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San Diego Fuel Cell Project Turns Waste into Energy, Revenue Source

By Jennifer Hill, Staff Writer, Novogradac & Company LLP

With roughly 175 million gallons of sewage flowing into the city of San Diego, Calif.'s Point Loma Wastewater Treatment Plant (PLWTP) each day, the Metropolitan Wastewater Department (MWD) had so much excess methane gas that for a number of years it resorted to gas flaring – a combustion-based, emission-releasing process – to dispose of it. Recognizing that the excess gas could represent a source of revenue instead of emissions, the MWD issued a request for proposals from companies that could use the surplus gas. Encinitas, Calif.-based BioFuels Energy's (BFE's) bid to purchase the gas and use it as a sustainable fuel for fuel cell power plants caught the city's attention, and ultimately led to the \$45 million, 4.5 megawatt (MW) beneficial use of digester gas (BUDG) project that is expected to supply electricity to the city of San Diego South Bay Water Reclamation Plant (SBWRP) and the University of California, San Diego (UCSD) as early as September 2011.

BFE will install, own and operate a 300 kilowatt fuel cell on-site at PLWTP to power a methane gas purification facility, which will bring the biogas up to natural gas standards and inject it into existing natural gas pipelines (directed biogas). A 2009 California Public Utilities Commission ruling allows the biogas to be transmitted via San Diego Gas & Electric Company's existing natural gas pipelines. The gas from PLWTP will be nominated to two additional BFE-owned power plants, a 2.8 MW plant at UCSD and a 1.4 MW system at SBWRP.

Ken Frisbie, BFE managing director, said because BFE was already under contract with the city to pay \$2.6 million over 10 years for its methane gas, siting one of the power plants on the city's SBWRP was a natural fit. The city expects to

save \$780,000 over the 10-year term by purchasing approximately 50 percent of the pump station's electricity from BFE through a power purchase agreement (PPA).

UCSD's 2.8 MW power plant – the largest on any college campus – will offset 8 percent of the electricity that the school previously purchased from the grid, said John Dillliott, UCSD energy and utilities manager. Construction has already begun on the fuel cell plant, which is expected to generate enough electricity to power 2,800 homes.

When the fuel cell plant is operational, UCSD will purchase the electricity at competitive rates though a PPA with BFE. Together with additional solar generating capacity, the campus will be able to meet as much 95 percent of its electricity needs, vice chancellor of Resource Management and Planning Gary C. Matthews said in a press release. Waste heat from the plant will provide a secondary power source. Dillliott said this is UCSD's first experience using fuel cell generation. The university plans to make the roughly tennis-court-sized plant the anchor of its Energy Innovation Park, an approximately 2-acre area on the east side of campus that showcases sustainable energy technologies such as solar panels, battery storage units and algae fuel production in action. A compressed natural gas fueling station for campus service vehicles is another of the learning tools at the park, which is open to UCSD students and those from the local K-12 schools.

"With traditional energy projects, you're putting [the energy] into the grid and you don't know who's benefitting from it," Frisbie said, pointing out that because the BUDG project involves distributed generation – the process of generating

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and using electricity on-site as opposed to transferring it to the grid – it promotes the local economy. Frisbie said its community impact is one of the project's three central facets, along with the environmental component of a 26 million-pound-per-year reduction in carbon dioxide emissions and the financial bonus of a combination of federal and state renewable energy incentives.

United Fund Advisors (UFA) served as an advisor to the transaction and structured the tax equity financing. "The financial structure was relatively complex due to the inclusion of two federal tax credit programs and two state of California subsidy programs," explained UFA principal Chris Hasle. The overall transaction will benefit from financing sources that include \$34 million in new markets tax credit (NMTC) allocation, a \$9.8 million Section 1603 grant in lieu of renewable energy investment tax credits (ITCs), a \$14 million California Self-Generation Incentive Program (SGIP) grant and \$12 million in tax-exempt bonds issued by the California Pollution Control Authority.

A community development entity affiliate of the East Los Angeles Credit Union is providing the NMTC allocation. This is the first fuel cell financing to utilize NMTCs, according to Nixon Peabody LLP's finance and syndication team, which represented the tax equity investor. The varied financing sources, their corresponding closing deadlines and a contemporaneous bond closing made the transaction larger than a typical NMTC deal, said Michael J. Goldman, Nixon Peabody's lead attorney for the transaction.

The project's bond purchaser and co-sponsor, New Energy Capital (NEC), is providing \$23.5 million in debt and equity investments through its CleanTech Infrastructure Fund. NEC principal Adam Bernstein said the firm was drawn to the project because of its credible off-takers and captive fuel source in the wastewater treatment biogas. US Bancorp Community Development Corporation (USBCDC)—also attracted to the project's strong partners, plus the inducement of the investment bank exploring new territory with a fuel cell energy project—monetized the ITCs generated by the UCSD site and the NMTCs, said Tina Lin, USBCDC project manager.

With so many incentive programs and financing partners, NEC CEO Scott Brown called the transaction the most complicated financing the company had ever undertaken. He said in a press release that he believes the BUDG project will serve as a model for future biogas projects. Bernstein said that to his knowledge, it's also the largest of its kind in the United States. And while biogas may not get as much public attention as solar or wind projects, the BUDG project solved a waste and emissions problem and is anticipated to create more than 50 jobs while financially benefiting all parties involved. ♦

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