



Impacting the Grid

Electric vehicles play a major role in increased electrification

By Katherine Loving

Last year saw a record increase in electric vehicle sales. Experts predict that by 2035, many major vehicle manufacturers will only produce electric models.

In northern California, Lassen Municipal Utility District serves roughly 10,000 customers in a rural area of the state. With a territory of about 1,900 square miles, Lassen is working on projects to meet the energy needs of its customers.

Lassen offers a rebate for residential EV chargers, with some rebates available for publicly accessible commercial chargers, says Theresa Phillips, LMUD's public relations manager.

Although LMUD hasn't determined if changes will be necessary to make sure its electric grid is able to support EVs, Theresa says the utility is in the process of building a substation. This will allow the utility to connect to NV Energy's Reno to Alturas transmission line, resulting in an increase in LMUD's capacity and greater stability.

"There are concerns about grid capacity," Theresa says. "However, we were

recently awarded a \$500,000 grant from the California Energy Commission to install eight fast-chargers."

Working with the state in a demonstration project shows the utility's plan to get ahead of those concerns and promote the use of EVs.

A 2021 study by the Department of Energy showed increased electrification—replacement of direct fossil fuel use with electricity—would account for a 38% increase in electricity demand by 2050. EVs will play a major role in this increased electrification.

The need for more electricity will have a major impact on the nation's grid, which means power supply and grid infrastructure must be carefully planned to accommodate it.

New Challenges

EV charging presents new challenges in maintaining the electric grid.

Fully charging an EV battery requires the same amount of electricity needed to power a home during peak energy use times. However, EV charging is a concentrated pull of energy over an extended period, which can add stress to the local power grid

by increasing the amount of electricity a utility has to provide.

A neighborhood transformer also needs adequate capacity to handle the increased load. EV charging can shorten the lifespan of transformers by straining and overloading their capacity if they are not matched to a neighborhood's energy needs.

Electric utilities are identifying ways to manage this new pattern of electricity use, though exact strategies will vary based on each utility's unique needs.

Analyzing energy load patterns or identifying where and when the local grid has spikes in demand can provide electric utilities with data on where to place higher-capacity transformers. This can also provide a picture of overall energy use and patterns to help forecast energy consumption for the future.

Planning system maintenance and upgrades are also part of that long-range forecasting. However, this has been recently complicated by supply-chain issues



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with transformers, with wait times that are upward of one year.

Playing Your Part

EV owners can play a role in reducing energy costs and system stress associated with charging. Similar to LMUD, some electric utilities encourage their customers and members to charge within certain time periods, as well as offering different charging rates.

Charging at night is a great way to ease demand in your neighborhood, even without a special EV rate.

“I would encourage customers to charge during off peak hours, between 9 p.m. and 5 a.m.—when our load is at its lowest,” Theresa says.

Another potential change on the horizon is a new energy peak time.

EV drivers that plugin to charge as soon as they return home from work would create even more of an electrical demand during this busy time of day. However, if EV drivers use a timer to schedule charging

at night, the demand could be spread over a longer period to reduce stress on the grid. This would be especially beneficial for neighborhoods with multiple EV drivers.

EVs are only expected to increase in number. Electric utilities and EV owners have roles to play in accommodating increased demand.

Clatskanie People’s Utility District, headquartered in Clatskanie, Oregon, has teamed up with Forth, a carsharing service, to offer a program where customers can get behind the wheel and decide for themselves.

“We have a car through Forth located in our parking lot to try out,” says Sarah Johnson, CPUD customer relations and services manager.

The PUD has proactively located EV chargers in its service territory to make it easier for commuters on their way out of town.

If you own an EV, let your electric provider know so they can better plan energy demand for you and your neighbors. ■



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