

ENERGY SAVINGS FOR A WINERY

Background

This winery produces red and white wines. The facility had an annual electrical energy consumption of over 2,400,000 kilowatt-hours (kWh) per year and an annual natural gas consumption of over 33,000 therms per year. The total energy costs were estimated to be approximately \$373,000 each year.



Potential Energy Savings

The energy efficiency opportunities recommended could potentially save an estimated 283,140 kWh of electrical energy each year, or about 12% of the plant's total electrical energy usage. The recommendations could reduce the facility's electrical demand by about 46 kW.

The recommendation could save an estimated 10,436 therms of natural gas each year, or 31% of the plant's total natural gas energy usage. The potential total annual cost savings due to implementing all of the recommended measures was estimated to be approximately \$49,874 per year, which represents about 13% of the plant's total energy costs. Total estimated implementation cost was about \$173,860 giving an average simple payback of 3.5 years.

SUMMARY OF ENERGY EFFICIENCY OPPORTUNITIES SAVINGS AND COSTS					
Description	Potential Energy Conserved	Demand Savings (kW)	Potential Savings (\$/yr)	Implem. Cost (\$)	Simple Payback (years)
1 Close Doors Leading to Cold Stabilization Room	85,662 kWh/yr	0	8,523	470	0.1
2 Install Lighting Occupancy Sensors in Low Occupancy Areas	19,878 kWh/yr	5.84	3,322	3,928	1.2
3 Replace High Intensity Discharge Lighting with High Efficiency T8 Lighting	12,058 kWh/yr	4.42	2,215	4,374	2.0
4 Install High-Efficiency Metal Halide Lighting	31,969 kWh/yr	7.32	4,865	11,378	2.3
5 Install High-Efficiency T8 Fluorescent Lighting	20,346 kWh/yr	6.36	3,027	12,786	3.7
6 Install Adjustable Speed Drives on the Glycol Supply Pumps	43,643 kWh/yr	4.98	5,488	21,620	3.9
7 Install Desuperheaters on Cold Stabilization Room and Settling Tank Refrigeration Compressors to Preheat Boiler Feedwater	10,436 therms/yr	N/A	11,125	56,250	5.1
8 Install High-Efficiency T5 Fluorescent Lighting	89,930 kWh/yr	23.40	14,336	63,054	4.4
Totals	(Electricity) 283,140 kWh/yr (Natural Gas) 10,436 therms/yr	45.96 kW	\$49,874/yr	\$173,860	3.5 years

Potential Demand Response Opportunities

The demand response opportunities identified in this report could reduce the total electrical demand in the facility by approximately 138 kW during demand response events. This demand reduction will result in an electrical energy credit of \$4,053 per year.

SUMMARY OF DEMAND RESPONSE OPPORTUNITY SAVINGS AND COSTS				
Description	Demand Reduction (kW)	Potential Energy Credit (\$/yr)	Implem. Cost (\$)	Simple Payback (years)
1. Turn Off the Lights in Unessential Areas During Demand Response Events	19.27	566	0	Immediate
2. Overcool the Building Refrigeration Systems Before Demand Response Events	118.72	3,487	0	Immediate
Totals	137.99 kW	\$4,053/yr	\$0	Immediate

Other Energy System Opportunities

The other energy system opportunity identified in this report, *Install a Combined Heat and Power System*, could result in an annual electrical cost savings of \$36,265 per year. The implementation cost is \$188,255 giving a simple payback of 5.2 years.

SUMMARY OF OTHER ENERGY SYSTEM OPPORTUNITY SAVINGS AND COSTS					
Description	Potential Energy Produced	Demand Reduction (kW)	Potential Savings (\$/yr)	Implem. Cost (\$)	Simple Payback (years)
1. Install a Combined Heat and Power System	936,000 kWh/yr -74,089 therms/yr	150	36,265	188,255	5.2