

a shining example



By Ryan Work

California reclamation facility successfully utilizes solar energy

Wastewater treatment facilities are prodigious users of electricity. With heavy equipment including pumps, digesters and aerators needed to maintain operations 24 hours a day, seven days a week, wastewater treatment facilities yield extremely high electricity bills for their owners or operators. On top of that, energy costs are on the rise.

The Truth About Solar

Solar energy is more than a commitment to the environment; it also is a solution to rising energy costs. Misconceptions about solar abound—it is too expensive, it is impractical for many applications, and it is too much of a hassle. In reality, solar energy is an affordable, simple and straightforward solution that many wastewater treatment facilities have already adopted to save bundles in electricity costs.

Solar's economics are already cost-effective for many applications and are only continuing to improve. Costs have plummeted by 30% in the past two years, leading to a 70% increase in installed solar nationwide over the past year. Furthermore, experienced project developers are accustomed to working with a range of municipal requirements, helping municipalities easily surmount installation challenges to keep cost-per-watt low and headaches minimal while complying with applicable regulations.

While solar makes sense for many end users, water treatment facilities are particularly well suited due to their high continuous energy use. In addition to hedging against rising electricity rates and keeping bills low for ratepayers, solar can help local governments comply with sustainability goals or clean energy mandates, and boost their environmental chops in the eyes of their citizens.

Ventura County

Moorpark Water Reclamation Facility (WRF), located in Ventura County, Calif., recently turned to solar to reduce electricity bills and meet county sustainability requirements. Ventura County Waterworks District No. 1 installed a 1.1-MW solar energy system that will power 80% of the electricity needs of Moorpark WRF and save the district roughly \$210,000 per year in electricity costs. Today, the system is the largest publicly

owned solar system in Ventura County.

Of the decision to install solar, Reddy Pakala, director of Ventura County's Water & Sanitation Department, said, "In addition to helping us keep monthly sewer rates stable for our ratepayers, this solar system will allow us to comply with our board's Climate Protection Plan, which requires county departments to reduce power consumption by 15% by 2020."

Not only is the system saving money that is passed along to Ventura County citizens, it also is providing an affordable way for the county to reduce electricity use to meet county-wide goals.

Moorpark's solar system covers approximately 6 acres of land. Trackers on the system rotate the solar modules to follow the sun throughout the day and optimize system performance. Trackers boost production (especially in the morning and late afternoon) generating more than 2 million kWh AC of electricity annually. By supplying solar energy during sunny hours, and selling electricity back to the grid when Moorpark does not need it, the system efficiently lowers the district's energy bill.

To ensure the system met all of the district's needs, Ventura selected AECOM to provide technical and management support services for the county. After a rigorous evaluation and selection process, national solar installer REC Solar was selected to design and construct the Moorpark solar array. By working with experienced firms like AECOM and REC Solar, the district was able to transition responsibility for all design, construction and supply decisions to the system developers and installers. As a result, construction was completed on time and on budget.

Beyond the Economics

By working with companies that were able to customize technology offerings and construction processes to meet the county's requirements, Ventura County Waterworks District No. 1 was able to bring its system online efficiently and with minimal headaches.

For example, the system was required to achieve a service life of more than 40 years, well beyond the typical 25-year lifespan for commercial solar systems. REC Solar's engineering teams utilized corrosion treatments on mounting piers (giving them a service life over 40 years) and robust



The 1.1-MW solar energy system installed at the Moorpark Water Reclamation Facility saves the district approximately \$210,000 in annual electricity costs.

conductors, combiner boxes and wiring (with service lives in excess of 35 years) to meet these requirements. In the end, the design approach ensured a long-term service life for the system.

Throughout the process, construction met the county's stringent safety requirements, while minimizing the cost per kWh of electricity produced. With the WRF filling a critical need for the public, construction of the system had to continue alongside existing operations. The construction process also was required to keep to a 120-day construction schedule—an unusually abbreviated timeline for a project of this size. Ultimately, REC Solar was able to successfully and safely complete the project on time, installing 300-plus solar modules per day during the 120-day period.

On top of the construction, economic and life-cycle benefits to the county, Moorpark WRF's solar array also brought job and educational opportunities to the region. The system contracted 20% of all labor hours from a local apprenticeship program, stimulating job training and economic growth for the county. Furthermore, an observation deck on the southern end of the site displays the system's expanse and describes the benefit of solar energy to the public, offering an educational opportunity to visiting school groups and community organizations. REC Solar and AECOM worked with Ventura County to provide educational materials and signs for visitors to learn more about renewable energy and sustainability.

Lastly, the system brought significant environmental benefits by reducing Moorpark's carbon emissions. Over the next 25 years, the system will generate more than 52 million kWh of clean electricity, which is equivalent to:

- CO₂ emissions from more than 85,000 barrels of oil;
- CO₂ emissions from more than 4 million gal of gasoline;
- Annual greenhouse gas emissions from more than 7,000 cars; or
- Carbon sequestered by 950,000 trees grown for 10 years.

Lessons Learned

Solar energy is continuously evolving to meet the needs of a diverse range of customers. Moorpark's example demonstrates how solar is accessible and practical for all types of customers—including municipally owned waste treatment facilities. A number of wastewater treatment facilities are implementing similar applications, including those in Hayward, Calif.; Shippensburg, Pa.; and Madera, Calif., to name a few. Companies like REC Solar are able to adapt their construction and installation processes in order to meet any combination of structural

requirements, municipal codes and county laws—and do so in a profitable way for the system owner.

With that in mind, selecting the right partners is crucial. With an experienced project development partner, it is easy to get started; the partner will design the system, select the components and installer and make sure everything is built seamlessly—on time and on budget.

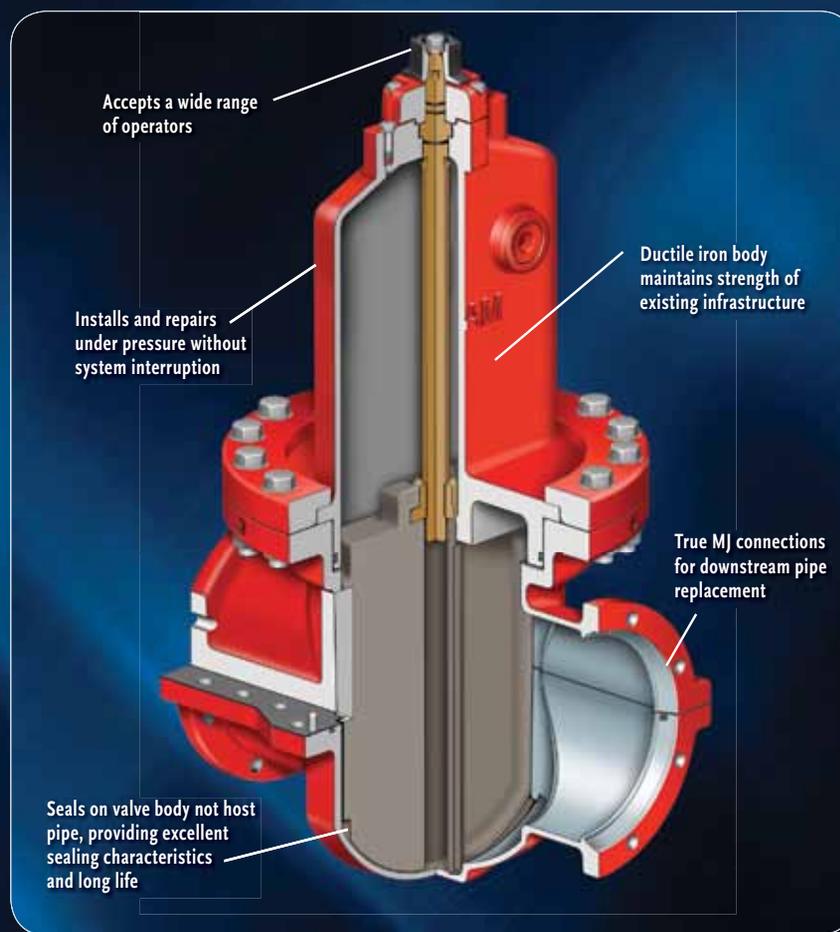
Convincing economics, customizable construction processes and important environmental

benefits make solar a compelling proposition for wastewater treatment plants. Now is the time for facility managers and wastewater treatment plant operators to take a fresh look at solar. www.wwd

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