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City's collaboration could pioneer energy solutions

By Onell R. Soto

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The view from inside the mock-up of a shark head as Mayor Jerry Sanders introduces UCSD Chancellor Marye Anne Fox at a press conference at the Scripps Aquarium. — K.C. Alfred / U-T

San Diego could pioneer how plug-in cars are integrated into the electric grid under a collaboration announced Monday.

The effort unites city officials with professors at the University of California San Diego, technicians at San Diego Gas & Electric, researchers at General Electric and business people with CleanTech San Diego.

"It brings us all together for a common purpose, a common goal, a common future," said Jim Avery, an SDG&E executive who oversees where the region gets its electricity.

For instance, the project will test different ways to charge electric cars at UCSD.

The goal is to figure out how much energy can be saved by



Three plug-in cars owned by SDG&E employees served as the backdrop as city, business and academic leaders announced a collaboration Monday. — K.C. Alfred / U-T

Projects under the collaboration



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avoiding a conversion from direct current to alternating current and back to direct current.

Photovoltaic panels make DC power. Batteries are charged with DC power. But the electric grid runs on AC. And every time you convert electricity from one type of current to another, you lose some energy.

In the UCSD test, some cars will charge directly from solar panels on car ports, while others will charge from batteries that have been charged with solar power. A third method will use the electric grid as a backup.

Other parts of the collaboration, called Smart City San Diego, will work on smart grid technology, cutting through bureaucracy in getting vehicle chargers into homes, figuring out how companies can make money with clean power and determining how people in the real world act when they have electric cars.

The effort was launched at the Scripps Aquarium in La Jolla by Mayor Jerry Sanders and leaders of the institutions involved.

Sanders said the focus of the collaboration is on electric vehicles because of the leading role the region is taking in the rollout of plug-in cars.

"This is the first of many initiatives that our partners throughout the region will undertake," Sanders said.

To that end, the city and SDG&E will work to make it easier for plug-in car owners to get the permits needed to install 240-volt chargers.

And CleanTech will work with the city to figure out the economic impact, and job growth, associated with putting plug-in cars on the road.

"Each of us will bring to the table our own strengths," UCSD Chancellor Marye Anne Fox said.

In addition to testing the chargers, the university will get 50 plug-in cars that GE is buying and will pair them up with professors, staffers and students to figure out how having such a car changes behavior.

The key to getting a realistic picture is to move away from the technology fans and environmentalists who would otherwise be among the first to drive electric, said Byron Washom, who is spearheading the university's sustainability efforts.

"We're looking for the soccer moms. We're looking for retirees. We're looking for mainstream America," he said. "We're not looking for the early adopters."

The university will also work on research efforts, along with GE and SDG&E, to figure out the feasibility of using the large batteries that plug-in cars have to help manage the grid better.

Called vehicle-to-grid, the idea is that there are short periods, sometimes just a few minutes, when electricity demand nearly outstrips supply.

Getting power on the grid quickly can help it run more smoothly. UCSD, which makes most of its own power, has significant amounts of on-campus solar and is set up to run as a small grid of its own, is in a good position to test the implications of using cars to store power.

"Without this partnership, we would never have the opportunity to be engaged in that type of research," Washom said.

GE is looking to San Diego as a test bed for some of the technology it hopes to roll out worldwide, said Bob Gilligan, vice president of digital energy for GE Energy Services.

"You do have a community that embraces renewables, electric vehicles and conservation," he said. "It prepares us for a move into the market."

Five plug-in car initiatives are part of the collaboration announced Monday

- **Use technology to integrate plug-in cars with the electricity grid:** UCSD, GE and SDG&E will try out technologies to identify when and where charging will occur and work with drivers to help the grid better deal with charging.
- **Streamline the deployment of charging stations:** SDG&E and the city will work on making it easy to get the permits needed to install chargers at homes and in public places.
- **Research different sources for charging cars:** UCSD, GE and SDG&E will test technology and economics for a variety of ways to charge cars.
- **Study economic impact:** CleanTech San Diego and city officials will work to determine what training is needed and how many jobs, companies and industry clusters are created as a result of electric vehicle initiatives.
- **Learn about consumer behavior:** By leasing 50 electric vehicles to UCSD staff, students and faculty, researchers want to determine how people behave when they drive such vehicles.



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