

Phase III Ex Ante Review Findings

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

IOU	PGE
Application ID	2K12088077
Application Date	6/6/2012
Program ID	PGE2182
Program Name	Energy Efficiency – Demand Response
Program Year	2012
Itron Project ID	X086
IOU Ex Ante Savings Date	6/25/2012
Measure Name	Boiler Economizer
Project Description	Install a new stack gas economizer that will recover waste heat from the flue gas to pre-heat the feedwater entering the boiler.
Date of CPUC Staff Review(s)	06/13/2012 & 07/27/2012 & 10/21/2013
Primary Reviewer and Firm	Kunal Desai/Itron Inc.
Review Supervisor and Firm	Joseph Ball/Itron Inc.
CPUC Staff Project Manager	Peter Lai / California Public Utilities Commission
Commission Policy Authorization (as needed)	TBD
Type of Review (Desk, On-site, Full M&V, Tool)	Desk Review
Commission Staff Recommendation	This project's final ex ante energy savings of 61,027 therms/yr are approved.

Measure Description

The measure involves replacing the existing boiler economizer with a new, more efficient economizer. The proposed economizer will recover waste heat from the stack flue gas to pre-heat the feed water entering the boiler. The stack gas temperature is estimated to be cooled from 392°F to 273°F.

Summary of Review

The documents reviewed by CPUC staff were: PGE Installation Review spreadsheet, pre and post boiler combustion tests, economizer trends for steam production and boiler stack temperature, IR live calculation spreadsheet, and project invoices.

The IOU submitted updated calculations with a boiler test conducted in the post M&V phase. Steam production and boiler stack temperature were trended. Inputs from the pre and post boiler tests and trend data were used to determine the energy savings for the project. CPUC staff's specified heat exchanger effectiveness factor of 80% was used in the final calculations. Boiler stack temperature was reported from the boiler combustion test to be 294F. The temperature difference of 79F was noted between the pre and post conditions. The project cost was verified from invoices submitted in the IR report. IOU's installation review calculations claim 63,139 Therms after post M&V true up. However, the steam flow claim of 52 KLB/HR was revised using the steam flow of 50 KLB/HR per the recorded trend data, and thus the savings are reduced to 61,027 Therms annually. Due to program rules and restrictions, the IOU has claimed 41,357 annual Therm savings, consistent with the PA approved amount, as the final savings claim. The evaluation team confirmed that natural gas purchase exceeds project savings.

The total project cost is reported as \$170,000. The equipment cost is 108,000 including freight. The installation cost or labor cost for the boiler economizer is 62,000. The installation was performed by a third party contactor. The total savings for the project are 61,027 Therms/yr and the incentive for the project is determined to be \$41,357.

Review Conclusion

CPUC staff approves the IOU final savings for the project as 61,027 Therms/yr savings.

Table 1-2: Detailed Review Findings

Reviewed Parameter	Analysis
Project Baseline Type (Early Replacement, Normal Replacement, Capacity Expansion, New Construction, System Optimization, Add-on Measures) Note: For early retirement projects only, include RUL through EUL baseline)	IOU Proposal: Early Replacement
	CPUC staff Assessment: Early Replacement claim is acceptable
	CPUC staff Recommendation: None
Project Cost Basis (for early retirement projects only, include RUL through EUL cost basis treatment)	IOU Proposal: Full cost
	CPUC staff Assessment: Full cost acceptable
	CPUC staff recommendation: None
RUL (required for early retirement projects only, otherwise n/a)	IOU Proposal: 3 years (1/3 of the RUL period)
	CPUC staff Assessment: RUL period acceptable
	CPUC staff recommendation: None
EUL	IOU Proposal: Not provided
	CPUC staff Assessment: 10 years for non residential economizers based on DEER 2008
	CPUC staff Recommendation: 10 years
Savings Assumptions	IOU Proposal: Live energy savings calculation spreadsheet provided
	CPUC staff Assessment: Post-install trend data was provided to support increased therm savings.
	CPUC staff Recommendation: None
Calculation Methods/Tool review	IOU Proposal: Live energy savings calculation spreadsheet provided
	CPUC staff Assessment: Energy savings methodology is acceptable.
	CPUC Staff Recommendation: None

Reviewed Parameter	Analysis
Pre- or Post-Installation M&V Plan	IOU Proposal: IOU conducted pre and post installation verification
	CPUC staff Assessment: Post installation trend data along with the boiler tests results was submitted for CPUC staff review
	CPUC staff Recommendation: None
Net-to-Gross Review	IOU Proposal: Not provided
	CPUC staff Assessment: Not accessed
	CPUC staff Recommendation: Not required

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

Description	IOU Ex Ante Claim	CPUC Staff Recommendations
First Year kWh Savings	N/A	N/A
First Year Peak kW Savings	N/A	N/A
First Year Therms Savings	61,027	61,027
kWh Savings (RUL Period)	N/A	N/A
Peak kW Savings (RUL Period)	N/A	N/A
Therms Impact (RUL Period)	61,027	61,027
kWh Savings (RUL thru EUL Period)	N/A	N/A
Peak kWh Savings (RUL thru EUL Period)	N/A	N/A
Therms Savings (RUL thru EUL Period)	61,027	0
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)	\$170,000	\$170,000
Project Costs for Baseline #2 (EUL minus RUL period)	N/A	N/A
Project Incentive Amount	\$41,357	\$41,357