FLOATING SOLAR: LAKE COUNTY SPECIAL DISTRICT

Lake County, California

The floating solar array installed on a polishing pond for one of Lake County Special District's treatment plants

PROJECT DESCRIPTION

Lake County Special District (LCSD) in California manages 5 water systems serving approximately 3,660 residential and 164 commercial connections, 4 wastewater treatment plants with 12,132 service connections, and 8 lighting districts within its county. In 2017/2018, LCSD installed a 251 kW floating solar facility in a polishing pond of one of its treatment plants, which was designed to provide 100% of the electricity needs for the treatment plant. The pond is brought into service on a seasonal basis and sometimes the pond is dry, but the solar remains active during dry times because the system is designed with tethers that allow the floating array to go up and down with the water level.

The floating solar option proved viable for this site because there was not a lot of ground area for a ground-based solar array. The solar array was designed as a 251 kW system and has consistently performed at or above that performance level. The project has seen an energy output of 389,580 kWh in 2019 and 404,214 kWh in 2020.

MAKING THE PROJECT HAPPEN

LCSD has a long history of being green/ecologically minded and has been investing in green energy projects since the ’90s. This history and mindset made it easy to move forward with the project, which was proposed by management and supported by both staff and the Board of Directors. The likely cost-savings from the project were also a driver in moving it forward.

FINANCES

The total cost of the project—including the initial cost plus municipal lease interest costs—is $934,134.00. To finance the initial costs of $767,760.00, LCSD utilized a 10-year, low interest rate (3.73% APR) municipal lease financing option that provided ownership of the facility to LCSD at the completion of construction. Annual payments on the financing are made utilizing the savings in O&M costs (electric utility payments) with the long-term goal to have reduced electric utility payments and no financing payments after the 10-year period. Over the system’s expected 25-year lifespan, LCSD anticipates total electric utility cost savings of $3,251,098 with a total financed cost of $934,134, for a net benefit of $2,316,964.

Before choosing the 251kW array, LCSP analyzed the anticipated savings for a 165 kW array vs. the 251 kW array. The 165kW system anticipated a net benefit of $2,629,705, which is about $300,000 dollars greater than the net benefit of the 251kW system. However, LCSD ultimately chose the 251kW design because it was the more environmentally conscious option, as it would provide 100% of the energy needs of the treatment plant.

WUCA
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FLOATING SOLAR PROJECT

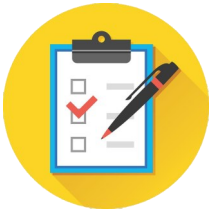
Lake County Special District

IMPLEMENTATION

To implement the project, there was internal interface with the legal department to review financing options and provide approval of the selected bid option. There was also coordination with the County Community Development Department for environmental review and permitting. There was compliance with CEQA (California Environmental Quality Act) and a General Plan Conformity check, both of which were performed by the County Community Development Department. They also needed to obtain building permits for the electrical work and an interconnection agreement with the utility provider (PG&E). There were no challenges in obtaining the permits.

CHALLENGES

The largest challenge LCSD has faced with this project has been dealing with the electric utility provider following the completed installation of the floating solar array. The anticipated cost savings of the project haven't been fully realized due to shifting utility rate structures (the rates shifted peak time of use and peak rates outside of normal solar times). LCSD has been working with the electric utility provider to ensure they're on the proper rate structure to maximize their savings. Due to these shifting utility rate structures, LCSD is also looking to install on-site battery storage to offset the peak usage charges of the electric utility rate structures. LCSD is partnering with a battery storage company to utilize the Self-Generation Incentive Program (SGIP) funding from the California Public Utilities Commission (CPUC) for a no-cost to LCSD installation of the energy storage project (battery).



ADVICE AND LESSONS LEARNED

LCSD suggests that a utility installing this type of project should thoroughly explore the assumptions around rate structure changes and expected savings. In this exploration, it should work closely with its energy provider and keep documentation of what rate structure plans will be available once the project is installed. Additionally, the utility should investigate on-site energy storage options (batteries, etc.) and their relevant financial incentives to best offset peak hour usage and further enhance potential savings from the project. Ultimately, LCSD feels that with the proper amount of planning, a floating solar installation can be a successful project for other utilities.

LEARN MORE

For more information about LCSD and this project, contact:

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