



Electric Vehicle Charging Station Guidelines

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The electric vehicle market is growing dramatically and is emerging as the future of transportation. All major auto manufacturers have announced plans to electrify a significant portion of their production over the next 3-5 years. With the increased number of electric vehicles comes the need to provide an EV charging infrastructure in private and public settings that supports the anticipated number of vehicles. Many establishments, particularly national retailers, have already begun to add a limited number of EV charging stations to their sites. It is anticipated that this trend will not only continue but intensify. Unfortunately, current City Ordinances and Building Codes have yet to be updated with specific requirements for EV charging stations.

With this in mind, the City of Rochester Hills has prepared the following guidelines for property owners and developers to use when considering adding EV charging stations to their particular sites. The City has determined it is a best practice to follow the requirements for EV charging stations found within the 2021 International Building Code and the 2017 Standard for Accessible and Usable Facilities. The City promotes the installation and preparation for adding EV charging stations for tenants, customers, staff and others who may use their facility.

Types of EV Charging Stations

To begin it is important to understand some of the terminology associated with EV charging. Currently there are 3 levels of EV charging based on power levels. The higher the level the faster the charging can occur.

- **Level 1** – Level 1 uses a common 120-volt household outlet. It is the slowest way to charge and adds between 3 and 5 miles of range per hour of charging. These are typically located in private homes where vehicle use is for shorter travel distances and charge times can be longer.
- **Level 2** – Level 2 charging is the most widely used level for daily EV charging? EV chargers can be installed at home, workplace, as well as public locations like shopping malls. Level 2 charging can replenish between 12 and 80 miles per hour of charging, depending on the power output of the Level 2 charger.
- **Level 3** – Level 3 is sometimes referred to as DC Fast Charging (DCFC) and is currently the fastest type of charging. These chargers can recharge an EV at a rate of 3 to 20 miles per minute of charging. These units use direct current (DC) versus the alternating current (AC) used by the Level 1 and 2 chargers. The voltage of the DCFC charger is much higher than is available in most residences.



Also important are the 3 options that can be considered when planning for EV charging stations now and in the future.

- **EV-Capable** – Install electrical panel with capacity for a charger and a dedicated branch circuit and continuous raceway conduit from the panel to the EV parking spot.
- **EV-Ready** – Install electrical panel with capacity for a charger and raceway conduit with wiring terminating in a junction box or 240-volt charging outlet.
- **EV-Installed** – Install a minimum number of Level 2 or Level 3 charging stations.

Number of EV Charging Stations

Currently the number of EV charging stations provided is at the discretion of the owner or developer. While there is a cost associated with the EV charging stations, owners and developers should be aware that it is more cost effective to insure homes and multifamily and non-residential projects are at a minimum EV-Ready when completed rather than conduct extensive electrical upgrades when they are installed later. We suggest the developers work with the Planning & Economic Development Department to determine an appropriate number of spaces for their project.

As an example, many Cities have adopted standards where:

- New one- and two-family dwellings with dedicated off-street parking are provided with at least one Level 2 EV-Capable or EV-Ready outlet.
- For multi-family dwellings and non-residential projects, EV charging infrastructure is based on a percentage of total parking spaces (e.g., 5% of the total parking spaces are to be a minimum of Level 2 EV-capable). These can be a combination of Level 2 and Level 3 EV-Capable, EV-Ready, and EV Installed spaces.

Even if specific EV charging stations are not being installed with a new development, the City encourages the installation of necessary conduit and electrical capacity to accommodate the future installation of EV charging stations. Planned conduit shall be shown on the site plan in the proposed locations to ensure conflicts do not arise with its installation.

EV charging station spaces should count towards satisfying the total number of required parking spaces and not be in addition to the minimum number required.

Location of EV Charging Stations

EV charging stations can generally be located anywhere on the site that standard parking spaces may be located, pursuant to zoning regulations. The following additional conditions shall also be applicable:

- When installing EV stations at existing facilities, any of the landscaping that was initially required by the City Ordinance that will be disturbed or removed must be replaced in kind.



- Any new transformers, switchgear or power blocks associated with the EV charging station should be located away from public view and shall be appropriately screened.
- All EV charging stations and associated equipment should be installed a minimum of 10 feet from all existing or planned storm sewers, sanitary sewers and leads, water mains, fire suppression and domestic water service lines.
- The charging station and any ancillary equipment shall not interfere with existing site accessibility including sidewalks, pathways, and crosswalks. They shall be located outside of road sightlines. Further, appropriate parking space dimensions shall be maintained if such equipment is located within the parking area.

Accessibility

The Americans with Disabilities Act (ADA), Architectural Barriers Act (ABA) as well as future code updates will require EV charging stations to be accessible and usable by individuals with disabilities. The U.S. Access Board has prepared a technical assistance document to assist in the design and construction of EV charging stations. This is available on line at <https://www.access-board.gov/files/usab-evse-guide.pdf>.

In general, the requirements include:

- Not less than 5% (but no less than one) of the EV charging stations provided for public or employee use shall be accessible. Spaces at car dealerships, repair shops, etc. used for charging for repair or delivery do not need to comply.
- As EV charging stations are intended to be short term in duration, the accessible space shall not count toward the required number of accessible spaces.
- The accessible space should be a van accessible space that is a minimum of 132 inches in width with an adjoining access aisle that is a minimum of 60 inches in width.
- The accessible space shall be signed with a “use last” sign indicating that the space is accessible, but direct people to use this space only when other charging spaces are occupied or accessibility features are needed.
- A person with disabilities should be able to exit the vehicle, have an accessible route to the EV charging station and then to the charging outlet on the vehicle. As the vehicle is being charged the accessible route should not be obstructed with the charging cable.
- Ground surface on the accessible routes and at the clear ground space at the EV charging stations shall be free of level changes and not slope more than 2%. Grass, curbs, wheel stops, and bollards should generally not be located within the accessible route or clear ground space at the EV charging station unless the accessible route can be fully maintained.
- Operable parts on the EV charging station including card readers should be within the reach ranges of a wheelchair bound individual. The part should be operational with one hand with no tight grasping, pinching, or twisting of the wrist.

Other Considerations

EV parking should be located in “open air” and not located within a structure or under a structure (underground parking) due to safety concerns. If located in or under a structure there are specific additional requirements or amenities that should be considered (i.e. fire blankets).



EV charging station spaces shall be clearly defined onsite. Striping shall be provided, pursuant to Section 138-11.304 of the City's Zoning Ordinance. EV parking spaces should be a separate color to help define the spaces.

EV charging stations shall be identified by an above ground sign that clearly depicts the sign as being an EV charging station space.

Concrete filled steel bollards or other acceptable means of protection as determined appropriate by the City shall be provided around the charging station, power block, and any other ancillary equipment necessary to ensure the charging station is adequately protected from vehicles.

When EV charging stations are being installed at facilities that dispense flammable fuels, liquids or gasses special attention should be taken when locating the EV charging stations. In these locations, a registered electrical engineer should be retained to evaluate the location of the EV charging station with respect to Article 514 of the National Electrical Code for Motor Fuel Dispensing Facilities. Articles 500, 501 and 502 for Classified Hazardous Locations and Article 504 for Intrinsically Safe Systems that should be considered as well.

Approvals

To assure that the installation of EV charging stations meets both City and Building Code requirements an EV Charging Permit will be required.

- For new commercial developments, the location of the EV charging stations will be reviewed by the Planning & Economic Development and other City Department staff as part of the formal site plan review process to insure compliance with all applicable codes and ordinances. Application for site plan review can be made online at [Apply for a PZE Approval](#). A separate EV Charging Permit will also be required.
- Where EV charging stations are being planned for installation at an existing commercial facility, an EV Charging Permit will be required which will include review of the location of the charging stations by the Planning & Economic Development and other City Department staff as well as building and electrical reviews.
- Where EV charging stations are being installed on the interior of a commercial facility an EV Charging Permit will be required which will include review by the building and electrical trade reviewers.
- Where EV chargers are being installed in single family homes, an EV charging permit will be required which will include the electrical trade reviewer.
- Application for applications for EV Charging Permits can be made online at [Apply for a Permit Online](#).



Documentation

For the EV Charging Permit, provide the following that apply:

- A site plan, drawn to scale, showing location of parking spaces, all electrical equipment, conduit runs, and bollards.
- Site plan should also include any underground utilities within the area of the installation.
- Show screening any new transformers, switchgear or power blocks associated with the EV charging station.
- Location of the nearest fire hydrant and if applicable the building FDC.
- Manufacturer's data sheets, electrical requirements, and installation instructions for the type of charges being installed including the location and type of emergency shut off.
- For interior installations, provide a floor plan showing location of EV chargers
- Electrical riser diagram, load calculations, and panel schedule that have been prepared, sealed, and signed by a licensed electrical engineer,