

Phase II Ex Ante Review Findings

Table Error! No text of specified style in document.-1: Project Information

IOU	Pacific Gas & Electric
Application ID	NC0119468
Application Date	10/23/2011
Program ID	PGE21011
Program Name	Savings By Design – Commercial Customized Incentives (NRNC)
Program Year	2011
Itron Project ID	X118
IOU Ex Ante Savings Date	NA
ED Measure Name	<p>There are four energy savings measures for this new construction project:</p> <ol style="list-style-type: none"> 1. High Efficiency Lighting & Lighting Controls 2. High Efficiency Rooftop Units 3. Air-side Economizer for Small Units 4. Supply air reset strategy <p>The facility did not implement Demand Control Ventilation measure as stated in Phase I EAR. Similarly, the daylighting measure was not implemented. Refer file “SBD 120292 - XXXXX 2011 Stierlin - Post Installation Verification Report.xls” and tab “██████ Post Summary”.</p>
Project Description	The scope of this project was a major tenant improvement at a high-tech facility. The proposed remodel includes energy efficient lighting and space cooling beyond Title 24 requirements
Date of ED Review(s)	07/23/2012 & 01/07/2013
Primary Reviewer and Firm	Amit Kanungo and C D Nayak/DNV

	KEMA
Review Supervisor and Firm	Keith Rothenberg/Energy Metrics & Joseph Ball/Itron
Type of Review (Desk, On-site, Full M&V, Tool)	Desk
ED Recommendation	Approved

Measure Description

This project is a remodel of a [REDACTED] square foot office building at a high-tech facility. The proposed energy efficiency measures include replacing internal lighting with high efficiency lighting, installing occupancy and daylight sensors, installing high efficiency HVAC roof top units, with economizers on the one smaller capacity AC unit, and installing supply air temperature reset. The customer applied for an incentive under the Savings by Design program and used the system approach to calculate the incentives for the implemented measures.

Summary of Review

Documents provided for Phase II review include the following:

- Post installation verification report
- The eQuest model in electronic format

The claimed savings for the implemented measures are estimated based on an eQuest model.

The installation of the following measures were verified during the post-field visit by IOU-reviewer consultant:

- 1) EEM 1: High efficiency lighting and controls
- 2) EEM 2: Install high efficiency rooftop AC units
- 3) EEM 3: Install economizers on small roof top AC units
- 4) EEM 4: Install DDC, and adopt supply air temperature reset
- 5) EEM 5: Indirect savings from EEM1

The project claims the following savings: 81,639 kWh, 19.3 kW, and 257 therms. The project claims \$7,681 incentive. Refer to submitted project document “SBD 120292 - XXXXX [REDACTED] [REDACTED] - Post Installation Verification Report.xls”. ED approved savings are 83,026 kWh, 29.7 peak demand reduction, and 271 therms. Based on the post-installation verification, the Phase-II submitted document revised the energy savings and cost, and the following are the reasons: 1) EEM1. The daylighting measure was not implemented and eQUEST model was updated to

remove savings related to daylighting controls. The daylighting control cost has been removed from EEM1 cost and the ED-revised EEM1 cost was calculated based on the DEER database, and 2) EEM4: DCV was not implemented, and the eQUEST model was revised. The DCV cost has been removed from EEM4.

Based on the screenshot provided by IOU technical reviewer ED found that AC-1, AC-2, and AC-3 are presently operating on a revised schedule (6:00 am – 10:00 pm in Monday to Friday, and 6:00 am to 6:00 pm in Saturday and Sunday), while the claimed savings model had considered no operation of these AC units during the weekend. Based on these changes, ED revised the weekend schedule of AC-1 to AC-3. This change increased the savings.

Review Conclusion

ED revised and approved the ex ante energy savings for this project based on the post-installation verification report provided by the IOU, and the post-installation AC unit schedules.

Summary of ED Requested Action by the IOU

Table 1-2: Project Overview

Description	IOU Proposed Ex Ante Data	ED Recommendations
Project Baseline Type (Early Replacement, Normal Replacement, Capacity Expansion, New Construction, System Optimization, Add-on Measures)	New Construction	New Construction
Project Cost Basis (Full Cost, Incremental Cost)	Incremental Cost High Efficiency Lighting and Occupancy Sensor and Daylight Control - \$3,042, High Efficiency Packaged ACs - \$24,297, Air-side Economizer for Small AC - \$488, and Supply Air Temperature Reset – \$3,908	Incremental cost is appropriate for new construction projects. Breakdown of measure incremental cost is provided in project document “SBD 120292 - XXXXX [REDACTED] - Post Installation Verification Report.xls”, tab “Revised Calculations”.
RUL (Early retirement projects only, otherwise N/A (not applicable))	Not applicable	Not applicable
EUL	Not provided	Consult DEER 2008 for the EULs
First Year kWh Savings	81,639 High Efficiency Lighting and Occupancy Sensor and Daylight Control – 41,100 kWh, High Efficiency Packaged ACs – 20,652 kWh, Air-side Economizer for Small AC – 4,134 kWh, Supply Air Temperature Reset – 2,076 kWh, and Lighting Indirect Savings – 13,677 kWh	83,026 High Efficiency Lighting and Occupancy Sensor and Daylight Control – 41,100 kWh, High Efficiency Packaged ACs – 22,173 kWh, Air-side Economizer for Small AC – 4,774 kWh, Supply Air Temperature Reset – 1,824 kWh, and Lighting Indirect Savings – 13,155 kWh
First Year Peak kW Reduction	19.3	29.7

Description	IOU Proposed Ex Ante Data	ED Recommendations
	High Efficiency Lighting and Occupancy Sensor and Daylight Control – 7.1 kW, High Efficiency Packaged ACs – 9.5 kW, Air-side Economizer for Small AC – zero, Supply Air Temperature Reset - 0.3 kW, and Lighting Indirect Savings – 2.4 kW	High Efficiency Lighting and Occupancy Sensor and Daylight Control – 16.8 kW, High Efficiency Packaged ACs – 12.3 kW, Supply Air Temperature Reset – 0.6 kW
First Year Therms Savings	257 Supply Air Temperature Reset – 279 therm, and Lighting Indirect Savings – (-) 22 therm	271 Air-side Economizer for Small AC – (-1) therm, Supply Air Temperature Reset – 284 therm, and Lighting Indirect Savings – (-12) therm
kWh Savings (RUL Period)	N/A	N/A
Peak kW Reduction (RUL Period)	N/A	N/A
Therms Impact (RUL Period)	N/A	N/A
kWh Savings (EUL thru RUL Period)	81,639	83,026
Peak kW Reduction (EUL thru RUL Period)	19.3	29.7
Therms Savings (EUL thru RUL Period)	257	271
Annual Non-IOU Fuel Impact (RUL Period)	N/A	N/A
Annual Non-IOU Fuel Impact (EUL thru RUL Period)	N/A	N/A
Net-to-Gross Ratio	Not provided	Assessment not completed, but may be warranted

Table 1-3: Detailed Review Findings

Reviewed Parameter	Analysis
Project Gross Savings Baseline (for early retirement projects only, include RUL through EUL baseline)	IOU Proposal: Title-24 new construction baseline
	ED Assessment: Title-24 standard is appropriate baseline for this project
	ED Recommendation: No change
Project Cost Basis (for early retirement projects only, include RUL through EUL cost basis treatment)	IOU Proposal: Both full measure cost and incremental cost were provided for the installed measures
	ED Assessment: Incremental cost is appropriate for new construction projects
	ED recommendation: No change
RUL (required for early retirement projects only, otherwise n/a)	IOU Proposal: N/A
	ED Assessment: N/A
	ED recommendation: N/A
EUL	IOU Proposal: Not Provided
	ED Assessment: Consult DEER 2008 for the EULs
	ED Recommendation: According to DEER 15 years for HVAC units, 8 years for occupancy sensors, 11 years for lighting fixtures and 15 years for DCV and SAT reset as these two measures are part of HVAC controls
Savings Assumptions	IOU Proposal: Energy savings analysis for this project was performed using eQUEST model
	ED Assessment: The input parameters used in the baseline eQUEST model were based on Title-24 building energy efficiency standards. Parametric runs were created for all the proposed measures to estimate the savings for this project.
	ED Recommendation: Savings methodology is appropriate for this project.
Calculation Methods/Tool review	IOU Proposal: eQUEST energy modeling tool was used to estimate the savings for this project
	ED Assessment: eQUEST is the appropriate modeling tool for new construction projects
	ED Recommendation: No change

Reviewed Parameter	Analysis
Pre- or Post-Installation M&V Plan	IOU Proposal: No M&V plan was provided
	ED Assessment: Only post-installation verification was used for validation.
	ED Recommendation: Post installation inspection is adequate for project verification.
Net-to-Gross Review	IOU Proposal: Not provided
	ED Assessment: A NTG assessment may be warranted
	ED Recommendation: a NTG interview is recommended