

# Self-Generation Incentive Program (SGIP) Energy Management Success Story



## City of Tulare



Lew Nelson,  
Public Works  
Director, City  
of Tulare



### City of Tulare's Water Treatment Facility Uses Fuel Cells to Transform Dairy Waste into Clean, Renewable Energy

The City of Tulare, home to the state's top dairy producers, is nestled between Fresno and Bakersfield in the heart of California's Central Valley and uses more electricity than any other city in the region. That's because, although Tulare is a relatively small town, its water treatment plant handles an increasing wastewater volume and as a result, the city's energy consumption is higher than that of other nearby cities.

Lew Nelson, Tulare Public Works Director, is an advocate of clean, green energy. Utility payments make up approximately 50% of Tulare Public Works' operating costs, so Lew has worked to reduce electricity consumption and lower the plant's utility costs. In 1995, the facility had a 450-kilowatt (kW) internal combustion generator that produced enough electricity to justify the addition of more capacity.

"We received proposals to build our choice of more combustion engines, turbines or renewable fuel cells," he explains. "The Self-Generation Incentive Program (SGIP) incentives, along with our environmental concerns, influenced us to select renewable fuel cells. They use the digester gas better than engines or turbines, and they run without combustion, so they don't generate harmful emissions."

Digester gas is used to power the turbines and combustion engines that generate electricity. Lew knew that SCE's SGIP program would give him incentives for adopting renewable energy technologies, such as fuel cells.

Tulare installed three 300-kW fuel cells (a total of 900 kW) to run 24/7 on renewable fuel from digesters that break down local dairy waste products to produce biogas. The digesters generate 600,000 standard cubic feet of biogas per day, which produces the fuel to generate up to 50% of the plant's required power. This makes the facility less dependent on the area's electricity grid.

Since September 2007, the system has generated 5.6 million kilowatt-hours (kWh) per year. Biogas must be extremely clean, however, for the system to work. During the first year, impurities caused the system to shut down frequently, and first-year savings projections weren't met. To solve this problem, Lew implemented a new facility policy of switching the fuel cell to natural gas if anything goes wrong with the biogas system, to ensure consistent system operation. The plant can now increase electricity generation and reduce its dependence on outside resources. At least 75% of the generator's total fuel supply must be from renewable sources, to ensure maximum environmental and financial benefits.

#### Estimated Savings by Managing Energy

- *Location:* Tulare, CA
- *Industry:* Public Works, Water Treatment
- *System Size:* 900 kilowatt (kW)
- *Facility Size:* 11.5 million gallons per day
- *Type of Installation:* Renewable biogas fuel cells
- *SCE Programs Utilized:* Self-Generation Incentive Program, Energy Efficiency Measures, and California Solar Initiative (CSI)
- *Results:* Generates 5.6 million kWh annually; produces up to 50% of the facility's power

#### GENERATED ANNUALLY

**5.6** million kWh

# Energy Management Success Story

City of Tulare Uses Fuel Cells to Transform Dairy Waste into Clean Energy

## Saving Money While Moving Toward a Long-Term Vision

When it comes to ecology, Lew Nelson “walks the talk.” His personal car is a clean-running natural gas vehicle, and he’s a hands-on crusader for environmentally friendly technology installations. Lew says, “Clean emission is one of our primary goals. We participate in the Sierra Club’s Cool Cities Program to help fight global warming, and the U.S. Environmental Protection Agency’s Green Power Partnership.”

## SGIP Program and Energy Efficiency Measures: Maximum Savings

Several years ago, Lew attended seminars at SCE’s Agricultural Technology Application Center (AGTAC) and learned about the benefits of SCE’s SGIP program. SCE still offers these sessions on a regular basis.

The time between learning about SGIP and the fuel cell installation was quick — just a few months. Lew says this is because he handled as many of the procedural steps as he could himself. The monthly cost of operation is slightly more than \$0.11 per kWh, offset by SGIP maintenance agreements. The total cost of the system installation was \$7 million and qualified the city for more than \$4 million in SGIP incentives. This cost the city \$2.95 million and has a payback period of 4.5 years. SCE is now working with Tulare on a new project to expand the system and increase its generation by 300 kW.

Tulare has also received rebates and incentives from numerous energy efficiency projects. The first was a building lighting retrofit that resulted in a proven return on investment. Lew plans to add lighting timers and variable frequency drives that will control equipment speeds for additional

energy savings. “I’ve also submitted a Savings By Design project application to get incentives for installing energy-efficient blowers and pumps, and I believe we have even more opportunities to complete other energy efficiency projects in our buildings.”

As part of Tulare’s ongoing concern for sustainability, Lew is also working to install a 1 megawatt (MW) solar generating system, using rebates from the California Solar Initiative to help offset a significant part of the system. Lew is also looking into the possibility that the new installation may be eligible for SCE’s Net Energy Metering program, which uses a bi-directional meter to track the “net” difference between the amount of electricity produced and the amount consumed.

## Potential Cost Reduction from Demand Response Programs and Time-of-Use Rates

Tulare’s fuel cells qualify the city for special electricity rates, so the technology saves money not only from its energy generation, but also from its quick implementation and the potential for use in conjunction with SCE’s rates and programs.

Today, the City of Tulare is enrolled in Rate Schedule TOU-8, SCE’s time-of-use rate for business and residential customers. In the near future, Lew will explore all of SCE’s Demand Response (DR) program offerings and rates to discover additional cost savings.

## A Green Solution Today for a Better Tomorrow

The City of Tulare is enjoying the advantages of fuel cells over combustion engines and turbines. Converting dairy waste products to efficient, clean power is a green solution today that’s leading the way to a better tomorrow — a sunny future of cost, energy and environmental savings.

This case study is provided for your general information and is not intended as a recommendation or endorsement of any particular product or company. Funding for this case study is provided by California utility customers and administered by SCE under the auspices of the California Public Utilities Commission.

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“Energy conservation is extremely important to both the City of Tulare and to our water treatment facility.”

Lew Nelson, Public Works Director  
City of Tulare

## Start Saving Now

### • SCE’s Self-Generation Incentive Program (SGIP)

Phone: (866) 584-7436

Fax: (626) 302-3967

E-Mail: [CSIGroup@sce.com](mailto:CSIGroup@sce.com)

[www.sce.com/sgip](http://www.sce.com/sgip)

## Other SCE Programs to Help Save More

- Find out how SCE’s Demand Response Programs can reward you for reducing your electricity usage during peak hours: **(866) 334-7827**  
[www.sce.com/dr](http://www.sce.com/dr)
- Switch to a Time-of-Use (TOU) rate and take advantage of lower energy rates by shifting electricity usage to off-peak hours. To learn more: [www.sce.com/business/rates/large-business](http://www.sce.com/business/rates/large-business)
- Take free SCE classes in lighting, HVAC, energy management and more at an Edison Energy Center: **Irwindale: (800) 336-2822**  
[www.sce.com/ctac](http://www.sce.com/ctac)  
**Tulare: (800) 772-4822**  
[www.sce.com/agtac](http://www.sce.com/agtac)
- Take the Online Business Survey at [www.sce.com/\\_Tools/Business/online-energy-guide](http://www.sce.com/_Tools/Business/online-energy-guide) or contact your SCE Account Representative to calibrate your facility for savings.
- Get building project design assistance and incentives from Savings by Design. To find out if your project qualifies, visit: [www.sce.com/sbd](http://www.sce.com/sbd)

SCE offers a range of solutions such as cash incentives, energy surveys and payment options to help you better manage your electricity costs.

## For More Information

[www.sce.com](http://www.sce.com)

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