



Insurance Council  
of Australia



# Charging Ahead: Electric Vehicles & Insurance

May 2024

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# Contents

<b>Executive Summary</b>	<b>3</b>
<b>Safety regulations and guidance</b>	<b>5</b>
<b>EVs and Insurance</b>	<b>7</b>
<b>Opportunities for Insurers</b>	<b>11</b>
<b>Policy recommendations for governments</b>	<b>14</b>
<b>Appendix</b>	<b>16</b>
<b>References</b>	<b>17</b>

## Acknowledgment of Country

The Insurance Council of Australia acknowledges the Traditional Owners of country throughout Australia and their continuing connection to land, culture, sea and community. We recognise the tens of thousands of years of continuous custodianship and placemaking by First Nations peoples and their proud role in our shared future. This report was produced on the lands of the Gadigal people of the Eora Nation. We pay our respects to Elders past, present and emerging.

# Executive Summary

**As the Electric Vehicle (EV) market continues to grow and mature in Australia, there is a clear role for insurers to unlock the opportunities this transition presents, as well as managing any potential risks. This industry paper lays out the policy and regulatory landscape of the EV market, what insurers consider with underwriting EVs, key opportunities for the insurance industry and also recommendations to government.**

Research indicates that road registered Electric Vehicles (EVs) do not present a greater risk of fire occurrence than internal combustion engine (ICE) vehicles<sup>1</sup>. Data in global markets, including the UK and Sweden, also suggest that fires in EV's are less common than vehicles that utilise a combustion engine, however when EV battery fires do occur, they need to be managed differently and may require more time, resources and water to manage the incident<sup>2</sup>. In NSW, Fire and Rescue NSW (FRNSW) attended three EV battery incidents in 2023<sup>3</sup> where the origin of the fire was determined to be the high voltage lithium-ion battery.

It is estimated that EVs will account for 72 to 99 per cent of Australia's new vehicle sales by 2050 (up from 4 per cent in 2022), depending on the specific scenario<sup>4</sup>.

This report focuses on road registered Electric Vehicles, not Personal Mobility Devices (e.g. electric bikes and scooters) or Light Delivery Electric Vehicles (such as electric golf buggies). These other devices present a moderate to higher risk of fire overall, as well as a higher risk of injury, fatality and property loss, and are explored in a separate [ICA briefing note](#)<sup>5</sup>.

In Australia, EVs and EV charging infrastructure are subject to regulations and testing that are considered by insurers when assessing risk. These include Australian standards for EV charging infrastructure, Australian Design Rules (ADRs) focused on high-voltage electrical components and the National Construction Code (NCC) which sets minimum requirements for EV charging within new developments. The Australasian Fire and Emergency Services Council (AFAC) have also released a position paper on agencies' approach towards Electric Vehicles (EVs) and the installation of EV charging equipment. AFAC member, Fire and Rescue NSW (FRNSW), also notes that the frequency of incidents involving electric vehicles and EV infrastructure is low, however, fire incidents have potentially high consequences and therefore enhanced fire-fighting measures may be required in buildings<sup>6</sup>.

In order to safely manage EVs involved in collisions and fires, investment in research and training for first and secondary responders will be essential, as well as educating consumers about safe EV maintenance and training. Enhanced training for first responders (fire, police, paramedics) and secondary responders (tow trucks, salvage yards and recycling) is critical to enable safe management of electric vehicles involved in collisions and fires. FRNSW is partnering with other fire services, government agencies, research institutions and industry to examine best practice response to EV fires in structures.

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<sup>1</sup> EV Fire Safe, The FAQs & facts about EV fires, [02.2 EV Fire FAQs | EV Fire Safe](#)

<sup>2</sup> Zurich (2022) Risk Insight: Electric Vehicle Charging. Accessed at: <https://www.zurich.co.uk/news-and-insight/risk-insight-electric-vehicle-charging>; Swedish Civil Contingencies Agency (2023) Fires in electric means of transport in 2022: [Fires in electric means of transport in 2022 \(msb.se\)](#).

<sup>3</sup> Lithium ion battery incidents - [PowerPoint Presentation \(nsw.gov.au\)](#)

<sup>4</sup> CSIRO (2022) Electric Vehicle Projections 2022. [CSIRO Research Publications Repository - Publication](#)

<sup>5</sup> Briefing note: Managing fire risk from electrified transport in residential buildings ([insurancecouncil.com.au](#))

<sup>6</sup> Briefing note: Managing fire risk from electrified transport in residential buildings ([insurancecouncil.com.au](#))

As the Australian market matures and EV charging technologies continue to evolve, regulations and standards will need to keep up with the pace of change. There is also an opportunity for government and the industry to work collaboratively on evidence-based risk modelling to inform decision-making on the transition to electric vehicles.

The cost of insuring an EV can vary when compared with ICE vehicles due to a number of factors, such as the higher value of the asset being insured, delays in repair and increased repair costs. There are opportunities to tackle some of these challenges, including via government investment in the upskilling of existing technicians and training new technicians to work on electric vehicles and associated infrastructure.

### **A critical window of opportunity**

**The next ten years also offer a critical window of opportunity for the insurance industry to continue playing its part in enabling the transition to EVs, from supporting driver education and partnering with EV charging providers, to collaborating on repairs and offering tailored insurance products.**

# Safety regulations and guidance

Research indicates that road registered EVs do not present a greater risk of fire occurrence than ICE vehicles<sup>7</sup>, however when EV battery fires do occur, they need to be managed differently and may require more time, resources and water to manage the incident. Data from fire agencies also confirm that incidents involving EVs and EV infrastructure are currently low frequency, but potentially high consequence requiring enhanced fire fighting measures<sup>8</sup>. This aligns with international experience, with global data from Zurich Resilience Solutions confirming that fire frequency is not higher for road registered EVs when operated normally<sup>9</sup>.

Electric vehicles are subject to regulations and testing, and associated charging infrastructure is subject to various technical specifications. Existing regulations and guidance, as well regulatory gaps, are considered by insurers when assessing risk.

As the Australian market matures and EV charging technologies continue to evolve and develop, the relevant standards should be reviewed and amended as required to ensure they remain fit for purpose and to make it easier for insurers to underwrite EVs. There may be further opportunities to amend the EV regulatory environment over time if data suggests this is required. A summary of existing safety regulations and guidance is outlined below. These include:

- **Australian Standards:** EVs and their charging infrastructure are subject to various standards and regulations to ensure safety and compatibility. AS/NZS 3000:2018<sup>10</sup> contains provisions relating to EV charging installations, including the wiring rules for EV chargers. In addition to these national requirements, there are rules at the state and territory level in the form of 'Service and Installation Rules'. Separately, AS/NZS 3008.1.1:2017<sup>11</sup> contains requirements for cable sizing from the upstream power supply to EV chargers. Standards Australia also administers AS 5732:2022<sup>12</sup> which guides technicians on suitable ways of handling the repairs of the different ranges of EVs. Australian standards for EV charging play an important role and can be further refined over time as the market matures.
- **Australian Design Rules:** The Australian Government has introduced new Australian Design Rules (ADRs), specifically for EVs to prescribe safety requirements with respect to EV high voltage systems<sup>13</sup>. This includes measures to prevent injuries occurring from contact with high-voltage electrical components and spillage of electrolytes from batteries.

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<sup>7</sup> EV Fire Safe, The FAQs & facts about EV fires, [02.2 EV Fire FAQs | EV Fire Safe](#)

<sup>8</sup> [FNSW Position Statement FRNSW position statements - Fire and Rescue NSW](#)

<sup>9</sup> [Risk Insight – Electric Vehicle Charging - https://www.zurich.co.uk/news-and-insight/risk-insight-electric-vehicle-charging](https://www.zurich.co.uk/news-and-insight/risk-insight-electric-vehicle-charging)

<sup>10</sup> Australian Standards, AS/NZS 3000:2018, Electrical installations (known as the Australian/New Zealand Wiring Rules), [AS/NZS 3000:2018 Electrical installations \(known as the Australian/New Zealand Wiring Rules\) | Standards Australia Store](#), 26 June 2018

<sup>11</sup> Standards Australia, AS/NZS 3008.1.1:2017, Electrical installations — Selection of cables, Part 1.1: Cables for alternating voltages up to and including 0.6/1 kV — Typical Australian installation conditions, [AS/NZS 3008.1.1:2017 Electrical installations — Selection of cables, Part 1.1: Cables for alternating voltages up to and including 0.6/1 kV — Typical Australian installation conditions | Standards Australia Store](#), 2 February 2017

<sup>12</sup> Standards Australia, AS 5732:2022, Electric vehicle operations — Maintenance and repair, [AS 5732:2022 Electric vehicle operations — Maintenance and repair | Standards Australia Store](#), 28 October 2022

<sup>13</sup> Department of Infrastructure, Transport, Regional Development, Communications and the Arts, New standards to accelerate electric and hydrogen vehicle safety in Australia, [New standards to accelerate electric and hydrogen vehicle safety in Australia | Department of Infrastructure, Transport, Regional Development, Communications and the Arts](#), 12 January 2024

- **National Construction Code:** The National Construction Code (NCC) sets minimum requirements for EV charging within new developments<sup>14</sup> and the Australian Building Codes Board (ABCB), as the standards body responsible for the NCC, has made recommendations that can support the safer installation and use of EV charging infrastructure without being an unreasonable barrier to adoption<sup>15</sup>.

Whilst these requirements are not binding, insurers reference the recommendations to assist in their risk assessments. In addition to the NCC and associated standards, there are also a range of other levers that can be used to reduce risk beyond building codes and standards, such as consumer education and behaviour and first responder training and response. Further information on these levers is outlined in the 'Policy Recommendations for Governments' section of the report.

- **Fire Authorities:** The Australasian Fire and Emergency Services Council (AFAC) have also released a position paper on agencies' approach towards Electric Vehicles (EVs) and the installation of EV charging equipment in the built environment specific to fire prevention and preparedness<sup>16</sup>.

As seen in more mature EV markets around the world, regulatory requirements work to strike a balance so as not be so onerous as to disincentivise EV charger installation, but flexible enough to enable the requirements to be amended over time if data indicates that this is required. ICA supports maintaining this balanced regulatory approach. As the EV market matures and technology evolves in Australia and globally, future regulatory approaches should take into account improved risk data, to ensure they remain fit for purpose. There is also an opportunity for insurers to share their own data and risk intelligence as the market evolves, as outlined in 'Opportunities for Insurers' section of this report. There is a clear opportunity for future collaborative research in this area that brings together insurers, the EV industry, first responders and regulators of our built environment.

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<sup>14</sup> Australian Building Codes Board. 2023. *Electric Vehicles in buildings*. 13 June. Accessed September 30, 2023.

<https://abcb.gov.au/sites/default/files/resources/2023/ABCB%20EV%20Guidance%20Document%20June%202023.pdf>.

<sup>15</sup> Australian Building Codes Board. 2023. *Electric Vehicles in buildings*. 13 June. Accessed September 30, 2023.

<https://abcb.gov.au/sites/default/files/resources/2023/ABCB%20EV%20Guidance%20Document%20June%202023.pdf>.

<sup>16</sup> AFAC, Electric Vehicles (EV) and EV charging equipment in the built environment, [https://www.afac.com.au/docs/default-source/doctrine/afac\\_evs-in-built-environment\\_2024-01-09\\_v1-5.pdf](https://www.afac.com.au/docs/default-source/doctrine/afac_evs-in-built-environment_2024-01-09_v1-5.pdf), 2 October 2023

# EVs and Insurance

## There are many factors insurers may consider when calculating an insurance premium for EVs.

This section outlines some of the reasons why the cost of insurance premiums for electric vehicles can vary to ICE vehicles.

There is a clear role for government and industry to work together to tackle some of these challenges, which are explored in the 'Opportunities for Insurers' and 'Policy Recommendations for Governments' sections of this report.

## EV purchase price

Currently, EVs tend to be higher value and are generally more expensive than equivalent ICE vehicles to purchase<sup>17</sup>. Therefore, they can be more expensive to insure. However, the increasing popularity of EVs is driving more supply, variety and competition in the market, which will help put downward pressure on EV purchase prices over time<sup>18</sup>.

## Repairs

Some studies have shown that EVs take longer to repair and are more expensive to repair than ICE vehicles. For example, according to a report by Thatcham Research, an automotive industry specialist in the UK, a recent survey indicated that EVs cost up to 25 per cent more and take 14 per cent longer to repair than ICE vehicles<sup>19</sup>. Several factors contribute to these trends, including:

- The technology and parts in an EV are more expensive to produce and replace, specifically motor and battery parts. For example, EVs may have more advanced driver assistance functionality, such as external sensors.
- Repairing damaged EVs requires importing parts to Australia. Since many EV models are relatively new, there are few options for aftermarket replacement parts. Recent analysis estimated that original equipment manufacturer (OEM) parts account for over 90 percent of the parts used in US and Canadian EV repair claims<sup>20</sup>.
- As there are a limited number of service centres around Australia that can repair EVs, vehicles may need to be transported to a distant location to be repaired.
- There is a shortage of trained EV technicians in Australia and repairing an EV often involves more than one technician - one for structural damage and another to work on the vehicle's high-voltage systems.
- Inflation and supply chain disruptions are also contributing factors to higher repair costs.

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<sup>17</sup> RAC, When will EV prices be the same as non-electric cars?, <https://rac.com.au/car-motoring/info/when-will-electric-cars-be-cheaper#:~:text=Australia%27s%20Electric%20Vehicle%20Council%20expects,moving%20in%20a%20positive%20direction>, 2 November 2023

<sup>18</sup> RACQ, EV prices charging down, [EV prices charging down | RACQ](#), 12 July 2023

<sup>19</sup> Thatcham Research, Impact of BEV Adoption on the Repair and Insurance Sectors Final Report, [Impact-of-BEV-Adoption-on-the-Repair-and-Insurance-Sectors-report-Innovate-UK-and-Thatcham-Research-FINAL.pdf](#), 2023

<sup>20</sup> Mitchel, Plugged-In: EV Collision Insights Q1 2023, <https://www.mitchell.com/insights/auto-physical-damage/article/plugged-ev-collision-insights-q1-2023>, 16 May 2023



## Battery Repair and Recycling

Batteries are one of the most expensive parts of an EV, with replacement often costing between US\$5000 to US\$20,000 (AU\$7,500 to AU\$30,000), up to 40 percent of the EV's total value<sup>21</sup>. This cost can contribute to a trend of replacing the entire car rather than repairing battery packs, after collisions.

Several other factors contributing to this trend include:

- The absence of a local battery repair network means that most batteries removed from EVs need to be returned to the OEM overseas.
- A lack of data on how to clearly identify the defective part in a battery pack is hindering the ability of EV technicians to repair battery packs after minor collisions<sup>22</sup>. For example, insurers have seen scratched battery packs where the cells inside are likely undamaged, however without diagnostic data the vehicle had to be written off. As a result, the number of battery packs and low-mileage cars getting scrapped after collisions is likely to keep rising as EV sales grow.
- Batteries require specialty removal equipment as well as disposal and recycling methods. However, a limited number of EV battery recycling facilities in Australia and limited or incomplete information regarding the appropriate management of end-of-life EV batteries could lead to improper or dangerous waste management practices.

OEMs producing easily repairable battery packs, providing repair methods and components, and improving third-party access to battery cell data, as well as the availability of alternative non-OEM batteries at reasonable cost, could help address these issues. These are explored more in the 'Opportunities for Insurers' and 'Policy Recommendations for Governments' sections of this report.

## Battery Safety

Research indicates that road registered EVs do not present a greater risk of fire occurrence than ICE vehicles<sup>23</sup>, however when EV battery fires do occur, they need to be managed differently and may require more time, resources and firefighting water to manage the incident, and can have significant impact on surrounding infrastructure.

At the time of writing, EV FireSafe data that there have been six battery fires in road registered passenger vehicles in Australia, with one fatality (still under investigation). None of these vehicles were charging, or connected to charging equipment, at the time of the fire. FRNSW data indicates that that FRNSW attended three electric vehicle battery incidents in 2023<sup>24</sup> EV FireSafe also reports there have only been a handful of EV battery fires globally for the first half of 2023 - mainly linked to extraneous variables. EV FireSafe research claims there have only been 466 verified EV battery fires globally from 2010 to today, with around 26 million EVs currently on roads around the world<sup>25</sup>.

This research is supported by analysis undertaken by IDTechEX, a Cambridge independent research institute, which found that current global data suggests that fires in EVs are much less common than ICE vehicles, but different fire management approaches will be critical<sup>26</sup>.

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<sup>21</sup> John Witt, Research, Electric Car Battery Replacement Costs, 8 February 2023, <https://www.recurrentauto.com/research/costs-ev-battery-replacement>

<sup>22</sup> Insurance Business, Insurers warn they need more access to EV data, [Insurers warn they need more access to EV data | Insurance Business Australia \(insurancebusinessmag.com\)](https://www.insurancebusinessmag.com), 22 March 2023

<sup>23</sup> EV Fire Safe, The FAQs & facts about EV fires, [02.2 EV Fire FAQs | EV Fire Safe](https://www.evfiresafe.com/ev-fire-what-is-thermal-runaway)

<sup>24</sup> <https://www.fire.nsw.gov.au/gallery/resources/SARET/FRNSW%20LIB%20fire%20data%202022-23.pdf>

<sup>25</sup> EV Firesafe. What is thermal runaway? <https://www.evfiresafe.com/ev-fire-what-is-thermal-runaway>

<sup>26</sup> EV Fires: Less Common But More Problematic? | IDTechEx Research Article <https://www.idtechex.com/en/research-article/ev-fires-less-common-but-more-problematic/25749>



An analysis by the Swedish Civil Contingencies Agency of the Swedish market from 2018-2022 also found that ICE vehicles were experiencing more fires than passenger vehicles that run on lithium-ion batteries. At the time of analysis there were 611,000 EVs, whilst cars powered by other fuels totalled 4.4 million<sup>27</sup>.

Zurich Resilience Solutions has drawn on insights from global markets where EV charging is a prominent feature in a wide range of premises, from multi-storey car parks, to national parks and commercial and retail premises. Recent loss history has shown that fire frequency is not higher for road registered EVs when operated normally. The guidance focuses on appropriate installation and maintenance of EV charging, as well as fire suppression equipment and training<sup>28</sup>.

Despite the low risk of battery fire, the consequence of an EV fire is potentially significant, particularly its impact on surrounding infrastructure<sup>29</sup>. Battery fires are generally harder to extinguish and require different approaches by firefighters. Lithium-ion batteries are essentially a fuel source, so the fire can burn for hours, with firefighters often unable to immediately extinguish these fires. Research into the safety of alternative and renewable energy sources is being undertaken by bodies such as Fire and Rescue New South Wales<sup>30</sup>.

The risk of EV battery fires has direct implications for personal and commercial lines, including auto and property insurance and other types of insurance depending on where the fire occurs. EVs that catch fire inside a home garage, in a public parking garage, or at a dealer or repair facility can damage these structures or any adjacent or nearby property.

## Emerging second-hand market

According to the Electric Vehicle Council, there are about 180,000 EVs on Australian roads at present, which is a small fraction of the 20 million or so passenger vehicles registered<sup>31</sup>. However, it is anticipated there will be significant growth in the second-hand EV market in 2024-2025 as fleet management companies start to offload used EVs<sup>32</sup>.

Consumers can make some savings by considering a second-hand EV, with limited second-hand options in Australia starting from around \$10,000, compared to new EVs that start from around \$40,000<sup>33</sup>.

However, as a second-hand EV market emerges, insurers will need to consider several factors associated with insuring second-hand models, such as battery considerations, given that they are one of the most expensive parts of an EV to repair and precise battery life expectancy is hard to measure<sup>34</sup>. Regular EV battery testing by EV technicians or insurers could help monitor if an EV battery is depleting faster than expected and strengthen consumer confidence in used EVs.

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<sup>27</sup> Fires in electric means of transport in 2022 (msb.se) <https://www.msb.se/sv/aktuellt/nyheter/2023/maj/brander-i-eltransportmedel-under-2022/?ref=warpnews.org>

<sup>28</sup> Risk Insight – Electric Vehicle Charging - <https://www.zurich.co.uk/news-and-insight/risk-insight-electric-vehicle-charging>

<sup>29</sup> FRNSW Position Statement [FRNSW position statements - Fire and Rescue NSW](#)

<sup>30</sup> New South Wales Fire and Rescue. n.d. SAFETY OF ALTERNATIVE AND RENEWABLE ENERGY TECHNOLOGIES (SARET) RESEARCH PROGRAM. Accessed September 2023, 30. <https://www.fire.nsw.gov.au/page.php?id=9401>.

<sup>31</sup> Australian Bureau of Statistics, Motor Vehicle Census, Australia, [Motor Vehicle Census, Australia, 31 Jan 2021 | Australian Bureau of Statistics \(abs.gov.au\)](#), 31 January 2021

<sup>32</sup> Used EVs will soon become much easier to get. This is how to choose a reliable one, <https://www.abc.net.au/news/2023-12-11/nsw-second-hand-evs-electric-vehicles/103191358>, ABC News, 11 December 2023

<sup>33</sup> NRMA, Buying a second-hand EV in Australia: what you need to know, <https://www.mynrma.com.au/electric-vehicles/buying/second-hand-evs-australia>

<sup>34</sup> Reuters: Nick Carey, Paul Lienert and Sarah Mcfarlane. 2023. Insight: Scratched EV battery? Your insurer may have to junk the whole car. 21 March. Accessed September 30, 2023. <https://www.reuters.com/business/autos-transportation/scratched-ev-battery-your-insurer-may-have-junk-whole-car-2023-03-20/>.

Second-hand EVs that have been imported into Australia (known as ‘grey imports’) can also present additional risks associated with warranty and support challenges due to the absence of manufacturer-backed coverage. These vehicles may face compatibility issues with local charging infrastructure and owners might miss out on crucial software updates, affecting performance and efficiency.

## EV Charging Infrastructure

Insurers may assess a range of factors when calculating an insurance premium for EV chargers:

- **Location:** The proximity to other vehicles, exits, fire safety systems, building utilities and critical infrastructure should be considered when located charging stations. Areas surrounding any EV charging stations need to be kept clear of any storage, particularly combustible items. Fire protection measures, such as fire hydrants and smoke detection systems, should be installed in appropriate settings such as multi-storey / underground parking that can be easily accessed in the event of a fire.
- **Installation and maintenance:** The installation of EV charging stations should be carried out by qualified technicians and as per the building requirements under the National Construction Code. A qualified electrician needs to check if the existing circuitry will support the required electrical load for the EV charger points. Implementation of a regular maintenance schedule for EV charging equipment should also be conducted by qualified technicians.
- **Theft and Tampering:** EV charging stations, particularly those in public or shared spaces, may face theft or damage. Unattended charger infrastructure should be appropriately fastened and secured to minimise the risk of accidental damage or tampering<sup>35</sup>.
- **Personal Injury:** Proper storage and usage are essential to minimise the potential for personal injury from EV charging stations. Procedures relating to safety and evacuation need to take into account presence of EV charging infrastructure.
- **Product Liability:** While third-party manufacturing and installation of EV charging equipment can raise concerns about product-related failures, most associated liability risks, including third party property damage and injury, may be covered in contractual agreements with the manufacturer, installer and maintenance service provider. Particular attention to the terms of these agreements is strongly advisable<sup>36</sup>.
- **Safety Regulations and Guidance:** As EVs in existing buildings becomes more common, existing building infrastructure will need to be appropriately maintained and upgraded, while new developments will need to comply with the relevant safety requirements, such as relevant Australian Standards and advice from fire authorities. These are outlined in more detail in the ‘Safety regulations and Guidance’ section of this report.

If property owners, developers or managers install EV charging infrastructure into new or existing properties, this is a material fact that should be disclosed to insurers and needs to be considered in insurance coverage. It’s recommended that insurers and their customers engage in comprehensive discussions to ensure adequate insurance coverage is provided and also discuss how to address potential risk factors, such as fixing outdated electrical wiring.

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<sup>35</sup> [1] Gallagher, Risk Insight: Electric Vehicle Battery and Charger Risks, 13 February 2024, Risk Insight: Electric Vehicle Battery and Charger Risks | Gallagher AU ([ajg.com](http://ajg.com))

<sup>36</sup> Gallagher, Risk Insight: Electric Vehicle Battery and Charger Risks, 13 February 2024, [Risk Insight: Electric Vehicle Battery and Charger Risks | Gallagher AU \(ajg.com\)](http://ajg.com)

# Opportunities for Insurers

There are a significant number of opportunities insurers can adopt to support more EVs entering the Australian market. These are outlined in the table below.

Opportunity	Example
<b>Telematics</b>	Insurers could manage the risks associated with driver behaviour by using telematics to analyse specific driver risks. Telematics describes the technology used to manage a vehicle and other assets by gathering vehicle location, driver behaviour and usage. In the context of insurance, this technology allows insurers to offer more individualised, risk-adjusted and usage-based pricing and coverage levels, which can be updated on a live basis as data is received <sup>37</sup> .
<b>Driver Education</b>	Insurers can educate customers about the safe operation and maintenance of electric vehicles and charging infrastructure. For example, RACQ has hosted a series of EV test drive sessions to provide members with the opportunity to experience electric vehicles <sup>38</sup> . On the day, participants got to choose an EV to test drive from the available range and learnt the basics of electric vehicle functions and ownership from our on-site experts.
<b>Partnerships with EV charging providers</b>	Insurers can partner with EV charging providers to provide advice to charging providers to strategically install charging stations to minimise damage or loss. Insurers can advise on the placement of charging points with considerations made around repair times in the event of machinery breakdown, or with climate considerations to ensure charging points are constructed and placed to withstand extreme weather events. For example, in April 2023, NRMA announced a partnership with the federal government, working to build 117 fast-charging sites along Australia's national highway network. The \$78 million funding initiative aims to foster EV adoption among residents in regional areas <sup>39</sup> .
<b>Residual Value</b>	In Australia, no insurers are offering residual value insurance which is how much the vehicle is worth after a certain amount of time and depreciation. In the short term, the concern and challenge for insurers is understanding the true second-hand value of EVs and therefore the ability to offer residual value insurance. However, in the longer term, as the sector matures, these challenges are expected to reduce. Insuring EVs residual value could allow insurers to offer specialised coverage tailored to the unique characteristics of this growing market.

Table continues next page.

<sup>37</sup> Kou, Aijun, Xiaojun Li, and Zhiwen Zou. 2023. "Dynamic robust analysis of IoV link delay in cellular Telematics and smart." *Results in Physics* 1-25.

<sup>38</sup> RACQ, EV Test Drive Day, [EV Test Drive Day | RACQ](#), 2023

<sup>39</sup> NRMA, NRMA announces Australian government partnership for EV charging, <https://www.mynrma.com.au/media/press-releases/2023/nrma-announces-australian-government-partnership-for-ev-charging>, 2023

Opportunity	Example
<b>Collaborating with Original Equipment Manufacturers</b>	<p data-bbox="394 304 839 338"><b>Collaborating on repairs and parts</b></p> <p data-bbox="394 344 1355 409">Insurers can collaborate with OEMs to improve understanding for all involved in repairs. For example:</p> <ul data-bbox="442 443 1425 1077" style="list-style-type: none"> <li data-bbox="442 443 1425 566">• Insurers can collaborate with OEMs to develop certified training programs for repair technicians. This would ensure that repair professionals have the necessary skills and knowledge to follow OEM procedures that are critical to the correct repair of EVs.</li> <li data-bbox="442 573 1425 824">• Insurers can collaborate with OEMs to streamline repair processes. For example, insurers could work with OEMs on how to use the information generated by EVs to simplify the repair process. Assuming there is customer consent, a vehicle in the moments after a collision can send the insurer basic information about the incident—location, conditions at the time, what happened in the seconds prior to the crash. That information could then go straight into a loss report that provides the insurer with key information before the customer contacts them.</li> <li data-bbox="442 831 1425 1077">• Given the ongoing global supply chain shortages and the highly specialised nature of electric vehicle (EV) components, it is crucial for insurers and Original Equipment Manufacturers (OEMs) to collaborate closely to ensure a constant and steady supply of parts. There may be opportunity for insurers and OEMs to explore specific agreements between manufacturers and insurers regarding parts, which would help maintain the supply chain, lower prices due to economies of scale as well as offer a more seamless experience for customer repairs.</li> </ul> <p data-bbox="394 1122 783 1155"><b>Collaborating on data-sharing</b></p> <p data-bbox="394 1162 1425 1384">Insurers can enter into data-sharing agreements with OEMs to enhance claims processes and provide better services to policyholders. For example, OEMs can use data provided by insurers to maximise repairability and salvageability by better understanding battery risks and reflecting crash data into vehicle design. Conversely, insurers can use data provided by OEMs to provide insurance that is tightly integrated with the respective EV’s technology. These partnerships can have long-term benefits for all parties involved.</p> <p data-bbox="394 1429 887 1462"><b>Collaborating on consumer education</b></p> <p data-bbox="394 1469 1425 1715">Insurers can collaborate with OEMs to educate customers as they switch to EVs. For example, Zurich Financial Services Australia has entered into an innovative new partnership to provide risk engineering and resilience services to Australian zero-emissions truck manufacturer, SEA Electric. Through the partnership, SEA Electric customers have access to Zurich Resilience Solutions’ team of more than 800 risk engineers for pre-purchase advice, risk assessment services and driver training. Zurich customers and brokers can also access the expertise and experience of SEA Electric as commercial fleets transition to zero emissions<sup>40</sup>.</p>

Table continues next page.

<sup>40</sup> Zurich, Zurich partners with leading Australian electric truck manufacturer, <https://www.zurich.com.au/latest-news/media-releases/2023/zurich-partners-with-leading-australian-electric-truck-manufacturer.html>, 23 March 2023

Opportunity	Example
<b>Innovative Product Offerings</b>	<p>As the transition to EVs accelerates in Australia, insurers will need to adopt innovative approaches and offerings in the provision of EV coverage. Some options include:</p> <ul style="list-style-type: none"> <li>• <b>EV tailored insurance:</b> Insurers can provide tailored options for EVs that consider battery, driving systems, third-party liability from fire, parking and charging and battery degradation. For example, Allianz’s Comprehensive Car Insurance provides cover for electric vehicles, including battery, charging cables, wall chargers and mounts<sup>41</sup>.</li> <li>• <b>Usage based insurance products:</b> The access to telematic data enables insurers to adopt usage-based insurance products – where premiums are adjusted using telematic data on policyholders to incentivise safer driving behaviour. These insights will allow insurers to move away from traditional risk profiling such as vehicle specifications and demographic variables of policyholders, to provide dynamic profiling and premiums on relevant metrics<sup>42</sup>.</li> <li>• <b>Specialised insurance coverage:</b> Insurers can provide niche insurance products for recent technologies and usage, such as battery performance and charging stations. For example, Munich Re offers a product that covers battery performance that allows battery manufacturers to insure their customer warranties<sup>43</sup>. If the repair or replacement costs of defective or weak battery modules exceed a predetermined amount, the insurance then covers the rest.</li> <li>• <b>Enhancements to roadside assistance:</b> Traditional roadside assistance policies will need to be adapted for EVs, for example to cover the assistance provided if the customer runs out of power.</li> <li>• <b>Cyber insurance:</b> Insurers can support customers to reduce their level of cyber exposure by offering stand-alone cyber insurance policies or implementing components of cyber insurance into specific EV policy offerings.</li> </ul>
<b>Collaborating with Fire Agencies</b>	<p>Insurers can collaborate with state and territory fire agencies on joint initiatives focussed on enhancing community resilience and safety by minimising risk. Some options include:</p> <p><b>Data sharing and risk analysis:</b> Insurers and fire agencies can collaborate on the capture and analysis of fire data, including the incidence and impact of fires, to develop effective risk mitigation strategies.</p> <p><b>Advocacy:</b> There are opportunities for insurers and fire agencies to jointly progress shared advocacy reforms relating to EVs, including through public forums, direct government engagement and research initiatives (see below).</p> <p><b>Research</b> Insurers and fire agencies can partner to share expertise, data and resources to identify best practice approaches to reduce the incidence and impact of battery fire risks, as well as best practice fire-fighting response and capability.</p>

<sup>41</sup> Allianz, Comprehensive Car Insurance, [Comprehensive Car Insurance | Allianz Australia](#)

<sup>42</sup> Li, Hong-Jie, Xing-Gang Luo, Zhong-Liang Zhang, Wei Jiang, and Shen-Wei Huang. 2023. "Driving risk prevention in usage-based insurance services based on interpretable machine learning and telematics data." *Decision Support Systems*.

<sup>43</sup> Munich Re, Battery performance now insurable – Innovative Munich Re coverage paves the way for renewable energy, <https://www.munichre.com/en/company/media-relations/media-information-and-corporate-news/media-information/2019/2019-03-07-media-information.html#:~:text=Munich%20Re%20is%20the%20world%27s,backed%20by%20the%20insurance%20coverage.>, 7 March 2019

# Policy recommendations for governments

**Insurers are ready to work with federal and state governments to accelerate the transition to EVs in Australia. The Insurance Council is advocating for...**

## The Federal Government to:

**Introduce an orderly implementation of a new vehicle fuel efficiency standard that brings Australia into line with global fuel efficiency standards, especially those of key car trading nations.** This will give consumers access to a wider choice of vehicle models that are cheaper to run and less polluting.

**Invest in local EV battery recycling facilities to appropriately manage end-of-life EV batteries.** Safely and effectively recycling electric vehicle batteries will be important to enable the responsible management of these assets through to end of life.

## Federal and state governments must:

**Invest in electric vehicle charging infrastructure.** Federal and state governments should increase funding commitments for electric vehicle charging infrastructure to ensure there is a comprehensive Australia-wide network in place by 2026. In addition, governments can explore with the private sector how to provide financial incentives to reduce the cost of installing home and commercial charging equipment.

**Improve national coordination of Australia's electric vehicle charging network.** National coordination is required to ensure infrastructure is built where it is most needed. Priority should be on expanding the national rollout of EV charging infrastructure on key highway routes across Australia.

**Review and amend relevant standards when necessary** Federal and State Government should ensure the National Construction Code and relevant standards remain fit for purpose to keep pace with the increasing uptake of EVs, and to support the safe installation and use of EV charging equipment in new and existing homes. In addition, insurers, peak bodies, and state governments should collaborate to chart a path for insuring and incentivising the uptake of charging infrastructure in existing homes and apartments. Doing this will future-proof new housing by ensuring all new builds are electric vehicle-ready, as well as implementing and enforcing consistent safety standards on electric vehicle charger installation and maintenance.

**Upskill existing technicians and train new technicians to work on electric vehicles and associated infrastructure.** The Federal Government's New Energy Skills Program provides subsidised courses for eligible trades and this needs to be regularly reviewed to make sure all relevant courses for emerging industries are included.

**Invest in research and training for first responders (fire, police, paramedics) and secondary responders (tow trucks, salvage yards, recycling) to enable safe management of electric vehicles involved in collisions and fires.** Research indicates that road-registered electric vehicles do not present a greater risk of fire occurrence than internal combustion engine (ICE) vehicles and one study has found that they catch fire at about one-twentieth of the frequency of ICE vehicles<sup>44</sup>. However, when electric vehicle battery fires do occur, they need to be managed differently, and may require more time, resources and firefighting water to manage the incident. More research and training will help to minimise the risks associated with electric vehicle fires. This could include supporting EV FireSafe to undertake a robust and independent review of global literature about electric vehicle fire safety in the built environment.

**Work with insurers to conduct evidence-based risk modelling to inform decision-making on the transition to electric vehicles.** Insurers are well-placed to provide advice on electric vehicle adoption, from ensuring charging infrastructure is built to withstand future extreme weather events or providing risk assessments on electric vehicle performance. Governments should work with insurers and collaborate with stakeholders such as building developers, original equipment manufacturers and charging station providers to facilitate the provision of verifiable and credible information to consumers.

## State governments must:

**Reform laws governing written off vehicles to enable more vehicles to be safely repaired instead of scrapped, including electric vehicles.** Currently, written-off vehicle laws are applied inconsistently across states with New South Wales having an especially restrictive set of rules. Reforming these laws will be critical to strengthening the circular economy and will help to grow the second-hand electric vehicle market in Australia, contributing to an increase in supply and reducing prices.

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<sup>44</sup> Allied World Insurance, Electric Vehicle Fires, A Cause for Concern?, <https://alliedworldinsurance.com/risk-management/electric-vehicle-fires-a-cause-for-concern/>, May 2023



# Appendix

## Glossary

Term	Definition
Australian Design Rules (ADRs)	National vehicle standards and regulations in Australia that set requirements for the design, construction, and performance of motor vehicles to ensure safety, environmental, and anti-theft standards are met.
Australian Light Vehicle Standards Rules (ALVSRs)	Regulations in Australia that define the standards and requirements for light vehicles, including safety features, emissions, and other aspects related to vehicle manufacturing and use.
Electric Vehicle (EV)	A vehicle that runs on electricity stored in its rechargeable batteries, rather than using internal combustion engines fuelled by gasoline or diesel.
Emissions	The release of gases, particularly greenhouse gases, into the atmosphere, contributing to climate change and global warming.
Electric Vehicle Charging Infrastructure	The infrastructure, such as charging stations, required to support the charging of electric vehicles.
Fuel Efficiency (CO2) Standard	A regulation or policy that sets limits on the maximum annual average level of carbon emissions from vehicles, often aimed at promoting fuel efficiency and reducing greenhouse gas emissions.
Internal Combustion Engines (ICE)	Engines that burn fossil fuels (such as gasoline or diesel) to generate power, commonly used in traditional vehicles relying on non-electric propulsion systems.
Net Zero	The state of achieving a balance between the amount of greenhouse gases emitted and the amount removed from the atmosphere, resulting in no net increase in atmospheric greenhouse gas concentrations.
OEMs (Original Equipment Manufacturers)	Companies that manufacture vehicles or components that are used in the assembly of vehicles.
Scope 3 Emissions	Indirect greenhouse gas emissions that occur in the value chain of a product or service, including emissions from suppliers, transportation, and customer use.
Telematics	The use of telecommunications and informatics to transmit data related to vehicles. In the context of insurance, telematics can be used to collect data on driving behaviour and customize insurance premiums based on individual risk profiles.
UBI (Usage Based Insurance)	Insurance policies where premiums are based on the actual usage patterns of the insured vehicle, typically tracked through telematics devices or mobile apps.

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