

UC San Diego Receives \$11 Million in Incentives for Renewable Energy

California Center for Sustainable Energy Announces State's Largest Energy Self-Generation Incentive Award

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The city of San Diego's Point Loma Wastewater Treatment Plant currently flares methane in a process that burns the gas.

The California Center for Sustainable Energy in San Diego announced today that the University of California, San Diego will receive \$11 million in incentives from California's Self-Generation Incentive Program for the installation of an innovative fuel cell energy generation and storage system. This is the largest amount ever awarded by the California Public Utilities Commission (CPUC) for a renewable energy project and is the nation's first advanced energy storage project to receive state incentive funds.

"This \$11 million incentive is key to the work UC San Diego is doing on campus and in the community in developing and using technology that will help reduce our carbon footprint," said Marye Anne Fox, chancellor of UC San Diego. "Funding these efforts will stimulate worldwide impact through the demonstration, usage, and implementation of cutting-edge sustainable technology by UC San Diego."

The planned 2.8-megawatt fuel cell at UC San Diego, funded at \$7.65 million, will be paired with an additional 2.8-megawatt advanced energy-storage system, funded at \$3.4 million, which will allow the university to store off-peak power and discharge the energy during peak-demand hours. It is the largest project of its kind in the world. Integrating clean, renewable generation with advanced energy storage is an important strategy for transforming California's electricity system into a sustainable "smart grid," according to the CPUC.

Danbury, Conn.-based FuelCell Energy, Inc., will deliver a 2.8-megawatt fuel cell to UC San Diego. The fuel cell utilizes a well-established electrochemical process to convert purified methane gas directly into electricity without combustion.

"Increasingly the state will be relying on renewable resources, like wind, fuel cells and other technologies that do not necessarily produce energy when it is most valuable," said CPUC President Michael R. Peevey. "Storage solves that problem, transforming what would otherwise be low-value energy into high-value energy that can be used on-site to reduce peak energy demand. UCSD should be commended for taking this important step."

The \$11 million award for the UC San Diego project comes from the CPUC's Self-Generation Incentive Program that provides rebates for fuel cell and wind generating systems from 30 kilowatts to 3 megawatts in size. The California Center for Sustainable Energy (CCSE) administers the program within the San Diego Gas & Electric (SDG&E) service territory. CCSE is a nonprofit organization dedicated to fostering public policy and programs that promote clean and efficient energy technologies and practices.

"Advanced energy storage lets us take the best advantage of renewable generation resources, and at the same time, it can improve the reliability of the electric system and ensure the level of power quality that a modern society requires," said Andrew McAllister, CCSE director of programs. "CCSE and UCSD have been

advocates for inclusion of advanced energy storage in incentive programs as an important way to develop this new marketplace. CCSE is pleased to partner with UCSD on this and many other projects."

The integration of this continuously available renewable resource with energy storage will demonstrate for the first time the ability to optimally meet the daily peaks and valleys of customers' electricity demand loads, according to Byron Washom, UC San Diego's director of strategic energy initiatives.

"The fuel cell integrated with energy storage is the centerpiece project for UC San Diego providing global leadership in smart grid initiatives" said Washom. "It is the world's largest commercially available system and the first such unit of this size to utilize renewable methane gas as fuel."

UC San Diego's fuel cell and storage system is being deployed by BioFuels Energy, LLC of Encinitas, Calif., and is scheduled to be completed in 2010. FuelCell Energy, Inc. of Danbury, Conn., the world's largest supplier of fuel cells, will provide the system, which utilizes a well-established electrochemical process to convert the purified methane gas directly into electricity without combustion. The renewable methane will be collected at the City of San Diego's Point Loma Wastewater Treatment Plant, purified and compressed on-site and delivered to the UC San Diego campus by BioFuels Energy. The wastewater treatment plant's methane is currently flared in a process that burns the gas.

Once in operation, the electrical output of the fuel cell will be used to help power UC San Diego's microgrid and also be stored for discharge during periods of highest electricity demand. The entire fuel cell and storage project is expected to cost as much as \$16 million. In addition, the university will capture the waste heat generated by the fuel cell as a continuous power source for 320 tons of chilling capacity to cool campus buildings.

UC San Diego is committed to reducing its carbon footprint through energy-efficient operations and developing renewable-energy sources that can serve as a basis for other projects. The campus has one of the country's most sophisticated microgrid energy systems that generates 80 percent of the university's electricity needs with a 30-megawatt gas turbine plant and 1 megawatt of solar photovoltaic arrays. The campus's microgrid energy system maximizes the efficient use of power while supplying a community of 54,000 students, faculty and staff.

The UC San Diego fuel cell and storage system will reduce carbon dioxide greenhouse gas emissions by an estimated 8,200 tons per year. The California Air Resources Board has certified the local pollution emissions of the planned fuel cell system as an "ultra clean" electrical generation technology that is exempt from the permit requirements of air pollution control or air quality management districts.

Fuel cells produce electricity by separating the component electrons and protons of a fuel, which will be methane gas at UC San Diego, and forcing the electrons to travel through a circuit that converts them to electrical power. Methane-powered fuel cells are in operation at landfills and waste water treatment plants across the country, as well as at several breweries. Fuel cells will operate virtually continuously as long as the reactant fuel is replenished.

The California Center for Sustainable Energy is an independent non-profit 501(c)(3) dedicated to fostering public policy and programs to facilitate the adoption of clean, reliable, sustainable and efficient energy technologies and practices. For more information on CCSE programs, rebates and services, please visit www.energycenter.org or call 1-866-SDENERGY.

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