

# Electric Vehicle Charging Infrastructure

## Description:

The relationship between increased adoption of electric vehicles (EVs) and the availability of EV charging stations has been described as a “chicken or the egg” problem. On one hand, consumer range anxiety creates an important barrier to increased adoption of EVs. On the other hand, while greater availability of charging stations would ease this anxiety, the relatively low numbers of vehicles on the road provides little incentive to install and make these stations available to the public. There are a number of programs that states can adopt to support charging stations.

## Discussion of the Policy:

1. **Development of State Charging Infrastructure Plan** - Locating charging infrastructure is different than locating conventional fueling stations. For the most part, EVs are cars used for commuting and local trips. Furthermore, while one fuels a conventional vehicle when they are going somewhere, stopping at a gas station for the specific purpose of filling up, a driver of an EV is generally looking to refuel when they are stopping somewhere: when going shopping, going into a restaurant, or going to work. Charging infrastructure plans should target these types of locations and attempt to pair the appropriate level of charging infrastructure with a reasonable amount of time a person may be stopped at that location.
2. **Financing and Financial Incentives** -The provision of financial incentives and innovative financing options can increase installations of charging stations. States have adopted a number of financial incentives including income and property tax credits, sales tax credits, low-interest loans, grants, and rebates. A handful of states qualify EV charging stations under their [property assessed clean energy \(PACE\) programs](#).
3. **Building Standards and Codes** - Many states and local governments are updating building standards and codes to provide guidance and standards for the installation of charging equipment. Building codes might also be updated to require either higher voltage pre-wiring or the installation of charging infrastructure.
4. **Parking Infrastructure Requirements and Restrictions** - Some states have adopted permitting standards for parking lots, requiring, for instance, that for every 100 parking spaces, an EV charging spot must be provided. States have also passed Anti-ICEing Legislation. “ICEing” occurs when an internal combustion engine (ICE) car is parked in an EV Only parking space. Some states have passed laws establishing penalties for non-EVs parking in EV only parking spots.
5. **Rental Properties and HOAs** - Legislation can also make it easier for lessees, renters, and members of a homeowners association (HOA) to install charging equipment. Typically, lessors are directed to allow lessees, at their own cost, to install charging systems. In some cases, lessees are required to maintain additional insurance for the system. Legislation related to HOAs typically directs Associations to avoid restrictions that would inhibit the installation of charging equipment.
6. **Utility-run Programs** - Charging rate incentives and time of use rates can reduce the cost of electricity used for charging. Eligibility for a charging rate incentive may be limited to users with separate or advanced metering systems. Some utilities also offer financial incentives for the purchase of an EV charging system. In some states, enabling legislation may be required to direct or authorize a public utilities commission to allow regulated utilities to offer and recover costs for these incentives.

## Example State Programs:

States, local governments, and electric utilities offer a variety of incentives to support the installation of EV charging stations.

- Hawaii EV Parking Legislation:  
[http://www.capitol.hawaii.gov/session2012/bills/GM1190\\_.PDF](http://www.capitol.hawaii.gov/session2012/bills/GM1190_.PDF)
- EV Connecticut:  
[http://www.ct.gov/deep/cwp/view.asp?a=2684&q=527866&deepNav\\_GID=1619](http://www.ct.gov/deep/cwp/view.asp?a=2684&q=527866&deepNav_GID=1619)
- Electric Drive Washington:  
<http://www.commerce.wa.gov/Programs/Energy/electric-vehicles/Pages/default.aspx>
- Georgia Power Plug-In Electric Vehicle Rate Plans:  
<http://www.georgiapower.com/environment/electric-vehicles/what-rate-plan-is-best-for-you.cshtml>
- St. Louis Park, Minnesota PACE:  
<http://www.stlouispark.org/news-updates/pace-property-assessed-clean-energy.html>

Part of the U.S. Department of Energy's [EV Everywhere Grand Challenge](#), the [EV Everywhere Workplace Charging Challenge](#) provides information, technical assistance, and networking opportunities to employers willing to install charging stations.

## Key Components:

- Coordination with electric utilities is key. Programs to provide access to vehicle registration data by service territory can assist utility planning for shifting demand.
- Programs can be targeted to one, some, or all of the following: Single-family homes, multi-family dwellings, businesses, or units of government.
- Eligibility for incentives may be limited to systems that comply with state codes or federal standards.
- Loan, grant, and rebate programs must have a dedicated funding source.

## More Information:

- Alternative Fuels Data Center (AFDC), Electricity webpage:  
<http://www.afdc.energy.gov/fuels/electricity.html>
- Energy Information Administration, Today in Energy webpage:  
<http://www.eia.gov/todayinenergy/detail.cfm?id=19151>
- Plug-In America homepage:  
<http://www.pluginamerica.org/>
- Southwest Energy Efficiency Project (SWEET), Policies to Promote Electric Vehicles in the Southwest Report:  
<http://www.swenergy.org/data/sites/1/media/documents/publications/documents/EV%20Report%20Card%20-%202014%20UpdateFNLBody.pdf>

- U.S. Department of Energy, Alternative Fuel Vehicle & Fueling Infrastructure Deployment Barriers & the Potential Role of Private Sector Financial Solutions Report:

[http://www.afdc.energy.gov/uploads/publication/afv\\_fueling\\_infrastructure\\_deployment\\_barriers.pdf](http://www.afdc.energy.gov/uploads/publication/afv_fueling_infrastructure_deployment_barriers.pdf)