Installation of Electric Vehicle (EV) Charger for Single Family and Multifamily Homes

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This Tip is designed to help guide you through the process of establishing an electric vehicle charging infrastructure for your home. It provides general information on what you need to know before purchasing an electric vehicle, the type of equipment required to support an electric vehicle, and how to apply for a permit to install the vehicle charging station.

Electric Vehicle

An electric vehicle (EV) uses one or more electric motors for propulsion and runs on a rechargeable battery. Electric vehicles can have a positive impact on the environment as they release almost no air pollutants and they have less noise pollution than regular motor vehicles. There is a variety of makes and models for EV currently available on the market. The level of charging required for individual battery modules vary widely depending on the manufacturer of the vehicle. All charging equipment installed in the City of Seattle must be listed by a nationally recognized testing laboratory. Currently, there are several manufacturers producing listed vehicle charging stations.

Car companies and utilities are working together to develop communication capabilities between the cars and the power distribution in the neighborhood to reduce the chance of overloading electrical system. Charging your electric vehicle during off peak hours will further decrease the chance of overloading the neighborhood utility grid. Most charging stations or the vehicle itself will allow for a delayed charging time.

Things to Consider

Before purchasing an electric vehicle, you will need to evaluate the adequacy of the electrical service in your residence. We recommend using a State licensed and bonded electrical contractor to evaluate your electrical system. The Department of Planning and Development (DPD) has developed a preliminary assessment form for EV capacity. This form will assist you in determining if your electrical service panel has enough electrical power to operate the electric vehicle charger safely. The assessment is only to provide a high level determination. For more accurate determination the electrical service should be evaluated by a qualified professional. The assessment form can be found electronically on DPD’s website at: www.seattle.gov/dpd/toolsresources/.

Another factor to consider is the location of where you intend to park the vehicle and the location of your electrical service equipment. Depending on the location of this equipment, installing the vehicle charger may be a simple task or it could add a significant cost to setting up your vehicle charging station. Some manufacturers will be offering to include the cost of this installation in the overall cost of the vehicle. Check with your dealership to determine if they are offering this incentive.

Single Family Residence

For single family residences, depending on your electrical service capacity, it may be a simple matter of installing a vehicle charger in an existing garage near your electrical service panel. However, if your electrical service panel is in a location away from where you intend to charge your vehicle, consideration should be given to the obstructions or complexity of the proposed installation. In some cases the cost of installation could be expensive and should be considered when making the final decision to purchase the electric vehicle.
Multifamily Dwelling

For multi-family residences, there may be physical issues as well as load capacity issues when considering the installation of a charging system. You will need to discuss your options with the owner of the property, condo association, or building management prior to purchasing the electric vehicle. The building owner/condo association has the authority to allow access to the electrical room and parking garage through the common areas of the structure. Be sure to secure this permission prior to making commitments for an electric vehicle if you intend to charge the vehicle at home.

Some of the challenges that you may need to address when installing vehicle charging stations in multi-family dwellings are:

- Does the building service equipment have adequate capacity for the additional power requirements for electric vehicle charging?
- How will the power to the vehicle charging station be supplied? Will the power need to be supplied by your service panel or will the power come from a panel controlled by building management/condo association?
- Does the electrical service room have sufficient space for the additional electrical equipment that will be needed to supply power to the garage? Will some other space in the multi-family structure need to be secured for the vehicle charging equipment?
- How will electrical raceways or cables be routed to the garage from the electrical service room or from the alternative location?
- Do you have designated parking spaces or will management/condo association need to dedicate parking spaces for vehicle charging?

If you have determined that there is enough power, you will need to find out how to intercept the power:

- Will building management provide a feeder from the service?
- Or will you need a subpanel that will provide electric power to an individual parking space and your dwelling unit?

**Permit Requirements**

In general, the person installing the EV charger obtains the required permits. A homeowner of a single family residence may perform their own installation and obtain the permit. However, we recommend the work be done by a state licensed and bonded electrical contractor. Electrical permits may be attained online at [www.seattle.gov/dpd/permits/permittypes/electrical/](http://www.seattle.gov/dpd/permits/permittypes/electrical/) or at the OTC permit counter, 700 5th Avenue, Suite 2000. For permit information, applicants can contact DPD’s over-the-counter permits at (206) 684-8464.

**Electrical Permit**

Electrical permits are required for all electric vehicle charger installations. There are three (3) levels of charge associated with electric vehicles:

- **Level I Charge** – trickle charge overnight (120 volt outlet)
- **Level II Charge** – 4-6 hours to charge (240 volts, 30 amps continuous load)
- **Level III Charge** (fast charger) – capable of providing a full charge in less than 30 minutes (208 volts at 200 amps or 480 volts at 89 amps)

Electrical permits for a Level II Charger (30 amp) require no plan review and may be obtained on-line or over-the-counter at DPD’s Applicant Service Center (ASC). Electrical permits for a Level III Charger require plan review. Level II and III with services and feeders 400 amperage or larger require plan review.

Permit fees will vary depending on the size and complexity of the system. Technical questions may be directed to DPD’s Electrical Technical Support at (206) 684-5383. The following flowcharts will assist you with the permitting process.

**Electrical Inspections**

After obtaining the permit for your project and completing the work, you may call for an inspection. Inspections can be scheduled by calling our 24 hour inspection line at (206) 684-8900 or by submitting an inspection request online at [http://web6.seattle.gov/DPD/InspectionRequest/default.aspx](http://web6.seattle.gov/DPD/InspectionRequest/default.aspx)

**Scheduling an Electrical Inspection**

To request an inspection you will need to have the permit number available. Inspection requests can be scheduled by telephone or on DPD’s public access network (PAN). Inspections are conducted daily Monday through Friday. An inspection scheduled by 7:00 a.m. will normally be conducted the same day. If you wish the inspection to be the following day, schedule the inspection after 7:00 a.m. the day before you wish the inspection to happen.

**LEGAL DISCLAIMER:** This Tip should not be used as a substitute for codes and regulations. The applicant is responsible for compliance with all code and rule requirements, whether or not described in this Tip.
To schedule an inspection by telephone on our interactive 24 hour construction inspection message system (IVR) call (206) 684-8900. Have your permit number available and follow the step by step instructions on the IVR system. In addition to scheduling an inspection on the IVR system, you may also get inspection results and cancel an inspection. You will also be able to leave a voice message with the inspection request. Provide information that the inspector will need or indicate you need to be contacted prior to the inspection. If additional information is not required, a voice message need not be left.

To schedule an inspection on the internet contact DPD's Construction Inspection home page at http://www.seattle.gov/dpd/permits/inspections/. Click on the ‘Request an Inspection’ hyper link to schedule the inspection. All you need is your permit number and the automated system will guide you through the rest. Just follow the step by step instructions to schedule the inspection. You can also get inspection details by following the directions on the ‘Request an Inspection’ page. In the ‘Contact Info’ field you can indicate if you need to be contacted or you may provide additional information the inspector will need before the inspector visits your site. To request a contact you will need to provide your telephone number and give specific contact information, indicating you must be contacted before the inspector visits the site.

When to schedule an Inspection
The type and number of inspections required vary according to the type of work being performed and the permit issued. For example, the electrical permit may require a cover inspection. Generally speaking, before any hole (filled with concrete or dirt), wall, or ceiling is covered an inspection should be conducted. Your project does not need to be 100% complete to receive an inspection. For example, you may have several walls and a ceiling ready for an inspection but, the remainder of the work to be completed is undone. You may call for an inspection on the portion that is complete and then schedule at a later date the remainder of your projected work. If you are unsure of when an inspection should be conducted, contact the inspector responsible for the work at your location to confirm the appropriate time.

Day of Inspection
The property owner or their representative (employee, contractor, etc.) must be present on the day of inspection. DPD’s staff will not enter an occupied property without a responsible party present. Vacant properties can be inspected without a responsible party present. You may request either a morning or afternoon inspection. Our staff will attempt to accommodate your request. However, due to volumes of work and workload balancing this may not be possible. If you need a more specific time and/or a morning/afternoon is critical to you, you will need to contact your inspector directly before they leave the office in the morning; Inspectors are available between 7:30 a.m. and 8:30 a.m.. Inspector’s telephone numbers and the area they inspect can be determined by going to http://www.seattle.gov/dpd/permits/inspections/ on our DPD PAN. If you are unsure who may be the inspector, call (206) 684-8950 to speak with an associate that can help you determine the correct inspector. The inspector assigned the scheduled inspection may also be determined by researching the Permit and Complaint status report at the following web site: http://www.seattle.gov/dpd/permits/

Your inspector will be identified on the inspection requested under the 'Inspections' tab after 9:00 a.m. on the day of your inspection.

The flowcharts on the following page will assist you with the permitting and inspection process.
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Seattle City Light

If it is determined that your electric service is not adequate, you will need to contact Seattle City Light (SCL) prior to commencing any work. If the proposed service upgrade exceeds 200 amps or is greater than 120/240V, you will be required to complete an electrical service application package and submit it to SCL. Once SCL reviews the application package, they will provide you with information such as cost for the service connection, location of the service point and the work required connecting to the SCL system.

The following basic steps are generally required for upgrading or installing a new service:

1. Contact electric service representative (ESR) for your location.
2. Complete and submit electrical service application package.
3. Install new electrical service.
4. Schedule inspection with a DPD electrical inspector.
5. Notify ESR once installation is complete and has been approved by a DPD electrical inspector. Ensure all SCL connection fees are paid.

Other Important information

We recommend contacting Seattle City Light prior to commencing any work as Codes and processes may change.

Due to the complexity of electrical services over 200 amperes and underground electric services, plans will be required and a review will be conducted by SCL engineering group. Please allow additional time for the review and for crew work.

Seattle City Light charges a fee for new service connections and electric service upgrades. The fee is based on size of the service and the complexity of the installation. Large services and underground services are the most costly.

All new or upgraded services must be inspected by both a DPD Electrical Inspector and a SCL electric service representative. Please ensure you contact your ESR once the DPD electrical inspector has provided you with a final approval for your service installation.

For information regarding your new service or service upgrade, including cost estimates and estimates of time frames for work, contact Seattle City Light at (206) 615-0600. Additional information, including a copy of the electric service application can be found at the Seattle City Light website at www.seattle.gov/light/electricservice.

Seattle City Light is committed to providing the highest level of customer service; please contact them and they would be happy to assist you with any questions you may have about this process.