

# TRANSPORTATION ELECTRIFICATION

Vehicle-grid interaction creates opportunities for managing electric vehicle charging load.

California's goals to reduce greenhouse gas (GHG) emissions are some of the most ambitious in the world. Southern California Edison (SCE) and other utilities operating in the state are playing a proactive part in this significant reduction effort, supporting cleaner generation of electricity through increased use of renewable energy and encouraging greater adoption of Transportation Electrification (TE).



## **Make the most of your impact on the grid.**

Electricity is on average a more cost-effective fuel than most other fossil fuels (learn more [here](#)). However, installing charging infrastructure typically results in increased demand and higher energy usage. Fortunately, tools are available to limit the impact of charging on the grid and your electricity costs. Whether you operate a fleet of electric vehicles (EVs), or provide charging for your visitors, customers, employees, or residents, consider the following options when designing or operating your charging infrastructure. Please note that some of these solutions may not be applicable to every charging situation.

## **Load management strategies and technologies currently available to you.**

### **Rates Designed for TE**

We have developed several time-of-use (TOU) rates specifically designed for TE adopters. The rates may help maximize your fuel cost savings, especially if most of your charging takes place off-peak. It's important to understand these rates require metering the charging load separately from your current operations with a dedicated meter and dedicated circuits. You will have to plan and design your deployment accordingly. Get more details about our rates [here](#).

### **Charging Fees**

You will want to first decide if you are going to require payment by those using your organization's charging stations. Free charging or "flat fees" (for charging operations other than fleets) tend to encourage charging at any time of the day. They may also minimize utilization of the charging stations with no incentive to rotate vehicles for multiple daily sessions per charging station. An alternative practice is to modulate charging fees based on the rate plan you select for your charging infrastructure. This practice can help to encourage end-users to charge during off-peak hours when your energy costs are lower (and charging is

## TRANSPORTATION ELECTRIFICATION

better for grid conditions). Most smart charging stations available today allow you to set a variable charging fee based on the time of the day, the day of the week and the season. Consider this feature when selecting your charging equipment.

### Controlled Charging

Depending on your charging operations, you may be able to limit charging during certain high-demand, on-peak periods, either by offering reduced charging levels (e.g., 3.3 kW instead of 6.6 kW) or by suspending charging for a few hours. This approach requires informing your end-users of suspended charging to avoid stranding situations. This may not be practical in all locations.

### Finding the Sweet Spot

Too many charging stations operating at the same time uncontrolled may contribute to high demand and low utilization (for instance if all EV drivers charge at the same time when arriving to work). However, a more limited number of charging stations may spread charging throughout the day with lower demand, but higher utilization, including on-peak periods. We can help you project the cost of the estimated load based on multiple scenarios. Also, keep in mind, with EV adoption on the rise, the current population of EVs at your site will likely grow in the coming months and years. Planning your electric infrastructure to accommodate more charging stations in the future will also help you meet demand and manage your load.



### Load Management Systems

If EVs park at your site for several hours, a load management system may allow you to sequence charging or share the load among vehicles so that the actual demand from your charging stations is lower than the potential maximum demand. For instance, two vehicles each connected to a 6.6 kW station could charge simultaneously at 3.3 kW or alternatively, a first vehicle

would complete charging, then “free up” the load for the second vehicle. In both cases, the actual demand would not exceed 6.6 kW (instead of a load of 13.2 kW if both charging stations operate at the same time), but could meet the vehicles’ charging needs.

It’s also important to note that your energy management system (EMS) may not be compatible with charging equipment, in particular if you currently participate in certain programs, such as demand response. In this case, your charging equipment should be served by an electrical circuit independent of your EMS.

### Energy Storage and Solar

Energy storage devices can be charged off-peak when energy costs are lower, and used during on-peak periods to help serve EV loads. In general, they can also help “shave” demand by supplementing the energy drawn from the grid. Photovoltaic devices may also help by either directly serving charging stations or recharging energy storage devices for use at a later time.

## TRANSPORTATION ELECTRIFICATION

### **New programs will be coming in the near future.**

We are conducting several pilots that may provide your business with additional vehicle-grid integration opportunities. These include demand response for EVs to allow participating customers to relieve stress on the grid and reduce energy costs. We are also participating in vehicle-to-grid projects to demonstrate the ability to charge and discharge EV batteries to serve a facility or the grid while meeting the vehicle owner's charging needs. These solutions may offer significant benefits in the near future for our customers.



**Have questions or want to discuss your TE plans?  
Please call your SCE Account Manager or 1-800-990-7788.  
Or for more information, visit [sce.com/TE](https://www.sce.com/TE).**

Please note that your actual energy costs may vary depending on your electric rate schedule, your energy usage pattern, operating hours, and service voltage. Businesses interested in setting up EV-charging services should understand the legal, regulatory, and other requirements that may be involved. We cannot advise customers on pricing or other aspects of a business establishing EV-charging services.