



Electric Faith: An Overview of Electric Vehicles and Charging Stations for Congregations



Updated May, 2019

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Overview

This guide is designed for congregations interested in promoting electric vehicles (EVs) to their congregants and community and installing on-site charging stations. It covers a wide discussion of topics related to EVs: the faith principles of driving EVs, the deleterious effects of traditional internal combustion engine vehicles in terms of pollution linked to poor public health and climate change, the multiple benefits of EVs, California state legislation driving transportation electrification, EV charging stations for congregations, and rebates and incentives for the purchase of EVs and installation of EV charging stations.

EVs are not just pricey Teslas; there are a wide variety available now with incentives and rebates that make them very affordable.

Note: Teslas have their own proprietary charging systems and network and will not be compatible with most of the recommendations in this guide. However, some Teslas carry adaptors to allow them to use standard charging stations.

Introduction

The Problem: Transportation accounts for 41% of greenhouse gas emissions in California, and light duty vehicles produce about 60% of those transportation emissions.¹ It's not just the tailpipe emissions from these internal combustion engines, but the production of the fuels — drilling, fracking, transporting, and refining of petroleum — that is very destructive to the environment and to human health.

Solution: EVs in California create 80% less carbon pollution than a typical gas-powered vehicle. You can find out how much cleaner an EV would be in your zip code by using the Union of Concerned Scientists' online calculator.² An EV is powered by an electric motor and battery rather than an internal combustion engine. EVs do not produce any exhaust and they do not require any lubricating oil. They can even make renewable energy more affordable, by providing a way to utilize excess power when wind and solar are plentiful and rates are low.³ Driving an electric vehicle rather than a gas or diesel vehicle is one of the most effective steps an individual can take to slow climate change and reduce air pollution.

¹ California Air Resources Board, <https://www.arb.ca.gov/cc/inventory/data/data.htm> and [epa.gov](https://www.epa.gov)

² Union of Concerned Scientists, <https://www.ucsusa.org/clean-vehicles/electric-vehicles/ev-emissions-tool#.WqbeBijwZaQ>

³ *Forbes*, 3/18 <https://www.forbes.com/sites/energyinnovation/2018/03/14/charging-an-electric-vehicle-is-far-cleaner-than-driving-on-gasoline-everywhere-in-america/#267ef23071f8>

The electric grid in California is one of the cleanest in the country and is getting cleaner every day as more solar and wind power is added and Community Choice Energy is providing many of us with 100% clean energy. This means that batteries in EVs are increasingly being charged with energy from low or no greenhouse gases that cause harmful air pollution.

Solar Power & Electric Vehicles: Many congregations are installing or have installed solar electric systems on their facilities. By using these solar electric systems to run EV charging stations, these congregations are helping their members and larger communities drive solar-powered cars.

This Guide: focuses on the benefits of electric cars and the steps that congregations can take to encourage their members to use electric cars instead of gas and diesel vehicles. The guide also includes recommendations on how congregations can promote and support the use of electric vehicles at their facilities.

Faith Principles

The mandate to care for all of Creation is a core tenet of religious scriptures, texts, and leaders. People of faith have a moral responsibility to care for Earth, all living creatures, our air and water, and to pass on a safe and habitable world for the coming generations. Driving an electric car instead of a gas or diesel car is one of the most effective steps a Californian can take to slow global warming and reduce air pollution. Making this choice is an opportunity to take responsibility for what we have done in the past in damaging the environment and to take steps in creating a healthier world now and for future generations.

EQUITY:

Developing EV charging infrastructure helps people who don't have access to EV charging because they rent and/or live in multi-unit dwellings. EV charging at houses of worship offers one more reliable, safe place for folks who do not have easy access to charging at their homes. The use of EVs also promotes environmental justice for the communities most impacted by fossil fuel generated pollution.

Electric Vehicle Basics

Electric vehicles use an electric motor rather than a gas or diesel engine. The three main components of electric vehicles are the motor, the battery, and the power electronics. The motor powers the vehicle, the battery stores the electricity used by the motor, and the power electronics provide control functions and manage charging of the battery.

These three components eliminate the need for the internal combustion engine, transmission, belts, fuel pumps, fuel tanks, engine oil, oil filters, air filters, spark plugs, exhaust systems, catalytic converters, emission controls, and many other parts that may fail and/or require maintenance. Because of their simpler design, EVs are more reliable, break down less often, and ultimately, save EV drivers money and time.

California Policy on Electric Vehicles

California has been the leader in the nation on the promotion, development and sales of electric vehicles. Transportation accounts for 41% of greenhouse gases in California and is one of the largest sources of global warming pollution in the United States. There are strong regulations in place for the deployment of electric and other clean vehicles: in 2018, Governor Brown signed an Executive Order setting a target of 5 million zero-emission vehicles (ZEVs) on California roads by 2030. As of the beginning of 2019, there are half a million EV's on California roads, one million on US roads, and, according to a recent report, there will be an estimated 18 million EV's on US roads by 2030.

In addition, there have been strong targets set for electric vehicle infrastructure in order to meet the demands of increased deployment of EVs. In Governor Brown's 2018 Executive Order also set a goal of 250,000 EV charging stations installed by 2030; at present, there are 18,000.

Benefits of Electric Cars

The benefits of driving electric cars are multiple, for the driver, the community, and the world. They include:

- Lower costs to drive
 - Electricity costs less than petroleum fuels.
 - Some utilities offer lower electrical rates to EV drivers.
 - No internal combustion engine means money saved on traditional maintenance costs.
 - Every year, there are more EV makes and models to choose from, and a good number of them are competitively priced.
- Superior driving experience
 - A faster acceleration and increased responsiveness make EVs fun to drive.
 - Better handling and superior traction in snow and on wet pavement.
 - EVs are quiet and there is no exhaust smell for drivers or road neighbors.

- Convenience
 - Opportunities for charging include home, some workplaces, and a variety of shopping centers.
 - Many regions of the state provide access to high-occupancy vehicle (HOV) lanes when driving solo, allowing faster commuting.
- Improved health and air quality
 - Pollution from gasoline and exhaust are linked to a host of respiratory and cardiac illnesses, such as asthma. The state of California has identified petroleum fuels as carcinogens. EVs do not impact community health.
 - Automobile exhaust is one of the major sources of smog and air pollutants. EVs do not harm air quality.
- Reduced global warming pollution
 - The largest source of global warming pollution in California and the nation is the transportation sector. EVs do not use these fuels so do not contribute to global warming.
- Environmental justice
 - In many areas of California and the nation, low-income communities and communities of color are more likely to live near freeways and heavily-trafficked areas; thus, the exposure to pollution, and the deleterious health effects, are greater for these communities. Non-polluting EVs help these communities.
 - Drilling, fracking, refining and transportation of fuel has been linked to polluted drinking water and aquifers. EVs reduce our dependence on fossil fuels and thereby protect clean water.
 - Replacing a petroleum-fueled car with an EV provides a benefit to entire communities.
- Greater global security
 - Violence is linked to the extraction and production of oil worldwide.
 - The U.S. is beholden to countries, some of which abuse human rights, because of the need for petroleum. Driving EVs allow the U.S. to be more energy independent.

Charging

The batteries in electric vehicles are charged by plugging the vehicle into an outlet or an electric vehicle charging station. Some EV drivers charge their car overnight at their homes. Some rely on a network of EV charging stations at their work, a local shopping center or other areas. Whichever, there are three main forms of charging:

Home Outlet:

Most electric cars can be charged by plugging in to a regular, three-pronged household outlet. The cord is included with the cars. The car battery will store enough electricity to drive 4 to 5 miles for every hour that it is plugged in. Many cars are parked for at least 8

to 10 hours overnight. Drivers who typically drive less than 40 miles per day find a regular household outlet to be more than sufficient.

Level 2 Charging Station:

Those who drive longer distances each day or need faster charging will likely install a 240-volt charging station in their garage or at their parking space. These units will provide 25 or more miles of driving distance for each hour the car is plugged in, or a full charge in about 4 hours. Many of the charging stations are weatherproof and can be installed either inside or outside. The units should be installed by a licensed electrician.

Outlets or charging stations are available at many employee parking areas so that drivers who commute to work in an electric car can plug in while they are at work. This makes it possible for apartment dwellers who may not be able to plug in at home to drive an electric car and reduces commuting costs for many employees.

Level 3 DC Fast Charger:

Many models of electric cars can be charged at fast charge stations. Fast charge stations are typically located at public parking areas such as shopping centers and along interstate highways. These stations deliver from 70 to 170 miles of driving distance in a half hour.

In addition to workplace and home charging, there are a significant number of charging stations located in shopping malls, public garages, movie theaters etc. PlugShare.com maintains one of the best charger maps plus hours of operation, pricing (if any), charger type, and other information.

What Congregations Can Do

Many folks drive to their destination, whether it be going to worship, taking their children to school, or shopping. The ideal form of transportation is walking and biking when possible, and taking public transportation. A growing number of houses of worship are advocating for these forms of transport.

When automobile transportation is a necessity, EVs are the solution. There are two main actions congregations can take to promote the use of electric vehicle education and increase access:

1. **EDUCATE:** Make members aware of the problems caused by using fossil fuels and encourage them to replace their gas or diesel cars with electric cars. This is a benefit for the members as well as for the environment. Driving an electric car is not a sacrifice; in addition to reducing air pollution and greenhouse gases, the members will gain a much better driving experience, save money, and enjoy the convenience of never having to go to the gas station. Fun ways of educating members and neighboring communities include EV Ride 'n' Drives, EV showcase, EV info events, inclusion of EV's in Earth Day celebrations, and offering designated parking to EV drivers.
2. **INCREASE ACCESSIBILITY:** Congregations can provide EV charging options using ordinary outlets, regular charging stations or fast charging stations (see previous section on Charging). Level I and II chargers can be inexpensively installed and may be eligible for local grants.

Level III charging stations are quite expensive and generally only installed at businesses. However, if your congregation is in a busy location, you might be eligible to get one for free. In some cases, the installation company will also pay rent to the congregation for the use of its space.

Providing charging stations can be an added incentive for some members to attend the congregation and is an excellent service to the community, broadcasting the congregation's commitment to caring for Creation. There are often grants available to offset installation costs and there is nothing wrong with asking for donations to cover the cost of electricity.

Charge up your congregation with an onsite EV Charging Station

Understanding the faith mandate to care for all Creation, the California faith community has been active in environmental advocacy, education and efficiency measures for almost two decades. And it is meeting the challenge of increased EV deployment and EV charging station infrastructure. A growing number of faith communities and houses of worship are installing EV charging stations on their grounds, which are open to members as well as the public.

Just a sampling of faith communities that house EV charging stations:

- West Covina United Methodist Church
- Beth Chayim Chadashim, Los Angeles
- Newport Mesa Church, Costa Mesa
- Calvary Community Church, Brea
- University Covenant Church, Davis
- Grace Cathedral, San Francisco
- Unitarian Universalist Church of Palo Alto
- Your congregation could be next on this list....

Here are a few congregations you can contact to discuss their experience –

- Beth Chayim Chadashim, Los Angeles – Senior Rabbi Lisa Edwards – lisa@bcc-la.org
- UU Church of Palo Alto – Member Bill Hilton - billhilton@mac.com

Incentives/Rebates for Congregational EV Charging Stations

Many houses of worship can receive incentives and/or rebates for EVs and EV charging stations.

Go to interfaithpower.org/electric-faith/ for opportunities in your area. Most utilities and some regulatory agencies have incentives, including:

- Los Angeles Department of Water and Power: Charge Up LA! Campaign
- Southern California Edison: Charge Ready Program
- San Diego Gas & Electric: Charge Point
- Pacific Gas & Electric: EV Charge Network
- Marin Clean Energy
- Bay Area Air Quality Management District (BAAQMD): 2017 Charge! Program
- South Coast Air Quality Management District (SCAQMD)
- San Joaquin Valley Air Pollution Control District
- California Pollution Control Financing Authority

Other Websites for Incentives/Rebates:

- Alternative Fuels Data Center (comprehensive list of many incentives/rebates) – bit.ly/AltFuelsDC

CIPL Network EV Recommended Expertise

Sven Thesen, EV Consultant & Founder

ProjectGreenHome.org 415-225-7645

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A video featuring Sven's congregations charging station is available for viewing here:

<https://www.youtube.com/watch?v=U2CEjr92AwM>

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Further Resource Websites

Golden Gate Electric Vehicle Association - www.ggeva.org

Electric Auto Association - www.electrcauto.org

Plug-In Amerca - <https://pluginamerica.org>

Coltura – EV Info and Advocacy - <https://www.coltura.org>