Electric Vehicles in Strata

Phase 2: Challenges

May 2023

A comprehensive investigation of the challenges of integrating electric vehicles into strata

strata community association®

About SCA

Strata Community Association (SCA) is the peak industry body for Body Corporate and Community Title Management (also referred to as Strata Management, Strata Title or Owners Corporations Management) in Australia and New Zealand.

Our 5,000 individual and corporate members include strata/body corporate managers, support staff, owners' representatives and suppliers of products and services to the industry. SCA proudly fulfils the dual roles of a professional institute and consumer advocate.

Direct employment in specialist strata management companies is approaching 10,000 people. More significantly, they are pivotal in an estimated $6.7 billion in annual economic activity.

Based on the 2020 Australasian Strata Insights Report, more than 2.2 million people live in flats and apartments, the vast majority being strata titled.[1] This figure does not include other forms of strata title such as townhouses and community titled developments. Nor does it include businesses operating in strata titled commercial buildings. The estimated value of property under strata title in 2020 exceeds $1.3 trillion.[2]

As the growth of apartment and strata living has intensified over the last decade, the strata management strata services industry has grown in lockstep to serve it. Strata managers navigate through a maze of Commonwealth, State and Territory legislation and regulation ranging from actual strata specific legislation, regulation, workplace, health, and safety issues and building codes as well as measures applicable to the management of body corporate funds.

A strata manager is expected to be knowledgeable on a range of issues relating to the management of a strata scheme.

[1] Hazel Easthope, Sian Thompson and Alistair Sisson, *Australasian Strata Insights 2020*, City Futures Research Centre, UNSW, Accessed at https://cityfutures.be.unsw.edu.au/research/projects/2020-australasian-strata-insights/

[2] Ibid, p6

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Foreword

Strata Community Association's (SCA) *Electric Vehicles in Strata Phase 1: State of Play* report was first released in December of 2022 to act as a baseline layout of the state of recognition and support for integrating EVs into strata.

In the second of a two-report series, SCA's *Electric Vehicles in Strata Phase 2: Challenges* report has been created to address the significant challenges that the strata industry will experience, in the face of future mass integration of EVs into strata complexes as demand continues to skyrocket.

Purpose of the *Electric Vehicles in Strata Phase 2: Challenges Report*

- The purpose of this first of its kind report is to act as a comprehensive analysis of the specific issues that the mass integration of EVs into strata will create. There is no existing resource of this kind, and there is a need for government, key stakeholders and SCA members alike to have access to this information as strata and service managers, governments and infrastructure providers grapple with the challenges EV integration brings.
- This report is the second of two reports that will be released by SCA. The reason for dividing the reports and investigation into two parts is that it is important to understand what the current level of consideration for these issues is as it is largely impacted at a state level (as opposed to federally), as well as the challenges it will bring.

SCA's Advocacy

- SCA has been on the front foot in relation to the challenges EV integration will bring to the strata sector, engaging with federal and state and territory governments through proactive outreach and written submissions, producing research, providing commentary in the media and informing and providing resources to members.
- SCA is taking a solutions-focused approach to EVs, proposing solutions that will benefit the sector and strata communities as a whole.
- SCA is the first organisation to specifically investigate the current support for strata and outline the multitude of issues that strata faces as a result of EV integration.
- SCA has already advocated hard for support for EVs in strata, having it be one of the core priorities in our federal and state election campaigns.
- SCA has formed a multi-jurisdictional taskforce, the Strata Electric Vehicle Infrastructure Taskforce, with the sole purpose of discussing, considering and addressing the core issues that we have identified in both Reports 1 and 2.
- Please visit the SCA National website and our dedicated electric vehicles page for more information.

Introduction

Electric Vehicles (EVs) have emerged as a promising solution to the pressing need to combat climate change and reduce carbon emissions on a global scale. The commercial viability of passenger EVs has accelerated in recent years, and as such both Australia and New Zealand have seen exponential growth in both demand and ownership. Australia currently has approximately 83,000 EVs on the road in comparison to 44,000 EVs at the beginning of 2022. This is predicted to increase to 100,000 EVs by the end of 2023 given that the number of EVs purchased has increased by 86 per cent over the past year.[3] Globally, electric vehicles sales are expected to grow by 35% in 2023.[4]

In Australia alone, we know that at least one in five people live in some form of strata-titled property, with estimates of the number of people living in strata reaching beyond 6 million people. In New Zealand, while the proportion of people living in strata is lower than Australia, thousands of vehicles will enter strata complexes each year. When considering the rapid uptake of EVs into wider vehicle fleets, SCA believes it has become imperative to consider the challenges associated with integrating EVs into strata communities.

Strata communities present an incredible opportunity for society as a whole to reach our goals of an electrified and greener future, and for individuals to have access to new technology and choice in the marketplace. Strata communities create economies of scale, where sound collective decision making can affect dozens, or hundreds of people in a community simultaneously. As the number of people choosing to live in strata communities such as apartments and townhouses which are well-served by proximity to transport, shops, workplaces and recreational centres continues to increase, we must ensure that they are also served by a choice to electrify their vehicle.

Common facilities, limited space, ageing infrastructure and diverse shared ownership structures in strata communities can create unique hurdles for EV ownership that aren't commonly faced in standalone homes or other areas. By understanding these challenges, owners, tenants, managers, governments and infrastructure providers will be able to better identify effective strategies and solutions that mitigate these impediments, and promote the adoption of EVs within strata schemes.

The integration of EVs into strata buildings has the potential to play a crucial role in the progression towards achieving the sustainable development goals set by the public and private sectors. By identifying and addressing the obstacles that face strata communities, this report aims to guide the formation of effective policies, guidelines and best practices that promote the integration of EVs and their supporting infrastructure.

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[3] Visontay, E. *Number of electric vehicles on Australian roads soars as demand exceeds supply.* The Guardian. 7 Feb 2023. Accessed at: https://www.theguardian.com/environment/2023/feb/07/number-of-electric-vehicles-on-australian-roads-soars-as-demand-exceeds-supply

[4] *Demand for electric cars is booming, with sales expected to leap 35% this year after a record-breaking 2022.* International Energy Agency. 26 April 2023. Accessed at: https://www.iea.org/news/demand-for-electric-cars-is-booming-with-sales-expected-to-leap-35-this-year-after-a-record-breaking-2022

Through collaboration with consumers, owners, service providers, government and associated stakeholders, we aim to contribute to a future where EVs thrive in strata buildings, and support cleaner and more sustainable transportation options for a significant proportion of the population.

To unpack these challenges, we have divided the report into three distinct Challenge areas, each with several specific issues to unpack. They are:

Challenge 1: EV Charging Costs, Cases and Strata Governance

Challenge 2: EV Backbone Infrastructure and Technical Considerations

Challenge 3: Insurance and Safety

Key Report Takeaways and Policy Priorities

Key Report Takeaways

- In most jurisdictions in Australia, and in New Zealand, the threshold for voting within a strata committee to install EV infrastructure is a majority vote, or 50%.
- Almost all older buildings in Australia and NZ have not been built with the level of electrical infrastructure sufficient to support the additional load that EV charging creates.
- The National Construction Code requires that new buildings are created to be EV ready from 1 October 2022, with a full program of integration commencing on 1 May 2023.
- Almost half of apartments are rented, meaning a balance must be struck between consumer demand and owner commitments to EV infrastructure, with government and supplier incentives and funding playing a part.
- Emissions reductions and net zero commitments will not be possible without the integration of the one in five Australian residents who live in strata complexes.

SCA's Policy Priorities

- Strata buildings and complexes are integrated into electrification strategies at the same pace as freestanding homes.
- Funding programs are created to establish baseline backbone infrastructure capability in all existing strata buildings in Australia and New Zealand.
- Federal, state, territory and local governments consult proactively and rigorously with SCA to produce policy, legislative and regulatory outcomes that enable strata residents to access and benefit from electrification programs.
- Insurers and fire, rescue and safety technicians work closely with SCA and other service providers to ensure that policies and programs are laid out in an effective and equitable manner for strata communities.

Glossary of Terms

DLMS	Dynamic Load Management System
EV(s)	Electric Vehicle(s) [this report focuses on Battery Electric Vehicles (BEVs) and Plug-in Hybrid Electric Vehicles (PHEVs)]
EVC	Electric Vehicle Charger
ICE	Internal Combustion Engine
NCC	National Construction Code
NEVS	National Electric Vehicle Strategy
OC(s)	Owners Corporation(s)
SCA	Strata Community Association
UNSW	University of New South Wales

What is Strata?

If you are unfamiliar with the term strata, strata-title buildings are largely multi-unit dwellings, such as apartments and townhouses.

As residential development has grown to integrate different planning and housing types over the last several decades, strata-title has extended to include mixed-use precincts where commercial and residential lots exist in the same building or precinct, holiday parks, retirement villages and many large-scale, greenfield developments with detached villas or houses.

A strata title allows individual ownership of part of a property (called a lot and can include land, a townhouse, villa, duplex, or more commonly an apartment), combined with shared ownership in the remainder of the property (usually called 'common property' and includes areas such as foyers, driveways, gardens). This is achieved through a legal strata structure, called owners corporations, bodies corporate, strata companies or strata corporations (use of term/s are typically based on the jurisdiction where this applies).

These legal strata structures are required to have participants in the strata scheme contribute additional funds as part of their ownership requirements to provide for the upkeep, maintenance and repair of common property areas (among other things).

In regard to EVs, in order to afford the costs associated with the implementation of EVs and EV charging into strata schemes, additional funds outside of regular contributions to the owners corporation may need to be accessed and repurposed, including through special levies.

EV Charging Infrastructure Costs and Strata Governance

Having access to an electric vehicle charger (EVC) at a person's residence is an essential component of EV ownership and a significant contributor to the attractiveness of EVs as a personal transport option. Residential charging offers a level of convenience, accessibility and reliability that does not exist with a dependence on public EV charging alone. Residential EV charging allows users to charge their vehicles overnight or during periods of low demand, customising their charging schedules to ensure that they are able to optimise cost-effectiveness, and align their charging needs with their daily schedules.

The amended National Construction Code (NCC) in Australia now requires all Class 2 buildings (apartment blocks or buildings that contain two or more sole-occupancy units) that are built beyond October 2023 to be able to accommodate EV charging. NZ currently has no statutory requirement of this kind.

However, a significant proportion of the strata housing stock in Australia and New Zealand is made up of older, established buildings. According to UNSW City Future Research Centre's 2020 Australasian Strata Insights Report, data shows that 54 per cent of strata schemes were registered before the year 2000.[5]

Fundamentally, the implementation of electric vehicle charging places a significant load on the existing electrical infrastructure within a given building. **As a general rule, almost all older buildings in Australia and NZ have not been built with the level of electrical infrastructure sufficient to support the additional load that EV charging creates.**

In fact, one of the most principal challenges relating to the integration of EVs into strata is the costs associated with the retrofitting of electrical infrastructure of existing buildings, to support the widespread introduction of EV charging within a given scheme. The installation of said infrastructure can be extremely cost prohibitive, and a significant barrier to entry for EV consumers that reside in strata.

Case Studies and Tools

EV Charging Cost Tool

The NSW government has developed a tool that provides an estimate of the cost of retrofitting electric vehicle infrastructure in a given building. You may find the link to that tool here.

Case study

The following are generic case studies and tools to evaluate real strata buildings that serve to illustrate the potential costs associated with retrofitting and implementing EV charging within a given strata scheme. It is important to note that every strata scheme is different, and the costs exhibited in the examples below may be different to what may be experienced elsewhere:

[5] [5] Hazel Easthope, Sian Thompson and Alistair Sisson, *Australasian Strata Insights 2020*, City Futures Research Centre, UNSW, Accessed at https://cityfutures.be.unsw.edu.au/research/projects/2020-australasian-strata-insights/

Large: 100 Lot Strata Scheme

A strata scheme sought to undergo a retrofitting process, in order to upgrade the electrical infrastructure within their existing building to support EV charging for all residents (the 'EV Backbone').

The scheme budgeted for:

Number of lots x $2000 = $200,000 to complete the retrofitting development process.

Lot owners then paid on average $4,500 to purchase and install their own EV charger, once the infrastructure had been implemented. Therefore, the total average investment per lot owner within this strata scheme was $6,500.

Who Pays?

Electrical Infrastructure Retrofitting: Ownership structures within the strata scheme will determine how the cost to retrofit the strata building is determined, and each scheme may be different in their approach. However, it is likely that each owner will have to contribute an equal amount of money (at the same time) as a contribution towards the required electrical infrastructure upgrades to the building, whether that be through the scheme's sinking or reserve fund, special levies or other financial vectors.

EV Charger(s): Privately owned assets (like personal EV chargers) will likely have to be paid for by the individual owner. However, if the building is 'EV ready' (whether through being built EV ready or through a retrofit) then an owner may determine when they would like to implement their charger and incur the cost of the charging unit. If the EV charger is a common use charger utilised by the whole scheme, then the cost of the unit is likely to once again be split amongst the owners within the scheme.

Cost of electricity: It is possible for the cost of the electricity required to charge an EV through a personal EV charger to be allocated directly to a given owners bill. However, in some cases (specifically including larger developments), it may be necessary to install additional electrical metering technology that determines and measures electricity usage.

Strata Governance

When making policy decisions that impact strata schemes, one has to take into account the methods by which owners corporations (or bodies corporate) make decisions.

Owners corporations operate in a democratised system, where each member of the OC may vote on a given issue. Each jurisdiction throughout Australia and NZ may have legislation that dictates the different standards required for votes to implement changes to the scheme, including the installation of EV charging infrastructure.

Below is a short summary of the types of resolutions required to implement EV charging infrastructure in each jurisdiction (thresholds as per online legislation and may be subject to interpretation):

EV Charging Resolutions by jurisdiction

Jurisdiction	Resolution Type	Voting Threshold	Relevant Legislation
ACT	Ordinary	50% (Majority)	Unit Titles Management Act 2011 - Part 3, Division 3.2 (23)
NSW	Sustainability Infrastructure Resolution	50% (Majority)	Strata Schemes Management Amendment (Sustainability Infrastructure) Bill 2020 – Part 1(5)
NT	Resolution without Dissent	Quorum with motion to carry if a no vote is not counted against the motion.	Unit Titles Act 1975 s.53 (1A)
Qld	Ordinary or Special (Dependent on specific strata scheme requirements)	Ordinary – 50% (Majority) Special – 75%	Body Corporate and Community Management Act and Body Corporate and Community Management Regulation 2020
SA	Special	85%	Strata Titles Act 1988
Tas	Ordinary	50% (Majority)	Strata Titles Act 1998
Vic	Ordinary or Special (depending on spending or loan amount, or if building/permit required)	Ordinary – 50% (Majority) Special – 75%	Owners Corporations Act 2006 S24 (4), S25, S53(2)
WA	Ordinary or Special (depending on spending and infrastructure contract requirements)	Ordinary – 50% (Majority) Special – 50% for and less than 25% against)	Strata Titles Act 1985 s91(2), s91(2), s64
NZ	Ordinary	50% (Majority)	Unit Titles Act 2010

Equity Issues

One of the largest barriers to overcome in the implementation of EV charging into strata (and by extension the vehicles themselves) is that in the short to medium term, those who currently do not own an EV, or plan to own an EV in the time that they are planning on residing in their current scheme, are far less likely to agree to the installation of EV infrastructure.

These residents will not be afforded the benefit of charging their vehicle, and as such are likely not willing to pay for the retrofitting and installation of infrastructure to support EV charging.

This refusal to vote in favour of EV charging may manifest even if a resident offers to pay for a charger and associated costs by themselves, without requiring a full-scale upgrade of the electrical infrastructure within the building.

Otherwise, as a building cannot support everyone charging without upgrading the infrastructure, there may be a 'first in best dressed' scenario, where some lot owners will derive the privilege of personal EV chargers until the grid capacity of the scheme is full. At that stage, it's not possible to facilitate personal EV chargers for the rest of the scheme without implementing significantly expensive infrastructure upgrades, and thus some residents may miss out.

Ownership and Tenancy

The strata sector in Australia and NZ attracts a large amount of private investment as an affordable entry point into surging real estate markets. According to UNSW City Future Research Centre's 2020 Australasian Strata Insights Report, data shows that more apartments are rented than are owner occupied:

Rented	Owned Outright	Owned (with a mortgage)	Unoccupied	Other
47%	12%	16%	17%	8%

As a result of the substantial amount of private investment into the sector, often those that are living in strata complexes are not necessarily the owners of the lots themselves.

This can create friction when considering the implementation of EVs, and specifically electric vehicle charging. Tenants that rent within a given strata scheme will likely be more motivated to install EV charging infrastructure in the scheme, whilst the owners of the lot may not be.

This may manifest through owners of lots (who do not reside in the scheme) being more likely to vote against the installation of EV charging infrastructure, as they would incur the extra associated costs of the retrofitting without gaining gain any utility out of the installation.

However, as electric vehicles continue to grow in popularity, the capital appreciation of strata lots with access to EV charging must be considered. When factoring the changes to the national construction code, buildings that do not have access to EV charging facilities will likely be at a disadvantage in the future, and face the prospect of lower valuations for their properties. Similarly, investors will likely see an increase in the attractiveness of their properties to potential tenants, if their property has access to EV charging infrastructure and facilities.

Cost Mitigation Options

Embedded Networks

An embedded network is a private electricity network that is connected to the main grid, but is operated independently by an external entity that manages the distribution and supply. Embedded networks operate by passing electricity through a gate meter, which can then be controlled and distributed individually to multiple residents within a building or facility.

As each individual has their own meter installed, they only pay for the energy they are using, which allows for greater control, a reliable supply and ultimately lower electricity prices.

Embedded networks can also be integrated with renewable energy sources such as solar, and may accommodate EV charging infrastructure into the system, making it an attractive, cost-effective option for strata schemes to explore. For further information relating to Embedded Networks, see page 24 of this report..

Government Funding

State Governments throughout Australia and New Zealand are largely responsible for the provision of policies that seek to support the integration of EVs into strata schemes.

As each jurisdiction is at a different stage in their consultative processes, some are further along in their recognition and support for the challenges facing strata residents in regard to this issue.

For a full breakdown of the support for electric vehicles in strata in each jurisdiction, visit the *Stage 1 State of Play Report*, to explore what options may be available to you.

Borrowing

Due to the cost prohibitive nature of infrastructure upgrades, and the current lack of government support for the retrofitting of strata complexes, some owners corporations may turn to lenders provide funding for the upgrades to their building.

Strata By-Laws

Strata schemes may independently implement by-laws that govern EV charging within their specific complex. These by-laws (or rules) may dictate the location of EV chargers, when chargers can and can't be used etc.

If a scheme is considering the implementation of EV charging infrastructure, SCA encourages strata managers to inform and encourage OCs to implement specific EV by-laws relevant to their scheme. For example, rules may include outlining the processes in scenarios where:

- An individual owner wishes to install EV charger to their parking space, and can connect to their own power supply.
- An individual owner wishes to install EV charger to their parking space, and requires connection into the house power of the base building (common power).
    - If they can have sub metering capability that enables the OC to manage the power consumed and bill back the user.
    - If they cannot sub meter and must come up with another method.
- If an OC installs banks of EV charging to common areas which owners are welcome to use.
    - The way of recovering the power costs.
    - Rules to ensure spaces aren't abused by one owner/group of owners.

Sample By-laws

The NSW Government has helpfully created a resource page that provides example motions and by-laws for the installation and management of EV chargers.

This includes sample motions and by-laws for single lots, multi-lots, generic lots and owners corporations.

For full access to the resources click here, and follow the prompts to "Step 5 – Plan approval processes and identify funding solution."

It should be noted however, that the sample has been created as an example in NSW only, and different jurisdictions will have different governing legislation, and as such different mechanisms and wording may be required depending on the readers location.

What Does this Mean for Strata Managers?

Experienced strata managers play a crucial role in facilitating the implementation of electrical infrastructure to support EV charging in existing buildings. Strata managers are well-positioned to provide valuable insights and recommendations regarding the feasibility, design and installation of charging infrastructure, due to the awareness of the unique characteristics and challenges relating to each building.

Similarly, strata managers have the capability to liaise with building owners, residents and relevant stakeholders to ensure that there is open communication and collaboration between the contractors engaged to undertake the project. For a full guide to EV implementation as a strata manager, follow the link here.

What Does this Mean for Strata Residents?

It is imperative that residents that wish to initiate the process of implementing EV charging in strata actively engage in discussions and decision-making processes with their owners corporation, collectively advocating for, and expressing their willingness to, contribute to the associated costs in conjunction with other motivated residents.

This may involve participating in strata community meetings and surveys of the residents, or the formation of a dedicated resident committee to explore potential funding options and cost-sharing models.

SCA Policy Position

SCA is supportive of the provisions within the National Construction Code that requires all new Class 2 buildings to be built to be EV ready. However, as discussed, a large proportion of Australia's strata building stock is older, and do not possess the required electrical infrastructure to support EV charging within the scheme.

As such, SCA is advocating for federal, state and local governments to support the establishment of funding programs and incentives for **existing strata buildings**, specifically targeted at supporting the implementation *of backbone electrical infrastructure*. This may include grants, subsidies or low-interest loans, that assist in offsetting the costs of installation and retrofitting required to support EV charging in established strata communities.

SCA believes that the strata sector could benefit from the provision of a cost-benefit analysis, that outlines the potential increase in the value of a given property that has access to EV charging, relative to the cost of implementing the infrastructure. If lot owners had concrete data that showed the increase in value their property would experience, it may address this specific market failure, and encourage the provision of more EV charging in strata in the future.

Advocacy and Engagement

SCA has been actively involved in providing a significant amount of submissions and responses to EV consultations across the country at state, federal and local levels, including working closely with the National Electric Vehicle Strategy (NEVS) team, highlighting the specific challenges that EV uptake will have on EV owners and people who live in strata complexes.

SCA has continued to engage, meet with and communicate to government departments and agencies the costs associated with electrical infrastructure retrofitting, highlighting the overwhelming need for support.

EV Backbone Infrastructure and Technical Considerations

Understanding the technical aspects of EV electrical infrastructure in strata buildings is critical for comprehending the broader implications associated with EV adoption in strata. It serves to provide the foundation for assessing the feasibility of EV infrastructure integration, identifying the necessary upgrades and modifications for a given scheme, and understanding the scale and associated costs. As a result, strata managers, residents and decision-makers can make informed choices, address potential challenges and ensure safety and compliance.

EV Backbone

EV 'backbone infrastructure' refers to the foundational infrastructure elements of a whole-of-building approach to supporting EV charging in strata buildings. The components work together, to ensure that an integrated and optimised system is implemented, and allows for the management of charging, monitoring of energy usage and coordination of billing within a strata scheme.

Whilst EV backbone infrastructure installation can have high upfront costs (especially when retrofitting existing buildings), the implementation of new backbone infrastructure is the most effective method of implementing EV charging options that will provide all residents with equal access to charging. With EV backbone infrastructure implemented, the process of installing personal chargers and accommodating the needs of all residents is possible. EV backbone infrastructure is generally comprised of the following components:

Switchboard

A switchboard refers to the central distribution panel that controls and manages the flow of electricity throughout the building. It houses circuit breakers, fuses and switches that allow for the safe and efficient distribution of electricity to different areas of the building. The switchboard protects the electrical system, and detects any faults or overloads that could potentially damage the system and compromise safety.

Main Switchboard

Specifically main switchboard is the central point of connection between the strata building site, and the grid. When implementing EV infrastructure, the switchboard may require upgrading to accommodate the increased electrical load and ensure compatibility with charging equipment.

Distribution Boards

Distribution boards are boards that are connected to the larger main switchboard and distributed to lighting, appliances, power points etc. Distribution boards serve as a system to manage the flow of electricity throughout the building, avoiding large levels of cabling having to run from the main switchboard to all users within a building. When upgrading EV backbone infrastructure, dedicated EV charging distribution boards may need to be introduced.

Cable Trays

Cable Trays are a system of organising and supporting electrical cables and wiring. Often seen in car parks, trays are structures that provide that are installed overhead, beneath surfaces or affixed to walls, and provide a pathway for cables to run through. They offer the protection of the cables, while allowing easy access in the case of maintenance requirements. By using cable trays, the risk of tangling, damage or interference is minimised.

Dynamic Load Management Systems

A Dynamic Load Management System (DLMS) is a software-based solution for managing and distributing energy when multiple EV charging stations work simultaneously. A DLMS in a strata scheme allows multiple EVs to be charged efficiently by adjusting the available power supply and balancing it between EV chargers.

The system also enables a strata scheme to increase the number of EV chargers without increasing the amount of contracted power. A DLMS uses advanced algorithms to learn EV charging patterns and control the energy flow at EV charging points to reduce electrical overloads at the grid connection point.

As each EV charger uses a large amount of energy, a strata scheme with six EV chargers operating simultaneously could cause power outages and damage electrical infrastructure. A DLMS should be integrated into every residential and commercial strata scheme to improve EV charging capabilities while protecting electrical infrastructure. Different types of residential and commercial strata schemes include multi-storey buildings, apartments, units, townhouses, villas and office buildings.

Benefits

A DLMS has multiple benefits for strata residents and owners, including:

- **Cheaper EV charging:** DLMS reduce the upfront cost of installing additional EV charging infrastructure, such as expensive electric grid extensions.
- **Efficiency:** DLMS enable an increase of up to eight times faster charging speed by using advanced algorithms which learn the EV charging behaviours of residents.
- **Convenience:** DLMS allow people with different schedules to charge their EV at any time of the day without worrying that their charging will compromise the ability of others to charge their EVs.
- **Reliability:** The power distribution of DLMS means that power outages are less likely to occur given, that electricity is not overloaded at the grid connection point.

Metering

Electricity meters are equipment that allow for the measurement and monitoring of consumed electricity. In the context of EV charging, specialised metering or sub-meters allow for the electricity usage of strata residents to charge their vehicles to be calculated and recorded, specifically for billing purposes. By implementing electricity metering, strata buildings can ensure fair and transparent billing practices, as well as have access to data on energy usage and the monitoring of electricity demand to ensure that capacity is not exceeded.

Trenching

Trenching refers to the process of excavating or digging trenches to install underground electrical cabling and other infrastructure. It is often necessary in car parks, to lay the required wiring and conduits from distribution panels or power sources to the designated charging locations.

When trenching, excavation of the ground surface and resurfacing is required, and careful planning and consideration is needed to ensure that electrical infrastructure is placed safely, and in conjunction with existing wiring, utilities and other obstructions.

EV Readiness

The term 'EV Ready' typically refers to the state of a building possessing the required infrastructure and development, 'ready' to accommodate EVs and their charging needs. Different buildings may have different requirements for being EV ready, however it can be generally applied to buildings and encompass considerations like power supply, wiring, designated parking spaces and units etc.

Step by Step - How to make a Strata Building 'EV Ready'

While there are many challenges and considerations in installing EV infrastructure in a strata scheme, by following the five steps outlined below, one may understand the process, procedures and requirements for integrating EVs and EV chargers into a strata scheme safely and efficiently.

The following draws from a variety of sources, notably including the NSW Government ***"Making your residential strata building EV ready"*** guide found here.

1. Resident Survey

The first step in becoming EV ready is to conduct a resident survey to identify individual EV charging needs and attitudes of residents and owners.

2. Energy Assessment

The second step is engaging an energy auditor to obtain a building energy assessment, to identify the impacts of installing EV infrastructure in your strata scheme. There are several important elements of a building energy assessment, including:

- Historical peak energy loads
- Supply Availability
- Energy usage and consumption patterns

3. Option Evaluation

The third step is selecting a strategy to help install EV charging infrastructure into your strata scheme. There is no one correct approach; however, the information below can act as a guide to help you select the best strategy for the specific qualities of a given strata scheme.

Individual Approach – No Existing EV Charging Infrastructure

This approach is best suited to Electrical Vehicle Supply Equipment (EVSE) in small buildings like standalone lots. Under this approach, the OC responds and investigates each request to install EV charging infrastructure.

There are two charging level options:

- **Level 1:** standard power point
    - Load control or peak demand management may be required.
- **Level 2:** dedicated EV supply equipment (e.g., 7kw EV charger)
    - Load control or peak demand management may be required and depends on the switchboards' electrical capacity.

Individual Approach – Existing Circuits and Meter

This approach best suits townhouses or apartments with integrated metering and individual distribution boxes. As there are existing circuits, it is possible to reuse or add an additional circuit to the distribution board. The approach's EV charging levels are determined by available charging circuits and load control may be needed to manage the overall load.

Common Property Approach

This approach is best suited when the OC has enough common property car spaces or access to car spaces is limited. A common property approach limits EV chargers to a fixed area (e.g., visitor parking spaces) and has two charging level options.

- **Level 2:** dedicated EV supply equipment (e.g., 7kw EV charger)
    - Suitable for sessions up to 8 hours and when charging in individual car space is impractical.
- **Level 3:** dedicated DC charging station (25kw to 50kw)
    - Suitable when there is a high demand for EV charging and sessions must not exceed two hours.

Before commencing works, approval of sustainability infrastructure resolution through an OC must be obtained. There are also the following considerations:

- Determining if there is sufficient electrical capacity in switchboards and electrical wiring
- Identifying building supply issues and electricity demand costs
- Determining the cost recovery method.

Modular (Phased) Approach

This approach is best suited for small and medium buildings with low demand for EV charging and a limited budget. A modular approach enables you to install an EV charging backbone to help ensure enough residents can pay the cost of installing EV charging infrastructure.

Before commencing works, the strata committee will need approval from the OC. Afterwards, an EV backbone's modular components are installed and the OC's approval is required to connect the EV equipment to common infrastructure.

The approach allows level 2 charging to each charging point and is usually paid for by relevant owners or residents. A suitable modular EV backbone comprises the following:

- Cable trays or busways
- Load control timer and a meter to measure usage
- A feed from the main switchboard to one or more EV distribution boards.

Whole-of-Building Approach

This approach is best suited for large buildings or those wanting to increase building value by installing EV charging in car spaces. After the strata committee has gained approval from the OC, an EV backbone (as highlighted) is installed in your strata scheme.

OCs will then need the approval to connect additional EV equipment to common infrastructure. The relevant owner or resident usually pays for the cost of this approach which allows for level 2 charging to all car spaces.

Building Sizes

The information below guides which approach should be considered based on building size:

- The individual approach is best suited to small buildings (10 apartments or less).
- A common property or modular approach is optimal for medium buildings (11 to 100 apartments).
- A common property or whole-of-building approach favours large buildings (Over 100 apartments).

4. Payment Option Evaluation

In residential buildings, two types of EV charging costs may be recovered:

Strata-provided Infrastructure Cost Recovery

- Cost recovery: OC pays the upfront installation cost of EV charging infrastructure and recovers the cost when residents use EV chargers over time.
    - Best suited for common property, whole-of-building or modular approaches.
- No cost recovery: OC determines that EV charging is a service that will be provided to residents.
    - Best suited for common property, whole-of-building or modular approaches.
- Full cost to owner: OC agrees the owners will pay for all costs.
    - Best suited for individual approaches

Usage Billing

- No usage fee
    - Best suited for common property or individual approaches.
- Flat fee: a fixed fee is charged daily or monthly regardless of energy usage.
    - Best suited for common property, individual or modular approaches.
- Metered rate: fees are charged based on usage meters.
    - Best suited for modular and whole-of-building approaches.
- Outsourced: subscription fees are charged by EV operators.
    - Best suited for common property or whole-of-building approaches.
- Existing meter
    - Best suited for any approach that uses existing meters.

5. Plan Approval Processes and Funding Solution

The final step is funding and seeking approval from OCs. Funding for EV charging infrastructure should be determined and approved as part of capital works fund planning and other budgets. All approaches require strata committees and/or owners to gain approval from OCs via motion at the next general meeting for a sustainability infrastructure resolution and to create a by-law covering each approach's installation of EV charging infrastructure.

Installation of EV Charging Units

Once a strata scheme has the appropriate infrastructure to support EV charging, consideration must be given to the charging units themselves. There are four steps to that should be followed when introducing EV charging units into a strata scheme, to do so successfully:

A. Finding an EV Supplier

The first step is deciding whether you prefer to hire an EV charging specialist or an independent electrical contractor to internally install or outsource the installation.

B. Seeking Advice

The second step is to obtain preliminary advice regarding installing EV chargers as building size and safety factors can become complex.

C. Seeking Quotes

OCs should ask EV charging operators to provide a quote while owners should contact suppliers to obtain a quote.

EV Charger Installation

For OCs, once approval has been gained from the OC, talk with your selected supplier to install EV charging infrastructure and inform your building manager about key dates and timeframes. Owners should follow the same procedure but talk with their selected supplier to install EV supply equipment.

EV Charger Supplies

In retrofitting EV chargers, you must select an EV charger with options ranging from 2.2kW to 22kW phase 3 chargers that use AC charging, DC charging, fast charging, etc. An electricity meter that satisfies the National Measurement Institute Pattern Approved Electricity Metering requirements must also be installed to bill residents based on their electricity usage.

Embedded Networks

Strata communities are one of the largest consumers of embedded network systems. As the growth of residency in strata titles continues to dramatically expand, so too does the prevalence of embedded network agreements.

An embedded network is a private electricity network servicing multiple lots within a property and monitors each individual lot's electricity, gas, and water usage. It is connected to the main electricity grid through a master meter which measures the amount of electricity supplied to every resident living on that property. In a strata scheme, embedded networks are commonly controlled and operated by one of many Exempt Embedded Network Service Providers (EENSP).

The embedded network operator purchases electricity from a licensed retailer to supply the whole property and on-sells that electricity to each resident in the strata scheme. The electricity consumption of each lot on the property is then measured by sub-meters connected to the master meter. As each resident has a sub-meter installed, they only pay for the electricity they consume in each period (e.g. monthly or quarterly).

In some states, alternate models are available for strata schemes who own the electrical and gas infrastructure. In these cases, they engage a billing services provider to undertake the meter reading and billing as a fee for service. The scheme then buys the electricity for the entire site from a licensed retailer, and engages an energy specialist to assist the scheme to procure the best energy pricing. A single (gate) meter, located at the entry point into the premises records the total scheme consumption. Each individual lot has a sub meter which is owned by the scheme, and the data from these sub meters is collected by the billing services provider and is used to prepare the electricity bill for the individual lot.

The strata company owns the embedded network infrastructure and engages with energy companies and/or EENSPs to provide electricity for their scheme. Embedded networks provide owners and residents of strata buildings access to cost-efficient electricity, gas, and water solutions.

EV Charging Infrastructure

As the market for electric vehicles (EV) continues to grow at an unprecedented pace, the installation of EV charging infrastructure is becoming a contemporary issue in the strata environment. The electricity that supplies residential car parks is often connected to the common area electricity meter and is therefore the responsibility of the OC. This creates a contentious issue where increased consumption of common area electricity can potentially increase levies.

Despite this, embedded networks have multiple benefits for OCs and residents in installing EV charging infrastructure in strata schemes. According to Energy Australia "embedded networks utilise traditional building infrastructure to deliver utility services to end users, whilst creating ongoing income streams that can benefit owners, building managers, residents and tenants".[6]

Benefits of Embedded Networks

Some benefits of embedded network integration may include the following:

- **Energy efficiency:** The supplier can use energy management to monitor and control energy output to reduce the risk of energy overload of EV chargers and to ensure optimum EV health.
- **Long-term sustainability:** Embedded networks allow for bulk electricity purchases and future installation of renewable infrastructure, including EV chargers and solar panels, which reduce carbon emissions.
- **Reduced electricity costs:** The nature of embedded networks means charging EVs at home is more affordable than charging at work or other public charging stations. Public charging stations often have a peak electricity tariff and prices fluctuate quickly depending on market conditions.
- **Improved reliability:** Embedded networks are less susceptible to power outages because they are independent of the larger electricity distribution network; thus, residents can charge their EVs without the concern of potential major power outages.
- **Additional revenue source:** the embedded network structure can generate additional revenue that can be used to fund building maintenance costs or retrofitting EV chargers into older residential buildings.

[6] Energy Australia. *What are embedded networks?* Energy Australia. 2020. Accessed at: https://www.energyaustralia.com.au/embedded-networks

Potential Negatives

There are some potential negatives related to the integration of embedded networks into strata:

- **Long-term Contracts**: Due to the nature of some existing supply arrangements, in some situations embedded network users may be unfairly locked into long-term contracts, with limited ability to disengage or renegotiate.
- **Consumer Choice:** Embedded network customers may be limited in their ability to engage in the market effectively, and unable to access the same competitive energy prices as non-embedded network customers. A lack of access to competitive pricing can create disproportionately high costs, which are ultimately passed on from lot owners to tenants.
- **Lack of Knowledge:** When purchasing into a strata scheme, future owners are often unaware of the existence and involvement of a scheme in an embedded network. This can be attributed to both the complexity and general lack of understanding of what an embedded network system is, and the lack of rigorous disclosure requirements when buying into a scheme. This may potentially lead to negative financial and legal outcomes for owners.

SCA Policy Position

SCA is an advocate for increased consumer protections for all energy consumers in Australia and NZ. SCA is aware that embedded network consumers have the potential to be faced with unfair situations, where due to the nature of existing supply agreements, tenants may be limited in their ability to engage in the market effectively, leading to limited choice and potentially increases in cost.

SCA believes lot owners, owners corporations and residents currently using embedded networks should be afforded the same choices, consumer rights and protections as those using non-embedded energy supply networks.

Shortening contract lengths and ensuring no automatic rollover mechanisms in energy contracts for embedded network users, implemented in tandem with the rest of the AEMC framework, should allow for greater oversight, and ensure the enforcement of accountability of energy providers serving these customers.

Similarly, if a strata scheme is already engaged in the services of an embedded network, it should be disclosed to a given prospective buyer so that they may have the opportunity to make an informed decision on the effects of the network on their ownership and energy use.

Insurance and Safety

Fire Safety

Electric vehicles are powered by lithium-ion batteries, a common type of rechargeable battery that effectively stores and distributes energy.

Due to the nature of their composition, lithium-ion batteries create different fire safety considerations for EVs than that of conventional ICE vehicles, which must be taken into account, specifically in the context of a strata environment.

Importantly, evidence suggests that electric vehicles are not necessarily more likely than conventional ICE vehicles to be involved in a fire incident. For example, it is reported that in London, EV fires account for 1 in 40 of all car fires. According to Professor David Hayward of RMIT:

> *"These vehicles (EVs) are no more likely to be involved in fires than conventional vehicles. But when they are involved with fires, the fire management risks are high"*[7]

Risk Factors

There are several additional factors that contribute to the risks associated with EV fires when compared to conventional ICE vehicle fire incidents. These risks may include (but are not limited to):

Thermal Runaway

When the cells of lithium-ion batteries are damaged, the energy released causes damage to other cells within the battery, creating a cascading build-up of heat that increases faster than it dissipates. This can eventually lead to a damaging and dangerous expulsion of heat.

Directional Flame Expulsion

A common phenomenon in EV car fires is the expulsion of flames in a *singular direction*. A standard petrol car fire disperses flames and heat in a range of 360◦, whist fires involving electric vehicles have been known to release 100% of its energy in a single direction, with flames reaching up to 1600◦ celsius.

[7] David Hayward, Vin Virtue and Liss Ralston. *A Better Fire and Rescue Service for the ACT: Context, pressures and organisational challenges.* United Firefighters Union of Australia. August 2019. Accessed at: https://www.parliament.act.gov.au/__data/assets/pdf_file/0005/1606172/11.-UFU-ACT-attachment-1-Rpt-1-A-Better-Fire-and-Rescue-Service-for-the-ACT.pdf

Expulsion of Toxic Chemicals

Electric vehicle fires produce two distinct and dangerous chemicals, Carbon Monoxide and Hydrogen Cyanide. These chemicals can cause hypoxia, meaning that they deprive the body of oxygen, and may be extremely dangerous to those in the vicinity of an EV fire. Hydrogen Fluoride gas is also expulsed, which may cause severe burns to a person's skin, and/or lung damage if inhaled.

Failure of Conventional Fire Suppression Practices

Electric vehicle fires may not be easily extinguished via traditional fire extinguishing methods. Once an EV is ignited, the chemicals contained within the foam of a conventional fire extinguisher used to combat fires are largely ineffective. Similarly, EV fires may require massive volumes of water to be fully extinguished, with suppression potentially requiring between *2000 and 60,000L of water* (a conventional ICE vehicle fire may be suppressed by less than 1400L). EVs have also been known to reignite spontaneously, after having thought to be fully extinguished.

Identification of EVs

It is not always apparent to first responders whether or not an ignited car is an EV or not, and as such first responders may initially engage in methods of fire suppression that may be ineffective. This is of particular concern in emergency situations, where time is of the essence and lives may be in danger.

Skills and training

First responders may not necessarily have been adequately trained to handle electric vehicle fires, and may not be well versed in specialised methods of fire suppression. This may include methods of determining if the vehicle is still running, how to turn them off, how to avoid electrocution etc.

It is important to note that these issues are likely to be compounded in a strata environment, where cars may be residing in underground, above ground or difficult to reach parking areas, where fires may be hard to combat effectively, and ventilation may be poor.

E-Transport

The term 'electric vehicle' does not necessarily just refer to a car or a truck. Alternative e-transport options like e-bikes, e-scooters, 'hoverboards' etc. have also successfully penetrated the markets in Australia and NZ over the past five years. These alternative e-transport options often utilise lithium-ion based batteries in the same manner as EV cars and trucks, due to their portability, weight, energy density and longevity. However, this also means that they carry similar ignition risks, and arguably are *even more* vulnerable to fire related incidents.

In fact, to date throughout Australia fire incidents related to e-bikes and e-scooters have been particularly prevalent, especially when compared to standard electric vehicles. Specifically, the low barriers to ownership and ease of battery abuse (including everything from direct physical damage, overcharging, sun exposure) generally lend to higher chances for lithium-ion battery fire incidents, especially when compared to electric vehicles.

Case Studies

Case Study 1 - Florida, United States

In 2019, a Tesla Model S crashed into a set of palm trees on a highway in Fort Lauderdale, Florida. First responders used a department-issued fire extinguisher to combat the flames, to no avail. The fire continued to burn, eventually taking the life of the driver. The fire was eventually seemingly extinguished using water, however the car reignited twice more after being towed away from the crash site.[8]

Case study 1 exhibits the dangers relating to physical battery abuse in EVs, as well as the importance of effectively identifying EVs in an emergency situation.

Case Study 2 - Quebec City, Canada

In 2022, the battery pack of a Hyundai Kona caught fire in an underground parking lot in Quebec City, Canada. First responders first had to ventilate the underground section of the building, in order to access the vehicle and extract it from the garage. The entire 8-storey building was evacuated, as smoke had entered the buildings ventilation ducts posing a health and safety risk to those residing in the building. From there, the vehicle was extinguished by firefighters.[9]

Case study 2 demonstrates the dangers relating to EV fires within strata buildings, and the complexities relating to extinguishing an EV in a poorly ventilated underground parking structure.

Case Study 3 - Canberra, Australia

In 2021, a recharging station for a commercial e-scooter hire company underwent a significant fire event whilst on charge, causing severe damage to the warehouse in which they were housed. Although extinguished and monitored for several days following the event, the warehouse experienced reignition even when not connected to a charger, and as long as 6 weeks later.

Case study 3 highlights the dangers relating to e-transport related fires, and the ongoing risk of reignition even when not charging.

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[8] Chester Dawson. *What first responders don't know about fiery electric vehicles.* Bloomberg. 25 March 2019. Accessed at: https://www.bloomberg.com/news/articles/2019-03-25/tesla-fires-what-first-responders-don-t-know-about-fiery-evs#xj4y7vzkg

[9] Andrei Nedelea. *Hyundai Kona EV Catches Fire In Underground Parking Lot In Quebec.* InsideEvs. 7 September 2022. Accessed at: https://insideevs.com/news/608898/hyundai-kona-ev-fire-quebec-city/

What Does this Mean for Strata Managers?

SCA strongly recommends that strata managers engage a fire safety consultant or engineer when undergoing the process of implementing EV charging infrastructure.

An accredited practitioner will be able to provide expert advice and assessment on the needs of a given building, and ensure that the building is fully compliant with all Fire Safety and Building Code certifications that follow the Australian Standards and the Building Code of Australia (National Construction Code).

Similarly, strata managers should work with specialist fire services to ensure that there any additional safety protocols are appropriately implemented, including any guidelines specific to a given scheme that may help to mitigate risk, and that these guidelines are adequately communicated to all residents within the strata scheme.

What Does this Mean for Strata Residents?

EV owners in strata may mitigate fire risk by familiarising themselves with fire safety guidelines specific to EVs, including proper charging procedures, maintenance practices and emergency response protocols.

Additionally, when charging, users should take care to ensure that their EV charging equipment, cords and outlets are all clear of any signs of damage or malfunction, and use is ceased until the issue is fully rectified.

SCA Policy Position

Upskilling

SCA is asking for the government to consider investment in the further education and upskilling of Australia's electrical technicians, to ensure that strata buildings, when being built or retrofitted, adequately meet the safety standards implemented to reduce the chance and frequency of EV related fires.

Fire and Emergency Services Training

SCA is advocating for state governments to implement EV fire specific training for Fire and Emergency Services, to ensure that in the event of an EV fire, responders are adequately trained to handle and manage the associated risks. Similarly, responders in every jurisdiction should have adequate access to all required EV fire suppression and management tools.

Advocacy and Engagement

SCA as an organisation is resolutely committed to ensuring that strata buildings are protected, and that owners and residents can be confident in the safety and reliability of their building in the event of a fire related incident.

SCA will continue to consult with stakeholders in the fire safety field, including jurisdictional fire and rescue government agencies and industry bodies like the Fire Protection Association (FPA), National Fire Industry Association (NFIA) and the Australasian Fire and Emergency Service Authorities Council (AFAC).

SCA is committed to continuing to provide information to government, both proactively and reactively through consultation, to ensure that the risks associated with EV fires in strata schemes is fully understood.

FAQ's

Will the building I manage need to upgrade fire safety equipment & infrastructure if an EV is present?

Although electric vehicles are becoming more prominent, they are still an emerging industry in Australia, and as such there is often a distinct information gap surrounding them (especially in the context of strata living).

Currently, there are no mandatory or legal requirements in Australia to have EV ready fire safety equipment or infrastructure in strata parking structures. However, there are *wiring standards* that buildings must be compliant with. For example:

In NSW, when installing charging equipment, one must ensure the charging cable and/or unit is electrically compliant and installed by a qualified electrician to AS/NZS 3000 *Electrical Installations "Wiring Rules", Appendix P Guidance for Installation and Location of Electrical Vehicle Socket-Outlets and Charging Stations*.

As research and policy develops in this area, fire safety standards may be subject to change. Until that time, access to fire extinguishers suitable for lithium-ion battery fires, along with standard smoke alarm and sprinkler systems may be effective in the event of a fire.

Are EVs more prone to ignition than standard petrol cars?

No, there is currently no evidence to suggest that EV fires are more frequent than in conventional ICE vehicles. In fact, the lack of fuel as an accelerant for fires, the lack of a catalytic converter and the lack of overheating in electric engines removes in EVs several of the most principal causes for fires in conventional ICE vehicles. In the case of a car accident, electrical system failure, charging failures of manufacturing faults however, EVs may still be prone to ignition.

Does EV charging increase the risk of ignition of EVs?

Evidence suggests that if an EV is charged in line with the manufacturers recommendation, then the risk for ignition *as a result* of charging is minimal. However, failures do still occur, particularly when unsuitable charging infrastructure is utilised for charging an incompatible EV.

What should one do in the event of an EV fire?

Immediately evacuate, and do not attempt to extinguish the fire. Ensure, if possible, that the EV is disconnected from its charger. Call emergency services (000), and notify them that the car is an EV, so that they may be adequately prepared to combat EV fire related risks.

Additional Resources

NSW Fire and Rescue – Electric Vehicles

Fire Extinguisher Online - Electric Vehicle Fire Safety Explained

Australasian Fire Authorities Council – Incidents Involving Electric Vehicles

Insurance Implications

Strata insurance is one of the few forms of insurance in Australia and New Zealand that is *compulsory*, meaning that each owner within a strata scheme is required to contribute additional funds towards the provision of insurance, that specifically covers the costs of risks and potential damage to common property areas.

Whilst compulsory insurance is an important element of risk mitigation in strata, owners in strata schemes are as a result particularly sensitive to changes in insurance premiums.

Due to the risk factors associated with the integration of electric vehicles into strata schemes, there is likely the potential for strata insurance premiums to be affected, as EVs continue to emerge and gain popularity.

Currently however, the market for electric vehicles is still in its infancy in Australia and NZ. Insurance modelling and pricing is largely based on data relating to losses from incident claims.

As such, the common conception is that the widespread insurance industry has not yet 'caught up' to factoring in electric vehicles into their pricing models, due to the lack of available data and incidents of which to base prices.

It is important to note that insurance pricing is always trying to anticipate the cost of future claims, and as such it is possible that the integration of EVs into strata may have an effect on the cost of premiums in the future. In fact, pricing for electric vehicle insurance itself is still in its inception, so the consequential loss to building insurance could still be as far as years ways. However currently, there are no specific underwriting questions for EVs in strata, nor any data field to capture any information.

It is possible that, for example, we will see strata insurance pricing based on the number of charging stations in a building in future. It is also possible that charging stations become so widespread that they form a part of the overall building risk.

Risk Factors

Risk factors that insurers may identify as contributing factors to shifts in strata insurance premiums could include:

Fire: The primary hazard relating to electric vehicles, particularly in relation to outdated electrical wiring, inappropriate charging infrastructure and the volatility of lithium-ion batteries.

Electrical Shock: High voltages are required to charge electric vehicles. This may leave consumers vulnerable to electrocution, especially when factoring in the potential for damage to cables and chargers through wear and tear, accidental damage or vandalism.

Theft: Electric vehicle chargers may attract incidents of theft and/or vandalism, as the copper wiring contented within charging cables may be able to be resold for profit. This is of particular concern for public or shared EV chargers, where the public may easily access the points with limited security.

Business interruption: EV charging stations in mixed-use, commercial or residential strata schemes may have an effect on the supply of electricity to a building, and as such may be a contributing factor to the increased risk of power outages that may disturb business operations.

Personal Injury: EV charging cables, if placed incorrectly or without consideration, may pose a personal injury threat. Charging cables should be stored and used in a manner that minimises the risk of trip and fall incidents for users, residents or visitors to the property.

Product Liability: EV charging equipment is often manufactured and implemented by third parties, as opposed to the vehicle manufactures themselves. Charging station providers must be appropriately qualified, indemnified and insured against product-related failures.

Maintenance: Qualified individuals must be responsible for the maintenance of EV chargers, to ensure that they are operating safely and without fault.

Disclosure

Currently, there is no overarching, legislative requirement to specifically disclose ownership of an electric vehicle within a strata scheme. However, any insured involved in a consumer insurance contract in Australia is subject to what is known as a 'prohibition against making a misrepresentation' (the large majority of strata insurance contracts are consumer insurance contracts however there are specific exceptions).

Previously known as a 'duty to disclose,' recent changes to the *Insurance Contracts Act* 1984 places the burden onto the insurer to gain the information it requires to assess a risk and place a policy at a certain price.

The *Insurance Contracts Act 1984* states that the insured has:

"A duty to take reasonable care not to make a misrepresentation when entering into, varying, extending or renewing a consumer insurance contract."

In simpler terms, the Insurance Council of Australia (ICA) states that:

"When you apply for an insurance policy, or renew or extend your existing policy, you have to tell the insurer everything about you and your situation that is relevant or could reasonably be expected to be relevant to the insurer's decision to insure you."[10]

If you are found to be in breach of this duty, an insurance company may have reasonable grounds to reject a claim in the event of loss, reduce the payout of a claim, increase insurance premiums or cancel the contract in full.

As such, when entering into, renewing or extending a strata insurance policy, it is important that when asked by the insurer (either specifically or in a broader question relating to the provision of other relevant information in relation to the risk), they are notified of the presence of an electric vehicle and/or electric vehicle charging infrastructure, to ensure that the strata scheme may not potentially be in breach of this requirement.

What Does this Mean for Strata Managers?

Strata insurance is highly complex (especially when compared to other types of insurance), and often sees a density of claims at a higher rate than that of other insurance products. The Deakin Strata Insurance Report *'A data-driven holistic understanding of strata insurance in Australia and New Zealand'* identified that there are at least 47 strata insurance services that are regularly provided by strata managers to their OC clients, including quotation, procurement, placement, renewal etc.[11]

As such, as a strata manager, it is important to maintain an open dialogue and transparent dialogue with all participants in the strata insurance process, including insurance brokers and underwriters. In the context of electric vehicles, strata managers (on behalf of owners corporation clients) should encourage the owners corporations of the buildings they manage to notify them of the presence of any electric vehicles that are residing within the scheme, and communicate this information to insurers when asked, to ensure that the prohibition against making a representation is being complied with adequately.

[10] Insurance Council of Australia. *What is duty of disclosure.* Accessed at: https://insurancecouncil.com.au/resource/q-what-is-duty-of-disclosure/

[11] Johnston, N., Lee, A., Mishra, S., Powell, K., BowlerSmith, M and Zutshi, A. (2021) A data-driven holistic understanding of strata insurance in Australia and New Zealand. Deakin University

SCA Policy Position

Premiums for strata insurance across the country have become broadly unaffordable, and can put enormous financial pressure on owners, with some not able to obtain insurance at all. As an organisation, SCA is committed to making insurance affordable and accessible for strata.

Currently, the private insurance market in Australia is responsible for their own response to EV integration into strata buildings, which may introduce a level of significant variance in response and resultant implications. As a result, SCA believes it is the responsibility of government to engage in ongoing dialogue with the insurance industry, to ensure that the specific challenges relating to insuring strata buildings with EVs are appropriately considered. Collaboration between insurers, strata stakeholders and government will help to ensure that potential insurance solutions are able to be manifested, to meet the evolving needs of strata communities.

Similarly, government should seek to monitor and review the effectiveness of insurance policies that cover schemes that have integrated EVs and EV charging infrastructure. Regular and ongoing evaluation over the long term may serve to assist in ensuring that timely adjustments and updates to existing frameworks may be addressed proactively, important considering the expected growth of EV ownership.

Advocacy and engagement

SCA's National Strata Insurance Taskforce (SCANSIT) is acutely active in its engagement with government representatives, stakeholders, and consumers to drive positive change within the strata insurance industry. With representation from each of the insurance, brokerage, and strata management industries, the SCANSIT taskforce is best placed to continue fight to affect desired outcomes in relation to strata insurance, including alleviating the cost pressures of strata insurance premiums.

As the insurance industry continues to develop its response to the integration of EVs into strata, SCA will continue to work alongside federal and state governments to ensure that they are aware of the experience of strata insurance consumers, and work towards alleviation of the potential cost pressures of increased strata insurance premiums.

Weight of Electric Vehicles

Due to the presence of lithium-ion batteries as their energy source, electric vehicles (counter to popular belief) actually weigh considerably more than conventional ICE vehicles. In fact, EVs can weigh as much as 30 per cent more than the average ICE vehicle. For example:

Style	Conventional ICE Vehicle Model	Weight	Electric Vehicle Model	Weight
Sedan	2023 Toyota Camry	1490 kg	2023 Tesla Model 3	1844kg
SUV	2023 Volkswagen Tiguan	1699 kg	2023 Tesla Model X	2554kg

This issue is a particular safety concern on roads, in consideration of vehicle-to-vehicle collisions, along with the accelerated degradation of roads due to the additional weight and wear.

In the context of strata, the additional weight of electric vehicles has the potential to cause issues relating to building integrity. Whilst EVs are unlikely to cause additional damage to driveways and other surfaces within strata complexes (due to the fact that most road wear comes from high-speed acceleration, braking and steering movements), SCA expects the additional weight may be particularly relevant when considering the structural integrity of strata parking structures.

Building Standards in Australia

The standards for the construction sector in Australia have undergone significant transformation since the acceptance of the singular, nationally consistent Building Code of Australia (BCA) in 1992. Ongoing reforms led Australia to adopt the unified National Construction Code (NCC) in 2011, which according to the Australian Building Codes Board provides minimum necessary requirements for safety and health; amenity and accessibility, and sustainability in the design, construction, performance and liveability of new buildings (and new building work in existing buildings) throughout Australia.[12]

In particular, Volume One of the NCC outlines the mandatory structural provisions and performance requirements of all Class 2 to 9 buildings (for which strata complexes fall under). This ensures the structural reliability and consistency of all *new* strata buildings.

However, according to UNSW City Future Research Centre's 2020 Australasian Strata Insights Report, approximately 50 per cent of Australia's total strata schemes were registered before the year 2000. As a result, many strata buildings (and therefore their strata parking structures) may not have necessarily been built to the same robust standards as today, or in consideration for the additional weight of modern highway-capable electric vehicles. This may have the potential to manifest in the weakening integrity of strata parking structures, and pose a risk to the safety of a given building and its residents.

Whilst this issue may not pose much of a threat in the short-term (considering the current popularity of EVs in Australia), it is an issue that is likely to continue to emerge alongside the development of the electric vehicle industry in Australia. As such, consideration may have to be made as to the impact of the weight of EVs on established buildings in Australia, and the necessity for retrofitting. Unfortunately, as with many issues relating to strata, the specific risk to a given strata building is only likely to be assessable on a case-by-case basis.

[12] National Construction Code. *History*. Australian Building Codes Board. Accessed at: https://ncc.abcb.gov.au/homeowners/history

What Does this Mean for Strata Managers?

If residents within the strata scheme parking their electric vehicles within the designated parking infrastructure of a strata building, strata managers should seek to arrange a consolation with a qualified construction engineer. Engineers have the capacity to evaluate the associated risk and bearing standard of a given structure, as well as facilitate the modifications or reinforcements to ensure the integrity and safety of the building as necessary.

What Does this Mean for Strata Residents?

Residents of strata buildings should take proactive measures to address the implications of the increased weight of electric vehicles on the structural integrity of their buildings. Specifically, strata residents should engage with their strata manager and/or their owners corporation when introducing an EV into the parking area of their building, to ensure that the existing parking infrastructure is designed and built to handle the increased load.

SCA Policy Position

Existing buildings that are seeking to retrofit in order to implement EVs and EV charging infrastructure, should undergo appropriate evaluations to ensure that they meet the current mandatory structural provisions in the NCC.

SCA recommends that federal, state and local governments when engaging in consultations regarding electric vehicle charging infrastructure, also engage in consultation with structural engineers, developers and builders on the possible implications of the additional live loads in buildings arising from the increasing proliferation of EVs in strata.

Advocacy and engagement

The weight of EVs continues to be one of SCA's core policy concerns in relation to EV integration into strata buildings and complexes. As an underrepresented issue area, SCA is committed to continuing to enlighten government as to the concerns surrounding the weight of EVs and the subsequent potential consequences for strata communities.

For example, in recent consultations with the National Electric Vehicle Strategy (NEVS) team and the ACT's ZEV Strategy Implementation Team, SCA has consistently raised the weight of EVs as a pertinent consideration for strata communities. As federal, state and local governments continue to engage in consultation with industry on EVs (in response to their rising popularity) SCA will continue to encourage them to consider the issue thoroughly, and engage in further consultation with the appropriate parties (structural engineers, developers etc.) as necessary.