



GUIDE TO

EV Charger Installation for Multi-Residential Buildings



2023

Guide to EV Charger Installation for Multi-Residential Buildings

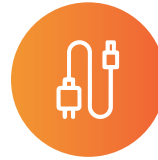
By 2035, the Government of Canada will require 100% of car and passenger truck sales to be zero-emission. Currently, 5% of Ontarians own either a fully electric or plug-in hybrid electric vehicle; however, nearly 50% of Ontarians are actively considering the purchase of one.* As more electric vehicles (EVs) are introduced into the market, drivers will look for a reliable network of charging options that are convenient to find and use within their daily routine. The availability and reliability of at-home charging is a critical part of EV infrastructure.

Drivers who reside in a single-family dwelling, in most cases – a detached home, may opt to install a charger in their home to support their vehicle's charging needs. EV drivers residing in multi-family dwellings such as an apartment complex or condominium, are faced with a more complex process to install such a device, both from a technical and logistical perspective.

Whether in single or multi-family dwellings, it is a requirement to obtain a notification (permit) from the ESA.

The following guide will share best practices to assist property owners and managers, condo boards and other parties involved in the installation of EV Charging Systems (EVCS) in a multi-residential building.

Electric Vehicle Charging System Categories



Level 1

This is a charger that uses a standard 120 Volt household outlet. It's the slowest speed of charging for an electric vehicle. Not an ideal system to be used in a multi-residential building.



Level 2

Level 2 charging stations have about the same requirements as a large household appliance like a stove or dryer (240 Volts/ 30 Amps) and offer a faster charging time than Level 1. Level 2 chargers can charge an EV in 6-14 hours (2-4 hours for a plug-in hybrid vehicle).



Level 3

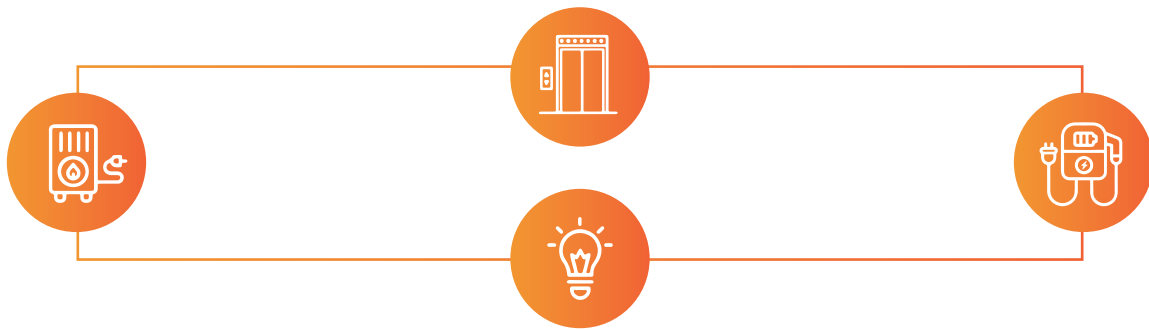
Level 3 charging stations are designed for commercial use and can charge an EV in 1-4 hours (15 minutes for a plug-in hybrid vehicle). These chargers provide DC power directly to the vehicle.

* Electrical Safety Authority Consumer Research – January 2023

Establish a plan for installation

From an electrical perspective, remember that your building is unique. Every structure has its own unique specifications and infrastructural set up, and different energy demands. There is no one-size-fits-all approach to the installation of EVCS.

Electrical amenities throughout your building draw varying amounts of power and therefore, any plans to install additional amenities, including EVCS, must take into account the overall system.



Get Your Building Future Ready

As you consider EVCS installation and needs for your building, it is important to consider what the future requirements might be for your tenants and for your electrical capacity. While today you may only have a handful of owners or tenants who have EVs that need to be charged at home, in five years or ten years that number may triple or quadruple.

You should plan for the future state. This does not mean that you need to install the EVCS for that capacity currently but establish a plan that considers what capacity you will need.

Assessing the requirements of your building:

- 1 How do EVCS fit within the existing building electrical infrastructure?**
- 2 Can your current electrical system support your future EVCS needs?**
- 3 Have you called the utility to determine your load capacity? They should be involved in your planning.**
- 4 Are there other electrical issues that need to be addressed prior to installing ECVS?**

ESTABLISH A PLAN FOR INSTALLATION

Consider Your Residents

Unlike EV drivers residing in a single-family dwelling, your electrical capacity might not allow for every tenant or owner to request and receive an EV charger at their parking spot.

The reality is your building has finite electrical capacity. Evaluating the benefits of an Energy Management System (EMS) could help to stagger the usage and the load to ensure all needs are met. An EMS is a system that helps manage the charging of multiple EVs at once, in order to optimize the use of available energy. The primary goal of an EMS is to balance the charging needs of all EVs plugged in, factoring in variables such as electrical capacity available, the charge level of individual vehicles and more.

Location, Location, Location

You will want to consider the factors involved in the location of your EVCS. The equipment you choose will need to be suitable for the environment and the distance from distribution.

- If you are installing outdoors, make sure the EVCS is rated for outdoor use.
- As you get further away from your distribution point, you may have to put in multiple panels to support the EVCS.
- Protect the EVCS from damage from individuals, vehicles or other equipment.

Price for Charging

There are several models to charge for EV charging that you should consider, including:

- **Donating** – or distributing the cost among the tenants or owners
- **Individual metering** – there are installation requirements to address with this option
- **Point-of-sale charging** – meaning the tenant or owner needs to input a credit card to pay for the charging

Direction for Owners and Boards

On May 1, 2018, changes to the regulations under the Condominium Act, 1998, established a new process for obtaining approval to install electric vehicle charging systems (EVCSs) in condominium buildings. These new provisions set out the process for condominium corporations to obtain approval to install EVCSs, and set out the process for an owner to request and obtain approval to install an EVCS.

The Condominium Authority of Ontario has prepared a [step-by-step guide](#) for owners and boards which outlines the steps required to install an EVCS, as well as templates to assist owners in applying for the installation of an EVCS, and to assist condominium boards in responding to applications.

<https://www.condoauthorityontario.ca/resources/>

Communicate with Your Utility

Your utility will need to provide an assessment on your capacity and your load usage. They will be able to provide the building's historic load data (1 year of peak usage). This will help to determine how much EVCS your building can handle. You will also be able to determine if you need a service upgrade at this point.

When you engage with a [Licensed Electrical Contractor](#), they can help you to work with the utility to determine next steps.

Installation by a Licensed Electrical Contractor & ESA Permit Requirements

Installing an EVCS can be a big undertaking. Factors including the age of the building, existing electrical systems, electrical load limitations and more, can add layers of complexity.

Hiring a Licensed Electrical Contractor is your best course of action.



Here are some tips to help ensure you're hiring a Licensed Electrical Contractor:

- Only Licensed Electrical Contractors can provide you with an ECRA/ESA licence number that proves they can operate their electrical contracting business in Ontario. This licence number should appear on their vehicles, business cards and estimates. Ask to see it.
- Licensed Electrical Contractors must obtain a notification from ESA to perform the work, and will be able to provide you with documentation (Certificate of Acceptance) from ESA once the work is complete, for your records. Keep this for insurance purposes.

Electrical work is dangerous and can put you and other residents at risk.

All Licensed Electrical Contractors:



Are required to be fully insured



Will arrange for notifications (i.e. permits) to the ESA



Are qualified to perform the type of electrical work you need



Offer an ESA Certificate of Acceptance once the work has passed an ESA review



Can provide references

Licensed Electrical Contractors will also be your best resource to assess the unique factors that might affect your project and whether other work, including electrical upgrades, are required before installation of an EVCS.

INSTALLATION BY A LICENSED ELECTRICAL CONTRACTOR & ESA PERMIT REQUIREMENTS

Choosing a Trusted Vendor

There are many emerging EVCS vendors to choose from, but you want to make sure that they are approaching this highly complex project in a safe manner.

If you are hiring a company to install an EVCS Ontario it must be a Licensed Electrical Contractor who is filing an ESA permit to ensure the installation is done safely.

Find a Licensed Electrical Contractor here: www.esasafe.com/contractor.

Here are a few questions to consider to ensure that you are choosing the best vendor:

- Are they transparent in identifying potential issues with installation?
- Are they transparent about their equipment sourcing, its safety certification and other considerations, including their Energy Management System of choice?
- Are they hiring subcontractors to complete the installation?
- Is the installation being done by a Licensed Electrical Contractor with an ESA permit?

Purchasing Canadian-Certified EVCS

An EVCS must carry the official mark or label of a recognized certification or evaluation agency. Before an electrical product or piece of electrical equipment is used, sold, displayed or advertised for sale in Ontario, it needs to be approved by an accredited certification or evaluation agency. This indicates that the product has been independently assessed for safety and is therefore suitable for use.



These are the most common, but you can find a full list of the [recognized approval marks here](#).

Be cautious when purchasing any EVCS equipment from online marketplaces or any suspicious source. Although you may find cheaper prices, un-certified EVCS equipment can be dangerous. These may compromise other electrical systems in your building and can damage the EVs using them.

ESAsafe.com/approvalmarks

Developing a Regular Electrical Maintenance and Repair Plan

According to a 2017 Federation of Rental-Housing Providers of Ontario (FRPO) report, 85 per cent of purpose-built rentals in Ontario are more than 35 years old. As buildings age, having a maintenance plan in place becomes increasingly important. Buildings naturally deteriorate, as do critical systems, such as electrical, plumbing and HVAC.

There are demands on your building that cannot be overlooked, and these ongoing electrical demands must be met before you install new technology like EVCS. These demands will only increase in the future, as the country moves away from fossil fuels in favour of electric.

As your property ages, regular electrical maintenance and repair are essential to keep up with these demands. This ensures that everything is working as safely and efficiently as residents expect. If your building was built more than 10 years ago, consider the systems in place and the implications for EVCS. What regular maintenance plans are established for your electrical systems? Are there structural considerations?

Learn more about creating a regular maintenance and repair plan at www.esasafe.com/aging.



Continuous Safety Services program

ESA's Continuous Safety Services (CSS) program offers services designed to increase electrical safety and compliance in facilities and support the requirements of the Ontario Electrical Safety Code (Code).

The program offers:



Facility Review:

An ESA electrical inspector will conduct a visual inspection of your electrical system.



Periodic Inspections:

The CSS program offers regular inspections of electrical work in conjunction with maintenance activities. You will receive detailed inspection reports, which identify and prioritize electrical concerns (defects) that require action.



Code Advice & Training:

Members of the CSS program receive information and guidance on electrical safety and Code issues from a dedicated electrical inspector backed by a team of technical experts. Members also receive tailored recommendations on general and technical, electrical training workshops.

For further information on the CSS program or to apply to become a member of the program, please call 1-877-854-0079 or email at CSS.ContactUs@electricalsafety.on.ca