

22 March 2024

Committee Secretary

Standing Committee on Climate Change, Energy, Environment and Water

PO Box 6021

Canberra ACT 2600

Via email: CCEEW@aph.gov.au

**Electric Vehicle Council's Response to
Inquiry into the Transition to Electric Vehicles**

The Electric Vehicle Council (EVC) welcomes the opportunity to provide feedback to the Standing Committee on Climate Change, Energy, Environment and Water Inquiry into the Transition to Electric Vehicles. The EVC is the national peak body for the electric vehicle (EV) industry in Australia. Our mission is to accelerate the electrification of transport for a sustainable and prosperous future. We represent members across the EV value chain, including car, bus and truck manufacturers, importers, operators, charging infrastructure suppliers, battery reuse and recycling companies, financiers, and network providers.

Introduction

Importance of transport decarbonisation

Transport makes up almost one-fifth of Australia's emissions, with the vast majority of emissions coming from cars, followed by trucks. Unfortunately, transport is also the greatest laggard when it comes to achieving our emissions reduction targets. We estimate that without action from the government, Australia's transport emissions will likely be significantly higher than 2005-levels in 2030 – significantly out of step with the average, economy-wide target of a 43% reduction. This means that the burden of reducing emissions is being shifted from the transport sector onto Australian farmers, manufacturers, energy suppliers, and other local businesses.

Based on current trends, it is likely that the transport sector will become Australia's top emitting sector in the near future, as other sectors of the economy – such as energy – rapidly decarbonise. While much of the technology is already available to decarbonise transport, the challenge for this sector is time; specifically the amount of time it takes to turnover the vehicle fleet. As such, it is of the utmost importance that the decarbonisation of this sector is prioritised today in order to achieve net zero emissions by, or ideally before 2050.

Global transition underway

Globally, the adoption of EVs is accelerating at an unprecedented pace, with EVs now comprising over 18% percent of new light vehicle sales.¹ In Australia, EV uptake has hit new records each year, reflecting increased recognition of their significant economic, environmental and health advantages (see **Figure 1**).² This growth can be attributed to a range of positive actions taken Australian state, territory and federal governments, and the Australian EV industry to reduce costs for consumers, increase model availability, and invest in the roll out of charging infrastructure.

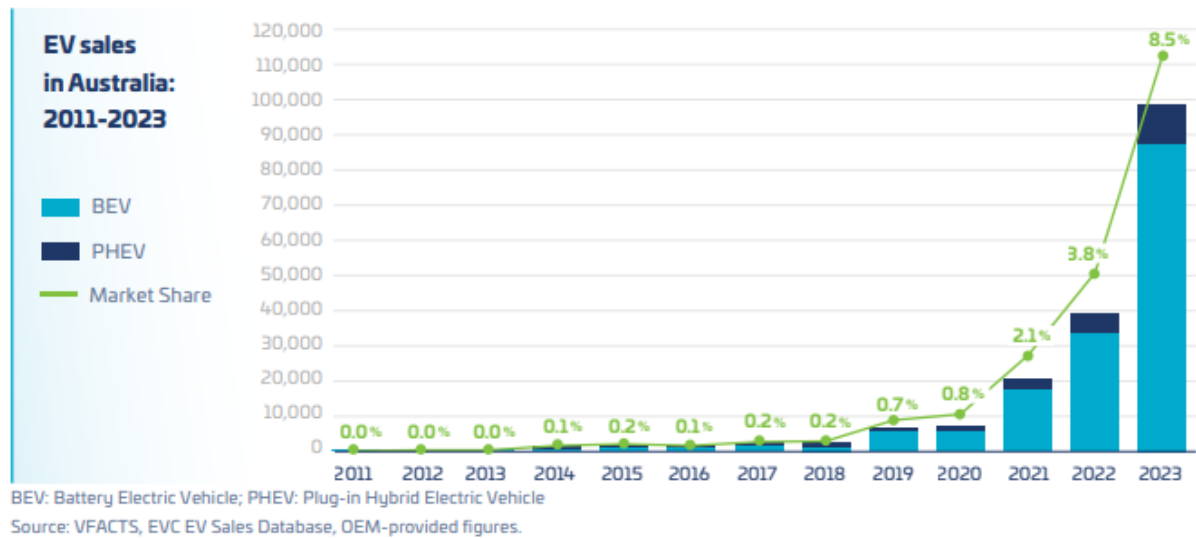
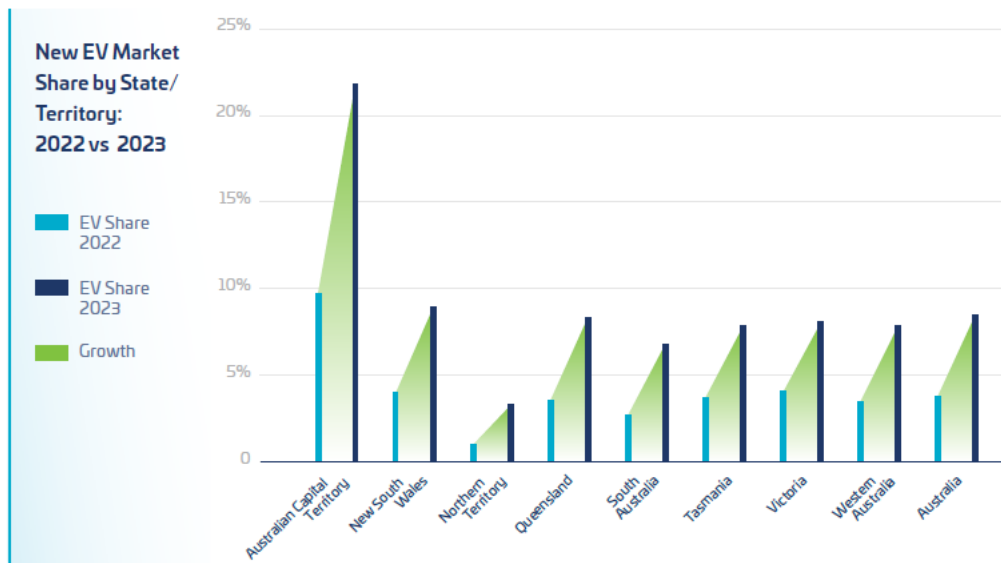


Figure 1 Light Vehicle EV Sales in Australia: 2011-2023.

It is also encouraging to see that EV uptake is not confined to the inner-city, with rates of EV adoption in Australia showing widespread interest across various demographics and geographies. In fact, out of the vast majority of light EV sales in 2023, 43% of those were in Outer Metropolitan areas, 39% in Inner Metropolitan areas, and 18% in regional and rural areas. More detail on this can be found in the EVC’s recent Industry Recap [report](#) for 2023.

¹ Please note that the EVC definition of EV includes Battery Electric Vehicle (BEV) and Plug-in Hybrid Electric Vehicle (PHEV). Please see the appendix for more detail.

² Please refer to State of EVs 2023 and Industry Recap Report 2023 for more information.



Source: VFACTS
 Note: state/territory market share is an approximate estimate calculated after removing an estimate of heavy vehicle sales in each jurisdiction from VFACTS data.

Figure 2 EV Uptake Comparison Across Different States/Territories

While the national market share of light vehicle sales is 8.5%, as shown above in **Figure 2** there is significant variation in EV uptake across different states and territories. Jurisdictions that have introduced and maintained comprehensive support measures, including financial incentives for EV purchases and substantial investments in charging infrastructure, have typically reported higher adoption rates. The EVC notes, however, that in recent months several states, namely New South Wales, Victorian and South Australian have prematurely ceased purchase incentives, and the EVC will continue to monitor any impact these decisions have on the distribution of EV sales across the country.

To meet sales targets set by governments, the EVC strongly encourages all Australian governments to actively support EV uptake until at least 30% EV sales are achieved nationally, after which we expect incentives can be progressively phased out. This target is informed by international examples where sustained incentives have successfully driven EV adoption to critical mass. Beyond this threshold, the EV market is expected to sustain itself without the need for such financial incentives – in part due to the expectation that even greater uptake of EVs will be achieved in comparable markets, over the same time period.

Need for ongoing efforts to implement national strategy

While the EV transition has seen significant progress in recent years, there remains a need for all levels of Government to develop nationally consistent policies to increase supply of EVs into the country and alleviate barriers to electrification across the transport sector. This includes the provision of incentives that make EVs, including heavy vehicles, more accessible for all Australians, and continued investment in enabling infrastructure. A range of measures will be crucial for meeting Australia’s emission reduction targets, reducing expenditure on imported fossil fuels, and creating a cleaner, more sustainable future for the transport sector. It is equally important that we harness the significant economic opportunities that the global EV transition provides for Australia, including pathways to develop new industries within battery and vehicle value chains.

The submission below will explore the terms of reference of this inquiry, providing recommendations on key areas that require prioritisation in the coming years.

EVC Recommendations - Inquiry into the Transition to Electric Vehicles

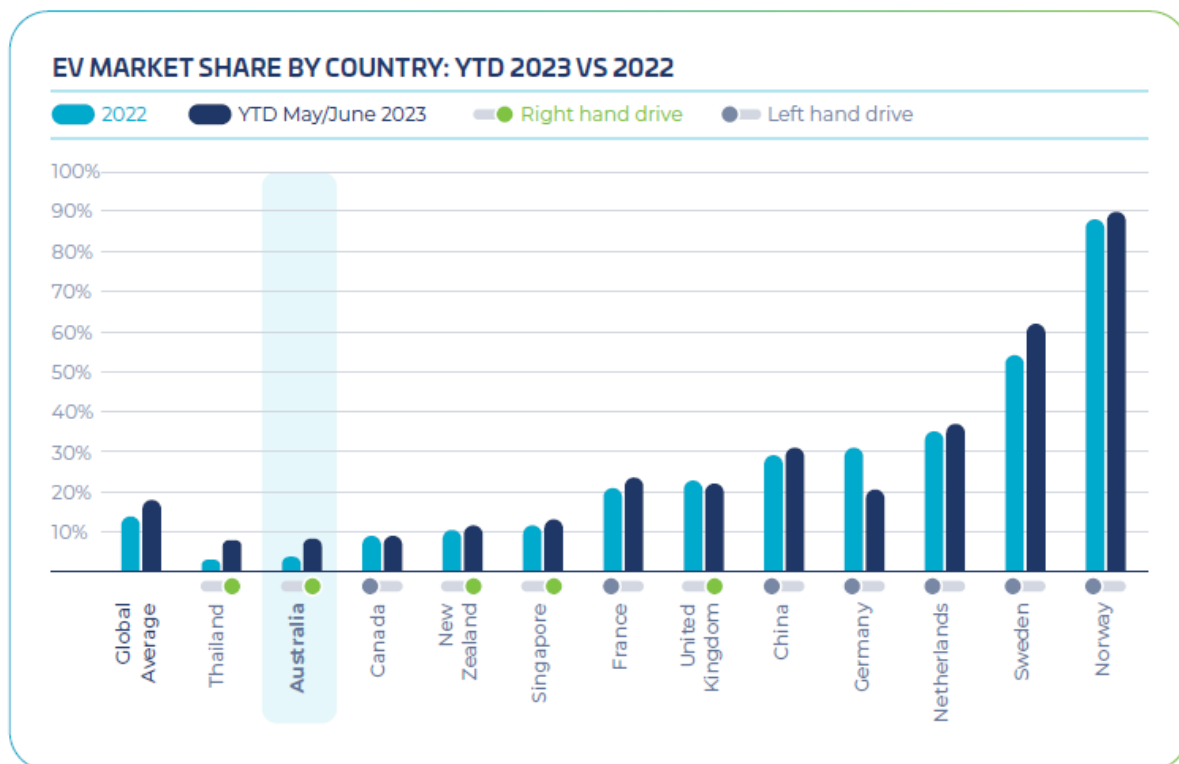
<p>1. Addressing Australia's Limited EV Supply</p>	<p>1.1. Implement an ambitious and robust New Vehicle Efficiency Standard, and streamline direct acceptance of type-approved electric vehicles from major global markets in full volume supply, to help increase the supply and variety of EVs available in the Australian market.</p> <p>1.2. Harmonise Australian Design Rules for heavy vehicles with international regulations to introduce a mass-limit concession (1.5 tonnes minimum) for electric trucks, and develop a National Electric Heavy Vehicle Strategy to increase the availability and adoption of electric trucks and buses.</p>
<p>2. Establishment of Resources, Systems and Infrastructure</p>	<p>2.1. Facilitate the deployment of public EV charging infrastructure by requiring DNSPs to share network capacity data, support second lines of supply to commercial premises, and offer supportive tariffs.</p> <p>2.2. Enhance access to EV charging by continuing to co-fund public charging infrastructure, especially in areas with weak business cases and for challenging modalities, while working with industry on setting requirements for charging locations to improve driver experience.</p> <p>2.3. Foster the expansion of EV charging infrastructure by actively preventing regulatory obstructions, encouraging national publication of post-code level EV registration data, and combating misinformation related to EVs and fire risk.</p> <p>2.4. Accelerate EV charging infrastructure in private settings by ensuring National Construction Code provisions on EV readiness are integrated into state level instruments, creating programs for EV charging retrofits in apartment complexes, requiring standardised approaches by DNSPs on installation requirements for home charging, and providing training for electricians on EV charger installation.</p>
<p>3. Impact on Electricity Consumption and Demand</p>	<p>3.1. Encourage grid-friendly EV charging to leverage low-cost solar energy and spare network capacity, optimising efficiency and supporting the transition to renewable energy. Advocate for national provision of time-of-use tariffs that incentivise off-peak charging, ensuring EV owners have flexibility and choice.</p> <p>3.2. Improve accuracy of energy system forecasting by addressing assumptions in current models regarding EV uptake, the timeline for vehicle-to-grid (V2G) technology deployment, and propensity for consumers to charge during peak times, to prevent over-investment in network infrastructure, and lead to more efficient use of resources and lower costs for all electricity consumers.</p> <p>3.3. Enable V2G deployment at scale by removing regulatory barriers, supporting the deployment of infrastructure, and creating incentives for consumer participation, so that EVs can be leveraged as a distributed energy resource contributing to a more resilient and sustainable energy system.</p>

<p>4. Opportunities for Fuel Savings</p>	<p>4.1. Enhance and expand government incentives for EV purchase, making them accessible to a broader range of drivers, with a focus on low and middle-income households, to lower the upfront cost barrier and facilitate equitable access to the economic and environmental benefits of EVs.</p> <p>4.2. Develop comprehensive incentive programs to accelerate freight decarbonisation, with a focus on the electrification of trucks, including regulatory and financial incentives to stimulate demand and investment in necessary charging infrastructure.</p>
<p>5. Impact of Transition from Internal Combustion Engines</p>	<p>5.1. Prioritise long-term planning for transitional support for workers and businesses affected by the shift from ICE vehicles to EVs, focusing on re-skilling and leveraging opportunities within the growing EV value chain.</p> <p>5.2. Engage with State and Territory Governments in a mature and genuine discussion on national reform of road taxation, which involves consideration of the major costs of transport, including road congestion, air pollution, carbon emissions, road safety, noise pollution, and road wear.</p>
<p>6. Expanding EV Battery Manufacturing, Recycling, and Safety</p>	<p>6.1. Support expansion of Australia's role across the EV value chain by enhancing critical minerals processing and developing local battery manufacturing capabilities, capitalising on abundant mineral resources and technical expertise to support job creation and industry growth.</p> <p>6.2. Promote and support sustainable battery life-cycle management through the development of infrastructure for onshore reuse, re-purposing and recycling of EV batteries and components, and enhancing data collection, harmonising regulations across jurisdictions, and increasing collaboration between industry and government.</p>
<p>7. Other Relevant Matters</p>	<p>7.1. Foster ongoing collaboration between federal, state, and local governments, industry, and community stakeholders to ensure a coordinated and consistent approach to EV policy, infrastructure development and the broader renewable energy transition.</p> <p>7.2. Establish a national government source for new vehicle sales data to support visibility of market dynamics, and continue to combat misinformation about EVs through public education campaigns and dissemination of evidence-based information.</p>

1. Addressing Australia's Limited EV Supply

Recommendation 1.1: Implement an ambitious New Vehicle Efficiency Standard, and streamline direct acceptance of type-approved electric vehicles from major global markets in full volume supply, to help increase the supply and variety of EVs available in the Australian market.

While the EV transition has accelerated over the last few years, it is evident that compared to the development of the EV market in other jurisdictions there remains a significant amount of work to go. The jurisdictions leading the way on EV uptake have taken significant efforts to support the transition through a combination of financial incentives, infrastructure deployment and regulation. Fortunately, the global transition means that Australia stands in a position to benefit from these international comparisons to address barriers to electrification and ensure an equitable transition.



Only June 2023 data available for Australia, New Zealand, Norway. All other countries are YTD May 2023. Global average is based on IEA forecast for 2023.

Sources: International Energy Agency, New Zealand Ministry of Transport, China Association of Automobile Manufacturers, Thai Department of Land Transport, InsideEVs, Cleantechica, EVVolumes, Electric Autonomy Canada, EV Database NZ, VFACTS.

Figure 3 EV Market Share by Country: 2023 vs 2022 (As of June 2023)³

In order to support the transition to EVs and decarbonise the transport system, a crucial lever that the Australian Government can pull is the provision of consistent and strong policy signals. Following the introduction of the National EV Strategy in 2023,⁴ and the commitment to introduce a New Vehicle Efficiency Standard, it is encouraging to see the level of ambition to support EV transition. To ensure that carmakers are able to allocate

³ https://electricvehiclecouncil.com.au/wp-content/uploads/2023/07/State-of-EVs_July-2023_.pdf.

⁴ <https://www.dcceew.gov.au/energy/transport/national-electric-vehicle-strategy>.

additional supply to the Australian market following introduction of a NVES, the EVC further recommends alleviating regulatory hurdles, by allowing the direct acceptance of type-approved electric vehicles from major global markets in full volume supply to eliminate another barrier to accelerating the supply of electric vehicles.

Beyond addressing Australia's limited supply of EVs, there is a need for continued support to help drive EV demand. This includes raising public awareness about the benefits of EVs and the importance of the decarbonisation of transport, and the provision of financial incentives that make EV ownership more accessible. As shown in overseas markets, is important that these incentives remain in place until EVs constitute at least 30% of new vehicle sales - indicative of reaching a critical tipping point in technology adoption. Achieving this level of market penetration will be necessary to establish a self-sustaining demand for EVs and a healthy second-hand EV market, after which the reliance on broad-based financial incentives can be re-evaluated.

As the market matures, a more nuanced approach to incentives can be introduced. This would involve gradually phasing out universal incentives in favour of more targeted measures designed to support households facing economic barriers to EV ownership.

For further detail and analysis, please refer to the EVC's [submissions](#) to the Federal Government consultations on the introduction of New Vehicle Efficiency Standards, and the EVC's recent [reports](#) on the state of the Australian EV market (also noted in the Appendix).

Coordinated approach to support heavy vehicle electrification

Recommendation 1.2: Harmonise Australian Design Rules for heavy vehicles with international regulations to introduce a mass-limit concession (1.5 tonnes minimum) for electric trucks, and develop a National Electric Heavy Vehicle Strategy to increase the availability and adoption of electric trucks and buses.

Beyond the transition of passenger vehicles, there is considerable work to be done to support the electrification of heavy vehicles, particularly freight vehicles, which account for a disproportionately high share of road transport emissions.⁵ In Australia, road transport plays a pivotal role in the economy, with the proportion of goods transported via road freight exceeding 30%.⁶ However, to date uptake of electric trucks within the heavy vehicle fleet is very limited, with market share of electric trucks in 2023 constituting approximately 0.2% of sales.⁷ This level of adoption highlights several underlying challenges to freight electrification, including higher upfront costs, limited model availability, charging infrastructure and regulatory hurdles.

⁵ <https://www.climateworkscentre.org/resource/delivering-freight-decarbonisation-strategies-for-reducing-australias-transport-emissions>.

⁶ <https://www.bitre.gov.au/publications/2023/australian-infrastructure-and-transport-statistics-yearbook-2023/freight>.

⁷ https://assets-global.website-files.com/5cbe46bce3c2320cf45d2b62/65c9a6226348e83137fa2737_TIC%20LZEV%20Discussion%20Paper%20November%202023.pdf.

While the recent decision to widen the maximum truck width from 2.50 to 2.55 metres aligns Australia with major international markets and is a step in the right direction,⁸ this support needs to be extended to adopting mass-limit concessions for electric trucks. The current limit for steer axle mass set at 6.5 tonnes, and tandem drive axle mass limits set at 16.5 tonnes, are significantly lower than major international jurisdictions like the United States and the European Union - posing a significant barrier to the deployment of electric trucks in Australia's relatively small and right-hand drive vehicle reliant market. In order to accommodate the immediate needs of electric trucks already on the market we recommended update the steer axle mass limit to at least 8 tonnes, allowing for a 1.5-tonne increase from the current limit. A similar concession should be made for tandem drive axles to accommodate at least 18.5 tonnes in the short term, with potential to extend this to 19 tonnes to support the industry to transition.

In response to the current regulatory and market limitations, various Australian states, including [SA](#), [VIC](#), [NSW](#) and [QLD](#), have independently initiated permits and exemptions to axle mass limits on selected road networks and freight routes to facilitate the introduction of zero-emission trucks. While these state-level actions are welcome, the resulting fragmentation creates a complex operational environment for the heavy vehicle industry, which is difficult for manufacturers, operators, and regulators to navigate.

In order to support the long-term decarbonisation of the freight sector, there is further need for a dedicated National Electric Heavy Vehicle Strategy that outlines a plan to decarbonise our heavy vehicle fleet over the long haul that involves charging infrastructure, and provision of regulatory and financial incentives, to reduce the financial and operational barriers for Australian businesses to adopt electric vehicles.

2. Establishment of Resources, Systems, and Infrastructure

A key objective of the [National EV Strategy](#) is to establish the resources, systems and infrastructure to enable rapid EV uptake. Central to achieving this is continued expansion of EV charging infrastructure. As the EV transition progresses, the need for adequate charging infrastructure across public and private settings will be crucial to avoid the scenario where inadequate charging facilities hinder the adoption rate. Concerted efforts are required from all levels of government to support deployment of additional charging stations and remove regulatory and substantive obstacles that currently impede infrastructure development.

Expansion of public charging infrastructure

Recommendation 2.1: Facilitate the deployment of public EV charging infrastructure by requiring DNSPs to share network capacity data, support second lines of supply to commercial premises, and offer supportive tariffs.

Distribution Network Service Providers (DNSPs) will continue to play a crucial role in the EV transition. Their unique position allows them to facilitate the integration of EVs into the

⁸ <https://www.infrastructure.gov.au/sites/default/files/documents/guide-to-safer-freight-vehicles.pdf> .

grid, meaning the active participation of DNSPs is critical to support the creation of a robust, accessible, and sustainable charging ecosystem. Accordingly, the EVC advocates for specific measures to be adopted by DNSPs to overcome current barriers and foster the expansion of public charging infrastructure. This includes:

- **Network capacity data sharing:** It is essential for DNSPs to provide sufficiently granular network capacity data, at the pole and pad mount transformer level, to support strategic planning and the efficient deployment of charging stations. The Energy Security Board (ESB) and the Australian Energy Regulator (AER) have highlighted the importance of this transparency through the Data Strategy and Network Visibility Project.⁹ The EVC is particularly supportive of initiatives that support the identification of suitable locations for EV charging on the network, including Essential Energy’s NSW network-specific capacity [tool](#). Given the extensive smart meter rollout in Victoria, Victorian DNSPs, in particular, have a prime opportunity to leverage their existing data towards supporting the EV transition effectively.
- **Support for second lines of supply:** To ensure the reliability and accessibility of EV charging stations, DNSPs should also be encouraged to facilitate the provision of second lines of supply to key commercial premises, including retail locations and petrol stations. Essential Energy and SA Power Networks (SAPN) are recognised for their leadership in this area.¹⁰ In contrast, the reluctance of some Victorian DNSPs to embrace this approach poses a significant barrier for the rollout of charging that must be addressed.
- **Introduction of supportive tariffs:** The adoption of supportive tariff structures by DNSPs is also important for making the operation of EV charging stations economically viable. Such tariffs would support the rollout of charging infrastructure to meet increased demand over the next few years.

Continuing to fund public charging infrastructure deployment

Recommendation 2.2: Enhance access to EV charging by continuing to co-fund public charging infrastructure in areas with weak business cases and for challenging modalities, while working with industry on setting requirements for charging locations to improving driver experience.

Public charging infrastructure has expanded significantly in the last 12-24 months, as both Federal and State Government programs move from initial grant allocation to implementation stages. The EVC supports ongoing efforts to expand the network and accessibility of charging stations by continued co-funding of public charging infrastructure. This will be especially crucial in regions where the economic rationale for investment is not immediately strong. By doing so, the benefits of EV ownership can extend to a wider

⁹ <https://www.aer.gov.au/industry/registers/resources/reviews/network-visibility>

¹⁰ <https://electricvehiclecouncil.com.au/wp-content/uploads/2023/09/EVC-response-to-ERC0346-unlocking-CER-benefits-through-flexible-trading-directions-paper.pdf>.

demographic, ensuring no community is left behind in the EV transition and future proof the transport system.

Further, it will be important to provide support for innovative charging solutions where unique challenges and constraints need to be overcome, including the installation of pole-mounted chargers in urban environments and expanding charging access to EV owners without private parking facilities available. In addition, the unique physical space and facilities requirements of the freight sector need to be considered. There is a considerable amount of effort to be undertaken here over the coming decades, with the NSW Government currently leading the way with its [kerbside charging](#) grants program.

As the providers of funding for public infrastructure, Governments can use the opportunity to work with industry stakeholders to establish standards for charging locations to significantly enhance the EV driver experience and shape the future of EV charging networks. Collaborating closely with industry leaders and stakeholders to define and adopt standards for charging station locations is essential. These should prioritise ease of access, safety, and convenience to ensure a positive charging experience for all EV users.

Support local governments

While the Federal Government has a significant national leadership role to play in the expansion of public charging networks, there is also a role for local governments across the country to reduce regulatory hurdles and engage with the industry and DNSPs to facilitate the installation of charging across the country. Local governments are uniquely positioned to address the specific needs of their communities and to implement strategies that significantly improve the accessibility and convenience of public EV charging:

- **Streamline planning approvals:** Local governments should review and, where possible, streamline planning approval processes to ensure that they do not become a barrier to the deployment of public EV charging stations. This includes rationalising requirements related to lighting, advertising, and the aesthetic integration of charging infrastructure within community spaces, ensuring that these do not unnecessarily delay or complicate installation efforts.
- **Facilitate Zero-Cost Leases for CPOs:** Local governments are encouraged to offer zero-cost leases for the use of government-owned parking areas to allow CPOs to establish charging stations without the burden of land costs. While local governments need not directly fund the deployment of charging infrastructure - typically a role for state and federal governments - they should avoid viewing these initiatives as opportunities for near-term revenue generation, instead prioritising the long-term benefits of increased EV adoption.
- **Support the deployment of innovative charging solutions:** Collaborating with CPOs and DNSPs to introduce solutions such as pole-mounted EV charging will support the transition to EVs for drivers without access to off-street parking. Local governments are advised to partner with organisations that specialise in the deployment and operation of public charging equipment, leveraging their expertise to achieve efficient solutions that lead to better outcomes for consumers.

Preventing regulatory obstructions and addressing fire safety misconceptions

Recommendation 2.3: Foster the expansion of EV charging infrastructure by actively preventing regulatory obstructions, encouraging national publication of post-code level EV registration data, and combating misinformation related to EVs and fire risk.

Preventing regulatory obstructions

In addition to actively supporting the rollout of infrastructure through co-funding, a proactive approach is required to prevent introduction of regulatory settings that hinder the expansion of charging infrastructure across the country and create nationally and internationally inconsistent approaches.

As an example, the ongoing work by the National Measurement Institute (NMI) on the general certificate of approval for Electric Vehicle Supply Equipment (EVSE) highlights an area where regulatory efforts, while well-intentioned, might inadvertently impede progress in charging infrastructure deployment. The EVC has consistently advocated for the metrology requirements around EV charging are harmonised with proven international approaches to ensure that globally developed and manufactured solutions can be deployed in Australia, without having to meet unique national requirements – this approach promotes competition, lowers barriers to entry for equipment providers, and results in better outcomes for consumers.¹¹

Provision of postcode level EV registration data

The provision of postcode-level EV registration data by Governments will play a key role in the strategic planning and deployment of charging infrastructure across Australia. By making this data publicly available, DNSPs and CPOs can undertake targeted system planning, ensuring that charging infrastructure development keeps pace with EV adoption rates. Recognising that EV uptake will vary significantly across different postcodes, with some areas accelerating faster than the national average, it is essential to identify hotspots to prioritise infrastructure deployment where it is most needed.

Several state governments, including Victoria, New South Wales, the Australian Capital Territory, and Queensland, have already adopted practices of publishing spatially granular EV registration data to some extent, although the nature of reporting varies from state to state. The adoption of similar practices by vehicle registration bodies in other states, and ideally the development of a central national register, would markedly enhance nationwide efforts to support the growing EV market.

The development of a national system for sharing up-to-date, accessible EV registration data would represent a significant leap forward. While the Australian Bureau of Infrastructure and Transport Research Economics currently offers annual [reports](#) drawing from the National Exchange of Vehicle and Driver Information System (NEVDIS), the granularity and timeliness of this data are insufficient for detailed planning purposes.

¹¹ <https://electricvehiclecouncil.com.au/wp-content/uploads/2024/03/EVC-Response-to-NMI-Draft-general-certificate-of-approval-for-EVSE.pdf>.

Specifically, the current reporting framework also does not adequately differentiate among Battery Electric Vehicles (BEVs), Fuel Cell Vehicles (FCVs), and Plug-in Hybrid Electric Vehicles (PHEVs), nor does it offer the real-time data necessary for responsive infrastructure development.

Addressing misinformation on EVs and fire risk

Concerns about EV fire safety have also become a prominent topic of discussion, both within Australia and internationally. While misconceptions about the risk of EV fires are prevalent and often widely publicised, it is evident they do not align with available data and research.¹²

The EVC and entities like EV FireSafe have dedicated substantial efforts to addressing these misconceptions through research and education, and engagement with relevant stakeholders.¹³ [EV FireSafe](#), funded by the Australian Department of Defence, has been at the forefront of research into EV battery fires and emergency responses, offering valuable insights and training to emergency services.¹⁴ Despite the small number of EV fires recorded in Australia - each with significant external causes such as arson, high-speed impacts, or prolonged exposure to the harsh conditions - there is a tendency to overestimate the risk associated with EV batteries. This can often be attributed to a conflation of EV batteries with the risks of other lithium-ion batteries used in non-road applications.

A concerted approach to address EV fire safety misconceptions is urgently needed. While certain misunderstandings and apprehensions about EVs may naturally resolve over time through increased consumer adoption, misconceptions around fire safety are creating substantive barriers in the EV transition. A fragmented regulatory landscape has emerged due to the absence of national leadership, with disparate practices hampering the installation of charging infrastructure in various contexts.

This has included the approach by some Australian fire services to treat areas with EVs or charging infrastructure as “special hazards”, which leads to an expectation on the part of the fire services of unnecessary and costly requirements in new builds including EV charging. This stance inflates the costs associated with installing EV charging infrastructure but also risks hindering broader adoption of EVs due to increased construction and compliance costs and a reluctance to address the issue with key stakeholders.

To effectively counteract the misconceptions surrounding EV fire safety requires a unified and comprehensive national strategy. This strategy must involve collaborative efforts between the government, the EV industry, and emergency services, grounded in evidence-based practices and the dissemination of accurate, transparent information. Standardising safety protocols and awareness across jurisdictions will be essential in addressing the public’s concerns and rectifying the misinformation that currently exists.

¹² <https://www.fleetnews.co.uk/news/tusker-fleet-data-reveals-the-truth-about-ev-fires>.

¹³ See, e.g., the EVC’s 2023 submission to the NSW Parliamentary Inquiry into Electric and Hybrid Vehicle Batteries, <https://electricvehiclecouncil.com.au/wp-content/uploads/2023/11/EVC-response-to-the-NSW-parliamentary-inquiry-into-electric-and-hybrid-vehicle-batteries.pdf>.

¹⁴ <https://www.evfiresafe.com/ev-fire-faqs>.

The role of federal leadership in orchestrating these efforts cannot be understated. A national approach that champions the cause of clarifying EV fire safety risks, backed by authoritative research and data such as that provided by EV FireSafe, will support development of consistent policies and practices across all states and territories. This will not only streamline the process of EV charging infrastructure installation by removing undue regulatory barriers, but also bolster public confidence in the safety of electric vehicles, and ensure that Australia can benefit from the broader environmental and economic benefits of the EV transition.

Supporting charging in built environment / private settings

Recommendation 2.4: Accelerate EV charging infrastructure in private settings by ensuring National Construction Code provisions on EV readiness are integrated into state level instruments, creating programs for EV charging retrofits in apartment complexes, requiring standardised approaches by DNSPs on installation requirements for home charging, and providing training for electricians on EV charger installation.

Supporting EV charging infrastructure in private settings is crucial for complementing public charging networks, ensuring EV owners have access to convenient charging to meet their needs. There is work to be done by all levels of government in facilitating the installation of charging and supporting the development of a workforce to meet demand for efficiency upgrades and charging installations over coming years.

- **New builds:** A key area to support futureproofing the built environment for the EV transition is the integration of National Construction Code (NCC) requirements for EV readiness into state legislation to ensure a consistent regulatory environment across Australia. With Section J9D4 of NCC2022 currently in effect, the upcoming public comment draft of NCC2025 is expected to outline further changes that enable the standards to adapt to growing demand for EV infrastructure. At a local government level, governments are encouraged to, at a minimum, align planning requirements with the EV readiness requirements in the NCC.
- **Retrofitting apartment complexes:** Supporting the retrofitting of existing apartment complexes with EV charging stations is going to be crucial to improve accessibility to EV charging as the transition accelerates. There is a significant amount of work and funding that will be required over coming decades to address this. The New South Wales state government's recent [EV Ready Buildings program](#) is an example of a successful initiative in this area, though broader application across the country will require scalable financial solutions, like low-interest green loans, to ensure widespread impact.
- **Addressing misinformation:** As previously mentioned with respect to public EV charging installations, addressing and correcting misinformation related to EVs and associated fire risks is another critical area that will need ongoing attention to enable integration of charging in private settings. This will need to include a concerted approach to clarifying misconceptions and providing factual information to a range of stakeholders involved in commercial developments and management of residential complexes.
- **Standardising requirements:** Standardising the installation requirements for in-home EV charging across all DNSPs will facilitate the smoother adoption of home

charging solutions and permit easier installation of 7kW chargers, ensuring that homeowners have autonomy over their charging infrastructure without undue interference.

- **Supporting workforce development:** Implementing training programs for electricians, delivered by Registered Training Organisations (RTOs), to equip them with the skills needed for installing EV chargers is going to become increasingly important as the transition (and broader energy transition) progresses. With the expected need for millions of EV chargers in the coming decades, following Victoria's lead in collaborating with industry for electrician training will be critical for preparing the workforce for this demand.

3. Impact on Electricity Consumption and Demand

Balancing grid integration and consumer flexibility

Recommendation 3.1: Encourage grid-friendly EV charging to leverage low-cost solar energy and spare network capacity, optimising efficiency and supporting the transition to renewable energy. Advocate for national provision of time-of-use tariffs that incentivise off-peak charging, ensuring EV owners have the flexibility and choice to charge their vehicles in a way that is both convenient and grid-friendly.

To support a balanced integration of EVs into the grid and maintain consumer flexibility, we recommend promoting grid-friendly EV charging practices. This includes harnessing low-cost solar energy during peak production hours and utilising spare network capacity overnight. Advocating for the nationwide access to well-designed time-of-use (ToU) tariffs will incentivise off-peak charging, allowing EV owners to charge their vehicles conveniently while enhancing grid efficiency and facilitating the shift towards renewable energy sources.

Despite ongoing concerns about the potential strain EVs could place on the electricity grid, evidence suggests these fears may be overstated. In 2022, the EVC released a publication outlining various studies examining EV owner charging behaviour.¹⁵ These reports generally contradict the notion that EVs will overburden the grid, suggesting instead that EVs can significantly complement the stability of our energy system, particularly during the transition to renewable energy.

From an energy system planning perspective, optimising the timing of EV charging is critical:

- The abundance of low-cost solar energy during midday presents an optimal window for EV charging to effectively utilise surplus energy generated during peak sunlight hours.
- There is also considerable spare network capacity available nationwide during the night, making the period post-11pm another opportune time for EV charging. This will continue to be the case as additional wind-generation capacity is introduced.

¹⁵ <https://electricvehiclecouncil.com.au/wp-content/uploads/2022/08/Home-EV-charging-2030.pdf>.

- Charging during the afternoon-evening peak is suboptimal due to higher wholesale electricity costs and the associated requirement for increased network capacity to accommodate higher electricity demand.

There will be instances where a driver's preferred charging time may not align with the optimal periods identified by their retailer or local energy network operator. While more efficient operation of the energy system could theoretically be achieved by relinquishing consumer control over charging times, it is crucial that the energy system remains consumer-centric. It is the role of Governments, energy networks and retailers to guide consumer behaviour in ways that benefit the overall system, without compromising individual autonomy.

The inclination of Australian consumers to adapt their EV charging habits in response to incentives, such as lower rates during off-peak hours, demonstrates the opportunities of ToU tariffs in promoting grid-friendly charging practices. In jurisdictions where they are available, these tariffs have become increasingly attractive to EV owners, offering significant savings on charging costs without compromising the utility of home energy use during peak times. The EVC has advocated for electricity retailers across the country to offer products that incentivise responsible EV charging behaviour. In regions lacking competitive retail electricity competition, efforts are being made to ensure all Australian EV drivers can benefit from such initiatives.

Improving accuracy of energy system forecasting

Recommendation 3.2: Improve the accuracy of energy system forecasting by addressing the assumptions in current models regarding EV uptake, the timeline for vehicle-to-grid (V2G) technology deployment, and the propensity for consumers to charge during peak times, to prevent over-investment in network infrastructure, and lead to more efficient use of resources and lower costs for all electricity consumers.

To optimise the planning and development of our energy system in response to the EV transition there is significant work to be done in refining the accuracy of energy system forecasting. This involves critically assessing and updating the underlying assumptions in existing models related to EV uptake rates, the integration and impact of vehicle-to-grid (V2G) technology, and the charging behaviours of EV owners. The need for improved forecasting accuracy is readily apparent when examining the Australian Energy Market Operator's (AEMO) recent projections.¹⁶ For example:

- **EV uptake:** AEMO's forecasts suggest a rapid increase in new light battery EV sales, reaching approximately 50% of new light vehicle sales in 2026 and up to 85% of new light vehicle sales by 2030. These projections significantly outpace current government targets and any potential trajectories of New Vehicle Efficiency Standards. On the other hand, the projection of PHEVs peaking at 35,000 units by

¹⁶ https://aemo.com.au/-/media/files/stakeholder_consultation/consultations/nem-consultations/2023/2024-forecasting-assumptions-update-consultation-page/csiro---2023-electric-vehicle-projections-report.pdf?la=en.

2031 seems conservative, given the current trajectory of sales growth in 2024. The underlying assumptions on growth expectations need to be revised to reflect realistic adoption trends and more reliably inform infrastructure development needs over the coming decades.

- **V2G deployment:** The assumption of zero V2G contribution until 2031 overlooks the imminent expected rollout of V2G technologies from 2025. Recognising the potential of V2G to stabilise the grid and contribute to energy storage solutions is crucial for accurate system planning.
- **Charging behaviour assumptions:** The presumption that 70% of consumers will engage in ‘convenience charging’ during peak times is out of step with the observed shift towards off-peak charging, driven by ToU tariffs and increasing consumer awareness about how to optimise charging. AEMO is encouraged to revisit assumptions about consumer behaviour to better predict and manage load distribution across the grid more accurately.

This combination of assumptions leads to a conclusion that EVs will have a far more disruptive and negative effect on the energy system than they are likely to. By aligning forecasts with more realistic projections of EV growth, V2G deployment timelines, and peak charging tendencies, we can avoid unnecessary expansion of network infrastructure, ensuring resource efficiency and minimising costs for all electricity users.

Addressing these discrepancies requires a collaborative approach involving AEMO, DNSPs, and other key stakeholders to share data, insights, and emerging trends relevant to the EV and energy transition. This will ensure that energy system forecasting reflects the realities of the EV transition and supports informed decision-making.

Opportunities from Scaling Vehicle to Grid (V2G)

Recommendation 3.3: Enable V2G deployment at scale by removing regulatory barriers, supporting the deployment of infrastructure, and creating incentives for consumer participation, so that EVs can be leveraged as a distributed energy resource contributing to a more resilient and sustainable energy system.

Vehicle to Grid (V2G) technology to allow EVs to export energy back to the grid during peak demand times, offering a significant opportunity to enhance grid stability, reduce reliance on fossil fuels, and provide financial benefits to EV owners. By supporting the adoption of V2G, the government and industry can leverage EVs as a distributed energy resource, contributing to a more resilient and sustainable energy system. This requires removing regulatory barriers, supporting the uptake of V2G-compatible vehicles and infrastructure, and creating incentives for consumers to participate in V2G programs.

A consumer with a V2G-enabled setup at home could expect to export up to 5kW at any given time when their vehicle is present. However, the scale at which V2G technology will be adopted in Australia is subject to several variables, including regulatory clearance and market readiness.

Given some of the roadblocks that need to be addressed, the probable rate of uptake of V2G in Australia is not entirely clear. However, drawing parallels with the rapid adoption of rooftop solar over the past two decades, we can anticipate a similar trajectory for V2G technology starting in 2025.

Year	Solar PV installations
2006	1115
2007	3480
2008	14,064
2009	62,916
2010	198,208
2011	360,745

Next year (2025) is expected to be a pivotal moment for V2G, mirroring the transformative period that 2006 represented for the adoption of rooftop solar in Australia. In 2025, we can expect to see:

- Multiple EVs OEMs in the Australian market supporting V2G;
- Regulatory hurdles currently preventing V2G deployment outside South Australia to be resolved;
- Multiple manufacturers of V2G inverters bringing product to the Australian market; and
- Emergence of additional retail products for consumers that will make engaging in V2G commercially attractive (noting that Amber is already offering one in most of the NEM).

The key question for government and industry will be the speed at which V2G will scale – noting that rooftop solar installations numbered over 600,000 by 2011, and V2G installations are relatively simple compared to rooftop solar installations. That said, there are a few challenges that can affect its widespread implementation. By 2030, the EV population on Australian roads may reach 2.5 million vehicles, assuming state government targets are hit, and NVEs is effective at achieving higher allocations of BEVs to the Australian market. Not all of these will be V2G-capable, limiting the potential network of V2G-enabled vehicles.

The feasibility of V2G technology installation varies significantly across different residential settings. Standalone homes may find it easier to adopt V2G solutions, while apartment dwellers might face more complex challenges due to structural and ownership constraints. The decision of EV owners to invest in V2G technology could also be influenced by their personal perception of their vehicle's use, with some viewing their car primarily as a means of transport rather than a component of the home energy system.

The number of operating V2G installations in domestic homes in 2030 could plausibly be in the range of 50,000 to 250,000, depending on the degree to which government elects to support uptake, once the regulatory hurdles are cleared and a functional market deploying V2G solutions for consumers exists. This scale of deployment could represent a substantial contribution to grid stability and peak demand reduction: 250,000 vehicles exporting at 5kW would equate to about 3% of total peak demand in the NEM, mirroring the impact of a major power station without necessitating extensive grid infrastructure upgrades.

As noted above, current AEMO forecasts do not fully account for V2G's potential contributions to the energy system. There is a compelling case for federal and state governments to conduct independent economic modelling to quantify V2G's value by 2030, considering its impact on wholesale energy prices, network augmentation needs, and reduction in operation of coal and gas fired power plants. In addition, the economic benefits to EV owners highlight the advantages of supporting this technology for grid stability and consumer savings.¹⁷

To ensure the success and scalability of V2G technology, the EVC recommends maintaining keeping regulatory requirements in this space to the minimum necessary, allowing for innovation and rapid adaptation to consumer needs. As V2G technology matures and approaches a level where it is displacing large scale generation, an increase in regulatory requirements will be necessary – but we cannot afford to impose our 'desired future' regulatory environment on V2G today, because that will smother it before it gets a chance to get started. Australia has the potential to become a global leader in V2G technology, building on our existing strengths in the rooftop solar sector, by creating an environment that supports the growth and integration of V2G solutions into the energy system.

4. Opportunities for Fuel Savings

Recommendation 4.1: Enhance and expand government incentives for EV purchase, making them accessible to a broader range of drivers, with a focus on low and middle-income households, to lower the upfront cost barrier and facilitate equitable access to the economic and environmental benefits of EVs.

Ensuring an equitable transition

The EVC firmly advocates for the continued provision of government incentives for EV purchases to make them more accessible to a wider range of drivers, with a particular focus on supporting low and middle-income households. This will be essential to ensure that we deliver equitable access to the fuel-savings and environmental benefits of EVs as the transition progresses. As previously mentioned, a range of purchase incentives and concessions exist to promote the uptake of EVs across the country, however the mix of different schemes that exist and premature withdrawal of several programs across the country creates a confusing landscape for consumers to navigate.

¹⁷ <https://arena.gov.au/knowledge-bank/v2x-au-summary-report-opportunities-and-challenges-for-bidirectional-charger-in-australia/>.

In order to achieve the 50% by 2030 EV sales targets set by the majority of state and territory governments, there will be continued need for nationally consistent incentives, such as purchase rebates, zero-interest loans or targeted schemes to support access to EVs in Australia. A combination of targeted strategies should aim to facilitate the shift of lower-middle-income households toward more efficient and electric vehicles and encourage the development of a robust second-hand EV market. In addition, they should work to promote the integration of EVs with other cost-saving consumer technologies like rooftop solar panels and home battery systems which will be particularly beneficial for residents in outer suburban and regional areas with abundant access to renewable energy sources.

Electric car discount

The positive impact of the Federal Government's electric car discount (FBT exemption) on EV uptake within company fleets and the novated leasing sector is a testament to the effectiveness of targeted government incentives in accelerating the EV transition. Following implementation of this policy in mid-2022, there has been a sizeable shift in the proportion of EV sales through novated leases.

By reducing the financial barriers to EV adoption and promoting novated leasing as a viable pathway to EV ownership, the government is not only facilitating a significant increase in EV sales but also contributing to the development of a robust second-hand market for electric vehicles. While we recognise the policy is currently set for review in 2025, continuing this policy will be important in supporting the transition until EV and ICE vehicle purchase prices achieve parity. To further enhance the effectiveness of the scheme, the EVC recommends incorporating home charging unit purchase and installation costs into FBT-exempt novated leases. The EVC is also supportive of the installation of new solar panels, when done in conjunction with a home EV charger, to be included within the lease agreement and benefit from FBT concessions or exemptions. This not only supports EV adoption by reducing upfront costs for consumers but also encourages the integration of renewable energy sources to provide for further environmental benefits for EV ownership.

In addition to the FBT exemption, at the federal level, the Clean Energy Finance Corporation's (CEFC) green car [loans](#) offer a model for additional incentives that could be explored to support Australians transitioning to EVs, including zero-interest loans or lease schemes aimed at making EVs more accessible to low and middle-income households.

Similar models could be applied to allocate funds to finance retrofitting projects for the installation of charging infrastructure in multi-storey residential buildings, for which demand is going to increase substantially over coming decades. Given the scale of investment required - potentially amounting to billions of dollars - CEFC support in this area could significantly accelerate the availability of charging solutions in these settings. Financing could cover or partially cover a range of expenses, including electrical upgrades to support increased power, the installation of charging hardware, and the integration of smart charging systems to optimise energy use and costs. We welcome the opportunity to work with Australian governments and industry to explore and establish these incentive programs.

Beyond passenger vehicles: electrifying freight

Recommendation 4.2: Develop comprehensive incentive programs to accelerate freight decarbonisation, with a focus on the electrification of trucks, including regulatory and financial incentives to stimulate demand and investment in necessary charging infrastructure.

To significantly advance the decarbonisation of the freight sector, the Government needs to work with industry to develop programs that specifically target the electrification of heavy vehicles. These should encompass a blend of regulatory changes aligned with European markets and financial incentives designed to increase demand for electric freight vehicles and catalyse investment in the requisite charging infrastructure. Over time, fostering the growth of a viable second-hand EV market will be essential to ensuring a transition to electric freight across the industry.

The transition to electric freight vehicles requires a multifaceted approach. The EVC and ATA have previously collaborated on a report to highlight gaps in electric freight policy.¹⁸ Since that report there have been a range of welcome measures, including regulatory changes to support weight limit concessions for heavy vehicles. However there remain substantive barriers to accelerating the adoption of electric vehicles across the trucking industry, including steer axle mass limits, upfront cost barriers and the lack of enabling infrastructure to encourage operators to make the transition.

The EVC recommends providing a range of targeted financial measures to lower the upfront cost barrier associated with purchasing electric trucks. This could include subsidies, tax breaks, and grants tailored to businesses transitioning their fleets to electric. Additionally, zero-low-interest loans or government-backed financial instruments can make the acquisition of electric freight vehicles more accessible, with the upfront cost of the vehicles paid off over a couple years due to the significantly lower operation and maintenance cost of electric trucks

Projects under the Driving the Nation program will go a significant way to proving what is possible for a major logistics operator.¹⁹ Given the majority of truck operators in Australia are small businesses, it's clear that while flagship projects demonstrate the potential for electrification, there is need for more widespread, accessible support mechanisms. These businesses often operate without the extensive depots or capital required to make the transition and would greatly benefit from dedicated assistance to electrify their operations.

As seen with the light vehicle segment, deployment of high-capacity, fast-charging infrastructure will be another critical component of this transition. Investment should not only aim at enhancing public charging stations designed to accommodate trucks and buses but should also extend support to businesses seeking to install on-site charging capabilities.

Ongoing collaboration with industry stakeholders, including vehicle manufacturers, freight operators, and energy providers, will be vital in shaping an ecosystem that supports the growth of electrified freight in Australia.

¹⁸ https://electricvehiclecouncil.com.au/wp-content/uploads/2022/01/ATA-EVC-Electric-trucks_Keeping-shelves-stocked-in-a-net-zero-world-1.pdf.

¹⁹ <https://www.energy.gov.au/news-media/news/electric-trucks-roll-out-sydney>.

5. Impact of Transition from Internal Combustion Engines

Recommendation 5.1: Provide transitional support for workers and businesses affected by the shift from ICE vehicles to EVs, focusing on re-skilling and leveraging opportunities within the EV value chain.

The transition to EVs will provide widespread benefits for Australia, including the significant reduction in noxious emissions and CO₂ emissions which are a major contributor to air pollution and climate change. With research from the University of Melbourne indicating that vehicle emissions may be responsible for over 11,000 deaths a year in Australia, the societal health benefits of a shift away from combustion engines should not be underestimated.²⁰

The current reliance on imported fuel for road transport exposes Australia to various risks, including price volatility and supply disruptions due to geopolitical tensions and other unforeseen events. We estimate that Australia spends over \$40 billion on imported fuel every year for cars alone. Reducing our reliance on expensive, imported fuel is also critical to the nation's future energy security. Accordingly, the transition to EVs will allow the more efficient use of imported fuel by sectors and industries that do not have viable alternatives.

While the EV transition is not without its challenges, it is important to recognise that it is a transition and not an overnight transformation of the transport system. Even with an optimistic scenario where up to 50% of new light vehicle sales are EVs in 2030, at this point there will still be over 15 million ICE vehicles on Australian roads – after considering the number of new vehicles being purchased today and average retirement rates. The coming decades offer sufficient time to adequately prepare for workforce adjustments, infrastructure deployment, and the adaptation of government revenue models to ensure a smooth transition.

Support to transition the existing auto industry

As we move towards an electrified transportation sector over coming decades, it will be essential to have a skilled workforce that can design, manufacture, maintain, and support electric vehicles and their enabling infrastructure.

While the transition brings new skill development opportunities for the existing automotive workforce and new career paths for those entering the workforce, understanding when and how to embrace those opportunities requires investment of time and capital, and the provision of robust policy signals about the industry's future direction. There are a number of different initiatives underway to help with reskilling and providing training pathways for the EV sector, however they are not necessarily consistently delivered or funded across the country.

As an example, AUR32721 is a nationally recognised course that reflects the roles of individuals who service, diagnose and repair battery electric vehicles and associated

²⁰ <https://www.unimelb.edu.au/newsroom/news/2023/february/vehicle-emissions-may-cause-over-11,000-deaths-a-year.-research-shows>.

components in the automotive, service and repair industry who carry out work according to Australian Standards AS5732:2022 Electric vehicle operations— Maintenance and repair.²¹

Undertaking AUR32721 provides apprentices with the necessary theory and practical knowledge specific to electric vehicles. However, in several states the lack of support for AUR32721 means that apprentices are required to complete additional training in combustion engine technology, which is unnecessary for those pursuing a career in the EV sector.

In order to support the development of a skilled workforce that meets the needs of the EV sector, nationally consistent approaches to workforce training and reskilling will be required to support growth of the industry and the transition to a cleaner transport future.

Workforce development priorities

To ensure a just and smooth transition to clean energy, we also need to be able to accurately measure and understand the clean energy workforce, including the EV industry, and identify the skills required for its growth.

Understanding the impact of the EV transition on workforce development demands improved data collection and analysis. There are a range of initiatives exploring the workforce needs of the clean energy transition through Jobs and Skills Australia, and the Mining and Automotive Skills Alliance (AUSMASA). However, the EVC notes that there are gaps in existing data that make it difficult to capture the full extent of the clean energy workforce, particularly in emerging occupations. Enhancing coordination within the education and training sector and improving government-provided data will be crucial for aligning workforce capabilities with emerging industry demands.

In particular, the proportion of the workforce involved in or adjacent to the EV industry needs to be more clearly identified to get an accurate picture of the gaps in skills and training for the growing EV sector. Enhancing workforce measurement data will serve to alleviate some of the barriers associated with recruiting skilled workers, by providing forward certainty on demand for training and development programs and improving awareness of career prospects.

National discussion on road tax reform

Recommendation: Engage with State and Territory Governments in a mature and genuine discussion on national reform of road taxation, which involves consideration of the major costs of transport, including road congestion, air pollution, carbon emissions, road safety, noise pollution, and road wear.

Various taxation measures apply to road vehicles in Australia, including one-off taxes on the purchase or import of vehicles, recurrent taxes on vehicle registration, fuel excises, and congestion charges. This complex taxation landscape presents an opportunity for reform that more accurately reflects the real costs of the transport system and introduction of price

²¹ [Australian Standards AS5732:2022 Electric vehicle operations - Maintenance and repair.](#)

signals related to road use that effectively address urban congestion, health and environmental impacts, and considerations related to vehicle weight and size.

In the wake of the High Court ruling on the Victorian Government's EV road user charge, there is a need for a comprehensive discussion on national road tax reform. This dialogue should actively involve State and Territory Governments, aiming to address the multifaceted costs associated with transport.

Historically, the fuel excise has been a significant source of Federal government funding, with the Government collecting an average of \$12.6 billion annually over the last decade. However, it's important to recognise that this revenue has not been exclusively allocated to road infrastructure spending, and that concerns about the EV transition resulting in near-term decline in the pool of funds available for road infrastructure are overstated.

That said, with the increased adoption of electric and hybrid vehicles, coupled with improvements in petrol and diesel vehicle fuel efficiency, there is a projected gradual erosion of this tax base. This decline calls for innovative fiscal strategies to ensure the sustainability of road infrastructure funding, over the coming decades, without disincentivising the adoption of low and zero emission vehicles, like EVs, or disadvantaging Australians who live in rural and remote locations, and as a result, tend to drive longer distances.

One of the EVC's major objections to a dollar per kilometre fee-based scheme that only targets EV owners is that those Australians who live in rural and remote parts of Australia, and who travel longer distances, will be unfairly penalised for adopting an EV, compared to Australians living in urban areas. This is counterproductive when these Australians generally spend the most on fuel, and also generate higher emissions, as a result of driving longer distances each year. A dollar per kilometre fee-based scheme is also a blunt tool that would do nothing to improve road congestion, road safety, air pollution, etc. Instead, Australia has the opportunity to take a smarter approach, not simply add a new tax for EVs.

The EVC is supportive of a mature and genuine national discussion on road tax reform that engages state and territory governments and looks at what road taxes should be phased out in exchange for introducing a new road pricing model that applies to all vehicles, including EVs, with the ultimate aims of encouraging safer and cleaner vehicles, while also reducing road congestion and road wear, and generating revenue to support the transport system.

The magnitude of the challenge faced to achieve this reform should not be taken lightly, but if done correctly, it presents an enormous opportunity to support the development of a future transport system that is more sustainable, equitable and efficient for all Australians, while achieving economic and environmental objectives across Australian governments.

6. Expanding EV Battery Manufacturing, Recycling, and Safety

Recommendation 6.1: Support expansion of Australia's role across the EV value chain by enhancing critical minerals processing and developing local battery manufacturing capabilities, capitalising on abundant mineral resources and technical expertise to support job creation and industry growth.

Opportunities across the EV value chain

The global EV and broader energy transition presents significant opportunities for Australia to capture across the entire value chain—spanning from the mining of critical minerals, the refining and processing of these minerals, the manufacturing of batteries and other EV components and equipment, the manufacturing of electric bikes, cars, buses and trucks, and ultimately the recycling of EV batteries and other components. Australia is uniquely positioned to capitalise on this once-in-a-generation opportunity given our rich resource base, availability of cheap, low carbon energy, skilled workforce, and national security.

With large deposits of critical minerals and rare earth elements, established technical expertise in mineral development and integration with global supply chains, Australia is well-placed to meet increased demand throughout the energy transition.²² Although demand for different resources may shift over coming decades due to the commercial viability of producing certain minerals and technological advancements, diverse mineral reserves enable Australia to supply the minerals necessarily to produce a range of lithium-ion battery chemistries.

While Australia remains a leader in the extraction and export of a number of critical minerals required for the EV transition, there remains a need to develop new downstream industries to help Australia transition to a low carbon economy, while supporting diversification of global supply chains. Australia is missing out on the value-add opportunities downstream of critical mineral extraction, including onshore mineral refining and battery production. The EVC looks forward to the upcoming National Battery Strategy to set the future roadmap for this critical sector.

Further downstream, the establishment of the Powering Australia Industry Growth Centre and the National Reconstruction Fund are welcome commitments to nurturing local manufacturing of clean energy technologies. A coordinated effort with state and territory governments will be crucial to maximising the inherent benefits and strengths of Australia's existing manufacturing sector and support the transition to EVs. This includes include the manufacturing of buses and trucks powered by Australian-made batteries, where guaranteed offtake agreements could stimulate the local industry and facilitate the transition to a cleaner economy.²³

²² <https://www.industry.gov.au/publications/critical-minerals-strategy-2023-2030>.

²³ <https://statements.qld.gov.au/statements/99747>.

Developing a circular economy

Recommendation 6.2: Promote and support sustainable battery life-cycle management through the development of infrastructure for onshore reuse, re-purposing and recycling of EV batteries and components, and enhancing data collection, harmonising regulations across jurisdictions, and increasing collaboration between industry and government.

Establishing a circular economy around EV batteries will allow for the provision of critical minerals to meet future needs for clean energy technologies and achieve significant emissions reductions by reducing the use of raw materials in battery production.

OEMs are collaborating to develop recycling and reuse options both within Australia and overseas. These efforts aim to establish a closed-loop system for EV batteries, ensuring that valuable materials are recovered and reused, minimising environmental impact, and contributing to the development of a circular economy.

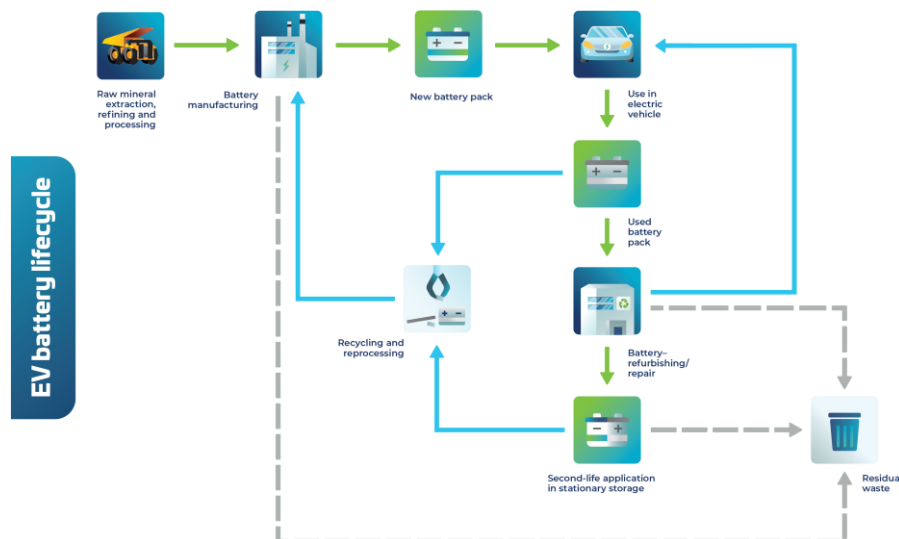


Figure 4. EV Battery Lifecycle

A key challenge to development or scaling of an onshore reuse and recycling industry is the limited volume of EV batteries available for processing. This is in part due to lack of onshore manufacturing facilities (as battery process scrap is the main source of recycling feedstocks), and because EV batteries are generally expected to significantly outlast their usage in a vehicle. With the exception of damaged batteries, EV batteries are able to be refurbished. Following an average 15+-year lifespan in a vehicle, current EV batteries are expected to retain approximately 70-80% of their energy storage capacity, which makes them attractive for several secondary use cases prior to recycling.²⁴

²⁴ IEA (2022) World Energy Outlook, p. 48; ICCT (2023), *Scaling Up Reuse and Recycling of Electric Vehicle Batteries: Assessing Challenges and Policy Approaches*, <https://theicct.org/wp-content/uploads/2023/02/recycling-electric-vehicle-batteries-feb-23.pdf>

All this means that at the current state of the EV market in Australia, there is a limited number of batteries available that require end-of-life processing (whether that is reuse, repurposing or recycling). The ICCT has estimated that the opportunities for reuse/recycling for batteries from light- and heavy-duty BEVs and PHEVs will grow over the next few decades.

Acknowledging that Australia will remain a nascent market for EV battery recycling for some time; and is constrained by lack of manufacturing facilities, there is still a need to create a supportive environment to deliver the requisite infrastructure and develop domestic capacity in battery reuse and recycling as the market develops. This includes enhancing data collection, streamlining regulations, and increasing industry and government collaboration.²⁵

Efforts should focus on expanding the supply of batteries for second-life applications and recycling (by boosting EV uptake), improving traceability, reducing regulatory barriers, and addressing safety and transportation challenges to support sustainable battery lifecycle management.

The EVC advocates for evidence-based approaches to address end-of-life EV batteries and supports the Federal Government's exploration of opportunities for EV battery reuse and recycling through a Government-led process under the National Electric Vehicle Strategy.

7. Other Relevant Matters

Recommendation 7.1: Foster ongoing collaboration between federal, state, and local governments, industry, and community stakeholders to ensure a coordinated and consistent approach to EV policy, infrastructure development and the broader renewable energy transition.

To accelerate the EV transition and support the broader shift towards renewable energy, it remains important to continue ongoing collaboration among federal, state, and local governments, alongside industry and community stakeholders. A unified approach to EV policy development, infrastructure deployment is essential to maintain consistency and avoid regulatory fragmentation or unintended policy consequences. While the various interjurisdictional working groups under the National EV Strategy are welcome developments to provide better coordination across the Federal and State Governments, there remain a number of areas (as noted in this submission), where further collaboration and harmonisation would be welcome.

The government can also explore policies developed internationally that support the electrification of transport and emissions reduction objectives. This includes consideration of a Low Carbon Fuel Standard (LCFS) adopted in a range of overseas jurisdictions²⁶ to address barriers to EV adoption by promoting greater investment in EV charging

²⁵ <https://electricvehiclecouncil.com.au/wp-content/uploads/2023/11/20231129-Batteries-ABRI-and-EVC-Collaboration.pdf>.

²⁶ <https://ww2.arb.ca.gov/our-work/programs/low-carbon-fuel-standard>; <https://www.canada.ca/en/environment-climate-change/services/managing-pollution/energy-production/fuel-regulations/clean-fuel-regulations/>.

infrastructure, complementing policies like new vehicle efficiency standards. A LCFS crediting mechanism would serve to provide a market-based incentive to concurrently support the uptake of renewable energy alongside greater investment in additional public and private charging infrastructure.

Enhance public education and establish a national government source for new vehicle sales data to support EV adoption

Recommendation 7.2: Establish a national government source for new vehicle sales data to support visibility of market dynamics, and continue to combat misinformation about EVs through public education campaigns and dissemination of evidence-based information.

Need for public reporting on vehicle sales

The provision of new vehicle sales data in a national database will contribute to improved understanding of the evolution of the automotive sector and the state of the EV transition. At present, there are substantial costs associated with accessing data on new vehicle sales which creates barriers for governments, industry stakeholders and the general public to obtain accurate insight into the rate of EV adoption across the country.

In light of this issue, it is important that the provision of this data is treated as a public good to promote transparency, equity and efficiency in the market and ensure equal access to the information on a timely basis. The creation of a centralised, official source will support the industry to analyse market trends over time, enhance general consumer awareness and facilitate evidence-based policy decision making by government.

Supporting ongoing consumer awareness initiatives

To foster the widespread adoption of EVs and counteract prevailing misconceptions, it is also going to be crucial for Governments and industry to continue to combat misinformation through targeted public education campaigns and the dissemination of accurate, evidence-based information. Addressing the gap in understanding about EVs is important not only for current 'early adopters' purchasing EVs, but also to reach the broader population and encourage mass adoption.

Highlighting the benefits of EV ownership through digital media, in-person events and drive days and clarifying common misconceptions across a range of public forums can significantly contribute to this effort. Both industry and government have a role to play in educating not just consumers, but also businesses, on how to go about transitioning to EVs.

In particular, local governments have a significant role to play in this due to their direct connection to communities and detailed understanding of their infrastructure needs. The EVC recommends that the Federal Government works in tandem with local governments through provision of support to run initiatives that increase awareness around EVs and renewable energy. This can include funding specifically for public education and events related to EVs, such as drive days, and the development of resources and planning tools to address community needs related to parking and charging infrastructure.

Conclusion

The EVC looks forward to the outcomes of this inquiry and remains committed to collaborating with all governments, industry and communities to realise the full potential of EVs in creating a prosperous, sustainable, and electrified future for Australia.

If you have any questions on this submission, please contact Natalie Thompson, Senior Manager - Policy at: office@evc.org.au.

Thank you for your consideration of our submission.

Yours sincerely,

A handwritten signature in black ink that reads "BJafari". The signature is written in a cursive style with a large, stylized 'B'.

Behyad Jafari

Chief Executive Officer

Electric Vehicle Council

Appendix

Glossary

A few key terms are outlined below. For more information, please see the EVC's website including [FAQs](#).

Term	Definition
Electric Vehicle	Any vehicle that can be plugged-in to be externally charged using electricity. This includes both BEVs and PHEVs. This definition is consistent with international bodies like the IEA, and is important given that the significant economic and environmental benefits that EVs provide can only be achieved through the direct use of external electricity to charge the vehicle's battery.
BEV	Battery Electric Vehicle – is powered by an electric motor/s and has a battery that is plugged-in to be charged using external electricity.
PHEV	Plug in Hybrid Vehicle – is powered by an electric motor/s, and can also be powered by an internal combustion engine. A PHEV has a battery that is plugged-in to be charged using external electricity. PHEVs can be powered exclusively using electricity for 30 – 150 km, during which zero tailpipe emissions are produced. The ICE engine is primarily used as a electricity generator to extend driving range on longer trips and can be powered by petrol, diesel or biofuels. In some PHEVs, the ICE engine can also directly propel the vehicle – generally at higher speeds, such as on the highway, where the ICE is most efficient.
EVSE	<p>Electric Vehicle Supply Equipment, or the infrastructure and equipment needed to charge electric vehicles, known as EV charging stations.</p> <p>There are different types of EV charging:</p> <ul style="list-style-type: none">• Level 1 / Mode 2<ul style="list-style-type: none">○ Existing power point (10-15 Amp, single phase), used in combination with a specialised cable which is typically supplied with the vehicle.○ Typically used in standalone domestic homes.○ This method will add between 10 and 20km of range per hour plugged in.○ It will top up daily use, but will not fully recharge a typical pure electric vehicle (BEV) overnight.• Level 2 / Mode 3<ul style="list-style-type: none">○ A dedicated AC EV charger at up to 22kW (32 Amp, 3-phase).○ Typically installed in homes, apartment complexes, workplaces, shopping centres, hotels, etc – anywhere the vehicle will be parked for a while.○ This method will add 40 to 100km of range per hour of charging depending on the vehicle.○ It will top up average daily vehicle use in an hour, or deliver a full recharge overnight.• Level 3 / Mode 4

	<ul style="list-style-type: none"> ○ A dedicated DC EV charger at power levels from 25kW to 350kW (40 – 500 Amp, three phase) ○ Typically used in commercial premises and road-side locations to provide for faster recharging than Level 1 and 2 can achieve. ○ At the lower end, this method will add up to 150km of range per hour plugged in ○ At the upper end, this method can fully recharge some electric vehicles in 10 to 15 minutes.
Vehicle-to-Grid (V2G)	Bidirectional charging technology that allows electric vehicles to communicate and interact with the grid, enabling the vehicle to discharge electricity back to the grid (or to a home or business), providing energy storage and grid support services.

Relevant EVC Publications and Submissions

Date	Title	Body/Government
March 2024	Australian EV Industry Recap 2023	EVC Report
March 2024	EVC Response to the Australian Government's New Vehicle Efficiency Standard Impact Analysis	Australian Government
March 2024	EVC response to the NMI Draft General Certificate of Approval for Electric Vehicle Supply Equipment – Consultation Paper	National Measurement Institute
Feb 2024	EVC Response to AEMO Draft 2024 Integrated System Plan	Australian Energy Market Operator
Nov 2023	EV Consumer Hub: learn.evc.org.au	EVC Resource
Nov 2023	EV Lifecycle Emissions Calculator	EVC Resource
Nov 2023	EV Battery Reuse and Recycling Explainer	EVC Resource
Nov 2023	Response to the NSW Parliamentary Inquiry into electric and hybrid vehicle batteries	NSW Government
Nov 2023	Response to NSW Government Request for Information on a Single interoperable and roaming Electric Vehicle (EV) charging payment solution	NSW Government
Oct 2023	Response to Ergon's 2025-2030 Draft Plan	Ergon Energy (Energy Queensland)
Oct 2023	Response to Energex's 2025-2030 Draft Plan	Energex (Energy Queensland)
Sept 2023	Submission to ACCC's Consultation on Draft Guidance on Environmental and Sustainability Claims	Australian Competition and Consumer Commission (ACCC)
Sept 2023	Response to ERC0346: Unlocking consumer's energy resources benefits through flexible trading	Australian Energy Market Commission

Sept 2023	Response to ERC0352: Scheduled lite rule change proposal	Australian Energy Market Commission
Sep 2023	Response to consultation on Victoria's Zero Emission Bus Transition	Victorian Government
Aug 2023	EV Charging at Home Guide	EVC Report
Aug 2023	Response to SA Power Networks draft regulatory proposal: 2025-2030	SA Power Networks
Aug 2023	Response to Green Paper on South Australia's Energy Transition	South Australian Government
Aug 2023	Response to final report on Queensland Electrical Safety Act 2002	Queensland Government
Aug 2023	Response to Energy Security Board-Australian Energy Regulator Consultation Paper: benefits of increasable visibility of networks.	Energy Security Board / Australian Energy Regulator
July 2023	State of Electric Vehicles 2023	EVC Report
July 2023	Submission to the Battery Stewardship Council's Discussion Paper on EV Battery Stewardship	Battery Stewardship Council
July 2023	Response to the Queensland Electricity Connection Manual Service and Installation Rules Version 4 Draft	Energy Queensland
July 2023	Raising standards, cutting costs: How an effective new vehicle efficient standard can reduce vehicle emissions and save consumers money	EVC Report produced by Mandala
June 2023	Response to Queensland Electrical Safety Office's discussion paper on a review of the Queensland Electrical Safety Act 2002	Queensland Government
May 2023	Submission to Federal Government's consultation on a Fuel Efficiency Standard: cleaner, cheaper to run cars for Australia	Australian Government
May 2023	Recommendations for an Australian New Vehicle Efficiency Standard	EVC Report
May 2023	Public high power EV charging availability report	EVC Report
May 2023	Submission to Federal Government's Consultation on proposed acoustic vehicle alerting systems for EVs	Australian Government
May 2023	Submission to the Australian Energy Regulator with regard to Ausgrid's electricity distribution determination: 2024-29	Australian Energy Regulator
Apr 2023	Submission to Queensland Government's discussion paper on the Queensland Battery Industry Strategy	Queensland Government
Apr 2023	Submission to the Federal Government's 2023-2030 Australian Cyber Security Strategy Discussion Paper	Australian Government

Mar 2023	Submission to the Federal Government's Consultation on the National Battery Strategy	Australian Government
Mar 2023	Submission to the NSW Government's Issues Paper on Going Circular in Clean Energy	NSW Government
Feb 2023	Submission to the Australian Energy Market Commissions' Consultation on unlocking consumer's energy resources benefits through flexible trading	Australian Energy Market Commission
Feb 2023	Submission to AEMO's draft 2023 inputs, assumptions and scenarios report	Australian Energy Market Operator
Feb 2023	Submission to the Energy Security Board's Consultation Paper on an EVSE Standing Data Register	Energy Security Board
Feb 2023	2022 Australian Electric Vehicle Industry Recap	EVC Report
Feb 2023	Submission to the Federal Government's National Reconstruction Fund Consultation	Australian Government
Feb 2023	Submission to the ACCC's Lithium-ion Battery Safety Consultation	Australian Competition and Consumer Commission
Feb 2023	Submission to the Federal Government's Critical Minerals Strategy	Australian Government
Jan 2022	Electric Trucks – Keeping Shelves Stocked in a Net Zero World	ATA and EVC Report