


Phase III Ex Ante Review Findings

Table 1-1: Project Information

IOU	Pacific Gas and Electric
Application ID	2K12082172
Application Date	2/29/2012
Program ID	PGE21011
Program Name	Non Residential Retrofit Program
Program Year	2012
Itron Project ID	X103
IOU Ex Ante Savings Date	10/01/2012
ED Measure Name	HVAC & Controls Upgrade
Project Description	<p>This customized retrofit project at an office building includes the following measures:</p> <ol style="list-style-type: none"> 1. EEM-1: Replace existing box car units with high efficiency units, 2. EEM-2: Replace old pneumatic control system with DDC, which includes static pressure reset, optimum start/stop controls, CO₂ based demand control ventilation (DCV), and HHW temperature reset, 3. EEM-3: Convert to variable volume HHW flow, and 4. EEM-4: Upgrade lighting.
Date of ED Review(s)	09/26/2012 08/01/2013
Primary Reviewer and Firm	C.D. Nayak/DNV KEMA
Review Supervisor and Firm	Kunal Desai & Joseph Ball/Itron
ED Project Manager	
ED Policy Authorization (as needed)	
Type of Review (Desk, On-site, Full M&V,	Desk review

Tool)	
ED Recommendation	<p>ED-revised savings continue to be conditionally approved subject to post installation M&V and savings true up. ED agrees to the IOU's proposal to reduce the post-retrofit M&V duration from six months to four months. ED requests IOU to submit the post M&V plan for review before the site visit is scheduled.</p> <p>Furthermore, upon retrieval of the post installation data ED reviewer will analyze the post-retrofit M&V data, and if needed, it will inform the IOU about the adequacy and appropriateness of the collected site data.</p>

Measure Description

This project is located at an office building (2029) in XXXXXXXX, and was carried as part of PG&E's Large Integrated Audit program. Earlier, four other buildings were selected for similar measures under the same incentive application. However, all other buildings were withdrawn from the application. The following energy efficiency measures were involved:

1. EEM-1: Upgrade to Premium Efficiency Package Units - Replace existing box car units with high efficiency units. Most of the units are original, installed in the late 80's to early 90's, and have reached the end of their useful life. The new premium efficiency units have efficiency ratings 10.2 EER.
2. EEM-2: Replaced the old pneumatic control system with DDC, which will implement the static pressure reset, optimum start/stop controls, CO₂ based demand control ventilation (DCV), and HHW temperature reset,
3. EEM-3: Hot Water Pump Variable Speed Drives - To convert the existing constant volume hot water system to variable volume HHW flow, and
4. EEM-4: Advanced Lighting Upgrades - The current lighting efficiency is approximately 0.75 Watts/sqft, and fitted with T8s, T5s and compact fluorescents. With enhanced controls and dimmable ballast, the facility is to reduce the lighting loads on average to 0.50 - 0.35 Watts/sqft.

Summary of Review

For Phase-I Ex Ante Review, see previously sent Phase I EAR document entitled: PGE_2K12082172_PR.docx.

For Phase-II Ex Ante Review, see previously sent Phase I EAR document entitled: PGE EAR_2K12082172_Phase II_092812.doc

Phase III Ex Ante Review

IOU wanted to check with the ED reviewer and provided the following letter with the filename: EnergyEfficiencyOIR-Post-2008_DR_ED_262_EEGA_2372.pdf, which requesting permission to shorten the post-installation M&V period for this project from six to four months originally required by ED reviewer. The IOU also proposed the ED reviewer to perform its post-retrofit building model analysis with four months' worth of collected data, and IOU expressed its willingness to provide additional data verifying six months of operation if ED reviewer finds the available data inadequate.

Review Conclusion

Savings conditionally approved. ED reviewer agrees to the IOU's proposal to revise the post-retrofit M&V duration from six months to four months. ED would like to know the parameters that the IOU/IOU technical reviewer plans to collect on system performance. ED reviewer will analyze the post-retrofit M&V data, and if needed, they will inform the IOU about the adequacy and appropriateness of the collected site data.

Summary of ED Requested Action by the IOU

None

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)	Appears to be normal replacement for the DX units and early replacement for other add-on measures	All measures are under normal replacement based on the information provided by IOU's technical reviewer
Project Cost Basis (Full Cost, Incremental Cost)	Full cost - \$1,967,146.00 per the first summary document, and \$2,156,123.00 per the second summary document.	The PA review report provides the cost break for the full cost of the project. Incremental costs apply for all measures.
RUL (Early retirement projects only, otherwise N/A (not applicable))	Not provided	N/A
EUL	Not provided	Per DEER 2008, 15 years for VFD installation on pumps, 15 years for new commercial air conditioners, and 15 years for energy management system controls.
First Year kWh Savings	287,212	312,131 (obtained from the parametric run results)
First Year Peak kW Savings	48.32	89.12 (obtained from the hourly results for parametric run-1 and parametric run -11)
First Year Therms Savings	12,715	11,496 (obtained from the parametric run results)
kWh Savings (RUL Period)	N/A	N/A
Peak kW Savings (RUL Period)	N/A	N/A
Therms Impact (RUL Period)	N/A	N/A

Description	IOU Proposed Ex Ante Data	ED Recommendations
kWh Savings (EUL thru RUL Period)	287,212	312,131 (obtained from the parametric run results)
Peak kW Savings (EUL thru RUL Period)	48.32	89.12 (obtained from the hourly results for parametric run-1 and parametric run -11)
Therms Savings (EUL thru RUL Period)	12,715	12,410 (obtained from the parametric run results)
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

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: Appears to be normal replacement for the DX units and early replacement for other add-on measures
	ED Assessment: All measures are under normal replacement based on the information provided by IOU’s technical reviewer
	ED Recommendation: All measures are under normal replacement based on the information provided by IOU’s technical reviewer
Project Cost Basis (for early retirement projects only, include RUL through EUL cost basis treatment)	IOU Proposal: Appears to be full cost
	ED Assessment: The PA review report provides the anticipated itemized measure full cost
	ED recommendation: Provide incremental costs for the normal replacement baseline measure and full cost for early replacement measures
RUL (required for early retirement projects only, otherwise n/a)	IOU Proposal: Not provided
	ED Assessment: N/A.
	ED recommendation: N/A
EUL	IOU Proposal: Not provided
	ED Assessment: Consult DEER 2008 for EULs
	ED Recommendation: Per DEER 2008, 15 years for VFD installation on pumps, 15 years for new commercial air conditioners, 15 years for energy management system controls.
Savings Assumptions	IOU Proposal: Energy saving calculations for the proposed measures were estimated with eQUEST model
	ED Assessment: The input parameters are based on the site inspections done by IOU technical reviewer
	ED Recommendation: No change
Calculation Methods/Tool review	IOU Proposal: Energy saving calculations for the proposed measures were estimated with a separate eQUEST model
	ED Assessment: Only after final discussions with ED were the final measures

Reviewed Parameter	Analysis
	<p>selected in the final eQUEST model. The original model was calibrated with the actual annual building energy usage.</p> <p>ED Recommendation: No change</p>
Pre- or Post-Installation M&V Plan	IOU Proposal: No M&V plan was provided
	ED Assessment: It appears that no baseline M&V was done, and no post-retrofit plan was provided either. The baseline conditions were taken from the pre-installation inspection findings.
	ED Recommendation: No change
Net-to-Gross Review	IOU Proposal: Not provided
	ED Assessment: Not assessed
	ED Recommendation: None