assistance grants to assist internal combustion engine part manufacturers and workers transition to new roles.

In addition, a workforce with the appropriate skills to meet Australia's mobility needs of the future will be critical. The development of STEM programs in collaboration with TAFE and universities should be a priority given future EV uptake projections and a continuing industry focus on Connected and Automated Vehicle technologies.

### **Batteries**

Grants for research, development and product innovation currently exist and should continue to incentivise private sector and scientific investment in the EV industry and its related fields. Expanding government funding for research and innovation prizes should also be considered for motivating lines of research, particularly into batteries and peripheral issues.

Proposed battery-related research streams include: cost per kWh; capacity; charging speed; heat reduction and battery safety; inductive charging; degradation minimisation; residual life maximisation; material recycling; disposal and end-of-life management; environmentally friendly mining, processing and manufacturing; and other battery chemistries and manufacturing techniques.

Battery-related issues such as resale, reuse, recycling, home conversion and disposal will also become increasingly important.

In addition, consumer protection rules and regulations for emerging innovations such as induction charging and battery swapping will require a 'fit-for-purpose' review.

The NRMA submits that Australian governments expand their EV research and develop a wide-ranging research capability and innovation prize program, and undertake this 'fit-for-purpose' review of EV battery regulations.

#### ***16. How can we expand our existing domestic heavy vehicle manufacturing and assembly capability?***

The NRMA acknowledges likely changes to the Australian Design Rules to support the provision and importation of a greater number of heavy vehicles. While safety should always be the number one priority, ensuring that regulations don't hinder the adoption of new and beneficial technologies is critically important for domestic manufacturing, investment, exportation and importation.

To further support demand for zero emissions heavy vehicles, the Australian Government may benefit by exploring opportunities to provide low interest loans, potentially through existing resources such as CEFC or ARENA funding, to assist in reducing upfront cost pressures.

The identification and planning for infrastructure investment to facilitate charging of heavy vehicles is also required, including at depots, hubs and rest stops.

The NRMA supports government, industry and community working together to further explore opportunities to expand heavy vehicle and parts manufacturing.

#### ***17. Is it viable to extend Australian domestic manufacturing and assembly capability to other vehicle classes?***

Australia possesses an innovative, entrepreneurial and well-educated population, and is well suited to developing industries that support the global market for EVs.

Policymakers and associated industry representatives have, through public policy reports and submissions to government inquiries and roundtables, highlighted opportunities for Australia through EV component and peripherals manufacturing (including advanced and precision manufacturing), parts assembly, retrofitting, value adding, storage technologies, and battery reuse and recycling.

The Industry 4.0 Advanced Manufacturing Forum facilitates dialogue and collaboration between multi-level stakeholders and is well placed to map emerging priorities and provide policy recommendations.

**18. Are there other proposals that could help drive demand for EVs and provide a revenue source to help fund road infrastructure?**

The NRMA supports the availability of all funding models to maximise investment in road and transport infrastructure, including:

- Community pays (taxation revenue).
- Beneficiary pays (value capture, third party revenue streams and levies).
- User pays (tolls, public transport fares and a broad-based road user charging scheme).

The NRMA supports the application of fair and equitable user pays funding models to bring forward infrastructure delivery where the charge represents value for money and real benefits to the community.

Benefits could take the form of:

- Improved transport network performance.
- Improved asset quality or safety.
- Reduced travel times on the network.
- Environmental improvements, including greenhouse gas emissions reduction.
- Productivity benefits, including reduced cost of congestion.
- Economy-wide benefits, including business and residential development opportunities.

The NRMA would like to see a fundamental change in the way infrastructure is funded, moving to a broad-based road user charging scheme because current arrangements:

- Are not delivering adequate investment in new infrastructure to support population changes.
- Provide inadequate asset maintenance, which is reducing the safety, quality and productivity of current infrastructure.
- Will see a declining revenue base (fuel excise) due to fuel efficiencies and EVs.

Critically, a broad-based road user charging scheme should not create a further barrier to the uptake of EVs in Australia. In 2021, the NRMA supported introducing a 2.5c/km (indexed to CPI) charge on EVs, but only from 1 July 2027 or when EVs represent 30 per cent of new vehicle sales.

The NRMA worked closely with the NSW Government on setting this balanced approach to a road user charging scheme which has since been adopted by several other state governments.






Australian governments investigating road user charging schemes need to consider the economic and societal benefits of EVs and avoid inadvertently putting in place additional barriers to their adoption. Any new or additional impost on the purchase or use of these vehicles in the short term would be counterproductive and would act to discourage the purchase of cleaner and more efficient vehicles.

Putting downward pressure on initial purchase prices while investing in supporting infrastructure and services will encourage more motorists to consider EVs.

Road user charging schemes, once implemented and ubiquitous, should evolve to consider further use factors to improve equity and road network efficiency, including location, time of day and vehicle type; price adjustments should also be considered over time to ensure sustainable funding for roads and transport infrastructure and maintenance.

To support progressing road user charging, as well as tolling reforms, a 'Phased Implementation Plan' has been developed by the NRMA (see following page).

# Road User Charging Phased Implementation Plan

Phase 1	Phase 2	Phase 3	Phase 4	Phase 5
 <p>Rationalise the tolled motorway network</p>	 <p>Replace fixed charges, including registration and stamp duty, with a distance-based charge.</p>	 <p>Replace fuel excise with a distance-based charge, including caps to ensure cost neutrality.</p>	 <p>Introduce variable charging based on location, time of day, and vehicle type.</p>	 <p>Adjust charges over time to ensure sustainable roads and transport funding.</p>
<p>Network-wide charging will improve simplicity, consistency and user equity.</p> <p>Multiple trip charging caps could benefit rationalisation and support heavy users.</p>	<p>Distance-based charging will remove inefficient and inequitable fixed charges.</p> <p>Distance-based charging can underpin further road pricing reform.</p>	<p>Distance-based charging will remove a regressive and unsustainable tax.</p> <p>Distance-based charging at the state and territory level would effectively administer a 'tax switch', giving states greater control over decision making that impacts their road network.</p>	<p>Variable charging will improve user equity and enable dynamic traffic management.</p> <p>Network efficiency will enhance asset utilisation.</p>	<p>Enables flexible charging based on consumer propensity to pay and funding requirements.</p> <p>Enables improved decision making in relation to capital expenditure and maintenance.</p>

**19. What more needs to be done nationally to ensure we deliver a nationally comprehensive framework for EVs?**

**See responses to Questions 4, 6, 10, 11, 15.**

**Electricity & Energy**

Australia's electricity networks were not designed to cater for EVs. Meeting future charging needs will require parts of Australia's system to be modernised. Some complex grid-related challenges include:

- Upgrading distributive transformers and utility lines to cope with increased downstream demand.
- Compensating for voltage drop due to distance and increased current usage.
- Upgrading segments of the network to offset phase imbalance/power quality.
- Upgrading utility lines to better host charger station integration.
- Capacity upgrades to facilitate ultra-fast charging (e.g. 350kW capacity).
- Changes in peak demand times.
- Increased maintenance schedules due to an increase in high usage hours.

While declining new technology costs, consumer preferences, investor priorities and government policy have shifted the dial on clean energy investment, the scale of the financial, technology, skills and practical challenges ahead is significant. The Energy Security Board has warned of disruptions across networks if the infrastructure and systems required to ensure reliability and affordability are not built in a timely manner to replace existing assets.

Key considerations to support the transition include:

- Promoting the growth of variable renewable energy and supporting integration.
- Consumer education about the scale of the challenges ahead, and supporting tools to assist in managing energy consumption.
- Bolstering power system security.
- Supporting the rapid spread of rooftop solar, smart appliances and other distributed energy resources.
- Effective collaboration between Australian governments and markets.
- Developing skills and technology capacity.

According to the Australian Energy Market Operator (AEMO), the National Electricity Market (NEM) would need to double its current output by 2050 to serve the electrification of Australia.

To achieve Net Zero 2050 the power system will need:

- Double the amount of power it presently serves and a nine-fold increase in utility-scale variable renewable energy.
- Triple firming, or dispatchable capacity, to balance the peaks and fill in the troughs of variable renewable energy.
- New transmission to convey the electrons from new areas of renewable generation to energy consumers in population centres.
- New tools for grid operability for the increased complexities of operating at up to 100 per cent instantaneous penetration of renewable energy.

To facilitate critical energy sector reforms across all levels of government, including planning, upgrades, network connections, infrastructure installation, tariffs, and community- and home-based infrastructure, the NRMA supports driving collaboration and decision-making through the Infrastructure and Transport Ministers' Meetings.

## ***Network Connections***

If the addition and connection of millions of EVs into electricity networks is not appropriately prepared for or managed, this may lead to increased costs for consumers due to delayed investment to manage reliability and capacity.

In the context of EV charging sites, short-term investments into networks may be needed to unlock capacity. Chargefox, recently acquired by Australian Motoring Services, identified through its EV Charging Network Project that high voltage network connections may be needed for fast charging sites. Chargefox found that dynamic connections would be an alternative to high voltage upgrades.

## ***Network Tariffs***

Reforming network tariffs will be a critical element in managing pressure on the electricity networks from a significant uptake of EVs. If no action is taken to incentivise electricity demand to be more evenly spread across the day, there is a risk that peak demand becomes overwhelming and necessitates further expansion of the capacity of the electricity networks.

Using network tariffs to incentivise usage in off-peak times is critical to co-ordinating and optimising the impact of a significant number of EVs connecting to the grid. Smart charging infrastructure can be used in co-ordination with time-varying network tariffs to ensure that EVs are only charged at times when costs will be lowest.

Network tariff reform will also be important for ensuring that EVs can provide support services to electricity networks, rather than being a stressor on capacity. As EVs will be highly distributed across the grid, they can be valuable for managing the security and stability of low voltage networks.

## ***Smart Meters/Chargers***

Smart meters will help unlock the benefits of smart home charging for consumers and facilitate EVs providing services to electricity markets. More broadly, smart meters can provide consumers with control over their energy assets and detailed data on their energy usage that can be downloaded and potentially shared. Smart meters, which can measure electricity use in 30-minute blocks, also enable consumers to more easily access time-varying tariffs that may facilitate cheaper EV charging costs during off-peak periods.

Outside of Victoria, which had a mandatory smart meter rollout, smart meters account for far less than half of all electricity meters. The low penetration of smart meters is one of the key reasons why their many benefits are not widely available to Australian consumers. Accelerating the smart meter rollout will enable more advanced integration of energy assets (including EVs) into the market and an increased uptake of time-varying network tariffs that can encourage and incentivise EVs to be charged at off-peak times.

The widespread usage of smart home charging will also depend on the development of policies that ensures there is interoperability of smart chargers and minimum technical standards. As part of its Customer Energy Resources Implementation Plan, the Energy Security Board is seeking to develop these types of policies, as well as other regulatory and market settings that support smart charging of EVs.

The NRMA supports Australian governments providing subsidies for the purchase and installation of smart meters that support EV charging at optimal times or bi-directional chargers that enable V2H and V2G functionality.

## **Cybersecurity**

It is likely in the future that millions of consumer endpoints are connected to and orchestrated via the internet, creating a significant new vulnerability.

The Australian Government should work with industry to ensure that any planned, wide-scale architecture is appropriately cybersecure to mitigate the risk associated with malicious actors.

### ***20. How can we best make sure all Australians get access to the opportunities and benefits from the transition?***

***See responses to Questions 1–19.***

The NRMA submits the following as priorities to ensure all Australians benefit from the transition to EVs:

- Introduction of a mandated CO<sub>2</sub> standard for new light vehicle sales.
- Rollout of public EV charging sites and plugs, particularly throughout regional Australia.
- Delayed introduction of road user charges on EVs (1 July 2027 or 30 per cent of new vehicle sales).
- Public information campaigns and initiatives to boost community knowledge about EVs.
- Periodic review of associated data, regulations, incentives and programs to ensure the delivery of the objectives and goals of the National Electric Vehicle Strategy.