

Phase II Ex Ante Review Findings

Table 1-1: Project Information

IOU	Pacific Gas and Electric (PG&E)
Application ID	IRP-3088
Application Date	09/03/2013
Program ID	PG&E 211024
Program Name	Industrial Refrigeration Performance Plus Program (IRPP)
Program Year	2013
Itron Project ID	X417
IOU Ex Ante Savings Date	10/01/2013
CPUC Staff Measure Name	Lighting Retrofit
Project Description	Replaced HID fixtures with LED and linear fluorescent fixtures.
Date of CPUC Staff Review(s)	01/15/2013
Primary Reviewer / Firm	Sepideh Shahinfard / Itron
Review Supervisor / Firm	Leonel Campoy / Itron
CPUC Staff Project Manager	██████████ / California Public Utilities Commission, Energy Division
CPUC Staff Policy Authorization (as needed)	
Type of Review (Desk, On-site, Full M&V, Tool)	Desk
CPUC Staff Recommendation	The ex ante savings of 590,463 kWh and 62.77 kW for the first baseline and 580,582 kWh and 62.30 kW for the second baseline are approved pending a final submittal of full and incremental measure costs supported with appropriately <u>itemized</u> contractor invoices that clearly identify the individual measure material costs and the installation labor for each measure.

Measure Description

The project will replace High Pressure Sodium (HPS) and Metal Halide (MH) fixtures with LED Fixtures in the refrigerated warehouse and manufacturing areas of a food production facility in Climate Zone 13. PG&E indicates that the lighting fixtures operate continuously covering three work production shifts for a total of 8,760 hours per year. PG&E indicated that the fixtures cannot be turned off during the production due to safety and ongoing maintenance.

Summary of Review

PG&E, the Investor-Owned-Utility (IOU), submitted documentation on the CMPA on the following dates for this final Phase II Ex Ante Review (EAR):

- January 3, 2014
 - Custom Lighting Calculations Workbooks;
 - Measurement and Verification Document;
 - Post-Verification Report Document;
 - IRPP Project Cost Recap Document;
 - Project Proposal Document; and
 - Lighting Retrofit Inspection 16Dec13 Workbook.
- On January 13, 2013
 - 3rd Party Installation Review Findings.
- On January 15, 2014
 - Post-Verification Calculations;
 - Post-Verification Report;
 - Invoices.

CPUC staff finds that the post-verification savings estimates documented in the updated savings calculation workbook provided on January 15, 2014 properly reflect the verified fixture replacements. Although the data collection period was less than optimal, CPUC staff considers the logger data evidence submitted to substantiate the lighting hours of use sufficient for this particular production facility.

PG&E incorporated the appropriate HVAC Interactive Effect Factor multipliers into the kWh savings and peak demand reduction estimates as CPUC staff identified in the Phase I review. Although not explicitly stated in the project documentation, it appears that all the retrofit areas are part of the production floor, and since there isn't any kind of space heating in these areas, the Gas Interactive Effects values for these areas should be changed to N/A. Lastly, CPUC staff found that PG&E did not provide the required full and incremental measures costs. The contractor invoices that were submitted only support the full project costs and are itemized to line item charges that cannot be readily related back to the actual measure equipment and installation labor.

Review Conclusion

The ex ante savings of 590,463 kWh and 62.77 kW for the first baseline and 580,582 kWh and 62.30 kW for the second baseline are approved pending a final submittal of the full and incremental measure costs supported by appropriately itemized contractor invoices that clearly identify the individual measure material costs and the installation labor for each.

Summary of CPUC Staff Requested Action by the IOU

CPUC staff requests that PG&E provide the following by February 14, 2014 or sooner:

- For the first baseline, the full measure costs for the T8 linear fluorescent, LED, and Occupancy Sensor measures must be provided;
- For the second baseline, the incremental measure costs for the T8 linear fluorescent, LED, and Occupancy Sensor measures must be provided; and
- Both the full and incremental measure costs shall be supported with itemized contractor invoices that clearly delineate the material and labor charges for each measure claimed.

Table 1-2 Review Findings

Reviewed Parameter	Analysis
<p>Project Baseline Type (Early Replacement, Normal Replacement, Capacity Expansion, New Construction, System Optimization, Add-on Measures, Major Renovation) Note: For early retirement projects only, include RUL through EUL baseline)</p>	IOU Proposal: Early Replacement
	CPUC Staff Assessment: Acceptable
	CPUC Staff Recommendation: None
<p>Project Baseline Technology (in situ equipment, Title 24 (specify year), other code or other efficiency level (specify), industry standard practice - ISP)</p>	IOU Proposal: In situ for the first baseline and Title 24 code for second baseline
	CPUC Staff Assessment: In situ for the first baseline and the 2013 Title 24 for the second baseline.
	CPUC Staff Recommendation: None
<p>Project Cost Basis (Full Incremental, or Both. Note: For early retirement projects, include RUL through EUL cost basis treatment)</p>	IOU Proposal: Full Project Cost
	CPUC Staff Assessment: Full measure cost for the first baseline and incremental measure cost for the second baseline are required. PG&E submitted only the full project cost along with supporting invoices.
	CPUC Staff Recommendation: Provide the full measure costs for the first baseline and incremental measure costs for the second baseline. Submit itemized contractor invoices, detailing labor and materials by measure, to support the full and incremental measure costs.
<p>RUL (required for early retirement projects only, otherwise N/A)</p>	IOU Proposal: 5 years
	CPUC Staff Assessment: 2.66 years
	CPUC Staff Recommendation: The existing HPS and MH fixtures have maximum RUL of 2.66 years.
<p>EUL (for each measure)</p>	IOU Proposal: 12.2 years
	CPUC Staff Assessment: 5.7 years for LED fixtures and 7.99 years for linear fluorescent fixtures. To calculate the EUL for LED fixtures use 50,000 hours of rated life of the fixture divided by annual operating hours.
	CPUC Staff Recommendation: The weighted average EUL is 5.99 years; based on a 50,000 hour LED life for 167 fixtures operating 8760 hours/year, and a 70,000 hour LF life for 15 fixtures operating 8760 hours/year.

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Reviewed Parameter	Analysis
Savings Assumptions	IOU Proposal: In situ equipment is used for the first baseline savings and lighting disposition default baseline of pulse start metal halides has been used for the second baseline savings. The Peak Coincidence Demand Factor of one was applied to the peak demand reduction for the fixtures.
	CPUC Staff Assessment: The second baseline for the HPS and MH fixtures early replacement now complies with the 2013 Title 24 requirements.
	CPUC Staff Recommendation: None
Calculation Methods/Tool review	IOU Proposal: Savings were calculated using an engineering spreadsheet.
	CPUC Staff Assessment: Calculation method is acceptable.
	CPUC Staff Recommendation: None
Pre- or Post-Installation M&V Plan	IOU Proposal: The post-installation survey will verified project costs via invoices, installation of the proposed lighting systems and occupancy sensors, new equipment specifications, and contains one week of trend data to verify the lighting operating hours in areas where occupancy sensors are installed.
	CPUC Staff Assessment: The post-installation survey verified installation of the proposed lighting systems and occupancy sensors and contained one week of trend data to verify the lighting operating hours.
	CPUC Staff Recommendation: None
Net-to-Gross Review	IOU Proposal: Not Provided
	CPUC Staff Assessment: An NTG assessment is not warranted.
	CPUC Staff Recommendation: None

Table 1-3 Energy Savings Summary, Project Costs & Incentive

Description	IOU Ex Ante Claim	CPUC Staff Recommendations
First Year kWh Savings	590,463	590,463
First Year Peak kW Savings	62.77	62.77
First Year Therms Savings	N/A	N/A
kWh Savings (RUL Period)	590,463	590,463
Peak kW Savings (RUL Period)	62.77	62.77
Therms Impact (RUL Period)	N/A	N/A
kWh Savings (RUL thru EUL Period)	580,582	580,582
Peak kW Savings (RUL thru EUL Period)	62.3	62.3
Therms Savings (RUL thru EUL Period)	N/A	N/A
Annual Non-IOU Fuel Impact (RUL Period)	N/A	N/A
Annual Non-IOU Fuel Impact (RUL thru EUL Period)	N/A	N/A
Project Costs for Baseline #1 (RUL or EUL)	Full Costs EEM1 T8: Not Provided EEM2 LED: Not Provided EEM3 OS: Not Provided Total: \$196,805.54	Full Costs EEM1 T8: TBD EEM2 LED: TBD EEM3 OS: TBD Total: TBD
Project Costs for Baseline #2 (EUL minus RUL period)	Incremental Measure Costs EEM1 T8: Not Provided EEM2 LED: Not Provided EEM3 OS: Not Provided Total: Not Provided	Incremental Measure Costs EEM1 T8: TBD EEM2 LED: TBD EEM3 OS: TBD Total: TBD
Project Incentive Amount	\$51,295	\$51,295