

ENERGY DESIGN REVIEW FOR A NEW WINERY

Background

An energy analysis was performed on the planned construction of a new winery facility to be located in Napa, CA. This energy analysis is divided into various sub-systems at the facility, including the lighting, glycol chillers, piping system, air handlers, pumps and motors. The total area of the proposed winery is approximately 70,000 ft², of which 63,000 ft² is conditioned.

Potential Energy Savings

The energy efficiency measures recommended could save an estimated 624,605 kWh of electrical energy per year and reduce the facility's demand by approximately 81 kW. Based on an assumed average cost of electricity of \$0.12/kWh, this translates into an annual electrical cost savings of \$74,953 per year. The total incremental cost of the measures recommended in this project was estimated to be \$62,385.

The utility offers incentives for these energy efficiency measures, based on the energy consumption of installed equipment and construction relative to a baseline design. The incentive for all of the recommended measures in this project was estimated to be \$35,713. The total incremental cost after the incentives is estimated to be \$26,672, resulting in an average simple payback period of 0.4 years.

SUMMARY OF ENERGY EFFICIENCY MEASURE SAVINGS AND INCENTIVES						
Energy Efficiency Measure	Energy Savings (kWh/yr)	Demand Reduction (kW)	Energy Cost Savings	Incremental Cost (\$)	Potential Incentive for Measures (\$)	Payback Period (yrs)
1. Insulation of Chilled Glycol Storage Tank	6,645 kWh/yr	0.0 kW	\$797/yr	\$3,848	\$532	4.2
2. Premium Efficiency Motors	30,998 kWh/yr	3.71 kW	\$3,720/yr	\$5,577	\$3,100	0.7
3. Variable Frequency Drive on the Cooling Glycol Pumps	52,701 kWh/yr	6.02 kW	\$6,324/yr	\$6,960	\$4,216	0.4
4. High Efficiency Water-Cooled Chiller	352,082 kWh/yr	40.19 kW	\$42,250/yr	\$46,000	\$28,167	0.4
5. High Pressure Pump Humidifiers	106,847 kWh/yr	12.20 kW	\$12,822/yr	N/A	N/A	N/A
Subtotals	549,273 kWh/yr	62.12 kW	\$65,913	\$62,385	\$36,015	0.5
Non-Lighting Incentive*					\$31,193	
6. High Efficiency Lighting	75,332 kWh/yr	19.05 kW	\$9,040/yr	N/A	\$4,520	N/A
Lighting Subtotal	75,332 kWh/yr	19.05 kW	\$9,040/yr	N/A	\$4,520	N/A
Totals	624,605 kWh/yr	81.17 kW	\$74,953/yr	\$62,385	\$35,713	0.4

* Non-lighting total incentive is limited to one-half of the non-lighting total incremental cost.