

Program/Project Narrative

Victor Valley Wastewater Reclamation Authority (VWVRA) is pleased to present the Omnivore Biogas to Energy Project for consideration in the Water Resources Utility of the Future category. They say one man's trash is another man's treasure. In the case of VWVRA, it was a piece of garbage in General Manager Logan Old's office trash bin six years ago that sparked the idea for an ambitious project with two main goals: achieve cost savings and energy neutrality. In 2014 that dream came true.

VWVRA, a wastewater treatment facility located in Victorville, California, serves three cities and two county services areas with a total population of over 350,000 people. Teaming with Anaergia (Burlington, Ontario, Canada), VWVRA retrofitted an out-of-commission anaerobic digester, giving it new life through recuperative thickening technology, nearly tripling capacity and resulting in a higher output of biogas. This excess biogas is then converted into electricity to power the plant operations. The Omnivore system utilizes existing organic waste streams to produce 100% renewable power. Until recently, power has been generated from natural gas and utility-supplied electricity at a cost of \$1.4 million annually. The innovation includes Anaergia's high solids mixers and recuperative thickener, which change an ordinary digester into a high-solids Omnivore digester.

While many facilities utilize biogas, produced as a by-product of treatment to generate energy, the truly innovative element of this project has been the ability to retrofit existing facilities and structures, resulting in immense cost savings and a reduced environmental footprint. The goal is to demonstrate that wastewater treatment facilities like VWVRA can operate the existing infrastructure more efficiently.

The Omnivore is unprecedented technology. The retrofit is the first of its kind in North America. The VVWRA Resource Recovery Facility, at 12.5 MGD, will be the second in the world to produce 100 percent of its energy from waste treated onsite. No solar or wind generated power is necessary. The project is reducing greenhouse gas emissions while eliminating electricity and natural gas related expenses that VVWRA would otherwise ultimately pass on to the community. This cost savings for the agency translates into cost savings for local businesses and an advantage to the economic development of the region. 584,000 kilowatt hours will be offset from the grid annually, and approximately 1,400 tons of waste will be utilized as energy instead of sent to the landfill equaling an estimated saving of \$9 million.

With recuperative thickening or even with traditional digesters, the ability to co-digest an additional waste stream can bring added value to the facility, whether it be through tipping fees or by producing power from the additional methane that is generated as a result of the decomposition. In addition, the potential to sell excess energy back to the grid exists, further reducing impact to rate payers and plant operation costs.

Funded in part by the California Energy Commission's (CEC) Public Interest Energy Research (PIER) program, the start-up of the VVWRA Omnivore project is significant to the future of utility design, the CEC and to Anaergia because it demonstrates how wastewater treatment plants can increase digester loading and biogas production using existing infrastructure.

Anaergia designed, built, and owns the renewable energy system under a 20-year power purchase agreement, with no capital cost to VVWRA. The agreement between VVWRA and Anaergia is a unique example that can be followed by other utilities and resource recovery facilities by way of creating a public private partnership that can significantly impact rates and

operations in a positive way – with no risk of losses should the project not perform as indicated.

The City of Chicago recently signed an agreement to replicate the process pioneered at VVWRA.

The benefits to the environment, the utility, and the community are numerous. The projects reduction in carbon footprint is equivalent to taking 2,053 passenger cars off the road for one year. By eliminating the need for “flaring”, or burning off methane, VVWRA is improving air quality for future generations of Victor Valley residents. Several high-strength waste-streams such as fats, oils, and grease (FOG); restaurant waste; and food processing waste are also being evaluated for potential introduction into the digester. A multitude of products are produced through the process, such as biogas, diesel fuel, compost, and soil amendments. The compost and soil amendments will result in recycling nutrients back into the local ecosystem for agricultural purposes, landscaping and public works projects, a commercial use for nutrients. The same byproducts can be used commercially for erosion control, water absorption, and improving overall soil quality in the arid desert region.

VVWRA is anticipating 100% energy neutrality by the start of 2015. In evidence of the project’s social benefit, within a month of the ribbon cutting General Manager Logan Olds partnered with the Mojave Environmental Education Consortium to conduct a workshop and site tour for K-12 school teachers in the Victor Valley. Each teacher attending the workshop received Standards-Based Curriculum Science Activities including tools and activities to help students in grades K-12 learn about biogas and the environmental issues related to this important form of energy. The Victor Valley Wastewater Reclamation Authority hopes that the transformational Omnivore Biogas to Energy Project will set the standard for a Water Resources Utility of the Future.