

Phase I Ex-Ante Review Findings

Table 1-1: Project Information

IOU	Pacific Gas and Electric Company (PG&E)
Application ID	PGE 1095-01.1
Application Date	TBD
Program ID	PGE21026
Program Name	Commercial Industrial Boiler Efficiency Program (CIBEP)
Program Year	2013
Itron Project ID	X468
IOU Ex Ante Savings Date	12/10/2013
CPUC Staff Measure Name	Insulate bare pipe surfaces
Project Description	Insulate bare surface hot water pipes, flanges, valves, pumps and strainer surfaces with 1-1.5 inch thick mineral fiber blanket and canvas jacket sleeving.
Date of CPUC Staff Review(s)	January 10, 2014
Primary Reviewer / Firm	Jonathan Wanjiru/Itron
Review Supervisor / Firm	Joseph Ball/Itron
CPUC Staff Project Manager	██████████ / California Public Utilities Commission, Energy Division
CPUC Staff Policy Authorization (as needed)	
Type of Review (Desk, On-site, Full M&V, Tool)	Desk
CPUC Staff Recommendation	CPUC staff waives further review of this project and recommends the IOU apply the 0.9 GRR to the verified savings estimate after measure installation.

Measure Description

This project proposes to insulate 235 square feet of hot water pipes, flanges, valves, pump housings and strainers. The pipe sizes range from 0.5 to 8 inches in diameter. The insulation to be installed shall be 1-1.5 inches thick mineral fiber blanket insulation with a canvas jacket material.

This insulation is expected to reduce the heat loss by 80%. The IOU ex ante savings estimates are 6,710 Therms. The project cost is estimated to be \$3,200. The estimated financial incentive is cost capped at \$1,600 which is 50% of the project cost.

Summary of Review

The Investor-Owned-Utility (IOU) submitted the following documents for Data Request (DR) which was reviewed by CPUC staff:

- 1095.01-1_DE_NWP_Final;
- 1095.01-1_3Eplus reports;
- 1095.01-1_Insul_Calc_131206; and
- 1095.01-1_NWP_Flue Log.

The technical baseline was properly identified for the piping systems and NAIMA model input assumptions are acceptable. The preliminary savings of 6,710 Therms appear reasonable, based on the data, calculations and assumptions submitted. The calculations take into consideration the OSHA code requirements to estimate the incremental savings for the surfaces where this applies, i.e. the baseline temperature has been set to 140 F. Savings from insulating all other bare uninsulated surfaces were estimated using the in-situ pipe temperatures.

Review Conclusion

CPUC staff waives further review of this project and recommends the IOU apply the 0.9 GRR to the final verified savings estimate after measure installation.

Table 1-2 Review Findings

Reviewed Parameter	Analysis
<p>Project Baseline Type (Early Replacement, Normal Replacement, Capacity Expansion, New Construction, System Optimization, Add-on Measures, Major Renovation) Note: For early retirement projects only, include RUL through EUL baseline)</p>	IOU Proposal: Retrofit Add-on
	CPUC Staff Assessment: Accept
	CPUC Staff Recommendation: None
<p>Project Baseline Technology (in situ equipment, Title 24 (specify year), other code or other efficiency level (specify), industry standard practice - ISP)</p>	IOU Proposal: In situ
	CPUC Staff Assessment: Accept
	CPUC Staff Recommendation: None
<p>Project Cost Basis (Full Incremental, or Both. Note: For early retirement projects, include RUL through EUL cost basis treatment)</p>	IOU Proposal: Both full (bare pipe baseline) and incremental (OSHA code baseline) costs apply.
	CPUC Staff Assessment: Correct. However, IOU should make sure costs are broken out for the OSHA code baseline portion of the project, since only incremental material costs apply which excludes installation labor and shipping costs.
	CPUC Staff Recommendation: Insure any insulation labor & shipping costs - for the OSHA code baseline pipes – are excluded from IMCs for that portion of the project.
<p>RUL (required for early retirement projects only, otherwise N/A)</p>	IOU Proposal: N/A
	CPUC Staff Assessment: N/A
	CPUC Staff Recommendation: N/A
<p>EUL (for each measure)</p>	IOU Proposal: 20 years
	CPUC Staff Assessment: Supporting evidence not provided and DEER EUL not used
	CPUC Staff Recommendation: 11 years per DEER estimate for gas hot water pipes

Phase I Ex Ante Review Findings

Reviewed Parameter	Analysis
Savings Assumptions	IOU Proposal: Savings are based on insulating approximately 235 square feet of bare pipes, valves, flanges, pump housings with 1 to 1.5 thick mineral fiber blanket insulation, and the operating hours and production remaining the same as the baseline. The annual operating hours are assumed to be 7,680 hours. The bare surface temperatures for the supply side and return side bare surfaces are assumed to be 251°F and 228°F respectively. The boiler combustion efficiency was measured to be 84%.
	CPUC Staff Assessment: Accept
	CPUC Staff Recommendation: Post installation monitoring should be used to validate and verify all the assumptions used in the savings calculations, including operating hours. Outside temperature after installation of insulation should be measured and the operating hours verified.
Calculation Methods/Tool review	IOU Proposal: Savings were calculated using the North American Insulation Manufacturers Association (NAIMA) 3EPlus software version 4.1.
	CPUC Staff Assessment: Accept
	CPUC Staff Recommendation: None.
Pre- or Post-Installation M&V Plan	IOU Proposal: A conceptual monitoring and verification plan submitted.
	CPUC Staff Assessment: Accept, with suggestion below for verifying boiler operating hours.
	CPUC Staff Recommendation: Post installation M&V plan should include validating annual boiler operating hours by monitoring the boiler for one or two complete weeks during normal plant productivity (e.g., using temperature data loggers with thermocouple(s) on the boiler pipes, measuring outlet temperatures at 5 minutes intervals).
Net-to-Gross Review	IOU Proposal: Not Provided
	CPUC Staff Assessment: TBD
	CPUC Staff Recommendation: TBD

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	6,710	0.9 (GRR) on trued-up post-installation savings
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 (RUL thru EUL Period)	N/A	N/A
Peak kW Savings (RUL thru EUL Period)	N/A	N/A
Therms Savings (RUL thru EUL Period)	6,710	6,710 x 0.9 (GRR)
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)	Full and Incremental Project Cost \$ 3,200	\$2800 EEM1 (full) + \$400 EEM2 (incremental) = \$3,200 Total combined project cost
Project Costs for Baseline #2 (EUL minus RUL period)	N/A	N/A
Project Incentive Amount	\$ 3,200	\$1,600; Incentive capped at 50% of the project cost.