



# Energy Innovation

*Since its formation in 1950, Eastern Municipal Water District (EMWD) has transformed from a small water agency serving the agricultural industry to one of the largest water providers in southern California—serving a population of more than 630,000 in a 555 sq-mile area.*

By Sarah McAuley

*Major southern California water agency issues a strong call to action to other agencies across the U.S.*

This public agency provides water, water treatment and other services to customers that rely on it for an always available, abundant and affordable supply of clean water. The agency is also a major consumer of electricity, which costs more than \$10 million per year. In 2007, the district enrolled in EnerNOC's Clean Green California demand response (DR) program, and committed to reducing approximately 1.5 megawatts (MW) of its energy usage. It achieves these reductions by shutting down major electricity-using equipment (e.g., pumps) at two of its main water treatment plants.

By participating in the DR program, the agency receives payments of approximately \$100,000 per year from EnerNOC. It also helps bring new stability to the electrical grid during peak periods, providing much-needed relief for Southern California Edison, its regional electricity provider.

## Reducing Energy Use by Identifying Flexibility

"Unlike electricity, water has the ability to be stored, and we can often accommodate short-term outages without a reduction in service," said Dan Howell, director of purchasing and contracts. "We can store water in tanks. We have water coming in via our pipeline. And we have redundant sources, such as wells. So we have the flexibility to stop production at some of our facilities for a limited amount of time, with minimal effect on our operation."

During a DR event, the agency receives 30-minute advanced notification from EnerNOC, then manually shuts down its Hemet Water Filtration Plant and Perris Water Filtration Plant. "We have redundant resources available for supplying water," Howell said. "Our resources and reserves let us run at reduced capacity temporarily. So we can shut down these two facilities

during a DR event for a couple of hours without any effect at all on service."

EMWD has long been an energy innovator. For example, at its headquarters, it operates microturbine generators on natural gas, recovers heat via an absorption chiller and provides more than 150 tons of cooling capacity—lowering energy use and capturing heat that would have gone to waste. It is currently installing a digester gas-driven fuel cell at one of its four wastewater treatment plants. And EMWD's sophisticated energy management system gives a clear view into its geographically-dispersed field operations, ensuring vigilant monitoring that can help managers maximize efficiencies. DR is a key element of EMWD's innovative programs aimed at using energy more intelligently at this major water facility.

Howell is convinced that if other water agencies follow suit, the impact on other communities will be significant. Howell is quick to highlight that reducing electricity at a major water plant is a simple process that has no negative impact on their business. "The water industry, in my opinion, has the potential to significantly impact the power demands of the state of California. We can reduce enough that we can put a serious dent in the state's peak electrical demand," he said.

Howell cites a recent statistic that attributes 10% to 18% of peak demand in California to water pumping and other water-related electrical use—which makes water plants among the largest users of electricity in the state. An outspoken believer in the potential of energy reduction by the water industry, Howell advocates participation in DR programs by the nation's water facilities. He also believes that utilities should continue to offer more incentives for energy efficiency.

"It is very expensive to build new electrical generation facilities," he said. "It is definitely not as expensive

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## PROBLEMSOLVER

to curtail energy and avoid problems that affect the broader community. Demand response is a key strategy that helps us curtail energy use for utilities—without any impact on service. It makes real sense for us.”

### The Results

Since enrolling, the agency has experienced two events and regular testing—which have all proceeded smoothly. During the events, EMWD was able to curtail more than 1.5 MW of electricity—exceeding its original nominated amount. The financial results are significant—up to \$100,000 annually in payments from EnerNOC. The agency’s DR payments are credited back to each of the two facilities and used to help offset the considerable cost of electricity. Plus, by not using energy during periods of peak demand, EMWD saves on its monthly energy bill. “We are always looking for new ways to cut costs,” Howell said.

### The Benefits

The most important benefit of DR is that it can be easily implemented by EMWD without requiring major changes or affecting its core mission of providing clean water to its constituents. Under the program terms, EMWD can choose to participate in an event at varying levels by choosing to run its equipment at lower levels or shutting them down completely; it also has the option of manually restarting whenever it needs to.

Key benefits that EnerNOC DR brings to EMWD include:

- **Reduction without risk.** “We can’t take any chance of running out of water,” Howell said. “EnerNOC DR takes a no-risk approach. If we

can’t participate in an event for some reason, we can always choose not to. This flexibility was really attractive to us.”

- **Reduction without BUGs.** The agency’s wastewater treatment facilities have onsite electrical generation capabilities with state-of-the-art, gas-powered backup generators (BUGs) capable of generating more than 6 MW; however, at its water treatment facilities that are enrolled in this program, EMWD does not have BUGs. Its reduction of 1.5 MW is achieved completely via energy reductions, not backup generation.
- **No penalties.** During a DR event, if EMWD can’t reduce its nominated capacity, it isn’t penalized—a flexible approach that makes the program much more attractive. “We need to reserve the option not to participate if the timing isn’t right for us,” Howell said. “With EnerNOC, we have the freedom to make our own decisions about curtailment, based on our current situation.”

### A Comprehensive Strategy

EMWD actively pursues and participates in a wide range of programs offered by Southern California Edison. “We have always taken a position where we try to be flexible about our energy use,” Howell said. “Over the years we have developed a comprehensive energy strategy.”

For example, its wastewater treatment plants participate in Southern California Edison’s I-6 Program for Large Interruptible Accounts, which offers lower electricity rates. DR fills a clear role in its portfolio of efforts aimed at reducing energy use, lowering costs, and maximizing the efficiency of electricity use

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throughout EMWD.

Working with EnerNOC has been a great experience, according to Howell. “The demand response program is very professionally operated,” he said. “I’m impressed with the communications and very comfortable with our partnership with EnerNOC.”

### The Future

Now that initial testing of demand response at two of EMWD’s facilities has proven successful, the district is evaluating other likely DR candidates among its nearly 250 additional facilities.

“We will be looking at possible facilities that can be enrolled and that can reduce demand via curtailment,” Howell said. “As long as we can manage the program centrally, we can continue to add other facilities. I anticipate that approximately ten of our facilities may participate eventually.” ■

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