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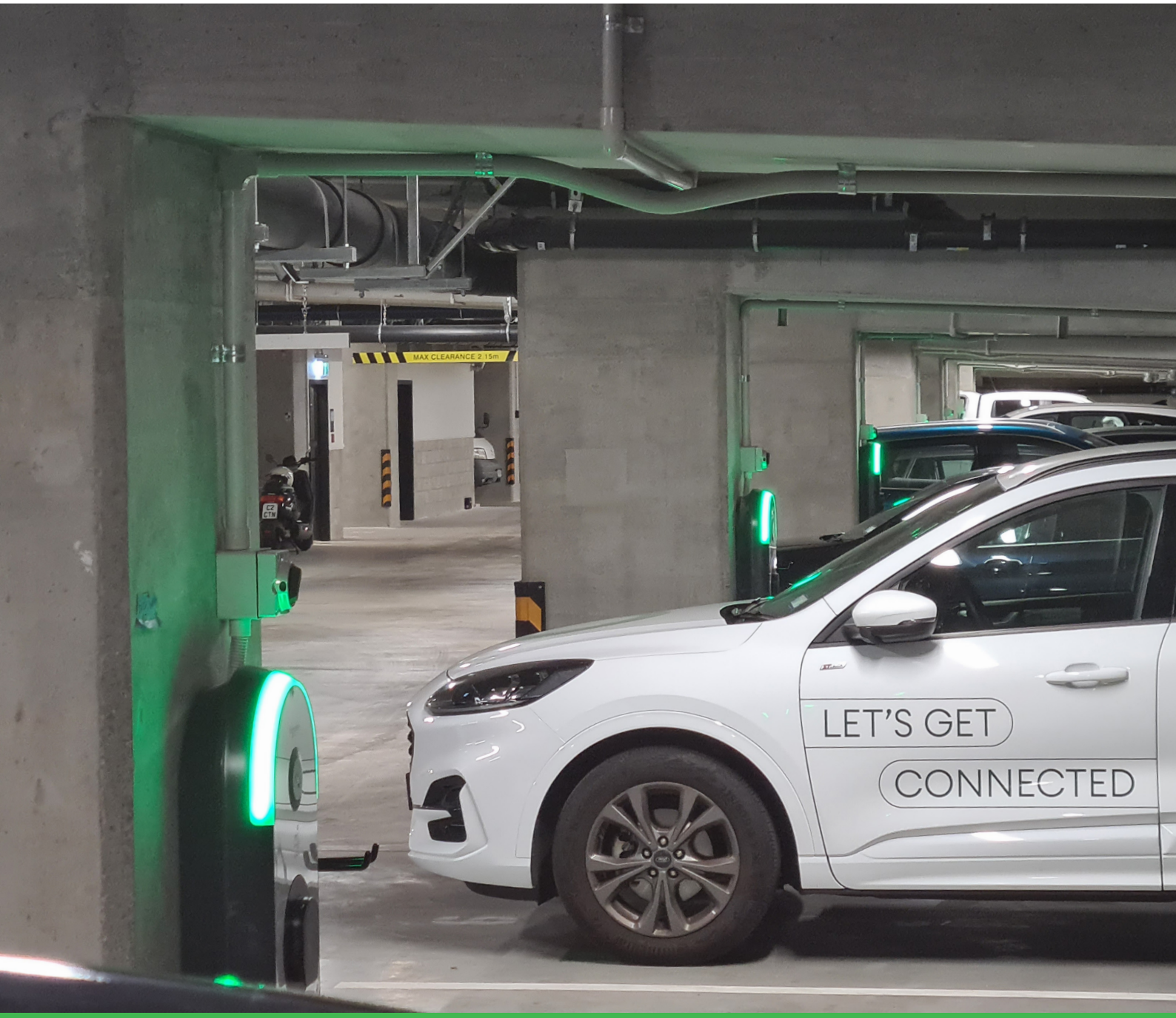

EV Charging Solutions: Designing for Demand

How Developers and Body Corporates can future-proof apartment EV Charging with scalable, centralised infrastructure

Designing for Demand: How Developers and Body Corporates Can Future-Proof Apartment EV Charging with Scalable, Centralised Infrastructure

Electric vehicle charging in apartment developments is rapidly shifting from a niche consideration to a core element of building design, driven by accelerating EV adoption and rising expectations from buyers, tenants, and regulators. For developers and body corporates, the critical decision is not whether to provide EV charging, but how to implement it in a way that avoids future constraints, cost escalation, and operational complexity. The most effective approach treats EV charging as a shared building service, designed and managed at a whole-of-site level rather than as a collection of individual installations.

At its core, EV charging introduces a new type of electrical demand that behaves very differently from traditional loads. Unlike lighting or appliances, EVs are typically connected for extended periods, and charging can be shifted, slowed, or prioritised without affecting functionality for most users. This flexibility creates an opportunity to manage charging intelligently across the building, rather than designing for a theoretical worst-case scenario where every charger operates at full power simultaneously. Recognising this distinction early fundamentally changes how infrastructure should be designed.

A shared electrical backbone combined with centralised load management has emerged as the most robust and scalable solution. In practice, this means creating a dedicated EV distribution system that sits alongside other building services, feeding a network of chargers through a common spine such as busduct or zoned cabling. A central control system sits over the top, continuously monitoring the building's total demand and adjusting EV charging in real time to remain within available capacity. This transforms EV charging from a passive load into an actively managed system aligned with the building's operational limits.

One of the most immediate benefits of this approach is the protection of electrical capacity. Without coordinated control, even a modest number of chargers can create peak demand scenarios that exceed the building's supply capability, potentially triggering outages and requiring costly upgrades to transformers, switchboards, or network connections. A centralised system removes this risk by dynamically allocating power based on what is actually available at any moment. When the building demand is low, more capacity can be made available to vehicles; when demand increases, charging can be temporarily reduced without impacting safety or reliability.

This approach also aligns far more closely with how EV charging is actually used. Most vehicles are parked overnight or for extended periods during the day, meaning there is no need for every charger to deliver maximum power at all times. A managed system can distribute energy across multiple vehicles over several hours, ensuring that everyone receives the charge they need without placing unnecessary strain on the infrastructure. This not only improves efficiency but also creates a more equitable charging experience across residents.

Scalability is another defining advantage. By installing a shared distribution backbone during construction, developers create a platform that can expand incrementally as EV adoption increases. Additional chargers can be connected to the existing system with minimal disruption, avoiding the need for major rework or redesign. This is particularly important in apartment developments where retrofitting new cabling, switchgear, and pathways after occupancy can be highly disruptive and significantly more expensive. A well-designed backbone effectively future proofs the building against rising demand.

Cost efficiency, both upfront and over the long term, is closely tied to this scalability. A centralised design reduces duplication of electrical infrastructure, such as protection devices, cabling routes, and switching equipment, which would otherwise be repeated across individual installations. It also minimises the likelihood of future upgrades driven by unmanaged growth. While there is an initial investment in creating the

shared system, this is consistently offset by lower lifecycle costs and reduced operational complexity.

Consistency across the development is another important consideration that is often underestimated at the design stage. When each apartment owner installs their own charging solution, the result is typically a patchwork of different technologies, standards, and performance levels. This creates challenges for maintenance, billing, and governance, and can lead to disputes or inequities among residents. A centralised system ensures that all chargers operate within the same framework, delivering a uniform experience and making it easier for body corporates to manage the asset over time.

By contrast, the alternative approaches commonly seen in early-stage developments expose significant risks. Supplying chargers directly from individual apartments might appear straightforward, but it quickly becomes inefficient and difficult to manage at scale. Long cable runs increase installation costs and complexity, particularly for remote or external parking areas, and there is no effective way to coordinate total demand across the building. As more residents adopt EVs, the cumulative load can push the electrical system beyond its limits, often requiring expensive upgrades that could have been avoided with a centralised design.

Similarly, relying on static load limits fails to make effective use of available capacity. Setting a fixed maximum output for each charger may seem like a simple solution, but it does not respond to real-time conditions within the building. When capacity is available, it remains unused; when demand increases, there is no flexibility to redistribute power. This results in slower charging for users and a system that is inherently less efficient.

Deferring infrastructure and planning to retrofit later is perhaps the most costly mistake. While it may reduce initial capital expenditure, it almost always leads to higher costs over the life of the building. Retrofitting requires invasive works in occupied spaces, creates disruption for residents, and often involves redesigning systems that could have been installed correctly from the outset. It also tends to produce inconsistent

outcomes, with early adopters receiving better solutions than those who follow.

For developers, the practical path forward starts at the concept design stage. EV charging should be considered alongside other core services, with space allocated for dedicated switchboards, control systems, and distribution pathways. Early coordination between electrical engineers, architects, and project teams ensures that infrastructure can be integrated efficiently rather than retrofitted into constrained spaces later. Parking layouts should anticipate future charger locations, even if only a portion of bays are equipped initially.

Installing a shared backbone is the next foundational step. Whether through busduct systems with tap-off points or zoned cabling networks, the goal is to create a flexible distribution layer that allows chargers to be added progressively. At the same time, a centralised load management platform should be selected and integrated, providing the intelligence needed to control and optimise charging across the site. This system should be capable of monitoring total building demand, allocating power dynamically, and supporting future integration with other energy systems such as solar or battery storage.

A staged deployment strategy helps balance cost and readiness. Rather than installing chargers at every bay upfront, developers can equip a proportion of spaces initially while ensuring all others are ready for connection. This avoids overcapitalisation while maintaining the ability to scale quickly as demand grows. Standardising on interoperable, networked charging technology further supports this flexibility, ensuring that equipment can be upgraded, maintained, and integrated over time without vendor lock-in.

For body corporates, the focus shifts to governance, operation, and long-term planning. Establishing a clear, whole-of-building policy for EV charging is essential to avoid fragmented installations that undermine the system’s effectiveness. Engaging experienced professionals to assess capacity, design infrastructure, and ensure compliance with local standards helps reduce technical risk. Transparent billing mechanisms,

whether through user-pay systems or integrated billing platforms, ensure fairness and financial sustainability.

Looking ahead, the integration of EV charging with broader building energy systems will become increasingly important. Managed charging can complement on-site generation, respond to grid signals, and support emerging energy markets. Designing infrastructure that can adapt to these developments will further enhance the value and resilience of the building.

The decisions made at the design stage ultimately determine whether EV charging becomes a seamless, scalable service or an ongoing source of complexity and cost. Treating it as a core building system, supported by shared infrastructure and centralised intelligence, provides a clear path forward. This approach not only addresses current needs but positions developments to accommodate the rapid growth in EV adoption with minimal disruption.

For developers, this translates into more future-ready assets and stronger market appeal. For body corporates, it ensures control, fairness, and manageable operating costs over the life of the building. As the pace of electrification continues to accelerate, getting the underlying architecture right from day one is no longer optional; it is a defining factor in the long-term success of multi-unit residential developments.

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