

## Phase II Ex Ante Review Findings

**Table 1-1: Project Information**

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| <b>IOU</b>  | PGE  |
| <b>Application ID</b>                                     | 2K13171187   |
| <b>Application Date</b>                                   | 4/8/2013   |
| <b>Program ID</b>   | PGE21021   |
| <b>Program Name</b>                                       | Industrial Calculated Incentives   |
| <b>Program Year</b>                                       | 2013   |
| <b>Itron Project ID</b>                                   | X338   |
| <b>IOU Ex Ante Savings Date</b>                           | 7/29/2013  |
| <b>ED Measure Name</b>                                    | Insulation of pipes and valves   |
| <b>Project Description</b>                                | 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. |
| <b>Date of ED Review(s)</b>                               | 5/13/2013 & 9/30/2013  |
| <b>Primary Reviewer and Firm</b>                          | Kunal Desai/Itron  |
| <b>Review Supervisor and Firm</b>                         | Joseph Ball/Itron  |
| <b>ED Project Manager</b>                                 | ██████ / California Public Utilities Commission, Energy Division   |
| <b>ED Policy Authorization (as needed)</b>                |  |
| <b>Type of Review (Desk, On-site, Full M&amp;V, Tool)</b> | Desk Review  |
| <b>ED Recommendation</b>                                  | Project is conditionally approved; pending post M&V true up of energy savings.   |

## **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 lines. 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:

- 3EPlus Report,
- Response to ED's Phase I data request,
- Pipe Insulation M & V Plan,
- Live Energy savings calculation spreadsheet.

In the Phase I data request, ED had asked PGE to demonstrate that the proposed pipes and joints are mounted more than 7 feet in height measured vertically from the floor or are farther than 15 inches measured horizontally from stairways, ramps or fixed ladders. In response to the data request, PGE submitted a revised list of 39 items which was outside of the OSHA regulation. PGE's original list had 139 items and their site visit determined that 100 of those items were disqualified due to OSHA requirement. Insulation details are provided in the 3Eplus PDF. M&V plan was also submitted by PGE which lists M&V verification activities that are primarily restricted to verification only.

PGE revised their original energy savings estimate from 370,837 to 34,454 Therms per year and 34,583 to 6,923 kWh per year. The estimated cost to implement this project was revised from \$322,877 to \$81,977 and the estimated incentive for the project is \$35,077. Simple payback without the incentive for this project is 2.9 years.

## **Review Conclusion**

Project is conditionally approved; pending post M&V true up of energy savings.

## **Summary of ED Requested Action by the IOU**

ED recommends that the IOU perform the following actions upon completion of the project:

1. Provide a final energy savings estimate after the post M&V true up. ED recommends that PGE provide documentation to support the boiler efficiency claim of 75% or use an ED recommended value of 80% in the final savings estimate. Chiller efficiency (kW/ton or COP) value should also be listed in the calculations with supporting documentation.

2. Provide invoices that list the material (insulation) and labor breakdown. Full cost should be used for hot water pipe insulation and incremental cost for chilled water pipe insulation. IOU needs to provide the above mentioned breakdown while reporting final cost estimate.
3. Provide EUL for proposed measure
4. Provide make, vintage, thickness and R-value of the existing insulation present on the chilled water pipes.

Table 1-2: Project Overview

| Description  | IOU Proposed Ex Ante Data | ED Recommendations  |
|--|---------------------------|---|
| <b>Project Baseline Type (Early Replacement, Normal Replacement, Capacity Expansion, New Construction, System Optimization, Add-on Measures)</b> | Add on Measure            | Add on Measure for hot surfaces. Normal replacement for chilled water pipes.  |
| <b>Project Cost Basis (Full Cost, Incremental Cost)</b>  | 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. |
| <b>RUL (Early retirement projects only, otherwise N/A (not applicable))</b>  | N/A                       | N/A   |
| <b>EUL</b>   | Not Provided              | Provide EUL for the insulation measure  |
| <b>First Year kWh Savings</b>  | 6,923                     | TBD   |
| <b>First Year Peak kW Savings</b>  | N/A                       | TBD   |
| <b>First Year Therms Savings</b>   | 34,454                    | TBD   |
| <b>kWh Savings (RUL Period)</b>  | N/A                       | N/A   |
| <b>Peak kW Savings (RUL Period)</b>  | N/A                       | N/A   |
| <b>Therms Impact (RUL Period)</b>  | N/A                       | N/A   |
| <b>kWh Savings (EUL thru RUL Period)</b>   | 6,923                     | TBD   |
| <b>Peak kW Savings (EUL thru RUL Period)</b>   | N/A                       | TBD   |
| <b>Therms Savings (EUL thru RUL Period)</b>  | 34,454                    | TBD   |
| <b>Annual Non-IOU Fuel Impact (RUL Period)</b>   | N/A                       | N/A   |
| <b>Annual Non-IOU Fuel Impact (EUL thru RUL Period)</b>  | N/A                       | N/A   |
| <b>Net-to-Gross Ratio</b>  | Not Provided              | Not required  |

**Table 1-3: Detailed Review Findings**

| <b>Reviewed Parameter</b>  | <b>Analysis</b>   |
|--|---|
| <b>Project Gross Savings Baseline</b> (for early retirement projects only, include RUL through EUL baseline) | IOU Proposal: Add on Measure  |
|  | ED Assessment: Add on Measure for hot surfaces above 140F. Normal replacement for chilled water pipes.  |
|  | ED Recommendation: None   |
| <b>Project Cost Basis</b> (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. IOU submitted full cost of \$81,977.   |
|  | ED recommendation: Provide post installation invoices with breakdown of equipment + labor costs, for the proposed and baseline equipment when available.  |
| <b>RUL</b> (required for early retirement projects only, otherwise n/a)                                      | IOU Proposal: N/A   |
|  | ED Assessment: N/A  |
|  | ED recommendation: N/A  |
| <b>EUL</b>   | IOU Proposal: Not provided  |
|  | ED Assessment: Not assessed;  |
|  | ED Recommendation: Provide EUL for the proposed measure   |
| <b>Savings Assumptions</b>   | IOU Proposal: It is assumed that the Boiler efficiency is 75%. The Chiller efficiency claim is not listed in the calculations.  |
|  | ED Assessment: No documentation was provided to support the boiler efficiency claim.  |
|  | ED Recommendation: ED recommends that PGE provide documentation to support the boiler efficiency claim of 75% or use an ED recommended value of 80% in the final savings estimate. Chiller efficiency (kW/ton or COP) value should also be listed in the calculations with supporting documentation |
| <b>Calculation Methods/Tool review</b>   | IOU Proposal: 3EPlus software was used to calculate the energy savings.   |
|  | ED Assessment: Calculation methodology is acceptable  |
|  | ED Recommendation: None   |
| <b>Pre- or Post-Installation M&amp;V Plan</b>  | IOU Proposal: M&V plan provided for ED review.  |
|  | ED Assessment: IOU is proposing a verification site visit only.   |
|  | ED Recommendation: ED recommends the post installation M&V should be conducted and process and external pipe temperatures should be verified.   |
| <b>Net-to-Gross Review</b>   | IOU Proposal: Not provided  |
|  | ED Assessment: Not assessed   |

| <b>Reviewed Parameter</b> | <b>Analysis</b>                                   |
|---------------------------|---|
|                           | ED Recommendation: NTG interview not recommended. |