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Association for the Advancement of Sustainability in Higher Education
STARS Program

To Whom It May Concern:

UC Davis is submitting West Village as an Innovation Credit under the AASHE STARS program. West Village is an on-campus neighborhood for UC Davis students, staff and faculty. The first 800 students who moved into West Village apartments in August 2011 are living in the largest planned community in the United States to require Zero Net Energy from the grid on an annual basis. This truly innovative project employs deep energy conservation measures to reduce demand by approximately 50 percent below the already stringent California Energy Building Code 24, the most stringent building code in the United States. Photovoltaic panels on building roof tops and parking lot shade structure generate the renewable energy to achieve this zero net energy goal. See the attached summary sheet for additional aspects of this truly innovative project.

Sincerely,

A handwritten signature in cursive script, appearing to read "A. Sidney England".

A. Sidney England
Assistant Vice Chancellor
Environmental Stewardship and Sustainability

UC Davis West Village (www.westvillage.ucdavis.edu)

What is UC Davis West Village?

- The largest planned "zero net energy" community in the United States. In the course of a year, the community is designed to generate as much energy as it consumes.
- A model for the nation: UC Davis West Village is on track to demonstrate, for the first time, that zero net energy is practical on a large scale.
- A model public-private partnership: The university and a private developer have accomplished together what neither could achieve alone. Leveraging the expertise of its faculty and staff, UC Davis secured nearly \$7.5 million in federal and state energy research grants to explore large-scale ZNE design. West Village Community Partnership, LLC, under a 65-year ground lease with the university, invested \$300 million to make the project a reality. (West Village Community Partnership is a joint venture of Carmel Partners of San Francisco and Urban Villages of Denver.)
- A model in higher education: UC Davis West Village includes the first community college center located on a University of California campus. And its planned single-family homes will help the university to recruit and retain top faculty and staff by enabling them to live locally and participate fully in the life of the campus and community.
- A spur for the region: The project's design, with a village square and network of open spaces, parks, gardens, pathways and courtyards, provides a high quality of place and community. Construction of UC Davis West Village has generated some 300 jobs.
- An incubator for innovation in sustainability: UC Davis's first uHub will be a prototype for future campus innovation hubs. Located in commercial space surrounding the village square, the uHub will be home to the campus's energy research centers, where they will enhance the living laboratory of UC Davis West Village while fostering interactions with the private sector in the area of energy research.
- A home for 3,000 students, faculty and staff. At build-out, the project will include 662 apartments, 343 single-family homes, 42,500 square feet of commercial space, a recreation center and study facilities. The development also includes a site for a preschool/day care center.

What is zero net energy?

- Zero net energy is the latest goal in sustainable design, made possible in large part by innovations fueled by academic research. ZNE buildings are designed to have a net energy consumption of zero over a typical year.
- ZNE building could significantly reduce greenhouse gas emissions and dependence on fossil fuels. According to the U.S. Department of Energy, traditionally designed buildings consume 40 percent of the total fossil energy in the United States.
- In its Zero Net Energy Action Plan, released Sept. 1, 2010, the California Public Utilities Commission called for shifting all new residential construction in California to ZNE by 2020 and all new commercial construction to ZNE by 2030.

How will UC Davis West Village achieve zero net energy?

- Through aggressive energy efficiency measures and on-site renewable power generation, in addition to conservation incentives.
- If built merely to code, the multifamily units at UC Davis West Village would burn an estimated 22 million kilowatt hours of electricity in a year. But through the use of aggressive energy efficiency measures, the annual total will come to approximately 11 million kilowatt hours-- a 50-percent reduction. Similar energy efficiency is anticipated for the single family housing.
- Energy efficiency measures include solar-reflective roofing; radiant barrier roof sheathing; high-efficiency light fixtures, air conditioning systems and appliances; thick 2" x 6" exterior walls for added insulation; and such architectural elements as roof overhangs and window sunshades.
- On-site energy generation is designed to be equivalent to the community's energy demand. An advanced four-megawatt photovoltaic system of rooftop solar installations and solar canopies over parking areas will meet the needs of the first 1,980 apartment residents and commercial spaces.
- On the horizon is a biogas generator, based on technology developed at UC Davis, which would convert campus waste into electricity. Waste will include table scraps from campus dormitories, animal waste from the campus's dairy and plant waste from agricultural research fields.
- To encourage conservation, residents will have access to a web-based tool that enables energy use monitoring by unit. And a smart phone app lets residents turn off lamps and plugged-in electronics remotely.

What was involved in zero net energy planning for the project?

- The unique public-private partnership between the university and West Village Community Partnership optimized public and private resources to deliver a new model for sustainable development.
- Energy grants came from the U.S. Department of Energy's Community Renewable Energy Deployment program, to explore waste-to-renewable-energy alternatives (\$2.5 million); California Energy Commission, as a matching grant for the DOE grant (\$500,000); California Public Utility Commission's California Solar Initiative, to study innovative technologies and innovative business models related to solar photovoltaic systems (\$2.5 million); and California Energy Commission's PIER Renewable-Based Energy Secure Community program, to assist in the design and engineering of renewable energy systems (\$1.94 million). Such grants are available only to research institutions.
- Energy advisors included PG&E, Chevron Energy Solutions, Davis Energy Group, Energy+Environmental Engineering and SunPower. The project also drew on the internationally recognized expertise of UC Davis faculty and research centers including the UC Davis Water Efficiency Center, UC Davis Energy Institute, UC Davis Energy Efficiency Center, UC Davis Western Cooling Efficiency Center, UC Davis California Lighting Technology Center, UC Davis Institute for Transportation Studies and UC Davis Biogas Energy Project. New innovations will be tested and introduced at UC Davis West Village as they emerge from these laboratories.

Is UC Davis West Village sustainable in other ways?

- Water: The design incorporates drought-tolerant landscaping to minimize irrigation needs and natural drainage systems to create greenbelts and "green streets" that also cleanse rainwater

before entering the storm drain system. Apartments are equipped with water-saving toilets that use only 1.28 gallons of water per flush (20 percent more efficient than required by code), water-saving shower faucets that deploy only 1.5 gallons a minute (40 percent less than code requires).

- Transportation: UC Davis West Village allows ease of pedestrian, bicycle and transit access to the central campus and greater community. The community is served by Unitrans, a student-run bus service that serves the campus and city of Davis. Bike racks are plentiful, and as the community matures, residents will not be allowed to purchase campus parking permits (with exceptions for disabled residents).
- Chemicals: Units are painted with low VOC (volatile organic compounds) paint. Kitchen and bathroom cabinets have a water-based low VOC finish.
- Materials: Floors are made of 50 percent recycled material. Countertops are made from recycled quartz.

What is ZNE living like?

Apartments in the development's first phase offer:

- En suite bathrooms and walk-in closets for each bedroom
- Full-size high-efficiency washer and dryer
- High-speed Internet
- Energy Star electric kitchen appliances
- Ceiling fans in living rooms and bedrooms;
- Patio doors and over-sized windows oriented to maximize cross breezes and provide natural lighting
- Window blinds and exterior sunshades to block direct sunlight
- A 15,000-square-foot recreation center that includes a 24-hour fitness facility, yoga studio, club room, swimming pool and outdoor kitchen with barbecue grills and outdoor fireplace

Is it affordable?

- Apartment rents are at the high end of the Davis market -- starting at around \$745 per bed -- and include utilities and unlimited high-speed Internet service.
- Single-family homes will be available for sale to full-time faculty and staff not already owning a home in the Davis Joint Unified School District.

What is the timeline?

- UC Davis West Village broke ground in August 2009. The first residents began moving into apartments in August 2011. A ribbon-cutting ceremony will take place Oct. 15, 2011. The Sacramento City College Davis Center will offer its first classes beginning in January 2012. Student housing will be completed in 2013. Single-family model homes are anticipated to be completed in late 2012.

Future plans?

- Under the neighborhood master plan for UC Davis West Village, a future construction phase could include another 882 student beds and 132 single-family homes on 94 additional acres. No timeline has been set for this phase.