National Capital Presbytery
Earth Care Network

OPTIONS FOR INSTALLING ELECTRIC VEHICLE CHARGING

Electric vehicles (EVs) are becoming more popular and affordable as a way of transportation that is environmentally friendly and cost-effective. However, one of the challenges that EV drivers face is finding a place to charge their vehicles when they are away from home. Installing an EV charging station in a church parking lot can be good for both the church and the community. The demand for charging stations will only grow as the EV population grows.

THERE ARE MANY BENEFITS OF HAVING AN EV CHARGING STATION IN A CHURCH PARKING LOT, SUCH AS:

Attracting visitors and new members: By offering EV chargers, the church can show its support for a green initiative and attract more visitors and members who drive EVs or are interested in switching to EVs. A charging station can be a “perk” for employees that drive an EV.

Can be a source of income: Having an EV charging station on site can generate revenue from fees or donations. Note that it will not be a large money maker and you could break even or experience a small loss.

Reducing pollution and green house gases: By encouraging more people to use EVs, the church can help reduce air pollution and greenhouse gas emissions in the area, improving the health and quality of life of the community.

Staying connected to the broader EV network: Installing an EV charging station can help the church stay connected to the broader EV network and draw regional travelers driving EVs who may need a place to stop and charge their vehicles. This can benefit both residents and outside visitors. Depending on the nature of the charging station, its location can be found on several apps such as PlugShare so travelers may stop by your church.

Serving the community: A charging station at a church demonstrates the church’s commitment to environmental stewardship and offers a service to the community, especially where there are few charging stations. It can enhance a church’s reputation and image in the community.

OPTIONS:

Options cover the range from a single 220/240-volt outlet/plug to a Level 2 commercial charger. There are three charger levels: Level 1 – 110 Volt (rarely used for all electric vehicles); Level 2 – found in commercial areas such a grocery stores (delivers up to ~7 kWh) e.g. Volta; and Level 3 – also called DC Fast Charging is found mostly in high traffic areas such as Sheetz, WAWA, and Tesla Superchargers (delivers up to 300 kWh). The table below describes each Level 2 option (Level 3 is not practical for a church.)

New - Dominion Electric in VA now provides a complete solution with its Level 2 Charging Program.

TYPE (all level 2)	CONFIGURATION	BENEFITS	ISSUES/ DISADVANTAGES
240 V plug. Usually has 40 – 60-amp dedicated circuit. One or two plugs to serve two cars	*Wall mount or covered receptacle, protected from weather if outside. Should be labeled with circuit capacity.	Simple installation. Open to anyone with car manufacturer's EV charging cord. Little maintenance.	No control. User must have charge cord and plug-in to outlet. No App to show location. Can't collect fee for use but could ask for donation via QR code. Any electrician can install. Unattractive.
"Dumb Charger". No WiFi. e.g., Grizzle EV Charger. Two units to serve two cars*	**Indoor/Outdoor wall or post mount. 40-60 Amp. May use NEMA 14- 50 plug but hardwiring is best. Dedicated circuit.	Includes cord & hanger. Low cost < $800. All EVs can use. Charge cord included. Can be installed in parking space on post or remote location.	Requires electrician to wire and install. No App, no control. Can't collect fees but could ask for donation via QR code. Cord usually not retractable. Discoverable via PlugShare (add location manually)
"Smart Charger" Requires WiFi. Two units to serve two cars. Examples: Autel Home EV Charger ChargePoint Home	Indoor/Outdoor wall or post mount. 40-60 Amp. May use NEMA 14- 50 plug but hardwiring is best. Dedicated circuit.	Includes cord & hanger. Low cost < $800. All vehicles. Can be installed in parking space on post. Controlled via App (start, stop, energy used, etc.) Bluetooth enabled. Over the air (OTA) firmware updates. Vendor support.	Requires electrician to wire and install. Requires user to download App to control. Can't collect fees but could ask for donation via QR code. Cord usually not retractable. Autel unit discoverable via PlugShare. ChargePoint Flex in ChargePoint network.
Commercial "Smart Charger" May require WiFi. Example: ChargePoint Level 2 commercial charging station. Two charging cords on one pedestal.	***On pedestal in front of parking space. Outdoor wall or post mount. Usually 40-48 Amp, requiring 50-60 Amp dedicated. May require WiFi.	May have self-retracting cable. Industrial grade. Visibility into drivers, power use, energy costs, and station status. Can set price. Manage driver access. Vendor managed/ maintained. OTA updates. Discoverable via EV locator Apps. Locking holsters.	Requires user to download App to control. Cost depends on configuration, installation requirements, and support level. Requires EV qualified electrician, usually vendor designated. Total cost estimate 12-16 K.

All options may require electrical panel upgrades to include dedicated circuits. Permits likely required.

*This is a typical configuration for a 240 V installation. Adds about 25 miles in one hour of charging for most EVs.

**This is the configuration of the EV charging station at Peace Church in Fairfax City. These chargers were installed in 2019 and cost about $730 each. Built for extreme weather conditions and high-traffic use with a 5-year limited warranty. Wall mounted. The manufacturer is Enphase and the model is HCS-40 EV (32 A, 7.7 kW, hardwired). The location of the charger is discoverable on Plug Share.
Unique to this installation is that the chargers draw power from the church solar roof panels.

** This is the configuration of the EV charging station at First Presbyterian Church, Port Townsend, WA. Pole/pedestal outside in the parking lot. These chargers are manufactured by ClipperCreek (HCS-60 EV Charger 48A With SAE J1772 Connector). The cost for this installation was under $4,000. [Note ClipperCreek and Enphase are now the same company]. The electricity cost for this configuration in Fairfax County would be about $0.45/hr., the same as providing an electrical outlet (option 1).

*** This is a typical commercial grade Level 2 dual port charger. It's in the ChargePoint network and uses the ChargePoint app. For a two-hour charge, the cost for charging an EV would be about $3.00 (could be higher or free – depends on what the station owner (church) wants to charge. ChargePoint takes a cut for operation and maintenance.) Church can set price or provide free charging, but must still pay a fee to ChargePoint for operation and maintenance.
For an "A to Z" solution involving minimal effort, consider the Dominion Energy Level 2 Charging Program that covers 50% of the total cost. The remainder can be paid off over 10 years. The cost is added to your electric bill.

IF YOUR CONGREGATION IS INTERESTED IN INSTALLING AN EV CHARGER, HERE ARE SOME SUGGESTED STEPS TO PROCEED:

1. Find an advocate group that is willing to press forward, e.g. Earth Care/Creation Care Team.
2. Develop and document rationale for the project
3. Meet with Property Committee to get support for the concept. Work together for remainder of process.
4. Make a preliminary selection from the options presented above that works best for your church
5. Contact certified electrician to determine if your electrical panel needs upgrading and what wiring is needed to connect to the station. May require a underground run.
6. Develop general idea for location, number of plugs, structure, zoning regulations, permits, etc.
7. Get rough estimate of total project cost and funding mechanism. Faith Alliance for Climate Solutions (FACS) can assist in VA.
8. Get Session approval for concept and permission to move to next step.
9. Contact certified electrician get contact proposal and cost (may combine with step 5)
10. Get Session approval and award contract.

This is a general list of steps. They should be tailored to how your church “operates”. Some may be accomplished simultaneously.

If your church is considering getting solar panels installed, installation of an EV charger at the same time is ideal.

Additional Resources:

- Virginia Interfaith Power and Light
- Fairfax Office of Environmental and Energy Coordination
- Dominion Energy