Phase I Ex Ante Review Findings

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

IOU	PGE
Application ID	2K13171187
Application Date	4/8/2013
Program ID	PGE21021
Program Name	Industrial Calculated Incentives
Program Year	2013
Itron Project ID	X338
IOU Ex Ante Savings Date	TBD
ED Measure Name	Insulation of pipes and valves
Project Description	The natural gas energy savings portion of the project involves insulating steam & hot water bare pipe surfaces including valves, fittings, traps and condensate return. For electrical energy savings, insulation is also being added to chilled water pipes, fittings and valves.
Date of ED Review(s)	5/13/2013
Primary Reviewer and Firm	Kunal Desai/Itron
Review Supervisor and Firm	Joseph Ball/Itron
ED Project Manager	[redacted]/ California Public Utilities Commission, Energy Division
ED Policy Authorization (as needed)	
Type of Review (Desk, On-site, Full M&V, Tool)	Desk Review
ED Recommendation	Project savings not approved; pending submission of further requested documentation described in this review.

Measure Description

The natural gas energy savings portion of the project involves insulating steam & hot water bare pipe surfaces including valves, fittings, traps and condensate return. For electrical energy savings, insulation is also being added to chilled water pipes, fittings and valves.

Summary of Review

Pacific Gas & Electric (PGE) submitted the following documents to the Energy Division (ED) for the Phase I review process:

- Table of Contents PDF document,
- Cover letter,
- Live energy savings calculation spreadsheet
- Project report with location of base surfaces and savings summary,

The measure is to insulate bare surfaces at this facility. IOU submitted the list of bare surfaces and their current process temperatures. Majority of the bare surfaces on the hot water loop have process temperatures running above 140F. Listed below is the extract from California OSHA for insulating hot pipes and surfaces.

From California OSHA T8CCR 3308:
http://archive.org/stream/gov.ca.ccr.08.3/ca.ccr.08.3_djvu.txt

"§ 3308. Hot Pipes and Hot Surfaces.
Pipes or other exposed surfaces having an external surface temperature sufficient to bum [burn] human tissue on momentary contact and located within 7 feet measured vertically from floor or working level or within 15 inches measured horizontally from stairways, ramps or fixed ladders shall be covered with a thermal insulating material or otherwise guarded against contact. This order does not apply to operations where the nature of the work or the size of the parts makes guarding or insulating impracticable.

Note: Authority cited: Section 142.3, Labor Code."

The temperature at which the human tissue burns is provided in http://www.nist.gov/fire/fire_behavior.cfm.

First degree burns occur at 118 F and second degree burns occur at 131 F and the tissue becomes numb at 140F.

The proposed project does not appear to be in compliance with the California OSHA requirements. The temperature of the existing pipes and joints exceeds 140F; therefore, these should have been insulated. PG&E should demonstrate that the proposed pipes and joints are mounted more than 7 feet height measured vertically from the floor or are farther than 15 inches measured horizontally from stairways, ramps or fixed ladders.

The chilled water pipes proposed to be insulated appear to have deteriorated insulation which suggests a normal replacement or ROB situation. Since these pipes are already insulated and a regressive baseline of bare pipes cannot be used, the proposed insulation must exceed the thermal properties of the existing insulation.

If PG&E can demonstrate that the project qualifies for incentives, additional information should be provided on the properties of the proposed insulation material. In that case, a post-installation M&V plan should be submitted for ED's review. The initial energy savings estimate proposed by the project is of 370,837 Therms per year and 34,583 kWh per year.

Review Conclusion

Project is not approved; pending submission of further requested documentation described in this review.

Summary of ED Requested Action by the IOU

ED recommends that the IOU perform the following actions:

1. Provide a revised energy savings estimate after removing the pipes or other exposed surfaces having an external surface temperature of 140 degrees F (60 degrees C) or higher and located within 7 feet measured vertically from floor or working level or within 15 inches measured horizontally from stairways, ramps or fixed ladders.
2. Provide cut sheets or submit the proposed pipe diameters, insulating material, thickness and jacket sleeving material, along with the correlated surface emittances (or emissivity).
3. Provide full cost for the measures that do not have to meet the OSHA requirement and provide incremental cost for measures that must comply with the OSHA requirement. Both the costs should be broken down by material and labor.
4. Provide specification or details on pre-existing insulation (damaged or deteriorated). Demonstrate how the proposed insulation exceeds the thermal properties of the existing insulation.
5. Provide EUL for proposed measure
6. Provide post-install M&V plan

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 for hot surfaces. Normal replacement for chilled water pipes.
Project Cost Basis (Full Cost, Incremental Cost)	Full Cost	Full cost for measures that do not have to meet the OSHA requirement; Incremental cost for measures that must comply with the OSHA requirement.
RUL (Early retirement projects only, otherwise N/A (not applicable))	N/A	N/A
EUL	Not Provided	Provide EUL for the insulation measure
First Year kWh Savings	34,583	TBD
First Year Peak kW Savings	N/A	TBD
First Year Therms Savings	370,837	TBD
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)	TBD	TBD
Peak kW Savings (EUL thru RUL Period)	N/A	TBD
Therms Savings (EUL thru RUL Period)	TBD	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 Provided	A NTG interview might be warranted

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 for hot surfaces below 140F. Normal replacement for chilled water pipes.
	ED Recommendation: None
Project Cost Basis (for early retirement projects only, include RUL through EUL cost basis treatment)	IOU Proposal: Full Cost
	ED Assessment: Full cost for measures that do not have to meet the OSHA requirement; incremental cost for measures that must comply with the OSHA requirement.
	ED recommendation: Provide post installation invoices with breakdown of equipment + labor costs, for the proposed and baseline equipment when available.
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: Not accessed
	ED Recommendation: Provide EUL for the proposed measure
Savings Assumptions	IOU Proposal: TBD
	ED Assessment: TBD
	ED Recommendation: TBD
Calculation Methods/Tool review	IOU Proposal: TBD
	ED Assessment: TBD
	ED Recommendation: TBD
Pre- or Post-Installation M&V Plan	IOU Proposal: M&V plan not provided for ED review.
	ED Assessment: Not assessed
	ED Recommendation: Submit post installation M&V plan for ED review. The M&V plan should be drafted to include the time period and the parameters that are going to be trended.
Net-to-Gross Review	IOU Proposal: Not provided
	ED Assessment: Not assessed
	ED Recommendation: NTG interview may be conducted.