

Phase III Ex Ante Review Findings

Table 1-1: Project Information

IOU	PGE
Application ID	2K12078508
Application Date	10/18/2011
Program ID	PGE21011
Program Name	2011 Customized Retrofit and Demand Response
Program Year	2011
Itron Project ID	X061
IOU Ex Ante Savings Date	TBD
ED Measure Name	Carbon monoxide controls on garage exhaust fans
Project Description	Install 35 carbon monoxide sensors and VFD controls on garage exhaust fan with on/off controls
Date of ED Review(s)	03/19/2012 & 04/08/2012 & 10/01/2012
Primary Reviewer and Firm	Ben Cheah/Itron
Review Supervisor and Firm	Kunal Desai/Itron
Type of Review (Desk, On-site, Full M&V, Tool)	Desk Review & On Site
ED Recommendation	Energy savings and demand reduction savings are approved at the ED recommended levels.

Measure Description

This project is to install carbon monoxide sensors on 35 garage exhaust fan motors with on-off controls. This will enable the fans to run on demand basis versus on schedule. Energy savings will result from reduced fan runtime.

Summary of Review

Phase III review was conducted based on post installation monitoring and verification data collected on site. Loggers were installed on 8 garage fans with varying motor horsepower. One fan was logged per floor. During the site visit, ED noted that the total HP of the fans was not correctly identified in the Phase II application. Phase III calculations were revised based on the HP collected on site.

The original IOU calculation showed a Motor Efficiency of 85%. This was changed to 90% by the IOU based on the 2011 Statewide Customized Offering Procedures Manual, Appendix C, Table C.1 for a 1800 rpm enclosed motor. Ed modified the motor efficiencies in the energy savings calculations based on DOE standard motor efficiency table for 3hp, 7.5hp, 10hp, and 15hp as ~82%, ~85%, ~87.7% and ~88.4% respectively.

A deemed load factor of 90% was used in the initial IOU calculations. The full-load amps specs for each motor were provided, however, the instantaneous run-time amps were logged. ED asks that the IOU to revise their calculations by taking the actual load factor, which was calculated by taking the average of the highest run-time amp reading and the lowest run-time amp reading, and dividing that by the full-load amps.

The energy savings and peak demand reduction for this project verified with post installation monitoring and verification are estimated to be 761,036 kWh and 188 kW, respectively. The incentive seems to be capped at 50% project cost and is calculated at \$70,875.00.

Review Conclusion

ED approves the savings for this proposed project based on post installation M&V true up for exhaust fans runtime. Energy savings have been adjusted to 761,036 kWh and demand savings to 188 kW.

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)	Add on measure	Add on measure
Project Cost Basis (Full Cost, Incremental Cost)	Full cost: \$141,750.00	Full cost of \$141,750.00 is acceptable.
RUL (Early retirement projects only, otherwise N/A (not applicable))	Not provided	NA
EUL	EUL of motors from DEER database is 15 years. EUL of CO sensors is estimated at 15 yrs by the vendor.	5 years based on RUL for motors and Fans. EUL is limited by the RUL of motors and fans.
First Year kWh Savings	1,006,700	761,036
First Year Peak kW Savings	250	188
First Year Therms Savings	N/A	N/A
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
kWh Savings (EUL thru RUL Period)	1,006,700	0
Peak kW Savings (EUL thru RUL Period)	250	0
Therms Savings (EUL thru RUL Period)	N/A	N/A

Description	IOU Proposed Ex Ante Data	ED Recommendations
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	Not Recommended

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: Add on measure
	ED Assessment: Add on measure acceptable
	ED Recommendation: None
Project Cost Basis (for early retirement projects only, include RUL through EUL cost basis treatment)	IOU Proposal: Full Cost provided
	ED Assessment: Full cost of \$141,750.00 is acceptable.
	ED recommendation: None at this time
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: EUL of motors from DEER database is 15 years, so RUL of motors is $15/3 = 5$ yrs. EUL of CO sensors is estimated at 15 yrs by the vendor.
	ED Assessment: EUL is limited by the RUL of motors and fans. Savings beyond the RUL of motors and fans would be based on prevailing standard practice.
	ED Recommendation: 5 years based on RUL for motors and Fans
Savings Assumptions	IOU Proposal: Energy savings calculation spreadsheet provided along with 5 weeks of M&V data.
	ED Assessment: During the original IOU site visit the total HP of the fans was not identified. During the post-install M&V, the total list of fans along with their specifications for each fan was provided, and the total HP was corrected by the IOU. The original IOU calculation showed a Motor Efficiency of 85%. This was changed to 90% by the IOU based on the 2011 Statewide Customized Offering Procedures Manual, Appendix C, Table C.1 for a

Reviewed Parameter	Analysis
	<p>1800 rpm enclosed motor. The efficiencies for 3hp, 7.5hp, 10hp, and 15hp are ~82%, ~85%, ~87.7% and ~88.4% respectively, so the value of 90% was used.</p> <p>A deemed load factor of 90% was used in the initial IOU calculations. The specifications for full-load amps of each motor were provided; however, the instantaneous run-time amps were logged. ED asks that the IOU to revise their calculations by taking the actual load factor, which was calculated by taking the average of the highest run-time amp reading and the lowest run-time amp reading, and dividing that by the full-load amps.</p> <p>ED Recommendation: None</p>
<p>Calculation Methods/Tool review</p>	<p>IOU Proposal: Energy savings calculation spreadsheet provided</p> <p>ED Assessment: ED reviewed the calculations and suggested that the IOU use the actual load factor which is based on field measurements and not the theoretical value of 90%. The motor horsepower was also revised based on post installation M&V findings Revised saving numbers were submitted by the IOU which ED reviewed and approved.</p> <p>ED Recommendation: None</p>
<p>Pre- or Post-Installation M&V Plan</p>	<p>IOU Proposal: A post installation inspection was conducted by the IOU. Short term monitoring was conducted to log fan power for five (5) weeks. Savings were adjusted based on post installation monitoring data.</p> <p>ED Assessment: IOU followed ED’s suggestion for longer M&V period to adjust for lower August usage for summer vacations. Post installation M&V data was used to true up energy savings estimate.</p> <p>ED Recommendation: None</p>
<p>Net-to-Gross Review</p>	<p>IOU Proposal: Not provided</p> <p>ED Assessment: Assessment not completed</p>

Reviewed Parameter	Analysis
	ED Recommendation: An ex ante NTG interview is not recommended