

Installing EV Chargers in Multi-Unit Buildings

Seven frequently asked questions

by Victoria Foote | July 2023

Sales of electric vehicles (EVs) have started to accelerate and, given the recent investments at the federal and provincial levels in EV manufacturing, the smart money says uptake will continue its brisk upward trajectory. Put it this way: globally, electric cars' share of the passenger vehicle market leapt to 14% in 2022 from 9% in 2021 and 4% in 2020. In the U.S., 2022 sales numbers pole vaulted over the previous year, increasing by 55%. In Canada, where EV sales are sluggish by comparison, one in 15 new vehicles registered in 2022 were all-electric whereas only one in 100 were all-electric only four years earlier.

In all likelihood, Canadian EV sales are about to go into overdrive thanks to upcoming federal regulations that will require Canadian automakers to produce an increasing number of EVs until all the cars they manufacture are electric by 2035. At that point, nearly half of the cars on the road will be electric.

To keep pace with the rise in electric car ownership, more charging infrastructure will need to be installed, including in multi-unit residential buildings (MURBs) for residential and visitor use. Below are some commonly asked questions from property owners and managers. But the answers only scratch the surface. To learn more about installing charging infrastructure in MURBs, please read our [Guide to Installing EV Infrastructure in Alberta's Multi-Unit Buildings: How to prepare for an electric vehicle future](#). Now is the time to get started as Canada moves toward cleaner, healthier means of transportation.

FAQs

Question: How do I figure out how many EV chargers to install in my building?

Answer: We can't stress enough how important it is to plan ahead when you begin to assess the number of chargers your building requires. In the short term, it's possible that only a dozen chargers are necessary to meet the needs of residents. But future-proofing backend electrical panels, outlets, and other infrastructure so that more chargers can quickly be installed at a later date is far more cost-effective.

There are many variables to consider when determining how many charging units should be installed. Start by surveying the residents of the building. Based on the responses, assess how

parking stalls are currently being used and for what purpose. Some stalls, for example, are used for visitor parking, others as a drop-off point. In other cases, a parking spot may be assigned to a specific unit. This information can help you pinpoint the likely number of EV charging stations you may want to install, and in what order.

That said, it is unlikely that every parking stall will have its own charger. More commonly, chargers will be situated in places where they can be shared among vehicles not unlike the way drivers today share a single gas pump.

Question: What if the EV chargers blow through the amount of electricity my building is wired to transmit?

Answer: Assessing a building’s electricity capacity is an important part of planning how best to install charging equipment. An electrical engineer with experience in designing charging systems for MURBs will need to assess what’s called the “charging performance” of the building. This kind of assessment evaluates the charging power that will be required to provide enough power for drivers’ charging needs if all parking stalls are being used by EVs.

Thanks to recent innovations, chargers can now share an electrical circuit. The assessment will show how many EV chargers can be assigned to a circuit. There are also ways to limit excessive load-sharing so that there will consistently be sufficient power at adequate charging speeds for all users.

Question: Do I have to install all the chargers at once or can I install them gradually over time as more residents switch to electric cars?

Answer: There’s no question that a comprehensive EV-ready retrofit is a large upfront capital investment. While our research has found that this approach is the most cost-effective over the lifetime of the building, installing EV chargers gradually has been by far the more common approach, particularly in jurisdictions that don’t offer incentives for installation.

A phased approach to installation —based on a comprehensive plan — does have the advantage of distributing upfront costs over time. Assessing if it is the most cost-effective way of retrofitting a building to accommodate EV charging depends largely on the type of building. For instance, in apartment buildings where tenants do not own a parking space, a phased approach can work well. The building owner can re-assign parking spots contingent on whether a tenant requires a charger; alternatively parking stalls with chargers can be grouped together.

In many condos, however, residents own a parking space. In this case, a one-time comprehensive retrofit may be the better option.

A note of caution: Try to avoid taking a piecemeal, unplanned approach to charger installations. You may find that the electrical panel or the transformer capacity is insufficient as more chargers are added over time. In some buildings, upgrading the entire backend infrastructure is only marginally more expensive than doing a small upgrade.

Ideally, planning for all parking spaces to be EV-ready from the beginning, even if the actual chargers are installed later, ensures that there will be sufficient electrical capacity to support all residents' charging needs. This will also significantly reduce the cost of wiring and electrical upgrades later.

Question: How can we gauge how long it will take to upgrade the electrical system and install charging equipment?

Answers: While the length of time it takes to install charging infrastructure varies widely depending on scope and level of complexity, it is safe to assume that preparing for the installation — securing contractors, paperwork, site preparation and the like — will consume as much as 50% of the total time allocated. Installing chargers on a piecemeal basis might appear to save time and money. Not taking a systematic approach to installation, however, can turn into an expensive and lengthy undertaking later on if electrical capacity needs a full upgrade to accommodate additional chargers.

Question: How much is this going to cost and are there government grants or subsidies that can help foot the bill?

Answer: Most EV-ready retrofits cost in the range of \$1,000 to \$1,500 per parking space, not including the charger itself. Unit owners pay additional costs to install EV chargers when they buy an EV.

As for government support, the federal Zero Emissions Vehicle Incentive Program (ZEVIP) provides funding for chargers and can be accessed through numerous organizations that have been assigned to distribute that funding. The organizations include: Green Economy Canada, Eco-West Canada, EPCOR Utilities, and The Atmospheric Fund. The full list of organizations can be found on [Natural Resources Canada's website](#).

Note that Alberta's provincial and municipal governments do not currently offer any grant programs.

Question: Tenants with EVs will be using more energy than tenants who still drive gas cars. How can we make sure everyone pays their fair share?

Answer: For residents who drive an EV, the cost of energy usage can be assigned to the individual driver and can be structured in one of three ways:

- **A flat fee** where all EV owners pay the same monthly fee for unlimited charging.
- **An hourly fee** whereby the EV driver pays a specified rate on an hourly basis for charging. Hourly fees can be prorated when electricity charging capacity is shared among users; for example, \$1.50/hour when accessing full capacity; \$0.75/hour when sharing capacity with one other vehicle, and so on.
- **An energy (or volumetric) fee.** In this case, residents are charged according to the kilowatt-hour of electricity they use (e.g., \$0.10/kWh).

Question: Will the building owners earn carbon credits for installing charging infrastructure?

Answer: Only in British Columbia will building owners receive carbon credits. Elsewhere the credits are granted to the network operator.