GARFIELD CLEAN ENERGY Challenge!

Case Study: New Castle Wastewater Treatment

New Castle, Colorado

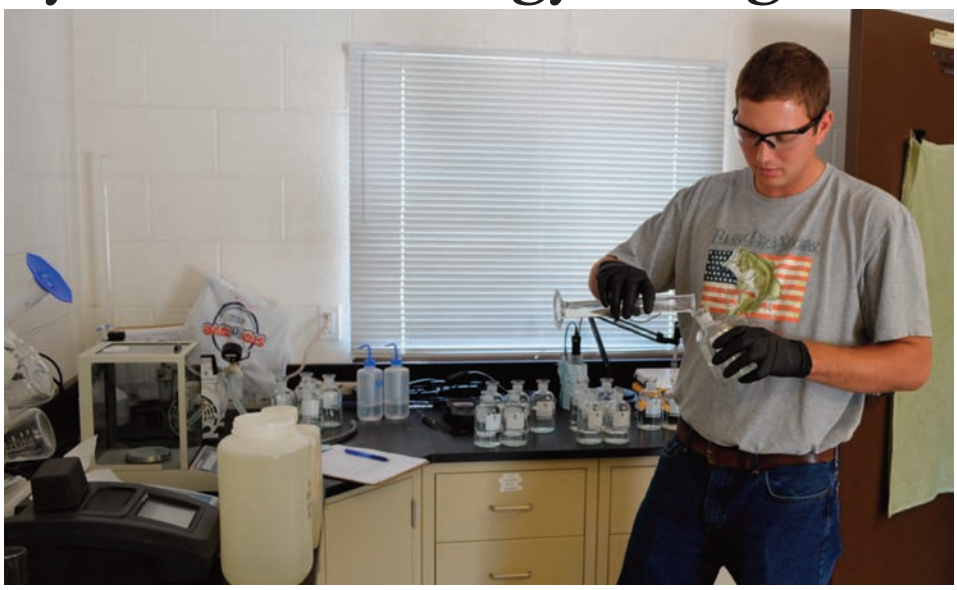
By Cam Burns, CLEER

Saving Energy at the New Castle Wastewater Treatment Facility with the Energy Navigator

Officials with the Town of New Castle are happy now that their "Active Energy Management" is helping them save thousands of dollars a year in electricity costs at New Castle's wastewater treatment facility.

"During the last 12 months we were saving between 5 and 10 percent, probably closer to 5, but that's significant," said Public Works Director John Wenzel. "Our electricity bills are over $80,000 annually, so we're saving between $4,000 and $8,000 a year. In March and April we did even better, saving about 15 percent on electricity costs compared to last year."

The energy saving at the facility began after officials there installed energy-tracking software developed by CLEER, Clean Energy for the Region. The Energy Navigator (www.garfieldenergynavigator.org) is a software system that tracks energy use in real time and displays it on a large kiosk, where facility managers can see how much their buildings are using. The Energy Navigator and access to the CLEER team for Active Energy Management are part of the services that the Town of New Castle receives for being a partner in Garfield Clean Energy.



Eli Jennings tests water at the New Castle wastewater treatment facility. Photos by Cam Burns

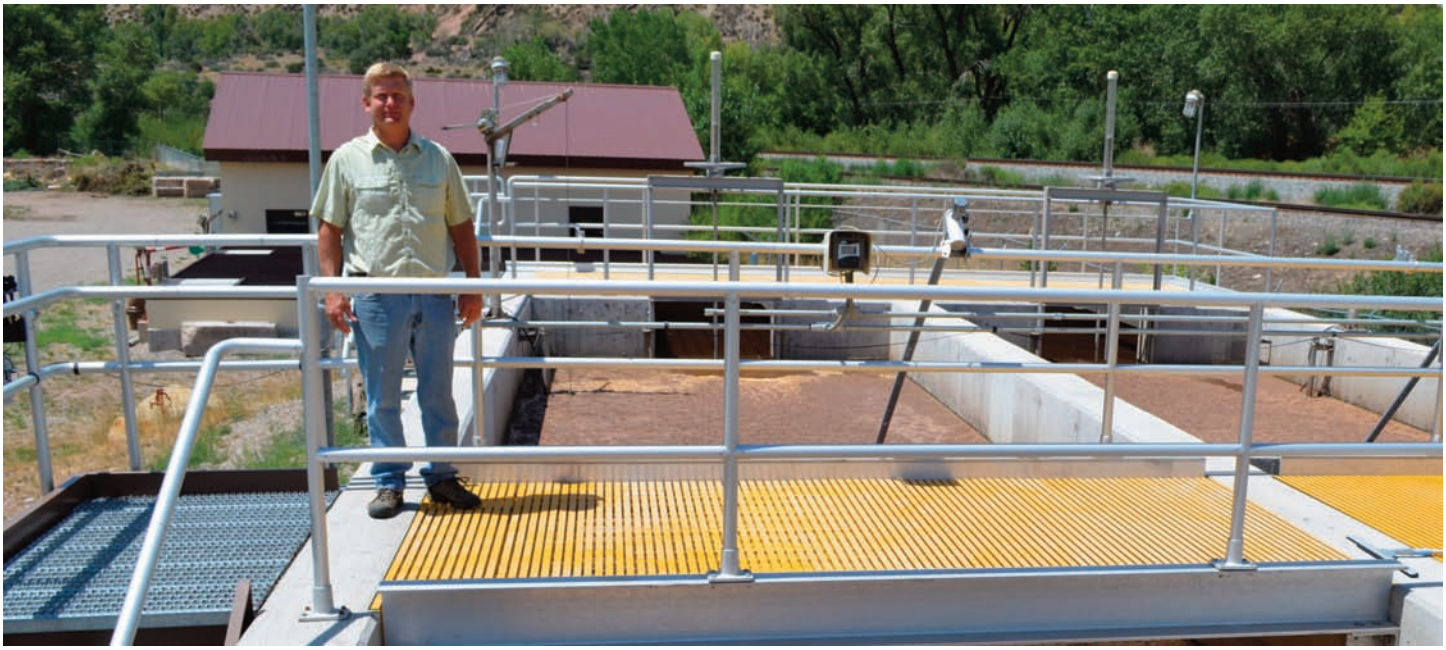
"It [the Navigator] monitors our power consumption every 15 minutes," Wenzel said. "It allows us to track and trend our power consumption."

Eli Jennings is a technician at the plant. Using the Navigator, Jennings has been tweaking knobs and spinning dials. He adjusted settings at the facility so that the most energy-intensive pieces of equipment operate at different times.

The plant was recently upgraded so Jennings focused his attention on portions of the plant that weren't upgraded, notably the digestion aerator. In the aerator, bacteria eat organic matter in the wastewater and convert it to carbon dioxide. Aerators and blowers account for about 30 to 50 percent of the elec-

Lessons Learned

- Small adjustments in how machines operate can have impressive results
- Not all equipment needs to run 24 hours a day. Some can be switched off periodically.



Above: John Wenzel at the New Castle wastewater treatment facility.

tricity used at the facility, according to Wenzel.

"It's tough for us being continuously operating, 24 hours a day," Jennings said. "But there are still things we have options with in terms of when they run. Having that daily tracking put it on all of our minds, and helped us understand the effects of starting and stopping equipment."

Wastewater facilities are notoriously big energy users. According to a 2003 PG&E study, energy accounts for 25 to 40 percent of operating costs for such facilities, second only to labor.

"The nation's wastewater plants and drinking water systems spend about $4 billion per year on energy to treat water," notes the U.S. Environmental Protection Agency's Energy Star website. "Individually, these operating costs can add up to one-third of a municipality's total energy bill. A 10 percent reduction in U.S. drinking water and wastewater systems—realized through cost-effective investments—would collectively save approximately $400 million and 5 billion kilowatt-hours annually."

The New Castle plant serves 1,600 homes and has a capacity of 600,000 gallons a day. Currently it's running at about 235,000 gallons per day.

CLEER's Mike Ogburn said CLEER's Active Energy Management at the New Castle plant involves careful scrutiny and ongoing adjustment of energy use in a building.

"To manage energy use, it's vital to know how much you're using, when, and what for," he said. "Since energy bills only come once a month, the addition of information on daily energy use can be a big help to facility managers. With good information, finding ways to trim energy use is much easier."

"CLEER also helped us better understand Xcel's billing methods," Wenzel said.

Most utilities charge more if a user has big spikes in electric demand ("peak demand charges"), and the wastewater treatment facility certainly did. While Jennings' tweaks to equipment operation cut energy use in general, it also smoothed out the spikes in electricity use, and is currently saving several hundred dollars a month in peak demand charges.

The wastewater treatment facility is also part of an EPA program to see how much energy the building can save, which ties in well with the deployment of the Navigator.

"We didn't expect to replace pumps with more efficient models," Wenzel said. "Rather, this is an effort to see how we can cut energy use through operations management."

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