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Turlock Irrigation District selected to pilot first-in-the-nation water-energy nexus project involving solar panels over canals

Ground to break this fall, providing proof of concept for University of California academic study; energy storage to be incorporated

At its February 8, 2022 board meeting, Turlock Irrigation District (TID) announced [Project Nexus](#), a pilot project to build solar panel canopies over a portion of TID's existing canals to operate and research a truly innovative, multi-benefit, water-energy nexus project that can further California's push toward water and climate resiliency.

Project Nexus, a public-private-academic partnership among TID, the Department of Water Resources (DWR), Solar AquaGrid, and the University of California, Merced, could contribute to a more water resilient future for California and position the State to meet its ambitious clean energy goals. The first-ever solar panel over canal development in the United States, the Project will assess reduction of water evaporation resulting from mid-day shade and wind mitigation; improvements to water quality through reduced vegetative growth; reduction in canal maintenance through reduced vegetative growth; and generation of renewable electricity.

Groundbreaking on Project Nexus is scheduled for this fall, with project completion expected in 2024 at multiple locations throughout the TID service territory in California's Central Valley. The project will use existing TID infrastructure on already-disturbed land to keep costs low and efficiency high while supporting the region's sustainable farming tradition. Additionally, energy storage will be installed to study how storage facilities can support the local electric grid when solar generation is suboptimal due to cloud cover. The \$20 million project is funded by the state of California.

"In our 135-year history, we've always pursued innovative projects that benefit TID water and power customers," said TID Board President Michael Frantz. "There will always be reasons to say 'no' to projects like this, but as the first public irrigation district in California, we aren't afraid to chart a new path with pilot projects that have potential to meet our water and energy sustainability goals."

While Project Nexus, especially if expanded beyond a demonstration project, offers benefits to TID, the project is seen as a template with potential to be replicated elsewhere in the state to help California

achieve its water and energy goals. The inspiration for Project Nexus comes from the concept presented in a [recent University of California study](#), published last March in the journal Nature Sustainability.

The UC study illustrated that covering all of the approximately 4,000 miles of California canals could show a savings of 63 billion gallons of water annually, comparable to the amount needed to irrigate 50,000 acres of farmland or meet the residential water needs of more than 2 million people. According to the study, the 13 gigawatts of solar power the solar panels would generate each year would equal about one sixth of the state's current installed capacity.

“The Solar AquaGrid model provides a combined, integrated response to addressing our water-energy nexus,” said UC Merced Professor Roger Bales. “It helps address California’s underlying vulnerabilities while meeting both state and federal level commitments to produce renewable energy, preserve natural lands, lower greenhouse gas emissions and mitigate climate change.”

DWR will oversee administration of the project, will provide technical assistance, as well as serve as a research partner.

“We are excited to explore new efforts to advance the integration of renewable energy into our water supply delivery system,” said Karla Nemeth, Director of DWR. “The project offers great potential, and we look forward to collaborating with our local and academic partners to advance these type of multi-benefit projects.”

Turlock Irrigation District has retained Bay Area development firm Solar AquaGrid as project developers and program managers for TID and Project Nexus. The two agencies have been collaborating since the project’s inception. Solar AquaGrid originated the project after commissioning the UC Merced Study in 2015 and has facilitated collaboration among the various parties to bring Project Nexus to fruition.

“Research and common sense tell us that in an age of intensifying drought, it’s time to put a lid on evaporation,” said Jordan Harris, CEO of Solar AquaGrid. “We are excited to partner with Turlock Irrigation District, DWR, and UC Merced to develop this first-in-the-nation pilot project and bring needed innovation to the Central Valley. Our initial study revealed mounting solar panels over open canals can result in significant water, energy, and cost savings when compared to ground-mounted solar systems, including added efficiency resulting from an exponential shading/cooling effect. Now is the chance to put that learning to the test.”

For additional information about the project and project partners, visit www.tid.org/projectnexus, or contact those listed below.

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Project Nexus Partners

Turlock Irrigation District (TID)

The Turlock Irrigation District, located in Turlock CA, is the first publicly owned Irrigation District and is one of only four today that provides irrigation water and power to residential, commercial, industrial and agricultural customers within its service area. TID has been in the retail electric business since 1923. TID provides safe, low-cost, reliable energy to a growing customer base that today exceeds 103,000 home, farm, business, industrial and municipal accounts. TID also serves 4,700 irrigation customers covering approximately 150,000 acres of farmland. For more information about TID visit www.tid.org.

Department of Water Resources (DWR)

The Department of Water Resources' mission is to sustainably manage the water resources of California, in cooperation with other agencies, to benefit the state's people and protect, restore, and enhance the natural and human environments. For more information, follow us on [Twitter](#) or [Facebook](#) and read our [news releases](#) and [DWR updates](#).

Solar AquaGrid

Solar AquaGrid LLC is a project development & envisioning studio based in Marin County, California. Founded by social & sustainability entrepreneur Jordan Harris and chief creative officer Robin Raj, the firm is dedicated to accelerating adoption of innovative solutions to address our water/energy nexus and is currently guiding development of pilot projects to provide large-scale solar shading over canals across the American West. www.solaraquagrid.com

UC Merced

The University of California is more than 150 years old and its 10 campuses —including UC Merced and UC Santa Cruz — comprise more than 280,000 students and more than 227,000 faculty and staff. UC campuses are routinely ranked among the best in the world. Through teaching, research and service, UC students, faculty, staff and alumni make advancements and address the world's most pressing challenges. UC faculty members are the drivers behind thousands of innovations in biotechnology, computer science, art, architecture and many other areas. Thousands of California jobs, billions of dollars in revenue and countless everyday household items can be traced back to UC discoveries. Similarly, many of California's leading businesses are based on UC technology, developed by faculty or led by UC graduates. <https://www.universityofcalifornia.edu>