

Phase 1 Ex Ante Review Findings

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

IOU	Pacific Gas and Electric
Application ID	1365-01
Application Date	TBD
Program ID	Not available
Program Name	Heavy Industrial Energy efficiency Program
Program Year	2012
Itron Project ID	X-120
IOU Ex Ante Savings Date	Not available
ED Measure Name	Chiller Replacement
Project Description	Replace Air cooled Chiller system with Water cooled chiller system
Date of ED Review(s)	07/16/2012
Primary Reviewer and Firm	Kunal Desai / Itron
Review Supervisor and Firm	Joseph Ball / Itron
Type of Review (Desk, On-site, Full M&V, Tool)	Desk Review
ED Recommendation	Unable to verify the ex ante impact estimates, pending fulfillment of requested data and the subsequent opportunity for ED to re-evaluate the project savings.

Measure Description

The measure proposes to replace two existing (165 tons each) air cooled chillers, 4 chiller pumps (10 HP, 25 HP, 40HP, 40HP), heat exchangers, 2 cooling towers (135 tons each) with 3 cooling tower pumps with 2 water cooled chillers (300 tons each), 2 cooling towers (1200 tons each) and 5 pumps (40 hp, 15hp, 25hp, 30 hp, 15hp).

Summary of Review

Documents provided for review included the following: Live energy savings calculation spreadsheet, Energy Audit Report, Baseline trends and project application pdf.

The existing air cooled chiller system supplies chilled water to the Heavy Wall Dripper (HWD) production line. The supply chilled water temperature is 40F to the HWD lines. The supply chilled water is then passed through to a heat exchanger which heats the water to the desired supply water temperature of 60F. Existing cooling towers supply the Thin Wall Dripper (TWD) production line through two cooling towers. The proposed measure will include installation of new water cooled chillers which will supply water at 60F. Heat exchangers will not be required to condition the water.

This measure proposes to significantly increase the capacity of new chillers and cooling towers as compared to the baseline. It is mentioned in the energy audit report that post installation, HWD production will increase by approximately 45% over the best 6 producing months, which equates to a potential 84% annual increase on the HWD line. Also, TWD line production will increase by approximately 20%, which equates to a potential 34% annual increase on the TWD line. Per the energy audit report, production of the existing systems decreased in summer months as the cooling water system was not able to meet required supply temperatures. Production increase seems to be triggered due to the capability of new equipment. In this scenario, for the additional load in-situ equipment cannot be used as baseline. Energy code or industry standard practice is required to be used as baseline. Cut sheets for new equipment were not provided for ED review.

The measure has anticipated energy savings of 1,884,891 kWh and 313.63 kW of on peak demand reduction. No quotes from contractors were available for review in the documentation though the project report provides the measure cost of \$980,000. The estimated project incentive is \$314,097.

Review Conclusion

Unable to verify project savings, pending fulfillment of requested data and subsequent opportunity for ED to re-evaluate the project savings.

Summary of ED Requested Action by the IOU

In order to complete an ex ante review the ED recommends that the IOU submit the following documentation due on **08/02/2012** (14 days from submittal date to IOU):

1. Provide RUL of the existing equipment (air cooled chiller, pumps and heat exchangers) to clarify baseline.
2. Per the energy audit report, production of the existing systems decreased in summer months as the cooling water system was not able to meet required supply temperatures. Production increase seems to be triggered primarily due to the added capacity of new chillers and cooling towers. In this scenario, for the additional load, In-situ equipment cannot be used as baseline. Please use industry standard practice or code as baseline.
3. Provide project cost estimates provided by contractor if available.
4. Provide post installation M&V plan per program requirements for ED review.
5. Provide manufacturer cut sheet for new water cooled chillers, cooling towers and pumps. Provide chiller sequencing (Lead lag or stand by) for the post case if available.
6. Energy savings estimates are doubled when the production is increased by 20% in the summary sheet. Please provide a detailed explanation.

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)	Not explicitly provided, but inferred from the energy audit report as early replacement	TBD; If RUL is applicable and the existing equipment is performing properly then early replacement can be the baseline for existing load. The baseline for increased production capacity current industry standard practice. If RUL is not applicable then use industry standard practice or code as baseline for all calculations.
Project Cost Basis (Full Cost, Incremental Cost)	Full cost – \$980,000	Full cost acceptable if early replacement is applicable. Incremental cost will apply for industry standard practice baseline.
RUL (Early retirement projects only, otherwise N/A (not applicable))	Not provided	TBD; provide RUL for existing equipment (air cooled chillers, heat exchangers, pumps, and cooling towers)
EUL	Not provided	20 years for new non residential chillers per DEER 2008
First Year kWh Savings	1,884,891	TBD
First Year Peak kW Savings	313.63	TBD
First Year Therms Savings	N/A	N/A

Description	IOU Proposed Ex Ante Data	ED Recommendations
kWh Savings (RUL Period)	TBD	TBD
Peak kW Savings (RUL Period)	TBD	TBD
Therms Impact (RUL Period)	N/A	TBD
kWh Savings (EUL thru RUL Period)	TBD	TBD
Peak kW Savings (EUL thru RUL Period)	TBD	TBD
Therms Savings (EUL thru RUL Period)	N/A	N/A
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	TBD; A NTG assessment may 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: Not explicitly provided, but inferred from the energy audit report as early replacement
	ED Assessment: RUL of existing equipment required to clarify baseline assumption.
	ED recommendation: If RUL is applicable and the existing equipment is performing properly then early replacement can be the baseline for existing load. The baseline for increased production capacity current industry standard practice. If RUL is not applicable then use industry standard practice or code as baseline for all calculations.
Project Cost Basis (for early retirement projects only, include RUL through EUL cost basis treatment)	IOU Proposal: Full cost
	ED Assessment: Full cost assumed to be \$980,000
	ED recommendation: Full cost acceptable if early replacement is applicable. Incremental cost will apply for industry standard practice baseline. Provide contractor quotes or invoices if available to support the project cost claim.
RUL (required for early retirement projects only, otherwise n/a)	IOU Proposal: Not provided
	ED Assessment: Cannot be assessed without existing equipment condition and RUL
	ED recommendation: Provide RUL and condition of existing equipment
EUL	IOU Proposal: Not provided
	ED Assessment: Not accessed
	ED Recommendation: 20 years for non residential chillers per DEER 2008 database.
Savings Assumptions	IOU proposal: Live energy savings calculation spreadsheets submitted for ED review

Reviewed Parameter	Analysis
	ED Assessment: TBD
	ED Recommendation: TBD
Calculation Methods/Tool review	IOU proposal: Live energy savings calculation spreadsheets submitted for ED review
	ED Assessment: TBD
	ED Recommendation: TBD
Pre- or Post-Installation M&V Plan	IOU Proposal: Post installation M&V plan not submitted
	ED Assessment: Post installation M&V plan required
	ED Recommendation: Submit post installation M&V plan per program rules for ED review
Net-to-Gross Review	IOU Proposal: Not provided
	ED Assessment: An ex ante interview may be warranted
	ED Recommendation: Conduct ex ante savings interview