



## City of Visalia

### Central California City Installs Energy-Efficient Equipment in Its Largest-ever Capital Project

Water scarcity is nothing new in Visalia, a city about 45 miles southeast of Fresno.

Since 1991, Visalia's City Council has enforced water restrictions. And for decades, water from the regional aquifer has been depleted faster than it can be replenished.

"This area has been water deficient for a very long time," said Kim Loeb, Visalia's natural resource conservation manager.

Part of Visalia's long-term water conservation strategy is the upgrade of its water treatment plant. The upgrade will enable the plant to treat wastewater to a higher quality, producing recycled water that meets state and federal standards required for irrigation use. At \$140 million, it's the largest capital project in the city's history, and possibly the most challenging.

The completed facility will also require much more power from the electric grid.

"We decided early on in the process to bring in Southern California Edison at the 'ground floor' as we designed the project," said Jim Ross, Visalia's public works manager.

Engineering, planning and design started nearly eight years before the project broke ground in April 2014. When the project was conceived, the goal was energy efficiency and a reduced carbon footprint, but after four years of the drought, the project became even more critical.

Treating Visalia's wastewater to the higher standard, while remaining energy efficient and moderating any hike in electricity costs, was a tall order. Yet, by participating in SCE's Savings By Design program, the city is eligible for up to \$500,000 in incentives by implementing energy-efficiency recommendations in the facility's construction.

### Project Overview

#### SCE Programs Utilized:

- Savings By Design

### Results:

#### Estimated Incentives:

**\$500,000**

#### Projected annual savings:

**750 kilowatts (kW),  
6.5 million  
kilowatt hours (kWh)**

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Energy efficiency is the most economical and cleanest method of supplying the growing need for electricity. Incentives paid to Savings By Design customers help encourage efficient designs and help defray a portion of the costs associated with high-efficiency equipment.

Visalia is installing the following equipment upgrades:

- Fine Bubble Diffusers
- Dissolved Oxygen Controls
- Aeration Basins High Speed Turbo Blowers with Variable Frequency Drives (VFDs)
- Membrane Bioreactor Air Scouring Controls
- Membrane Bioreactor Scouring High Speed Turbo Blowers with VFDs
- Dewatering Screw Presses
- High Efficiency Lighting System

The city’s project will also include these additional equipment upgrades above and beyond the incentive program offerings:

- Inter-Stage Pump Station Bypass
- Low Pressure Ultraviolet (UV) Disinfection & Controls
- Return Activated Sludge Pump VFDs
- Permeate Pump VFDs

By implementing these recommendations, the plant is estimated to process 12 million gallons per day, which could reduce its energy consumption by more than 10 million kilowatt-hours annually.

Once the upgraded facility is online in April 2017, Visalia will be able to complete an innovative water exchange agreement. The city will provide the majority of its treated water — of high enough quality for farmers to use for irrigating their crops — to the downstream Tulare Irrigation District.

In return, the district will allocate potable water from its federal allotment upstream to Visalia who can then recharge the groundwater under the city. Visalia will also keep some of its treated water to irrigate its golf courses and some parks.

“All of this is being done by gravity,” said Ross, “so no electricity is needed to facilitate the exchange.” With SCE’s help, Visalia is taking wastewater that would otherwise travel outside the city boundaries and turning it into recycled water that benefits its citizens.



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