

Appendix E

Engineering Calculation Worksheet



Port of Stockton
January 1, 2014

2014 Engineering Calculation Worksheet

Project Name: _____ Contact Name: _____

1. Process / Measure Description

1.1. Existing Process / Equipment Description

Fully describe the existing process and equipment listing all pertinent data in the tables provided below. Attach additional sheets (see Supplemental Info. Sheet) as needed. Identify the source of all data and/or attach any manufacturer's data, production data and/or other documentation that supports the inputs and assumptions used in your calculations or descriptions.

Existing Equipment List:

Equip. Name	Manuf.	Model	Serial #	Full Load Capacity (output)		Effcy (%)	Other/Comments
				Value	Units		

Existing Operating Hours / Load:

Equip. Name	% of Full Load	Estimated Efficiency	Annual Op. Hours	Operation Description / Basis (i.e. 2 nd shift – 8 hours/day, 20 days/month, On or Off Peak etc.)	Measured Data Available?

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1.2. Proposed New Equipment Retrofit or Enhancement Description

Describe the proposed equipment retrofit or enhancement referring to the equipment list and operating hours / load table in the previous section (existing process/equipment) and/or the new equipment list and operating hours/load tables below. Attach additional sheets (see Supplemental Info. Sheet) as needed. Identify the source of all data and/or attach any manufacturer's data, production data and/or other documentation that supports the inputs and assumptions used in your calculations or descriptions.

New Equipment List:

Equip. Name	Manuf.	Model	Serial #	Full Load Capacity (output)		Effcy (%)	Other/Comments
				Value	Units		

New Operating Hours / Load (if applicable):

Equip Name	% of Full Load	Estimated Efficiency	Annual Op. Hours	Operation Description / Basis (i.e. 2 nd shift – 8 hours/day, 20 days/month, On or Off Peak etc.)	Other/Comments

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2. Establish Baseline Annual Energy Use and Demand

Calculate the estimated annual energy use and peak demand of the existing process/equipment being replaced using efficiency values based on either accepted State or Federal Standards (see Appendix C) or the existing equipment efficiency, whichever is higher. Fully describe the basis of all data used in the calculation using the tables shown below to document data that differs from equipment or process data noted previously. Refer to the existing process and equipment by equipment name or serial number consistent with information shown in previous tables. Attach additional sheets (see Supplemental Info. Sheet) as needed.

Standard (Baseline) Equipment List:

Equip. Name	Serial #	Baseline Efficiency (%)	Applicable Standard (i.e., Title 24, etc.)	Other / Comments

Baseline Energy Use:

Equip Name	Operation Description (i.e. 2 nd shift, etc.)	% of Full Load	Baseline Efficiency	Baseline Input (kW, therms)	Annual Op. Hours	On/Off	Baseline Energy Use
Annual Totals:							

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3. Establish Post-Installation Annual Energy Use and Demand

Calculate the estimated annual energy use and peak demand of the process/equipment using the new equipment or enhancement. Fully describe the basis of all data used in the calculation using the tables shown below to document data that differs from equipment or process data noted previously. Refer to the existing process and equipment using equipment names or serial numbers consistent with information shown in previous tables. Attach additional sheets (see Supplemental Info. Sheet) as needed.

Post Installation Energy Use:

Equip Name	Operation Description (i.e. 2 nd shift, etc.)	% of Full Load	Effcy	Input (kW, therms)	Annual Op. Hours	On/ Off	Post Installation
Annual Totals:							

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4. Estimate the Annual Energy Savings and Peak Demand Reduction

Calculate the estimated annual energy use as the difference between the Baseline and Post-Installation annual energy use values. Calculate the peak demand reduction as described in Section 1.4.8.

5. Calculate the Maximum Incentive Amount

Calculate the program incentive amount (subject to program limitations) by multiplying the estimated annual savings and demand reduction by the applicable incentive rates (see table below).

Program Incentive Rate Table

Lighting	<ul style="list-style-type: none">▪ Interior and exterior lighting retrofits including linear fluorescent, HID, induction, cold cathode and compact fluorescent lamps (not including screw-in lamps)▪ LED luminaire retrofits utilizing qualified fixtures (see Appendix E for qualification process and table of current qualified fixtures)▪ Screw-in cold cathode and Integral LED Lamp retrofits utilizing qualified lamps - see Appendix E for LED qualification process and table of current qualified LED lamps (SCE and SDG&E only)▪ High efficiency signage or architectural lighting▪ Lighting control systems▪ LED exit signs (SCE and PG&E only)▪ Day lighting controls and dimmable ballast▪ De-lamping measures performed as part of an integral lighting
Energy -	
On-Peak \$0.068 /kWh	
Off-Peak	
\$0.055/kWh	
24 hour Operation	
\$0.066/kWh	
Peak Demand -	
\$36 / kW	

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Motors and Other Equipment Energy - On-Peak \$0.068 /kWh Off-Peak \$0.055/kWh 24 hour Operation \$0.066/kWh Peak Demand - \$36 / kW	<ul style="list-style-type: none">▪ Motor upgrades (all sizes)▪ Variable-speed drives (e.g., on industrial fans, industrial pumps, and on air compressor motors)▪ Industrial process applications▪ Industrial fan replacements▪ Industrial pump replacements▪ Trimming impellers on industrial fans and pumps▪ Exhaust hood and fan projects▪ Dairy Vacuum Pumps/ Variable-speed drives (VSDs)
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2009 Engineering Calculation Worksheet

Project Name: _____ Contact Name: _____

Supplemental Information for Section _____