California electricity system will tap homes’ resources

Plans call for power ‘aggregations’ to feed into California’s power grid
Small suppliers run the gamut, from electric vehicles to rooftop solar arrays
State grid operator calls its federally approved proposal the first of its kind in the U.S.

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At the turn of the millennium, when the Toyota Prius hybrid was being introduced to California motorists, some energy experts talked of a day when electric vehicle owners would plug into the state’s power grid, pushing surplus energy back into the expansive system.

The predictions had the ring of something that our grandchildren would see in some distant, “Star Wars”-like future.

In reality, Californians could be plugging into the grid as soon as early next year, according to officials with the Folsom-based California Independent System Operator, which runs the state’s electric transmission grid.

Earlier this month, ISO received approval from the Federal Energy Regulatory Commission to develop a framework aimed at driving distributed energy resources – DER for short – into the power grid. ISO calls its effort the first of its kind in the nation.

While some utility customers currently get credit on their utility bills for excess power produced by their home solar systems, the ISO plan will allow participants to sell directly to the wholesale market.

DERs are small-scale power-generation sources located close to where the electricity is used. A DER can be a plug-in electric car – or much more. They can be solar power systems on the roofs of homes or businesses, battery storage systems, turbine systems, fuel cells and other electricity-storage systems. DERs are considered among the fastest-growing power sources in the nation, with the potential to provide an enormous energy source to the power grid. They have become increasingly popular as major power providers in California and throughout the United States face growing demands.

Advocates also note that DERs typically use renewable energy sources and do not involve major costs associated with constructing large, centralized power plants and high-voltage transmission lines.

DERs have been advocated in California for years but faced a roadblock to participate in the state’s wholesale power market, which required a 0.5-megawatt minimum. That was out of reach for numerous small DERs.

ISO filed with the federal energy commission in March for tariff changes allowing DERs to aggregate to meet the 0.5-megawatt threshold. Simply put, under the FERCapproved framework, if a DER provider – DERP for short – can group together multiple DERs meeting the threshold, that entity can become an eligible contributor to the grid.

Under ISO rules, DERP must apply to become ISO-certified and are subject to ISO rules, including metering and monitoring procedures. Like other providers to the wholesale power market, they would submit bids.

“In terms of the model for these, an aggregation would be a single resource, not the individual DERs. … The aggregators are sort of analogous to a power plant owner, offering product into our market,” said Tom Flynn, ISO’s storage and DER policy manager.

On a consumer level, a person could not only draw energy from the grid, but inject it back into the system – a potentially invaluable resource that can help meet growing energy demands. Just last week, for example, ISO declared a “Flex Alert” in Southern California to conserve power and reduce potential stress on the power grid.

Even plug-in electric vehicles are potential contributors, when equipped with devices that enable EV owners to push power back into the grid. Homeowners with rooftop solar systems would be similarly equipped. Asked how many potential DERP might be certified, Flynn said, “There’s really no limit.”

DERs grouped in a provider’s network are eligible for incentives that could include discounts on power usage. Any
incentives offered, Flynn noted, are between the DER and the DER provider, “like any other business arrangement.”

“This is a step toward the redesign of the power grid,” said Steve Berberich, ISO president and CEO. “We are seeing a shift from a one-way centralized system to a two-way decentralized system. This will open new market opportunities for distributed energy resource products and services, which will be instrumental to grid reliability in an emerging era of renewable power.”

The implications of ISO’s plan among California tech companies is substantial.

Last week, Palo Alto automaker Tesla Motors announced a nearly $3 billion bid to acquire San Mateo-based SolarCity in an all-stock deal. Tesla is headed by clean energy mogul Elon Musk, who also serves as chairman of SolarCity. The proposed deal has been panned in some quarters. However, given SolarCity’s expansive solar power network and Tesla’s continuing development of powerful batteries, the Golden State firms shape up as prototype DER providers, should they opt to participate.

Damon Franz, director of policy for SolarCity, called the ISO plan “a program that we’re very excited about,” citing its potential to provide power in densely populated areas that lack room for construction of a large, power-generating facility. He said the ISO program also opens the door for further development of smart devices and batteries to deliver reliable power on demand.

Flynn did not name any potential DERPs but characterized SolarCity as “an example of somebody that could be an aggregater.” He also pointed to the potential for DER growth in California, citing the proliferation of plug-in electric vehicles statewide and the recent, rapid growth of solar power installations on homes and businesses.

Utilities, including the Sacramento Municipal Utility District, are likewise interested in the power-providing potential of DERs. Asked about DERs, SMUD issued a statement that said, in part: “SMUD sees (DERs) playing a strong role in decarbonizing our energy system and wants to make sure that we leverage those resources to maintain and enhance reliability while keeping costs low for all of our customers. SMUD is actively developing strategies focused on this shift toward DER. We are also participating along with the rest of the industry in activities that will enable these technologies and customer choice to play a prevalent role in the energy system of the future.”

FERC’s approval requires ISO to submit an informal report on implementation efforts in six months and provide annual performance reviews for the next three years.