James Martin Institute for Public Policy

Policy Insights Paper

Driving change by supporting electric vehicle ready apartments

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Dr Thomas Longden, Dr Gina Gatarin, Dr Ali Hellany, Dr Anna Leditschke, Dr Declan Kuch, Prof Greg Morrison, Prof Nicky Morrison

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The James Martin Institute for Public Policy acknowledges the Gadigal people of the Eora Nation upon whose ancestral lands our Institute stands. We pay respect to Elders both past and present, acknowledging them as the traditional custodians of knowledge for these lands. We celebrate the diversity of Aboriginal peoples and their ongoing cultures and connections to the lands and waters of NSW.

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About the authors

Dr Thomas Longden is a Senior Research Fellow at the Urban Transformations Research Centre (UTRC), Western Sydney University.

Dr Gina Gatarin is a Research Fellow at UTRC and the Institute for Culture and Society (ICS), Western Sydney University.

Dr Ali Hellany is a Senior Lecturer at the School of Engineering, Design & Built Environment, Western Sydney University.

Dr Anna Leditschke is a Lecturer in Urban Planning at the School of Social Sciences, Western Sydney University.

Dr Declan Kuch is an Adjunct Research Fellow at ICS, Western Sydney University.

Professor Greg Morrison is the Lang Walker endowed Chair in Urban Transformations, School of Engineering, Design & Built Environment, and Co-Director of UTRC, Western Sydney University.

Professor Nicky Morrison is the Professor of Planning and Co-Director of UTRC, Western Sydney University.

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Authorship

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Executive summary

In 2023, the New South Wales Government passed the Climate Change (Net Zero Future) Act 2023, which legislates emissions reduction targets of 50 per cent by 2030, 70 per cent by 2035 and Net Zero by 2050.[1] Part of the Net Zero Plan is to increase the adoption of electric vehicles (EVs).[2] Improving EV infrastructure in apartment buildings is a key step in increasing the accessibility of EVs for apartment residents and a critical factor in driving wider adoption of those vehicles.

In recent years, EV sales have been led by those living in outer-metropolitan suburbs, followed by inner-metro residents. Greater sales in outer-metro areas have been attributed to significant fuel cost savings and the ease of installing personal EV chargers in houses.[3]

Getting EV chargers into apartment buildings is an important step in supporting a wider and equitable diffusion of EVs. It will enable apartment residents to view EVs as a convenient and viable transport option, while playing a crucial role in achieving a just and equitable energy transition.

In Australia, the NSW Government has led the way in increasing access to charging infrastructure in apartments by establishing the EV Ready Buildings Grant. This scheme, launched in 2023, made $10 million available to eligible NSW apartment buildings.[4]

> *Getting EV chargers into apartment buildings is an important step in supporting a wider and equitable diffusion of EVs. It will enable apartment residents to view EVs as a convenient and viable transport option.*

This paper summarises insights from a nine-month research study that captured the views of 43 experts with experience of installing EV chargers in apartments. This expertise included experience of strata processes and working on charging installations.

The research explored various challenges that may have prevented EV charging in apartments. These included barriers that occur before the approval process commences, such as getting support from tenants, deciding on the type of installation to be explored, and determining charging options. Fire safety provisions were also identified as confusing and a barrier to progress.

Our study identifies four policy opportunities that will support the roll-out of EV charging to more apartments in NSW. These include developing and disseminating resources and successful case studies for those interested in future installations, providing guidance on fire safety provisions, expanding and improving the EV Ready Building Grant scheme, and exploring other finance options to support charging installations. Other suggestions included establishing a right-to-charge, network improvements where additional power supply is needed, and training initiatives to increase the capability and capacity of installers.

Policy opportunities – at a glance

1) Develop and disseminate case studies of successful projects that have been co-funded by the EV Ready Building Grant scheme.

The NSW Office of Energy and Climate Change could use the feasibility assessments from the EV Ready Building Grant scheme to develop case studies, guidance sheets, and other educational materials to support further progress in making more apartment buildings EV-ready. These would be valuable resources for those developing future projects, including apartment residents, strata committees, and those advising on feasibility assessments. There is demand for practical examples of successful EV charging installations in apartment blocks.

2) Provide guidance on fire safety provisions for EV chargers in apartments to reduce confusion and tackle misconceptions concerning the risk of fire.

Experts requested that the NSW Government provide guidance on the fire safety provisions that would facilitate approvals and may prevent notable increases in insurance costs. Some experts believe that the NSW Government has a role in dispelling misconceptions and myths about fire risk during EV charging.

3) Expand and improve the EV Ready Buildings Grant scheme.

Over a third of experts mentioned expanding the EV Ready Buildings Grant scheme and included specific suggestions on improvements that the NSW Office of Energy and Climate Change could implement. These focused on supporting a smoother transition from the feasibility assessment stage to the installation of EV infrastructure upgrades.

4) Explore different finance options to support the installation of EV chargers in apartments.

Many apartments have already or will miss out on the EV Ready Buildings Grant scheme. Additional support could be provided via zero/low-interest financing, subsidies, and targeted schemes for low-income groups.

Apartment buildings: a route to greater EV uptake

The NSW Government aims to drive the uptake of EVs as part of the Net Zero Plan, with the Minister for Energy and Climate Change making it clear that increasing the diffusion of electric vehicles in NSW is an essential step to achieving Net Zero emissions.[5]

One emerging priority is investing in EV infrastructure for people living in apartments[6] as demonstrated by NSW's groundbreaking EV Ready Buildings Grant,[7] which launched in October 2023. This grant program has begun to address an important gap in previous EV policy strategies.

In NSW, 15 per cent of people live in apartment dwellings, and expanding charging infrastructure in these buildings would enhance the accessibility of EVs for residents. Recent data shows that apartment buildings lag single dwelling homes in the installation of EV charging infrastructure. In late 2022, the Electric Vehicle Council (EVC) told ABC News that 95 per cent of personal EV chargers were installed into homes, with apartments largely missing out.[8] There is a clear opportunity for the NSW Government to address this shortfall and enable apartment residents to take advantage of the cost savings, environmental gains and other benefits of owning an EV.

Harnessing the insights of experts, this study sought to explore the current barriers to making NSW apartments EV-ready and identify actions for the NSW Government that would boost the number of EV-ready apartments across the state. This analysis provides a roadmap for further progress to help ensure NSW is prepared for EV ownership on a massive scale, in line with Government objectives.[9]

Informing EV policy with expert insights

The value of eliciting expert insights

The installation of EV chargers into apartment complexes is rare. This survey of experts was conducted to learn from those with experience installing chargers in existing apartment buildings.

Expert elicitation is used as a method for understanding issues concerning technology where there is uncertainty that hampers progress. It is often applied to emerging technologies where information may not be available through other empirical approaches. This study combined a detailed survey with qualitative interviews.

Harnessing unique expertise

There are few people with relevant expertise of getting EV chargers into apartments. This study focused on securing the participation of a well-qualified and diverse group of experts to ensure confidence that the research insights were well-informed, authoritative and representative.

Which experts participated?

The authors conducted an extensive process of identifying relevant experts to participate in this study and verified that their expertise was relevant to the research aims. 43 experts from a broad range of organisations, including strata organisations, local councils, and industry, were selected to participate in the study. The pool of experts brought a mix of experience in installing shared-use charging, individual charging and whole-of-building charging installations.

Most experts (25 out of 43) had experience with installing EV chargers in apartment buildings. The next most common expert type was those with experience of strata processes and installations (13 experts), followed by a smaller group of experts who only had experience of strata processes (5 experts).

The experts selected also had strong awareness of the NSW Government's EV Ready Building Grant, with 88 per cent confirming they had heard of the Grant and one-third confirming they had been involved in a grant application.

Further details, including an overview of expert participants, can be found in Annex A.

Installing EV chargers in apartments

The research focused on the practical steps involved in installing EV chargers in a residential strata building in order to identify key barriers. The NSW Climate and Energy Action website outlines the five steps that an owner's corporation (or strata committee) must go through to make a building EV-ready.[10] Table 1 summarises these steps.

Table 1: Five steps when planning to install EV chargers in a residential strata building

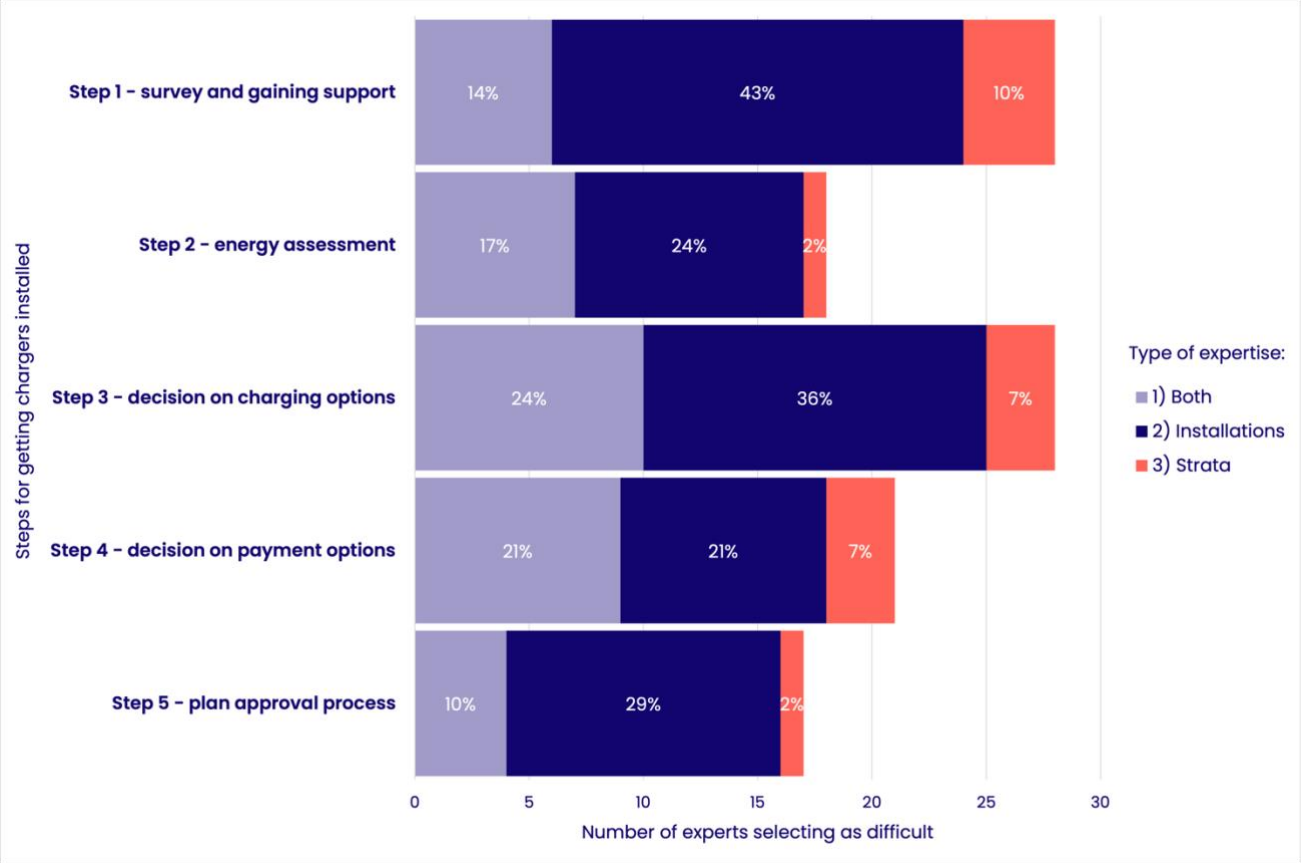
Shortened description	5 steps to EV readiness for residential strata building
Step 1 - survey and gaining support	Gaining support for EV charging by discussing options. There may be a need to gauge charging needs and attitudes of tenants and owners with a survey.
Step 2 - energy assessment	Conduct a building energy assessment to understand the impacts of EV charging and help plan for the new electrical load. Key issues will include assessing: existing circuit breaker sizes, energy usage patterns, energy efficiency actions, and calculating spare electrical capacity for EV chargers.
Step 3 - decision on charging options	After conducting an energy assessment, there will be a decision about the most appropriate EV charging infrastructure for the building. This will include choosing between: • an individual approach, i.e. one private charger at a time, • modular or phased approach - a few individual chargers/spaces, • shared-use charging station/s on common property, or • whole-of-building.
Step 4 - decision on payment options	There are two main payment decisions for residential buildings: usage billing (kWh based) for electricity consumed, and cost recovery of strata-provided EV charging infrastructure. This will include discussion of full cost to owners or owners' corporation paying for the installation of the EV charging infrastructure and recovering the cost over time.
Step 5 – planning for the approval process	Plan for approvals, including by-laws and motions, and secure funding. Different by-laws will apply for: • works by a single lot owner to allow them to install an electric vehicle charger within their lot (usually, in their car space), • works by multiple lot owners, where more than one lot owner (but not all) seeks to undertake such works, or • generic approval of such works by all lot owners. Voting requirements for these types of works to proceed are that 'less than 50 per cent are against the resolution' and there is a requirement to have a 10-year capital works fund (CWF) that budgets for provision of capital works.

Source: NSW Government. Making your residential strata building EV-ready[11]

Most difficult steps when planning to install EV chargers

Our research showed that experts faced difficulties at each stage of the process of planning to make a building EV-ready, as shown in Figure 1.

Figure 1. Most difficult steps when planning to make a building EV-ready



Note: Sample size = 43 experts. Experts could choose up to three options. Most experts did provide three selections (36 experts, 86 per cent), five experts provided two options, and one expert provided one option.

Source: Expert elicitation survey conducted by the research team at Western Sydney University.

Step 1: Survey and gaining support

67 per cent of experts identified this as a difficult step. Reasons cited included a lack of understanding about what would be required, concerns about cost, and the need to fund other initiatives (such as fire compliance or building defects). Often, there was a division between owners and landlords. Another challenge raised was opposition from those without EVs or from those with negative views about EV ownership.

Step 2: Energy assessment

43 per cent of experts identified this as difficult. A key issue cited was paying for and getting a reliable energy auditor. Some people found technical issues overwhelming and decided that installing EV chargers was too difficult.

Step 3: Decision on charging options

Alongside Step 1, Step 3 was identified as the most challenging component of getting apartments EV-ready. 67 per cent of experts identified this step as difficult. Challenges cited included confusion and a lack of technical knowledge. In some cases, shared charging was seen as the only viable way forward.

Step 4: Determining payment options

49 per cent of experts identified this as difficult. Key issues included how to share the costs and bill individual users. In those cases where it was decided to centrally finance installations, choosing the software and a supplier proved challenging.

Step 5: Planning for the approval process

41 per cent of experts identified this as difficult. A lack of guidance and planning expertise was highlighted. The process was either too complex or people received conflicting information from different sources. Example by-laws are available but, in some cases, this was not enough to convince people to go ahead and start the approval process.

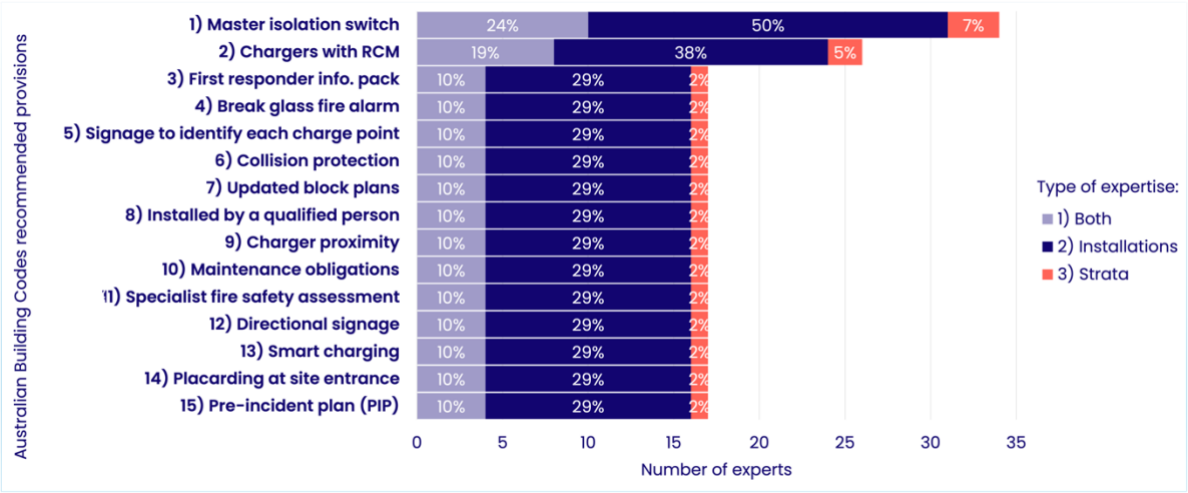
Awareness of fire safety provisions

This study also explored the fire safety provisions related to getting apartments EV-ready. While there has been a low rate of fires associated with EVs, there has been a lot of attention on fires linked to other types of battery devices as well as some misinformation about EV safety. This study explored awareness of the fire provisions listed in the Australian Building Codes Board (ABCB) advisory note on EV charging, which was released in June 2023[12] (see Annex B for a full list of provisions).

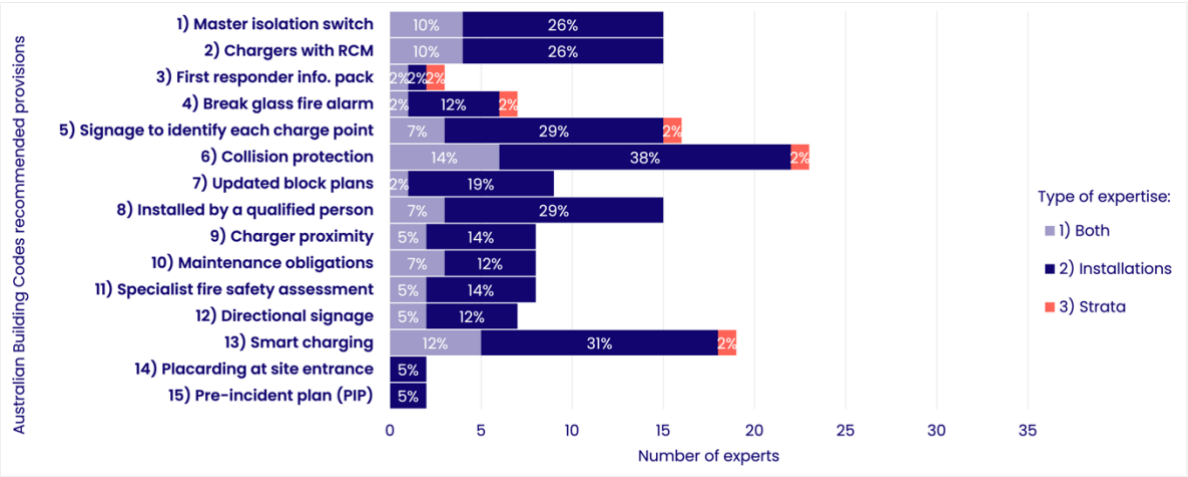
Survey results demonstrate a notable gap in awareness of the fire provisions linked to EV charging. Although there was strong awareness of two provisions (81 per cent were aware of the master switch isolation requirement and 62 per cent were aware of the need for a Regulatory Compliance Mark), there was limited awareness of all other fire safety provisions (see Figure 2). Less than 50 per cent of experts were aware that the other options were fire-related safety provisions.

Figure 2. Awareness and implementation of fire safety provisions

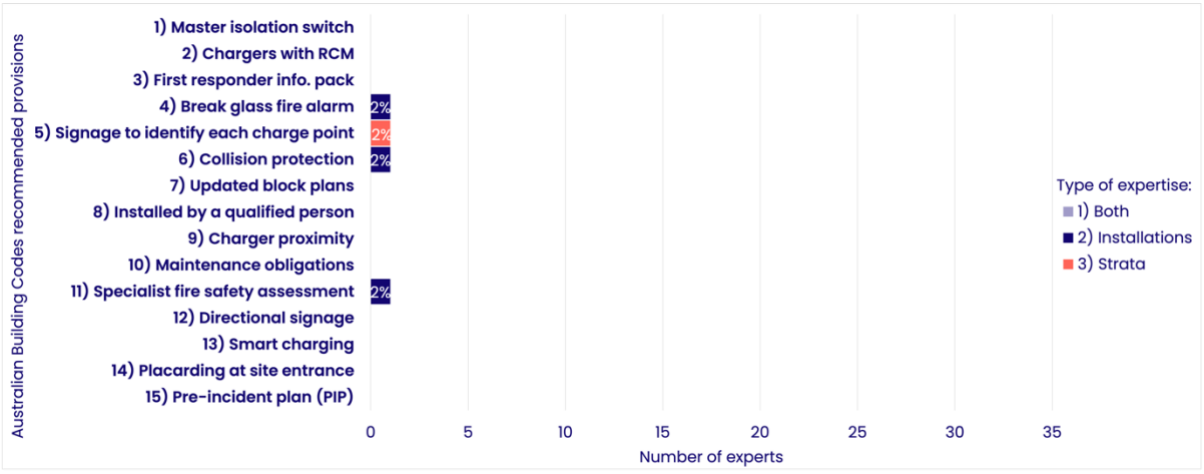
1) Aware of provision related to fire



2) Seen implemented



3) Planned for but then removed



Note: Sample size = 43 experts. Experts responded to a Yes/No question.

Source: Expert elicitation survey conducted by the research team at Western Sydney University.

The study also explored the extent to which experts had seen fire safety provisions implemented. Only 36 per cent of experts reported seeing a master isolation switch or chargers with a Regulatory Compliance Mark (RCM) installed. More experts had seen collision protection and smart charging than were aware of these options as fire-related safety provisions. These measures should be part of any future education materials.

There were a few cases where a fire-related safety provision was planned but then removed. These provisions were: break glass fire alarm (issues with false alarms), signage for each charge point (costly or did not want to draw attention to it), collision protection (need to provide wheelchair access), and special fire safety assessment (too difficult and too costly).

These results demonstrate a clear need for better guidance on fire safety provisions linked to EV chargers in apartments.

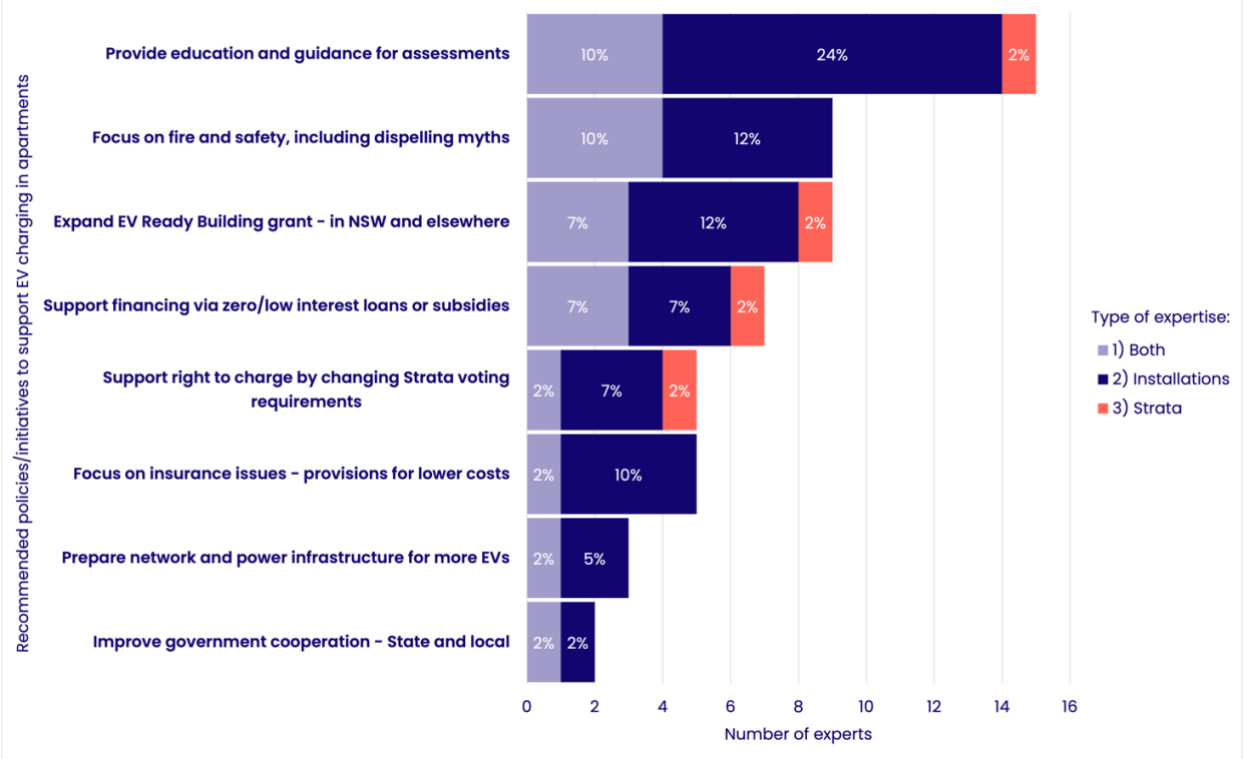
Opportunities to support EV charging in apartments

This study sought expert insights on what actions would support EV charging in apartments. Key findings included:

- 36 per cent highlighted the need for greater education, resource sharing, and guidance for future assessments.
- 22 per cent highlighted a need to address fire and safety, including an important role for government in dispelling misinformation.
- 21 per cent highlighted expanding the EV Ready Building Grant scheme.

Figure 3 details the expert views on opportunities that emerged through our study.

Figure 3. Recommendations to support the deployment of EV charging in apartments



Note: Sample size = 43 experts. Experts provided comments, which were then classified into eight groups using 28 keywords.

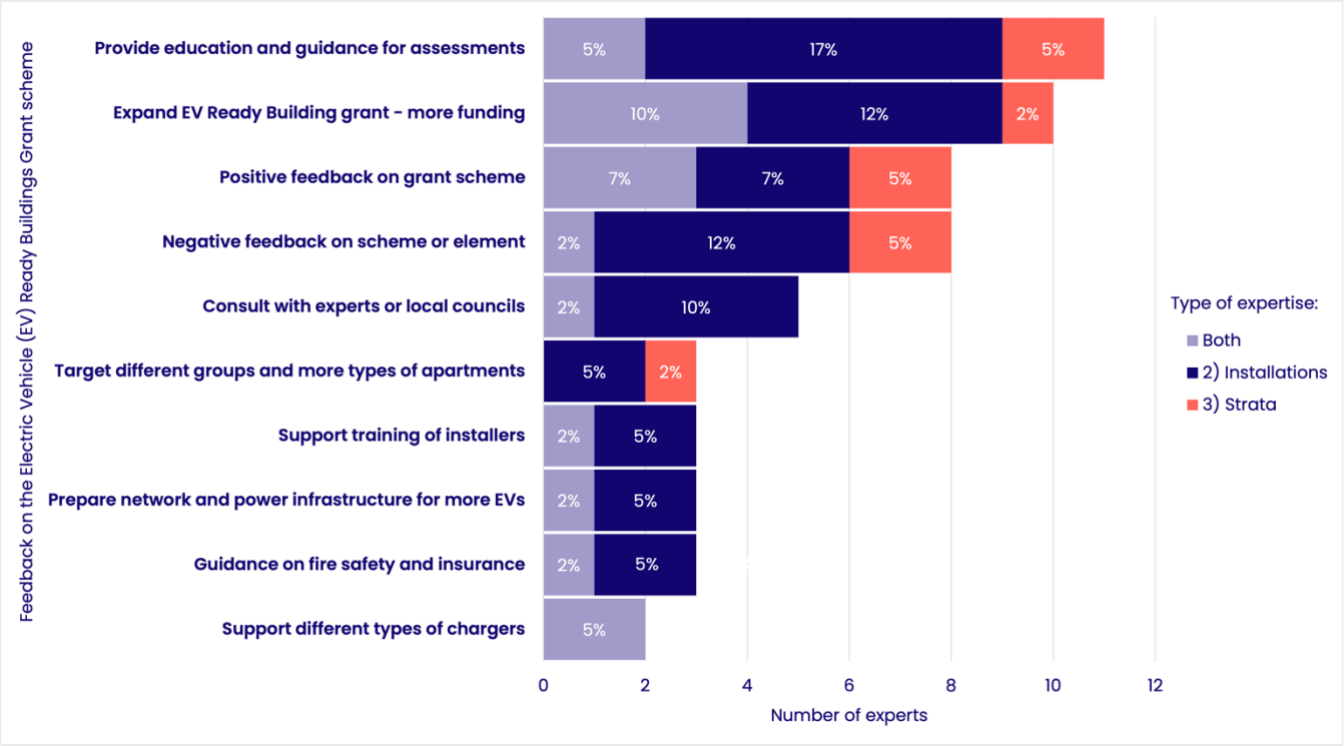
Source: Expert elicitation survey conducted by the research team at Western Sydney University.

Building on the EV Ready Buildings Grant scheme

The NSW Government has already made progress towards making more apartments EV-ready with the EV Ready Building Grants scheme. This study sought expert feedback on the scheme and revealed potential improvements. There is strong awareness of the scheme, with 88 per cent confirming they had heard of the grant and one-third confirming they had been involved in a grant application. As shown in Figure 4, the most notable findings were:

- 27 per cent of the experts mentioned a need for greater education, resource sharing, and guidance for future assessments.
- 43 per cent of experts mentioned expanding the EV Ready Building Grant or provided positive feedback.
- 19 per cent of experts had positive feedback on the grant, and the same percentage had negative feedback or suggested a change that needed to be implemented.

Figure 4. Feedback on the EV Ready Buildings Grant scheme



Note: Sample size = 43 experts. Experts provided comments, which were then classified into ten groups using 48 keywords.

Source: Expert elicitation survey conducted by the research team at Western Sydney University

A policy agenda for NSW – drawn from experts

Our study obtained in-depth insights from a broad range of experts. Based on these insights, we have identified four policy opportunities for the NSW Government that could drive further progress in making more apartments EV-ready. These are outlined below.

1. Develop and disseminate case studies of successful projects that have been co-funded by the EV-Ready Building Grant scheme.

The NSW Office of Energy and Climate Change could use EV-ready building feasibility assessments from the first round of the EV Ready Building Grant scheme to create case studies, educational materials and guidance notes to support future installations. These could focus on key issues, such as fire safety provisions and supplement existing materials, such as 'Making your residential strata building EV-ready'.[13]

2. Provide guidance on fire-safety provisions for EV chargers in apartments to reduce confusion and tackle misconceptions about fire risk.

This study revealed a clear need for guidance on the fire safety provisions.

Survey findings revealed that the level of awareness of the fire provisions listed in the Australian Building Codes Board (ABCB) advisory note on EV charging showed that only two provisions were commonly known.

Further guidance could help facilitate smoother approvals and be useful when discussing insurance costs or the complexity of obtaining insurance. The discussions about fire safety provisions also revealed a desire to dispel misconceptions and myths about the risk of fires arising during EV charging.

3. Expand and improve the EV Ready Buildings Grant scheme.

There is interest in expanding and improving the EV Ready Buildings Grant scheme.

Some negative feedback was also received, but a range of improvements were suggested that the NSW Office of Energy and Climate Change could implement, such as improved communication and assistance with Stage 2 of the scheme, ensuring that quotes are valid for longer than 90 days, and making the process simpler so that people do not need to rely on consultants. There is also potential to support a range of charging options, including type-1 chargers, and consult and engage more with local councils and Distributed Network Service Providers.

4. Explore different finance options to support the installation of EV chargers in apartment buildings.

Many apartments have missed or will miss out on the EV Ready Buildings Grant scheme. There is an appetite for developing other initiatives to support EV readiness, including a range of finance options:

- zero/low-interest financing for strata schemes installing EV chargers,
- subsidies, especially for difficult installations, and
- target schemes towards low-income groups.

Other potential opportunities surfaced by this research include:

- establishing a right-to-charge or a lower percentage of votes needed for installations,
- ensuring that network improvements are happening where additional power supply is required, and
- training initiatives to increase the capability and capacity of installers.

Annex A: Methodology and participants

Number of invitations sent and surveys completed

Survey stages	Number
Invitations sent	166
Registrations received	50
Response rate	30%
Surveys completed	43
Completion rate	26%

Overview of experts surveyed – organisation and role

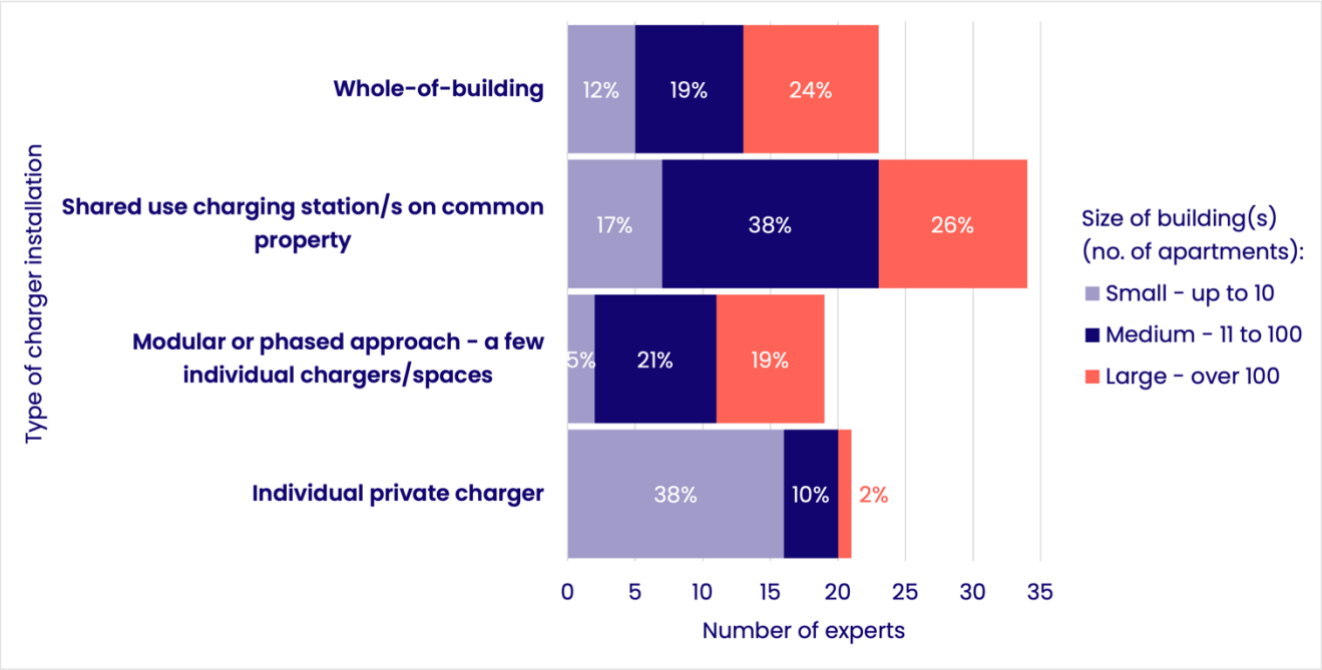
Author	Application
Organisation	Alchemy Charge, Archers the Strata Professionals, Arup, Avionix Inc., BSA Ltd., ChargeWorks, Department of Energy and Climate, Electric Vehicles Canberra, enevi, EV Strata, EVSE Australia, Future Charging Solutions Pty Ltd, JET Charge, Karchargers, Kerin Benson Lawyers, Ohme, Owners Corporation Network, Randwick Council, Waverley Council, Woollahra Council, Schneider Electric, SEVC, Solar Choice, Space 2 EC, University of Technology Sydney, Vista Power Technologies, Wattblock, Zinc Apartments.
Role or job title	Apartment Sector Manager, CEO, CEO and Co-Founder, CEO and Founder, CEO and Managing Director, Chair and project leader, Chair, City Planner, Co-Founder/CTO, Corporate Partnerships Sector Manager, Designer, Director, Electric Vehicle Project Manager, eMobility Solution Architect, Energy consultant, General Manager, Head of EV Charging Partnerships, Managing Director, Member of Executive Committee, National Sales Manager, PhD student, Principal, Principal Project Officer, Research Director, Sector Manager – Apartments, Technical Manager, Technical Sales Engineer.

Experience with specific types of installations

The survey sought experts' experience with specific types of charger installations in different sized buildings.

- 64 per cent of the experts had experience working on shared use charging on common property in medium and large apartment buildings.
- 50 per cent had experience working on individual private charging.
- 55 per cent of experts had experience of whole-of-building EV charging installations.

Figure 5. Experience with specific types of charger installations in different sized buildings



Note: Sample size = 43 experts. Experts could choose more than one option. Most experts provided three types of installations (25 experts, 58 per cent), six experts provided two types, two experts provided one type, two experts provided four types, and eight experts did not respond.

Source: Expert elicitation survey conducted by the research team at Western Sydney University.

Annex B: Description of fire safety provisions

Shortened description	Description in the Australian Building Codes Board (ABCB) advisory note
1) Master isolation switch	Provide a master isolation switch with signage at fire indicator panel/Fire Detection Indicator Control Equipment (FDCIE) or building entrance.
2) Chargers with RCM	Use chargers that have the Regulatory Compliance Mark (RCM).
3) First responder info. pack	Emergency services information pack (ESIP) developed for each site and provided for first responders.
4) Break glass fire alarm	Provide additional break glass fire alarm unit (BGU).
5) Signage to identify each charge point	Provide placarding/signage to identify each EV charge points.
6) Collision protection	Provide vehicle impact bollards or stops.
7) Updated block plans	Block plans should be updated for existing sites and implemented for new builds to clearly show the location of charging hubs and master isolation.
8) Installed by a qualified person	Mode 3 and 4 chargers should only be installed by a qualified person and in accordance with AS/NZS 3000 Appendix P.
9) Charger proximity	Carefully assess proximity to avoid blocking evacuation routes or placing chargers too close to other flammable risks.
10) Maintenance obligations	Ensure the owner of the charging unit understands and meets their maintenance obligations.
11) Specialist fire safety assessment	Complex buildings and higher-risk environments should seek comprehensive, specialist fire safety assessment and advice.
12) Directional signage	Directional signage to be provided – to the charging units and to the emergency exits.
13) Smart charging	Where possible, prioritise the use of 'smart charging' to enable remote monitoring and access to disconnect power supply to a connected EV. This gives emergency responders another potential method of shutdown from unit to EV. Encourage operators to monitor for faults and provide early intervention when detected.
14) Placarding at site entrance	Sites with 5 or more Mode 3 or 4 chargers to install ground level or other appropriate level placards to indicate which entrance is most closely located to EV charging hub.
15) Pre-incident plan (PIP)	Where 5 or more chargers are installed, then building owners should invite local fire crews to attend a site familiarisation visit in order to develop a pre-incident plan (PIP).

Source: Australian Building Codes Board: Advisory notice - Electric vehicles in buildings (2023)

Endnotes

[1] NSW Government, The Climate Change (Net Zero Future) Act 2023, https://www.energy.nsw.gov.au/nsw-plans-and-progress/government-strategies-and-frameworks/climate-change-net-zero-future-act-2023 (accessed 1 November 2024).

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[8] Emilia Terzon, "The EV 'social equity' dilemma that may put apartment residents off electric cars", *Australia Broadcasting Corporation*, 27 September 2022, https://www.abc.net.au/news/2022-09-27/ev-apartment-electric-car-barriers-costs-installation-tesla/101473158.

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[11] Ibid.

[12]Australia Building Codes Board, Advisory notice: Electric vehicles in buildings, (Canberra: ABCB, 2023). https://www.abcb.gov.au/sites/default/files/resources/2023/ABCB%20EV%20Guidance%20Document%20June%202023.pdf.

[13] NSW Government, Making your residential strata building EV ready, https://www.energy.nsw.gov.au/business-and-industry/programs-grants-and-schemes/electric-vehicles/electric-vehicle-ready/strata (accessed 1 November 2024).

JMI

Transforming public policy

Level 1, 60 Martin Place
Sydney, NSW 2000 Australia

E info@jmi.org.au | **W** jmi.org.au