

CASE STUDY



E. & J. Gallo Winery

Integrated Case Study • Energy Efficiency and Demand Response



"Using PG&E rebates and incentives boosts the return on investment of energy projects and helps the management team set priorities. In the coming year, we expect to achieve \$1 million through a combination of rebates and energy savings resulting from new projects at the wineries."

Elizabeth Meyer,
Corporate Director
of Supplier Development

WINERY'S DEMAND RESPONSE PROJECTS PAY FOR THEMSELVES

For wineries, the crush period between August and October is the most energy-intensive time of year. Since it partly overlaps with California's period of peak energy demand, wineries' participation in demand response programs makes a particularly large impact both on these customers' energy costs and on the state's electric supply reliability.

E. & J. Gallo Winery is one of the largest winemakers in the U.S. and the leading U.S. wine exporter. Like many food processors, Gallo must continuously refrigerate its perishable products. The company's need for reliable refrigeration has historically limited its ability to participate in Demand Response, a PG&E program that notifies participating customers to temporarily reduce their energy usage when the state's energy demand is high.

Through technical assistance, PG&E helped Gallo find smart energy solutions, such as installing automated controls on their refrigeration. PG&E's Demand Response Technical Incentives paid the full cost of the new control systems. Now Gallo can earn additional incentives by participating when Demand Response events are called.

ENERGY-EFFICIENCY AUDITS IDENTIFY SAVINGS

Gallo has taken advantage of PG&E's programs and services to identify and implement energy-efficiency projects since 1990. Early energy-efficiency improvements at the Fresno facility, including retrofits to its refrigeration system, process boilers, and an oversized high-capacity condenser, saved 4.7 million kilowatt hours of electricity and 144,000 therms per year, and reduced ongoing electric demand by over 1,000 kilowatts. These measures earned nearly a half million dollars in rebates from PG&E over several years.

In 2001, Gallo received its first comprehensive energy audit from a PG&E-hired consultant, which resulted in the company implementing audit recommendations for upgrades to lighting and air compressors, and installing variable speed drives (VSD) on its cooling towers. The projects resulted in an additional energy savings for Gallo of 5.7 million kilowatt hours.

Most recently, Gallo took advantage of PG&E's new Integrated Energy Audit for large customers, which identifies potential demand response and self-generation as well as energy-efficiency opportunities. In the audit report, PG&E's demand response recommendations included scheduling options and advanced optimization refrigeration controls for the Fresno and Livingston plants to enable the wineries to participate more significantly in PG&E's Demand Response programs.





“Proper stewardship of the environment is the foundation for all great vineyards.”

E. & J. GALLO WINERY

AUTOMATED CONTROLS MAINTAIN PRODUCT QUALITY AND CUT COSTS

Curtis Robinson, Gallo’s Senior Manager of Engineering, and Kurt Eulberg, Gallo’s Maintenance Manager at Fresno, were excited by the idea of installing automated controls on their refrigeration. They researched the opportunities, risks, costs, and benefits of the recommendation in detail. Maintaining product quality and meeting Gallo’s cost-effectiveness were both of paramount importance and key success factors.

Gallo’s Technology and Quality Group, which evaluates all potential technological advances to ensure that changes won’t compromise product quality, confirmed that there would be no negative impact. PG&E’s Technology Incentives, in combination with the potential financial benefits of bidding into demand response programs on event days, ensured the project’s cost-effectiveness.

Both the Fresno and Livingston facilities installed energy demand control systems consisting of intelligent, automated energy control coupled with facility load management tools. These control systems can:

- Monitor electric demand levels and adjust the operating status of selected connected loads to keep demand within pre-defined limits
- Move processing loads to off-peak periods by relying on the thermal mass of the product to maintain temperatures within narrowly defined acceptable limits during a demand response event

These systems allow the facility managers a high degree of flexibility. They can choose among various combinations of actions to reduce overall facility loads that control the equipment connected to these intelligent systems. For example, they can reduce compressor and cooling fan power, or shut down selected pumps.

An additional planned project will connect remaining stand-alone refrigeration plants at one of the facilities to the site’s control system.

REBATES AND INCENTIVES MAY SAVE GALLO \$1 MILLION IN THE COMING YEAR

According to Gallo’s Elizabeth Meyer, Corporate Director of Supplier Development, the incentives available through PG&E’s Technology Incentive (TI) program made the two Gallo demand control projects possible. Based on dollars per kilowatt of verified load reduction capability, the incentives completely covered the \$438,000 capital cost.

A cross-functional planning team, with representatives from multiple Gallo sites, meets frequently to discuss energy needs and potential investments. “Using PG&E rebates and incentives boosts the return on investment of energy projects and helps the team set priorities,” says Meyer. “In the coming year, we have set a goal to achieve \$1 million through a combination of rebates and energy savings resulting from new projects at the wineries.”



RESULTS AND BENEFITS

Prior to installing the automated control system, Gallo's Fresno facility had estimated that its manual demand response capability was approximately 250 kilowatts. With the new system their capability has increased to approximately 4,400 kilowatts.

Test results at the Livingston facility, which has somewhat different operations from the Fresno facility, showed a capability of up to approximately 1,700 kilowatts. Gallo also plans to install automated demand controls at its Sonoma winery in 2008.

In addition to the technical incentives, project benefits to Gallo include:

- Increased operational control of the refrigeration and pumping equipment
- The potential to earn bill credits and participation bonuses for making and meeting demand bids when PG&E announces a demand response event
- The opportunity to reduce electricity bills through day-to-day demand control
- The opportunity to link the automated control system to a centralized information system providing real-time monitoring and analysis

For most food processors, energy efficiency is the first and largest arena of opportunity for controlling energy use and costs. Gallo's demand response projects demonstrate that there are also opportunities within the industry to provide significant short-term demand response contributions without a negative impact on production or quality. Even better, the technologies that enable demand response can also reduce long-term energy use and overall operating costs.

WINERIES DEMONSTRATE ENVIRONMENTAL STEWARDSHIP – IN OPERATIONS AND IN THE VINEYARDS

As the cross-functional energy team spreads the practices spearheaded by Kurt Eulberg and Curtis Robinson throughout other Gallo facilities, Gallo's commitment to the idea that "proper stewardship of the environment is the foundation for all great vineyards" is reaching beyond the vineyards to the operation of the wineries.

The benefits of good energy management are environmental as well as economic and operational: PG&E estimates that energy savings of 10.9 million kilowatt hours in the past three years between the Fresno and Livingston facilities have prevented the production of 5,985 tons of greenhouse gases.

PG&E's 2006-08 Energy Management Offerings for Businesses, Industries, and Institutions

- Energy Audits
- Energy Efficiency Rebates and Custom Incentives
- Demand Response and Reliability Programs
- Self Generation Incentives
- Time of Use Rates

Contact your local PG&E Representative or call **PG&E's Business Customer Service Center** at **800-468-4743** for more information or visit pge.com/biz/demand_response.



FRESNO AND LIVINGSTON PROJECT RESULTS

1990 - 2007 Energy Efficiency

19,248,169 Annual kWh savings

9,368 Annual kW savings

473,303 Annual therm savings

\$2,104, 814 Project incentives

2006 - 2007 Demand Response

6,100 kW Demand response capacity

\$92,000 Annual energy cost savings

\$438,417 Project incentives



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