

Phase I Ex Ante Review Findings

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

IOU	PG&E
Application ID	2K12128176
Application Date	TBD
Program ID	PGE21021
Program Name	Industrial Calculated Incentives
Program Year	2013
Itron Project ID	X259
IOU Ex Ante Savings Date	TBD
ED Measure Name	High Bay LEDs
Project Description	Replace manually controlled high-bay metal halide fixtures with LED fixtures with occupancy and daylight-adjusted dimming controls
Date of ED Review(s)	03/12/13
Primary Reviewer and Firm	Sepideh Shahinfard/ Itron
Review Supervisor and Firm	Joseph Ball/ Itron
Type of Review (Desk, On-site, Full M&V, Tool)	Desk Review
ED Recommendation	Ex ante savings are conditionally approved. Final savings values are pending submission of additional information to verify baseline conditions including the pre- and post-lighting power densities (LPDs). Savings should be corrected to reflect the correct baseline.

Measure Description

The project involves replacing the existing 170 manually controlled high bay metal halide fixtures with 170 LED lighting fixtures in the warehouse. The proposed LED fixtures are equipped with the automated occupancy and daylighting control. The fixtures also have the capability of monitoring the electrical energy load (kW). Baseline operating hours are determined based on an 18 hours/day weekday schedule (two nine hours work shifts a day, five days a week throughout the year).

Summary of Review

The Investor Owned Utility (IOU) submitted the following documents for review:

- PG&E review form “2K12128176 PGE Review Form v1 2_rev”
- Proposed fixture catalog “Digital Lumens Manufacturers Spec Sheet”
- Output of Visual Interior Tool “Photo Metrics ILE3-13 [REDACTED] RLP”
- Energy usage summary of the trial fixtures “Summary of Trial Energy Use”

The Energy Division (ED) Phase I review focused on the information provided by the IOU and verifying that the appropriate baseline was used for this project. The documentation provided by PG&E did not include any information regarding the age, condition, make and model of existing fixtures, percent of fixtures replaced, existing controls, lighting power density of the existing fixtures, as well as the 2008 Title 24 applicability, remaining useful life (RUL) of the existing fixtures, and estimated useful life (EUL) of the proposed equipment. Also, ED determined that the proposed occupancy sensors savings were negated by the Title 24 requirement for mandated lighting controls due to the pre-existing lighting controls being manual switches only.

During a March 12th conference call, PGE stated that Title 24 requirements do not apply to the project, because industrial warehouse were exempt from meeting this standards. ED recommended that industrial warehouses are subject to T24 requirements and PGE should address the Title 24 lighting alteration requirements if the correct project baseline requires so.

In addition, ED noted that the assumption of 5% load during 70% of the operating hours for occupancy sensor saving calculations was not sufficiently supported and that a 15% reduction in operating hours could be used as an assumption to estimate initial savings, pending measurement data to substantiate the actual reduction in hours of use, and as long as the Title 24 mandated controls requirement were separately met. Furthermore, PG&E stated its willingness to verify the lighting controls savings through measurement of all the fixtures controlled with occupancy sensors and daylighting control, as well as providing photographs of the existing fixtures. ED agrees that using the monitored data over two week duration post-retrofit will provide sufficient ex ante savings true-up.

Review Conclusion

As was discussed during the March 12th conference call, ED recommends conditional approval of ex ante savings subject to determination of the project baseline and post-install measurements of all 170 LED fixtures. ED will reconsider the project's estimated savings upon review of the lighting logger data and the review of the IOU's final savings estimates.

Summary of ED Requested Action by the IOU

ED requests the following actions and supporting documentation to allow ED to complete the ex ante review:

- Provide photographs of the existing equipment including the lamp (showing wattage) fixture housings, and manufacturer nameplate data.
- Provide information in reference to Title 24 applicability to the project, estimated useful life, and remaining useful life of the equipment, if applicable.
- Provide floor plan showing all lighting fixtures, fixture mounting height, floor area with a description of the type of activities in each area.
- Provide the Lighting Power Density of the existing fixtures.
- For any area where daylighting controls are proposed, include a drawing of the daylit areas.
- Update savings calculation spreadsheet with correct baseline after the post-install, two week monitoring period and the IOU installation report has been completed and submitted to ED.
- Calculate any appropriate HVAC interactive effects for both the energy savings (kWh and Therms) and peak demand (kW) reduction.
- Provide both the full and incremental measure costs.
- Submit the signed project application.
- Submit to ED the installation report (IR), the revised savings calculations, and the logged 15-minute interval kW measurements for all 170 proposed LED fixtures for a minimum of two weeks.

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)	Not provided	TBD
Project Cost Basis (Full Cost, Incremental Cost)	Full Cost: \$169,150	TBD
RUL (Early retirement projects only, otherwise N/A (not applicable))	Not provided	TBD
EUL	Not provided	TBD
First Year kWh Savings	327,630 kWh	TBD
First Year Peak kW Savings	54.7 kW	TBD
First Year Therms Savings	Not provided	TBD
kWh Savings (RUL Period)	Not provided	TBD
Peak kW Savings (RUL Period)	Not provided	TBD
Therms Impact (RUL Period)	Not provided	TBD
kWh Savings (EUL thru RUL Period)	Not provided	TBD
Peak kW Savings (EUL thru RUL Period)	Not provided	TBD
Therms Savings (EUL thru RUL Period)	Not provided	TBD
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 available	Not assessed

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: Existing fixtures are used as the baseline.
	ED Assessment: Not completed pending submission of more information.
	ED Recommendation: Provide information on project gross savings baseline and Title 24 applicability
Project Cost Basis (for early retirement projects only, include RUL through EUL cost basis treatment)	IOU Proposal: Full project cost
	ED Assessment: Not completed pending submission of more information.
	ED recommendation: Provide incremental project costs.
RUL (required for early retirement projects only, otherwise n/a)	IOU Proposal: Not Provided
	ED Assessment: Not completed pending submission of more information
	ED recommendation: provide the RUL of the existing fixtures
EUL	IOU Proposal: Not Provided
	ED Assessment: Not completed pending submission of more information
	ED recommendation: Provide the EUL of the new LED fixtures
Savings Assumptions	IOU Proposal: The savings calculation spreadsheet used existing fixtures as the baseline. Fixtures operate 30% of the operating hours at the power adjusted demand when occupancy is detected, and they operate at 5% load during 70% of the operating hours, when no occupancy is detected.
	ED Assessment: Based on the documentation provided, ED is unable to determine if this is normal replacement or not. If this project is considered as normal replacement the savings calculations should be corrected to meet 2008 Title 24 requirements and if the project is considered as early retirement the RUL-EUL savings should be provided.
	ED Recommendation: Savings calculation should be corrected to reflect the current codes and standards.
Calculation Methods/Tool review	IOU Proposal: Savings were calculated using an excel spreadsheet.
	ED Assessment: Calculation method doesn't reflect Title 24 requirements and the saving basis for occupancy sensor was not supported with any document
	ED Recommendation: The spreadsheet approach is acceptable but the savings calculation spreadsheet needs to be corrected to reflect Title 24 requirements.
Pre- or Post-Installation M&V Plan	IOU Proposal: Not Provided
	ED Assessment: Not assessed
	ED Recommendation: Provide an M&V plan that includes the accuracy of

Ex Ante Review Findings

Reviewed Parameter	Analysis
	the built-in measurement devices.
Net-to-Gross Review	IOU Proposal: Not provided
	ED Assessment: Assessment not completed
	ED Recommendation: Not recommended