

Calgary



# Charge YYC

MULTI-RESIDENTIAL PILOT PROGRAM APPLICATION GUIDE



# Table of Contents

- INTRODUCTION ..... 1
- EV CHARGING 101 .....2
- WHY IS THE CITY FOCUSING ON INSTALLING EV CHARGERS  
IN MULTI-RESIDENTIAL PROPERTIES? .....5
- WHAT IS A MULTI-RESIDENTIAL PROPERTY? .....6
- WHAT DOES IT MEAN TO HAVE A SHARED ELECTRICAL SERVICE? .....7
- TIPS ON PARTICIPATING IN CHARGEYYC ..... 10
- OPERATIONS AND MAINTENANCE CONSIDERATIONS .....12
- SELECTING A QUALIFIED PROFESSIONAL FOR YOUR WORK .....13
- GETTING PERMISSION FOR CHARGING INSTALLATION ..... 14
- ADDITIONAL RESOURCES ..... 15
  
- APPENDIX: EV CHARGING ROAD MAP ..... 16



# Introduction

Transportation is one of our main sources of air pollution and greenhouse gas (GHG) emissions. In Calgary, transportation makes up approximately 33 per cent of our annual GHG emissions. To meet the goals of the Calgary Climate Strategy, we need to make it easier for more Calgarians to walk, wheel, or take transit instead of driving. But for people who still need to or choose to drive, we need more car trips be completed using vehicles with low or no tailpipe emissions. Electric vehicles (EVs) are the most widely available option for zero tailpipe-emission vehicles today.

The ChargeYYC – Multi-residential Pilot program (the “Program”) provides funding to Calgarians, living in condos, apartments, townhouses, rowhouses, and other multi-residential properties, to install EV chargers in their buildings. ChargeYYC is part of The City of Calgary’s ongoing commitment to prepare for the future of transportation and reduce greenhouse gas emissions in Calgary.

This guide is intended to be a supplementary resource for applicants to the ChargeYYC – Multi-residential Pilot program. This guide:

- Contains background information on electric vehicle (EV) charging infrastructure in a multi-residential properties; and
- Helps identify questions for applicants to ask the qualified professional completing their EV Charging Road Map

## DISCLAIMER

Please note that this guide is not meant to provide specific technical advice for any property. ChargeYYC applicants are recommended to consult with qualified professionals to ensure that any retrofits to their property are completed in a technically feasible and safe way that complies with all applicable laws, bylaws, orders, ordinances, standards, codes and rules, requirements, licenses and permits of all lawful authorities, manufacturer’s specifications; and, if applicable, the electric authority having jurisdiction.

The City of Calgary (“The City”) takes no liability for claims, costs for injury or death of any person, damage to or destruction of property and all economic loss suffered by any person arising from or occurring by reason of the Program, receipt of a rebate(s) or actual or alleged preparation or installation or use of charging infrastructure including any actions or omissions by third-party consultants or contractors in the preparation of EV Charging Road Maps.

EV technology is evolving quickly and best practices for EV charging installation may change over time. The information in this document is considered current as of the time of publication, in September 2024. Industry best practices may change in the future.



# EV Charging 101

## TYPES OF EVS

The term “electric vehicles” usually covers two different types of cars, both of which plug into a wall outlet or use an EV charger:

Battery electric vehicles (BEVs), which use an electric battery pack instead of a fuel like gasoline or diesel to power the car’s electric motor. In a BEV, the electric motor replaces the internal combustion engine (ICE) that powers conventional cars.

Plug-in hybrid electric vehicles (PHEVs), which have both systems: a battery pack and electric motor as well as an ICE. A PHEV typically runs on electric power until the battery is depleted. If the battery is depleted, the car switches over to its ICE.



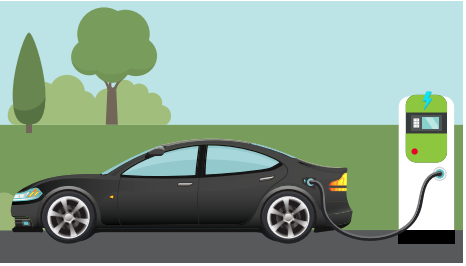
BEVs tend to have more battery range out of the two since PHEVs contain two different systems of propulsion. However, PHEVs often have more overall range because they can switch to running on gasoline or diesel when their battery is depleted.

## LEVELS OF CHARGING

When talking about EV charging for both BEVs and PHEVs, you’ll often hear people refer to levels. Each of these types of charging has different pros, cons, and best applications. We have summarized these in the table below to help you start conversations with your qualified professional about the best solution for your property.

Please note that the type of charging that works best for your multi-residential property is dependent on your specific goals and your residents’ habits. Data shows that most Calgarians drive less than 35km per day on average and a [\*study of the habits of 129 Calgary-area EV owners completed by the University of Calgary\*](#) using data from ENMAX found that 29 per cent of the EVs from the study could have their daily energy needs met entirely with Level 1 charging. Meanwhile, another 53 per cent of drivers’ needs could be met by Level 1 chargers if supplemented by occasional Level 3 charging top-ups a couple of times a year. However, this may not be the case for your multi-residential property if, for example, you have an outdoor parking lot or many of your neighbours drive a lot for work.

Keep in mind that your neighbours (and their habits) can change over time and doing “retrofits of a retrofit” in the future can be more costly over the long run.

	LEVEL 1	LEVEL 2	LEVEL 3
			
WHAT IS IT?	A standard 120V wall outlet (almost all EV models today come with an adapter or “Level 1 charger” that allows you to plug directly into a 120V outlet).  Also known as a trickle charger.	Likely the first image that comes to mind when you think of the term “EV charger,” this usually looks like a box on a wall or other vertical surface that has a tube-like connector attached to it.	An industrial-type EV charger that usually looks like a tall electrical box on the ground with a tube-like connector attached to it.  Also known as a fast charger.
TYPICAL RANGE ADDED PER HOUR OF CHARGING (may vary depending on voltage)	3-8 km	20-50 km	Up to maximum driving range of vehicle
COSTS	\$	\$\$	\$\$\$
PROS	In many cases, home parking stalls may already have outlets/Level 1 chargers beside them for block heating  Cheapest solution	Most common solution for charging in multi-residential properties  Most EV load management equipment, networking solutions, etc. are designed for Level 2 chargers	Fastest way to top up your EV
CONS	Doesn’t provide much of a charge in Calgary winters if parking is located outdoors  Since it’s very slow, it may not be fast enough to charge a vehicle that you drive a lot daily	More expensive than a Level 1 outlet  Still typically requires several hours to bring a vehicle to 100% charge	Can degrade your battery more quickly  Some older BEVs and some PHEVs may not be able to charge using Level 3 chargers  Uses direct current and requires significant voltage to charge your vehicle
BEST FOR	Home charging (especially for people who typically drive short distances)	Home charging, public charging in places where you’ll spend a couple of hours	Public charging in places you’ll stop for a short time (e.g. highway rest stops)

## EV READY STALLS

You may also hear the term EV Ready. This refers to a parking stall that has all the preceding electrical infrastructure in place (e.g. panel upgrades, conduit, wiring, etc.) to easily connect to Level 2 EV charger in the future. They usually end in a conduit box or a 240V outlet. Though you may not be able to charge your EV today in an EV Ready stall (if it doesn't end in an outlet), EV Ready stalls are still an important tool for new developments that helps to significantly minimize the costs of retrofits for future residents.

Please note that EV Ready stalls are not eligible as a solution that can be recommended in Phase 1 or the program or installed in Phase 2 to receive a rebate through ChargeYYC.



## ALL ABOUT LOAD MANAGEMENT

A home has limits on how much electrical load can be added to the existing electrical service to a home. Adding a new electrical load – whether that be a new appliance or an EV charger - can be too demanding on your existing electrical service. One option to prevent overloading your home's electrical service without having to upgrade your panel or service is to add an energy management system (EMS) for the purposes of load management.

An energy management system is a means used to control loads through the process of connecting, disconnecting, increasing, or reducing electric power to electrical loads. It may consist of any of the following: a monitor(s), communications equipment, a controller(s), a timer(s), and other applicable device(s).

An EMS makes sure the electricity in your home is shared among the different appliances. Managing the electricity prevents electrical appliances from using too much electricity at once. For example, with an EMS, an EV plugged into a charger might stop or slow down its charging when an electric stove is on. Instead of both items using electricity at the same time, all or most of the power used to charge the car can instead power the electric stove until you are done cooking.

An electric vehicle energy management system (EVEMS) is an EMS specifically designed to interface with EV chargers in your home. Having an EVEMS installed along with EV chargers on your multi-residential property can save you money during installation by limiting the need for additional service upgrades. Many EVEMS solutions are networked and come with apps and other monitoring equipment for ease of use. Note that the EVEMS solutions on the market today are typically only compatible with Level 2 chargers.

Another option to prevent overloading of your electrical system is called load switching. Load switching is the method of sharing an electrical circuit between two pieces of equipment, so that only one piece of equipment is permitted to operate at a time. This approach is more compatible with Level 1 charging though it can be used with Level 2 charging. If using load switching with EV charging, you have to be mindful when using the other device on the same circuit to ensure that your EV still has an opportunity to get a charge before your next trip.



## Why is The City focusing on installing EV chargers in Multi-residential properties?

One of the main hesitations we hear from Calgarians who want to get EVs is lack of access to convenient charging – especially at their homes. This makes sense – for most Calgarians who use their car for commuting, their car spends most of the day in its designated parking spot. Therefore, that spot is a great opportunity for charging their EV. This is supported by data from around the world that shows that most EV owners prefer to charge their EV at home.<sup>1</sup>

According to the most recent census, 38 per cent of all occupied dwellings in Calgary are in multi-residential properties.<sup>2</sup> Multi-residential properties pose unique challenges when it comes to installing EV charging infrastructure compared to single detached dwellings or duplexes. In general, it's more technically complicated to install charging infrastructure in a parkade (which may be a surface lot or an underground structure) and as a result, significantly more expensive. Since there can be many different owners and decision-makers on multi-residential properties, it is also administratively more difficult to get this infrastructure in place. While someone in a detached home may decide one day to install an EV charger in their house's garage and get started immediately, EV owners living on multi-residential properties may need permission from multiple people to proceed.

Because of these complexities, we want support Calgarians living in multi-residential properties through this pilot program. We also want to learn from the experiences of Calgarians participating in this program to help inform City policies related to public charging and EV charging at home in the future.

<sup>1</sup> Electric Vehicle Charging Infrastructure Costing Study (Calgary and Edmonton), AES Engineering, 2022.

<sup>2</sup> 2021 Census of Population, Statistics Canada.



# What is a Multi-residential Property?

Multi-family residential properties are eligible for rebates through ChargeYYC. A multi-family residential property (a “Property”) is a private property that contains multiple residential units. The units on a Property may be individually owned, with common property being operated by a condominium corporation (also referred to as a purpose-built rental or apartment). Many Properties consist of a single detached building with multiple units inside it. However, some Properties may have multiple detached buildings (each of which may contain several units) that share the same street address but different building and unit numbers.

To qualify for the Charge YYC – Multi-residential Pilot, a complex must:

- Have 3 or more residential units;
- Be fully constructed at the time of application into the Program; and
- Have shared electrical services (commonly known as having a meter stack or a gang meter base).

## WHO’S ELIGIBLE FOR CHARGE YYC?

Only Properties with shared electrical service (identified by a gang meter base or meter stacks) are eligible for the ChargeYYC – Multi-residential Pilot. Multi-residential properties with fee simple electrical service are NOT eligible.





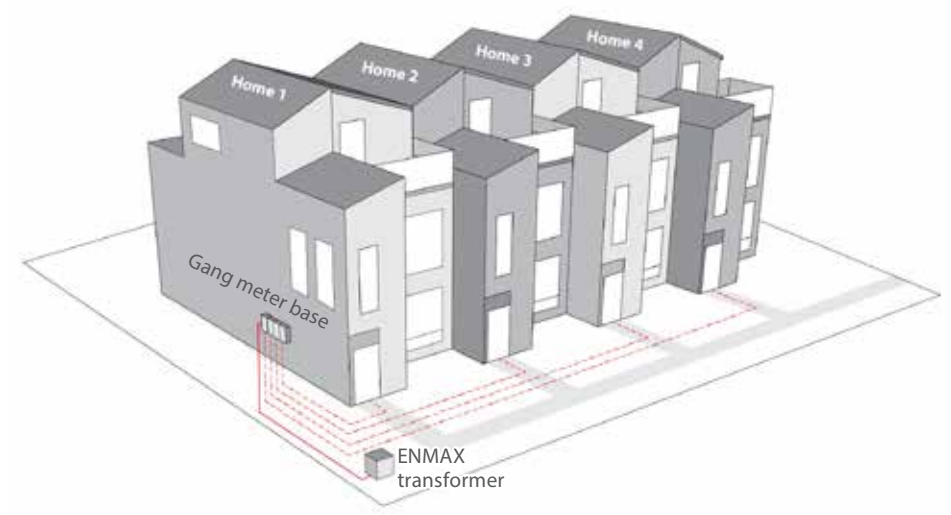
# What does it mean to have a multi-meter socket or shared electrical service?

Many townhouses, row houses and condominiums have electrical services that are shared between all units and have limited spare electrical capacity. Any additional plans for electrification must be shared with the other people who live there.

Properties with shared services can be identified by their electrical metering. They will have a gang meter base or meter stacks.

A gang meter base service is when a single electrical service is run directly from the ENMAX transformer to the shared gang meter base. The service is then split, and a cable takes electricity from the gang meter base to each home. The gang meter base can only provide a calculated amount of electricity to each home based on the load capacity determined at the design phase. Based on this design calculation and service, future electrical capacity is often limited. A gang meter looks like several individual electric meters attached to each other. It is usually located on the side of a multi-residential building.

The diagram below illustrates shared service with a gang meter base service.

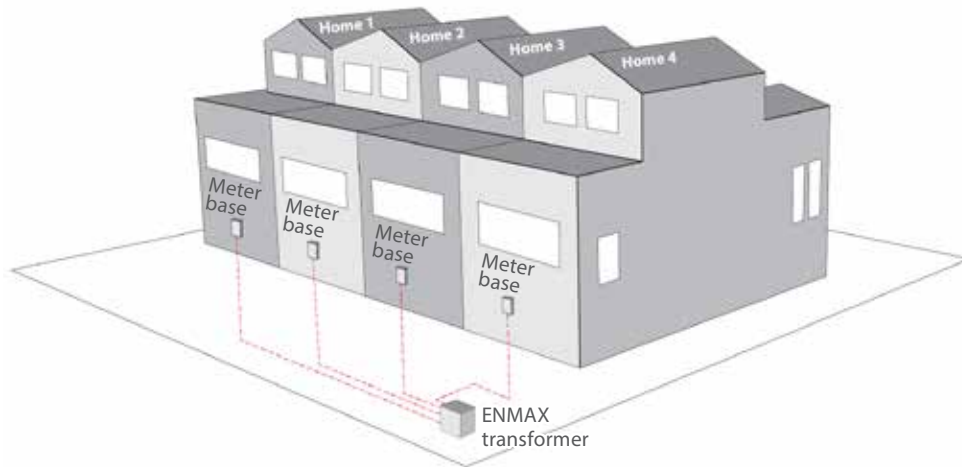


On a larger multi-residential property, the meters for a shared service may be in the form of a meter stack. Meter stacks look like several individual electrical meters stacked on top of each other. Meter stacks are often found inside electrical rooms.

A fee simple service is when the electrical service connects directly from the ENMAX transformer to each home. This type of service is not limited with regards to future electrical capacity because each home is connected directly to the ENMAX transformer. The diagram on this page illustrates a fee simple service.

If you have a fee simple service, your meter will not be attached to any other meter and is most likely located on the outside of your individual unit, even if you live in a townhouse or rowhouse.

The diagram below illustrates a rowhouse with a fee simple electrical service.





A gang meter base on the side of a townhouse.



A single meter on the side of a house with fee simple service.



Meter stacks in an electrical room of a multi-residential building.



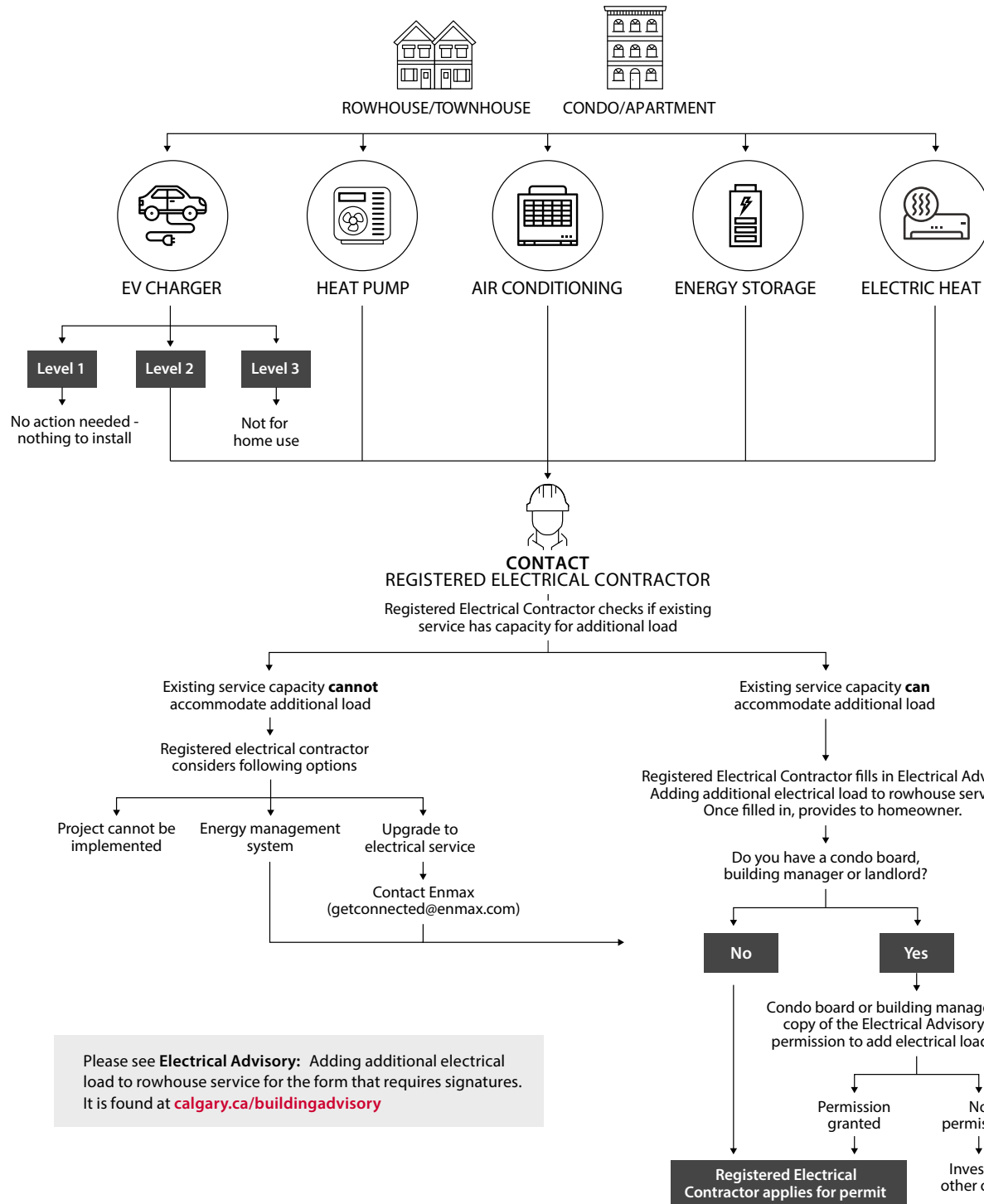
# Tips on participating in ChargeYYC

The ChargeYYC – Multi-residential Pilot has limited funding and specific criteria for applicants. We recommend that you review the following tips to ensure the best chance of success for your application:

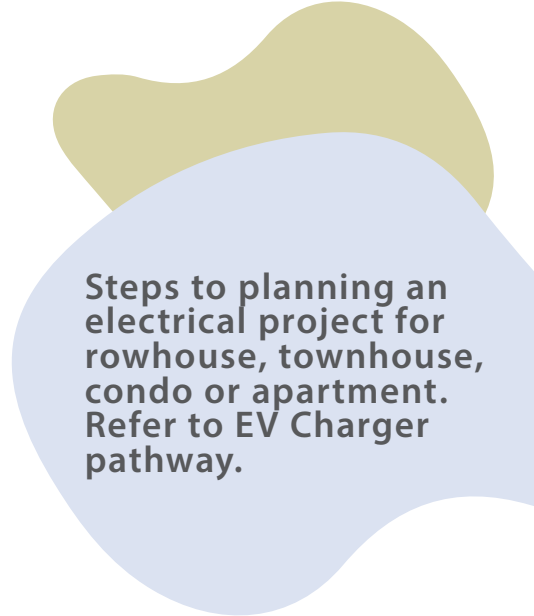
Review the following tips to ensure the best chance of success for your application:

- Program Terms and Conditions, timelines, and other details are subject to changes. Stay up to date on program launch dates and other updates by visiting the [program webpage](#) regularly and by signing up to The City's Electric Mobility newsletter from there.
- Program application and participation information will be made public on the program webpage in advance of any application intakes. Check your eligibility in advance and find out all the information you'll require for when it's time to submit.
- Multi-residential properties often have multiple owners and designated decision makers. To participate in this program, **you must have permission from your property owner(s)**. If you would like to participate, start having discussions with building decision makers, such as the owner or condominium corporation, about installing EV chargers and their implications on your property.
- When working with a qualified professional to install EV charging equipment at your property through ChargeYYC – Multi-residential Pilot or otherwise, ask your professional many questions to best understand the options available to you. This guide is intended to help you generate some questions that may be worthwhile discussing prior to commencing any work.
- If you are planning to install EV charging equipment as a result of participating in ChargeYYC – Multi-residential Pilot, become familiar with the requirements for City permits and inspections (for [homeowners](#) and for [contractors](#)) in advance. Additionally, refer to the following graphic for steps to implement and electrical project on your multi-residential property.

# ELECTRIFICATION PROJECT



Please see **Electrical Advisory: Adding additional electrical load to rowhouse service** for the form that requires signatures. It is found at [calgary.ca/buildingadvisory](http://calgary.ca/buildingadvisory)



Steps to planning an electrical project for rowhouse, townhouse, condo or apartment. Refer to EV Charger pathway.



# Operations and Maintenance Considerations

It's important to think not only about what is needed to get EV chargers installed but also what will happen to them after they are installed. This means planning early how they will be operated and maintained over time.

Like any technology, EV chargers can sometimes fail or malfunction. They can also be misused. That's why it may be worthwhile to think about a process for what should happen if the EV charger(s) have issues and a policy for enforcing appropriate use of the chargers on your property.

There are also things to consider about how these chargers will be used day to day. Many Level 2 (and in some cases, Level 1) EV chargers today offer networking solutions that allow you to operate them using an app, enable billing back to specific residents when they use chargers, allow chargers to communicate with each other to manage loads, and more. Having a plan for how your property will operate the chargers will help ensure that the right equipment and software is installed with your chargers on Day 1.

When working with your qualified professional, make sure to ask questions about the best solution for your multi-residential property from the perspective of operations and maintenance. You can use some of the following questions to inform your discussion and decisions:

- What happens if a charger stops working? Is there a contingency in place for residents who may be relying on the access to EV charging?
- How will appropriate charger use be enforced?
  - If the chargers are not located in assigned stalls, what happens if a non-EV parks in the stall? What happens if someone leaves their EV in that charging stall for days and doesn't let others get access to the stall?
  - With Level 1 chargers, if the chargers are not locked (i.e. don't require a key or app login to unlock and use), what happens if someone is using them for things other than EV charging?
- How will energy use for charging be billed back to the appropriate residents? Will the property owner(s) cover the cost of EV charging for residents?



# Selecting a Qualified Professional for your work

To participate in ChargeYYC – Multi-residential Pilot, you will need to retain a qualified professional to complete the work. For Phase 1 of the Program, professionals completing an EV Charging Road Map for your property must actively fall into one of the following categories and be in good standing with their professional association:

- A Professional Engineer licensed to practice in the Province of Alberta; or
- A Master Electrician certified to practice in the Province of Alberta.

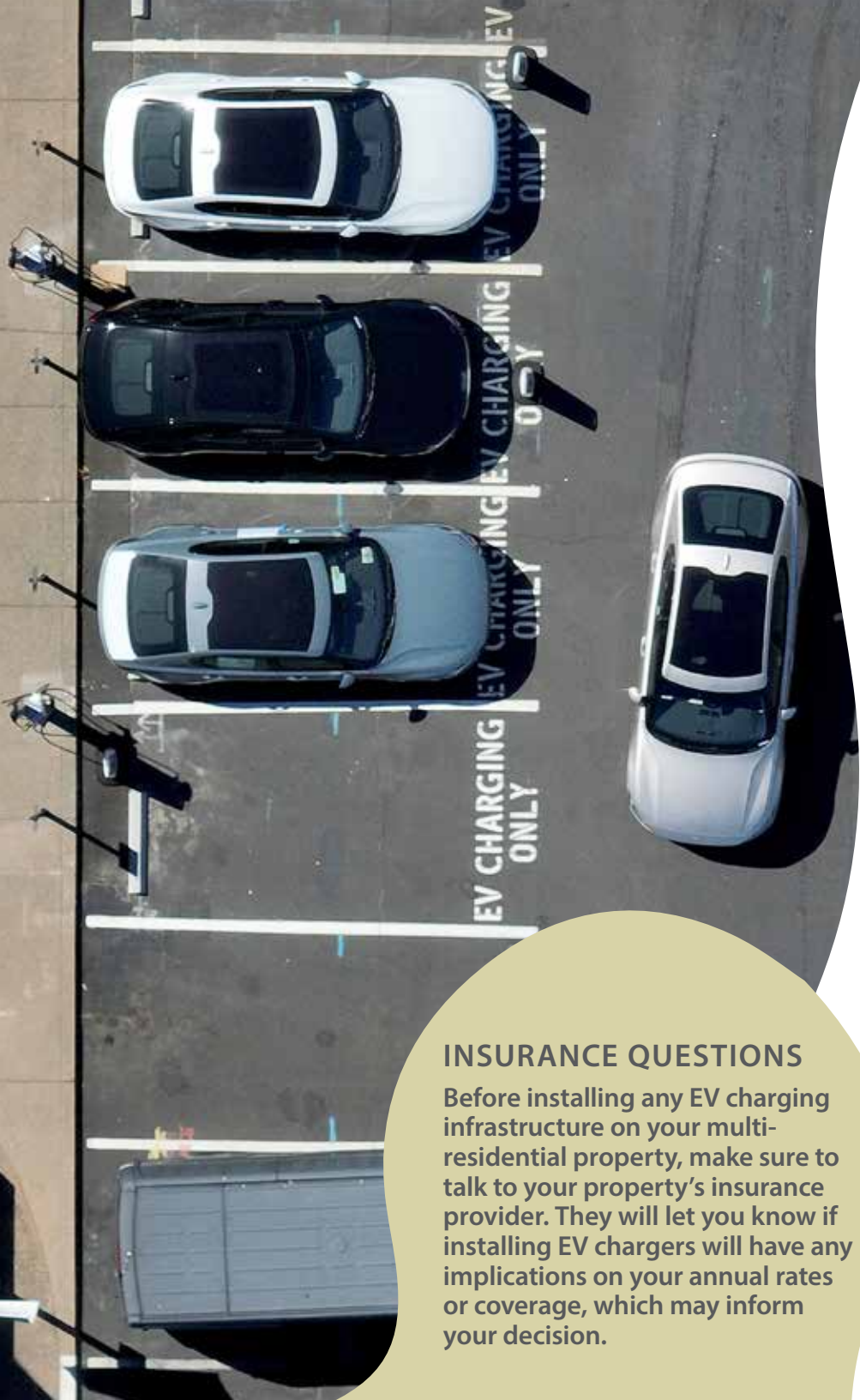
To select the best consultant or contractor for your project, we recommend making a list of questions to ask them in advance of making your decision.

You may also want to ask potential contractors or consultants for examples of past work (to see if they have experience with EV charging and multi-residential electrical infrastructure) and for references from past clients.

We recommend talking to and/or getting a minimum of 3 quotes for the work to allow you to compare approaches and to ensure that you are getting the services you are looking for at the best price.

Below are some additional resources to help you make your decision:

- Review [\*The City's tips on hiring a contractor\*](#)
- Learn more about [\*hiring engineers\*](#) from the Association of Professional Engineers and Geoscientists of Alberta (APEGA)
- Look up a registered professional's [\*status with APEGA\*](#) (if they are a professional engineer or licensee) or with the [\*Safety Codes Council\*](#) (if they are a Master Electrician)

An aerial photograph of a parking lot. On the left side, there are four parking spaces, each with a white electric vehicle charging station. The ground is marked with 'EV CHARGING ONLY' in white letters. A white car is parked in the space between the second and third charging stations. The rest of the parking lot is empty, and a grey dumpster is visible in the bottom left corner.

# Getting Permission for Charging Installation

EVs are growing in popularity across Canada. In Calgary, we continue to see more EVs on our roads each year. Additionally, in 2023, the Government of Canada introduced [Canada's Electric Vehicle Availability Standard](#), which sets regulations for auto manufacturers and importers to meet annual zero-emission vehicle regulated sales targets. The targets begin for the 2026 model year, with a requirement that at least 20 percent of new light-duty vehicles offered for sale in that year be zero-emissions vehicles. The requirements increase annually to 60 percent by 2030 and 100 percent by 2035.

Although not many residents on your multi-residential property may own an EV today, that may not be the case in the near future. As more Calgarians purchase EVs, you may hear more of your neighbours asking about EV charging.

Thinking about access to EV charging on your multi-residential property in a holistic way is important. In the short term, it might be cheaper to only install EV chargers one at a time, when one of your neighbours specifically requests one. At the start, the process may be simple because your property may have the spare electrical capacity to accommodate a couple of EV chargers. However, this can lead to costly upgrades down the line for the EV charger(s) that triggers the need for a service upgrade to install more chargers. It can also lead to feelings of unfairness among residents if the property changes its policy for installing EV chargers for later adopters. ChargeYYC – Multi-residential Pilot is designed to support a holistic approach to looking at long-term access to EV charging on your multi-residential property.

It's also important to remember that on many multi-residential properties like condos, parking lots and parkades are often designated as common spaces. Therefore, to participate in ChargeYYC – Multi-residential Pilot, you must have the permission of the property owner(s) and/or condominium corporation.

If you are interested in participating in the ChargeYYC – Multi-residential Pilot, consider making a case to your property owner(s) or condominium corporation early to ensure that you can qualify into the program while funding is available. You may wish to use some of the information from this Application Guide to help inform your discussion.

## INSURANCE QUESTIONS

Before installing any EV charging infrastructure on your multi-residential property, make sure to talk to your property's insurance provider. They will let you know if installing EV chargers will have any implications on your annual rates or coverage, which may inform your decision.





## Additional Resources

This document is not a comprehensive resource for everything related to EV charging. If you are looking for additional information, below is a list of resources that may be helpful:

[ENMAX Power's Guide to Electric Vehicles & Charging Stations](#)

[Pembina Institute's Guide to Installing EV Infrastructure in Alberta's Multi-Unit Residential Buildings](#)



# Appendix: EV Charging Road Map

## EV CHARGING ROAD MAP REQUIREMENTS

The EV Charging Road Map for a multi-family residential property participating in the ChargeYYC – Multi-residential Pilot program (the “Program”) must be completed by a qualified professional. This document contains all that must be included in an EV Charging Road Map for the final document to be eligible for the rebate.

Note that only one EV Charging Road Map is eligible for a rebate per each Multi-residential Property (the “Property”). In many cases, a Property will be made up of a single multi-residential building. However, in some cases, multiple standalone multi-residential buildings can make up a single Property (i.e. multiple buildings that share the same street address and/or are all part of the same condominium but each unit has different unit numbers).

Please refer to the Program Terms and Conditions for full eligibility details.

## WHAT IS AN EV CHARGING ROAD MAP?

An EV Charging Road Map is a customized plan for a specific Property that recommends a solution for having electric vehicle (EV) charging in the Property. The professional costs associated with developing the EV Charging Road Map are eligible for a rebate through the Program.

## WHO CAN COMPLETE AN EV CHARGING ROAD MAP?

To be eligible for the Program rebate, the EV Charging Road Map must be completed by a qualified professional meeting the following qualifications:

- A Professional Engineer licensed to practice in the Province of Alberta; or
- A Master Electrician certified to practice in the Province of Alberta.

## WHAT QUALIFIES AS A POSSIBLE SOLUTION THAT CAN BE PART OF THE EV CHARGING ROAD MAP?

The following can all be part of the solution(s) recommended by an EV Charging Road Map:

- Level 1 chargers/120V or 240V outlets;
- Level 2 chargers; and/or
- Electric vehicle energy management systems (EVEMS).

## WHAT SHOULD BE INCLUDED IN AN EV CHARGING ROAD MAP?

A completed EV Charging Road Map should have the following five sections.

NOTE: Your EV Charging Road Map MUST be organized using the five section headings and bullet point sub-headings below.

### 1. Property Information

- Property address
- Type of Property: condominium or purpose-built rental
- Number of residential units
- Type of parkade: outdoor and/or indoor
- Number of parking stalls by type: residential assigned, residential unassigned, visitor, commercial
  - Please indicate which are outdoor and which are indoor
- Number of existing EV Chargers by type: Level 1, Level 2
- Property Owner/Condominium Corporation contact information
- If applicable: Property Management contact information
- Contractor/consultant contact information, qualifications, and signature (physical or electronic)

### 2. Resident Survey Summary + Needs Assessment

The qualified professional completing the study must work with the Property owner(s)/condominium corporation and Property residents to develop and distribute a short survey to understand the future needs of the Property. Each unit should be encouraged to submit one survey response and the responses must be summarized.

The survey questions should be designed to allow the qualified professional to develop response summaries for the following points, which must be included in the final EV Charging Road Map:

- Average number of vehicles/unit in the Property;
- Number of existing EVs among residents in the Property;
- Proportion of units where the resident is the unit owner vs. where the resident is a renter;
- Average number of parking stalls/unit;
- Number of units where residents are considering purchasing an EV (i.e. either a battery electric vehicle or a plug-in hybrid) in the next five years;
- Average daily km's that Property residents drive on a typical day each weekday;
- Average daily km's that Property residents drive on a typical day each weekend;
- Average annual km's that Property residents drive;
- Average number of visitors (who drive) to each unit per month; and
- Average number of hours that visitors use visitor stalls per visit.

### 3. Electrical Capacity

The qualified professional completing the study must determine and report the following:

- Existing electrical main service size in the Property (in kW), calculated as per the current edition of the Canadian Electrical Code.
- Spare electrical capacity in the Property prior to additional EV charging installation (in kW), calculated as per the current edition of the Canadian Electrical Code.

### 4. Recommended 5-Year Solution

The 5-Year Solution should be the recommended immediate EV charging solution for the Property, to meet the anticipated demands for the next 5 years. The recommendation for the 5-Year solution should be developed through conversations with Property owner(s)/the condominium corporation and residents as well as by considering the outputs of the previous sections of the EV Charging Road Map.

For many Properties, the 5-Year Solution may only recommend limited charging infrastructure to meet short-term demands, even if the Property may require a more comprehensive solution in the longer-term future.

This section must include a summary of the Recommended 5-Year Retrofit Solution, specifying:

- How many chargers are recommended, at which stalls, and what types
  - NOTE: Level 1 chargers/120V or 240V outlets and/or Level 2 chargers are eligible to be part of the solution
- The rationale for the recommendation (informed by information gathered through Section 2 of the EV Charging Road Map)
- If the existing service is sufficient for this solution (and why) or the itemized details of the service upgrades that are required
  - NOTE: EVEMS is eligible to be part of the solution
  - NOTE 2: The Qualified Professional is strongly encouraged to talk to ENMAX during the development of the solution to ensure that the proposed solution is feasible, even if it will not be implemented immediately
- How many existing EV chargers will be integrated into the new EV charging system, including load analysis and the effects on the main distribution panel/systems
- Conditions of the existing telecom/network infrastructure and if it can handle the new EV charging equipment
- A high-level cost estimate (in 2024 \$) associated with the permitting, electrical, telecom, and network hardware and infrastructure that is required for this solution
  - NOTE: For solutions including EVEMS, the costs should include all communications equipment, control systems installation, licensing, and permitting required to operate the system
- The specific products that will be compatible with the recommended solution for both chargers and EVEMS (if applicable)
- Estimated charging performance per average EV in the Property post-implementation
  - Include minimum kW and km charged/hour
- Main service spare capacity (in kW) post-implementation of the recommended solution, calculated as per the current edition of the Canadian Electrical Code and consumer's remaining service capacity
- Recommendations for how the Property owner(s) will charge residents for charging and the recommended maintenance schedule and responsibilities.

## 5. Recommended 100% Retrofit Solution

The 100% Retrofit Solution should be the recommended long-term EV charging solution for the Property, that will enable all residents to have access to EV charging. This section is intended to help inform Property owner(s)/condominium corporations what they may want to consider for the future.

Note that this section is not necessary if the Recommended 5-Year Solution is full retrofit of all parking spaces.

This section must include a summary of the Recommended 100% Retrofit Solution, specifying:

- How many chargers are recommended, at which stalls, and what types
  - NOTE: Level 1 chargers/120V or 240V outlets and/or Level 2 chargers are eligible to be part of the solution
- The rationale for the recommendation (informed by information gathered through Section 2 of the EV Charging Road Map)
- If the existing service is sufficient for this solution (and why) or the itemized details of the service upgrades that are required
  - NOTE: EVEMS is eligible to be part of the solution
  - NOTE 2: The Qualified Professional is strongly encouraged to talk to ENMAX during the development of the solution to ensure that the proposed solution is feasible, even if it will not be implemented immediately
- How many existing EV chargers will be integrated into the new EV charging system, including load analysis and the effects on the main distribution panel/systems
- Conditions of the existing telecom/network infrastructure and if it can handle the new EV charging equipment
- A high-level cost estimate (in 2024 \$) associated with the permitting, electrical, telecom, and network hardware and infrastructure that is required for this solution
  - NOTE: For solutions including EVEMS, the costs should include all communications equipment, control systems installation, licensing, and permitting required to operate the system
- The specific products that will be compatible with the recommended solution for both chargers and EVSE (if applicable)

- Estimated charging performance per average EV in the Property post-implementation
  - Include minimum kW and km charged/hour
- Main service spare capacity (in kW) post-implementation of the recommended solution, calculated as per the current edition of the Canadian Electrical Code and consumer's remaining service capacity
- Recommendations for how the Property owner(s) will charge residents for charging and the recommended maintenance schedule and responsibilities.

