

# **Electric Vehicles: An Overview for Congregations**



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This guide has been prepared by Dale W. Miller, president of Golden Gate Electric Vehicle Association, to assist congregations to help their members move to clean, emission free electric cars. Questions and comments may be sent to [dalewmiller@gmail.com](mailto:dalewmiller@gmail.com)

## **Introduction**

*The Problem:* Gasoline and diesel fueled vehicles account for more than 60 per cent of the greenhouse gases produced in some parts of California. It's not just the tailpipe emissions from these internal combustion engines that are harmful to humans and the environment, but the production of the fuels — drilling, fracking, transporting, and refining of petroleum — that is very destructive to the environment and to human health. 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.

*A Solution:* Electric vehicles are powered by an electric motor and battery rather than an internal combustion engine. They do not produce any exhaust and they do not require any lubricating oil. Electric vehicles include cars, trucks, motorcycles, bicycles, and buses.

When the batteries in electric vehicles are charged with electricity from solar, wind, or hydroelectric power, no greenhouse gases or harmful air pollution attributed to transportation is produced. In addition, 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. Even in areas of the country where the electricity is predominantly generated by coal-fired power plants, studies have shown that electric vehicles are better for the environment. If drivers are using electric vehicles, then when coal-fired power plants are replaced with solar and wind generation, the emissions resulting from transportation are eliminated whereas with gas and diesel vehicles, cleaning up the electric grid does nothing to reduce emissions related to transportation.

*Solar Power & Electric Vehicles:* Many congregations are installing or have installed solar electric systems on their facilities. When coupled with electric cars, these solar systems are even more beneficial for the environment and provide greater economic benefits.

*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.

## **Electric Vehicle Basics**

Electric vehicles simply 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 and catalytic converters, emission controls, and many other parts that may fail and/or require maintenance.

## Charging

The batteries in electric vehicles are charged by plugging the vehicle into an outlet or an electric vehicle charging station. Most charging is done at home as the vast majority of cars are parked overnight. This is the most convenient time for charging electric cars because the car would not normally be used during this time anyway. Overnight is also the best time for charging cars because electricity rates are lowest and the load on the electric grid is much lower than during the daytime.

All electric cars can be charged by plugging in to a regular 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.

Those who drive longer distances each day 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. 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.

In addition to regular outlets and 240 volt charging stations, many models of electric cars are capable of being charged at fast charge stations. Fast charge stations are typically located at public parking areas such as shopping centers and along interstate highways. Fast charge 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.

## Benefits of Electric Cars

Contrary to some perceptions, driving an electric car does not require making sacrifices. In fact the opposite is true. Electric car drivers save money, have more fun driving, and enjoy the convenience of never going to the gas station while contributing to cleaner air, slowing climate change, and promoting social justice.

### **Cost Less to Drive**

Electric vehicles cost less to drive than gas or diesel cars. Electricity costs less than petroleum fuels. Special lower electrical rates for electric car drivers also apply to all of the electricity used by the driver's home. Therefore some electric car drivers have a lower total electric bill.

Because electric vehicles require far less maintenance than internal combustion engine cars, drivers save money on maintenance costs.

Rebates and tax credits make leasing or purchasing an electric car very affordable. Electric vehicle drivers may qualify for federal tax credits, rebates from the State of California, as well as rebates from some cities, and air quality districts. Some employers offer incentives for driving electric vehicles. Additional rebates and credits may be available for lower income drivers. Leasing new electric cars is currently the most economical choice for many drivers. Used electric cars are also a very affordable option for some drivers.

## **Superior Driving Experience**

Electric cars are more fun to drive than gas and diesel cars. These cars have much faster acceleration and are much more responsive. They offer better handling as well as superior traction in snow and on wet pavement. Electric cars are smooth and quiet. Since there are no emissions, there is no exhaust smell.

## **More Convenient**

Charging your car at home or at work means never needing to go to a gas station. Each morning the car has its full driving range available. There is no need to stop for gas on the way to work, to take children to school, or at other times when the driver is in a hurry. Electric cars are eligible for car pool lane sticker. Being permitted to use the car pool lane without a passenger can save time for many drivers.

## **Health Benefits & Air Quality**

The pollutants from gasoline and diesel exhaust have been shown to increase the incidence of asthma, heart attacks, and strokes. The State of California has identified petroleum fuels as a carcinogen. Automobile exhaust is one of the major sources of smog and air pollutants. Electric cars use no petroleum fuels and produce no emissions, unless charged from electricity from fossil fuels. Therefore they eliminate these health risks.

## **Slow Climate Change**

The largest source of greenhouse gases that cause climate change is from using fossil fuels for transportation. Because electric cars do not use fossil fuels or lubricating oils, they do not contribute to climate change. Driving an electric car results in less drilling, fracking, refining, and transporting petroleum and is the most effective step a driver can take to slow climate change.

## **Social Justice**

In many areas of the United States many lower income families tend to live near refineries and near heavily travelled freeways. These families are exposed to the pollutants from the refineries and to a higher concentration of exhaust from the vehicles on the freeways in the air they breathe.

In some areas of the world Indigenous populations have been exposed to pollutants from oil exploration, drilling, and transportation. Drinking water has been polluted.

Electric cars assist in eliminating the need for oil drilling, oil refining, and transporting petroleum. Also, since they do not produce any exhaust, they do not pollute residential areas near freeways. Replacing a petroleum fueled car with an electric car helps people other than just the driver and provides a benefit to the entire community.

## **Geopolitical Benefits**

Wars have been fought over access to oil. Countries have been in disputes over oil pipelines. Driving cars powered by electricity from solar and wind allows countries to be less susceptible to the threats from hostile governments of other countries.

## **What Congregations Can Do**

The majority of people come to their houses of worship by driving, the same way that they get to work, take their children to school, and do their shopping. If those trips are made in an electric vehicle, the amount of greenhouse gases and air pollution will be significantly reduced.

There are two actions congregations can take to promote the use of electric vehicles:

1. Make their 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 really a benefit for the members as well as a huge benefit for the environment. Driving an electric car is not a sacrifice. In addition to reducing the amount of greenhouse gases and air pollution, the members will gain a much better driving experience, save money, and enjoy the convenience of never having to go to the gas station.
2. Congregations can install electric vehicle charging connections. This is especially important for congregations with a school or members or staff who drive a long distance to the facility. Regular 120 volt outlets are sufficient for teachers or staff members who park at the facility for a half day or longer. 240 volt charging stations can be installed for members or staff members who are there for a shorter time or use their cars to support the work of the congregation. Providing charging stations can be an incentive for some members to come to the facility as well as an employee benefit that helps attract teachers. Finally, there are often grants available to offset some of the installation cost. And, there is nothing wrong with asking for donations to cover the cost of electricity.

## **The Faith Principles**

People of faith have a moral responsibility to care for the earth, care for our fellow human beings, and to provide for the coming generations. Buying fossil fuels provides the funding for the destruction of the earth through oil drilling, fracking, refining, and transporting petroleum fuels. When we drive gas and diesel cars and buy gasoline, diesel, and lubricating oil we are clearly abdicating our responsibility to care for creation and we are leaving a planet to future generations that is far worse than when we were born.

Driving an electric car instead of a gas or diesel car is one of the most effective steps anyone can take to slow climate change and reduce air pollution. Making this choice is an opportunity

to take responsibility for what we have done in the past to damage the environment and to take steps to make the future better for ourselves and our children.

## **Sampling of California Congregations with EV Charging Stations**

Grace Cathedral, San Francisco

Unitarian Universalist Church of Palo Alto

Newport Mesa Church, Costa Mesa

Beth Chayim Chadashim, Los Angeles

Calvary Community Church, Brea

University Covenant Church, Davis

West Covina United Methodist Church, West Covina

*In-Process*

Bayview Baptist Church, San Diego

If your congregation currently has a charging station please let us know so that we may add you to the growing list.

## **CIPL Network EV Recommended Expertise**

Sven Thesen

EV Consultant & Founder

ProjectGreenHome.org

415-225-7645

[sventhesen@gmail.com](mailto:sventhesen@gmail.com)

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

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

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## **Resources**

Golden Gate Electric Vehicle Association - [www.ggeva.org](http://www.ggeva.org)

Electric Auto Association - [www.electricauto.org](http://www.electricauto.org)

Plug In America - [www.pluginamerica.org](http://www.pluginamerica.org)

For information and to apply for California EV Rebates: <https://energycenter.org/program/clean-vehicle-rebate-project>

For current EV leasing rates see: <http://ev-vin.blogspot.com/?m=1>

Additional Information on rebates and advocacy is available at:  
<http://environmentcalifornia.org/programs/cae/charge-ahead-california>

Consult your tax advisor for information on Federal Tax credits.