

Phase I Ex Ante Review Findings

Table 1-1: Project Information

IOU	PG&E
Application ID	Sales Lead of 28051
Application Date	TBD
Program ID	PGE21021
Program Name	Industrial Calculated Incentives (Hybrid Rebate Program)
Program Year	2012
Itron Project ID	X218
IOU Ex Ante Savings Date	August 9, 2012
ED Measure Name	Replace failed steam traps
Project Description	Replace 361 steam traps which have failed in open position.
Date of ED Review(s)	01/08/2013
Primary Reviewer and Firm	Kumar Chittory/Itron
Review Supervisor and Firm	Joseph Ball/Itron
Type of Review (Desk, On-site, Full M&V, Tool)	Desk Review
ED Recommendation	ED-revised ex ante savings of 362,858 therms are conditionally approved, pending post-install verification and IOU savings true-up

Measure Description

The measure involves replacing 361 faulty steam traps which have failed in open position with new steam traps.

Summary of Review

The IOU submitted the following documents for this initial ex ante review:

- Steam trap savings estimation tool (Stm_Trap_v3.0.xls)
- 2011 Rebate application package (2011 rebate application-complete package.pdf.pdf)
- Steam trap data audit from 2011 (Batch Upload Valero 2011.xls.xls)
- Populated steam trap savings tool (Stm_Trap_v3.0.xls.xls)
- Steam Trap Database (Xxxxxx Steam Trap Database 07 16 2012 frm Antonio Inserni Jul 17, 12.xlsm.xlsm)
- Cover Letter (EnergyEfficiencyOIR-Post-2008_DR_ED_271_EEGA_2415.doc)

The facility identified 361 failed steam traps in the open position by performing a detailed steam trap audit. As part of the steam trap audit, the input parameters that are needed for the savings calculation were also recorded. The audit provided information regarding the location of the trap, make and model number, steam trap condition, application of the trap and operational hours of the trap.

Steam traps have also failed in the closed position and will result in significant energy losses and other steam problems. However, the savings cannot be claimed for those steam traps. The estimated therm savings from replacing the 361 faulty steam traps were calculated using HP steam trap savings estimation tool. The HP tool estimated a savings of 644,467 therms, based on the input parameters for each failed steam trap. However, since the savings estimation tool is locked, ED was unable to review the assumptions and approach behind the savings calculations.

ED had developed a steam trap savings calculator as part of the 06-08 CPUC evaluations and used this calculator to determine the therm savings for this project. Using the input parameters from the steam trap audit, the ED calculator estimated a therm savings of 362,858 therms if the 361 failed steam traps were replaced.

The main reason for this significant difference in savings is due adjustments made to the pressures that were collected in the steam trap audit. Although no details were provided, the pressures listed in the steam trap audit appear to be the header pressures of various steam loops in the plant. Steam trap leakage rates, based on the reported pressures, are correct only if the traps are connected directly to the headers. The appropriate pressure for all the other remaining traps that are connected to the outlet of a process heat exchange device should be the steam

pressure at the outlet of the device. This is somewhere between the higher pressure header value serving the device and the lower header pressure of the loop that the steam feeds after the device. The steam trap audit did not provide information on the steam trap service, any drip leg traps or process outlets, as part of the survey. As a result, ED will use an adjustment factor of 0.578 to the pressure at the header in order to obtain an estimate of the pressure at the inlet of the steam trap. The 0.578 multiplier provides the pressure drop across a steam using device that produces choked flow based on a known inlet pressure. ED decided to use this multiplier as the audit did not contain the steam pressures entering the traps. If this information was collected in the audit or if it can be confirmed that all the replaced traps were drip leg traps, then the multiplier can be removed.

The following calculation spreadsheet provides the assumptions and calculations behind the steam trap savings estimate of 362,858 therms: X218 PGE Sales Lead 28051 Steamtrap Calcs.xls.

ED conducted a NTG interview with this facility in May of 2012 as part of ED's Custom Impact Evaluation for 2010-2012 for the before-decision (BD) period. This company replaced a large number of failed steam traps, over 200, through the program during 2010 and is continuing to do so through this proposed project. Their primary reasons are to save energy and improve the reliability of their steam system. Although the idea for this project came from inside the company, and they were already doing steam trap surveys and replacement on their own, they said that the availability of program incentives has allowed them to replace more traps earlier than otherwise. In terms of the NTG scoring, the program decision influence that they scored the highest was the payback on the investment with the incentive. They scored the program's overall influence on their decision a 6 out of 10 in importance, and assigned a 3 out of 10 likelihood that they would have installed exactly the same program qualifying efficient equipment in the absence of the program. Based on the interview ED assigns a NTGR of 0.60 for this project.

Review Conclusion

ED-revised ex ante savings of 362,858 therms are conditionally approved, pending post-install verification and IOU savings true-up.

Summary of ED Requested Action by the IOU

ED requests that the IOU revise the savings as recommended or provide additional documentation to support IOU's savings estimate. ED also recommends IOU to perform post-installation verification and true-up the savings based on those findings.

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)	System Optimization	System Optimization
Project Cost Basis (Full Cost, Incremental Cost)	Full cost	Full Cost
RUL (Early retirement projects only, otherwise N/A (not applicable))	N/A	N/A
EUL	Not provided	6 years from DEER
First Year kWh Savings	N/A	N/A
First Year Peak kW Savings	N/A	N/A
First Year Therms Savings	644,467	362,858, pending IOU post-install verification and true-up
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)	N/A	N/A
Annual Non-IOU Fuel Impact (RUL Period)	N/A	N/A
Annual Non-IOU Fuel Impact (RUL thru EUL Period)	N/A	N/A
Net-to-Gross Ratio	Not provided	0.60

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: N/A
	ED Assessment: N/A
	ED Recommendation: N/A
Project Cost Basis (for early retirement projects only, include RUL through EUL cost basis treatment)	IOU Proposal: Full cost
	ED Assessment: Full cost acceptable
	ED recommendation: None
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: Not provided
	ED Assessment: Use EUL from DEER
	ED recommendation: ED recommends EUL of 6 years for the steam traps from the DEER.
Savings Assumptions	IOU Proposal: Input parameters were collected from steam trap audit and used in the HP steam trap estimation tool.
	ED Assessment: ED agrees with the input values for all the parameters except the input pressure. The pressures listed in the steam trap audit appear to be the header pressures of various steam loops in the plant.
	ED Recommendation: Apply a multiplier of 0.578 for the input pressure in order to obtain an estimate of the pressure at the inlet of the steam trap
Calculation Methods/Tool review	IOU Proposal: IOU calculated the savings using HP steam trap estimation tool
	ED Assessment: The savings estimation tool is locked, ED was unable to review the assumptions and approach behind the savings calculations. ED used the input values from the steam trap audit in a steam trap savings calculator developed during the 06-08 evaluations. Even though both the tools use the same formulae and input values, the reason for discrepancy in savings is because of the multiplier used by ED on the input pressure values.
	ED Recommendation: Use multiplier recommended by ED on the input pressure value and recalculate the therm savings using their HP steam trap

Reviewed Parameter	Analysis
	estimation tool
Pre- or Post- Installation M&V Plan	IOU Proposal: N/A
	ED Assessment: Post installation M&V plan is not required for this project.
	ED Recommendation: IOU should verify the installation of the 361 failed steam traps and true up the savings.
Net-to-Gross Review	IOU Proposal: Not provided
	ED Assessment: A NTG interview was conducted in May of 2012 on similar steam trap replacement projects.
	ED Recommendation: Based on the NTG interview, ED recommends a NTG of 0.60