

## **Ex Ante Review**

**Table 1-1: Project Information**

<b>IOU</b>	PG&E
<b>Application ID</b>	2K12079864
<b>Application Date</b>	2/8/12
<b>Program ID</b>	
<b>Program Name</b>	Customized Incentive Program
<b>Program Year</b>	2012
<b>Itron Project ID</b>	
<b>IOU Ex Ante Savings Date</b>	2/8/12
<b>ED Measure Name</b>	
<b>Project Description</b>	Chiller Retrofit
<b>Date of ED Review(s)</b>	3/8/12
<b>Primary Reviewer and Firm</b>	Keith Rothenberg/Energy Metrics
<b>Review Supervisor and Firm</b>	Nikhil Gandhi, ED Consultant
<b>Type of Review (Desk, On-site, Full M&amp;V, Tool)</b>	On-Site (preliminary)
<b>ED Recommendation</b>	Savings to be determined as PG&E processes the project from feasibility study through post-installation M&V.

## **Measure Description**

The facility has a central chiller plant that produces and distributes chilled water throughout the campus. The chiller plant has 12 large capacity water cooled centrifugal chillers of various vintages. Each chiller has a nominal capacity in the 1,000- 1,500 ton range (capacity data and date of installation information were not available during the site visit but have been requested from the customer). Some of the original chillers have been replaced and several are not functioning. The chiller plant load has declined in recent years as the number of buildings on the campus has been reduced. The project is in an early stage of development. The current concept is to install a new 1,500 ton VFD driven water cooled centrifugal chiller where chiller number 1 is currently located. Ideally chillers 7, 8, and 9 would also be removed but this is not required to implement the project and may not ultimately be part of the project scope. The customer has provided an estimated completion date of December 2012 in the application documents.

## **Summary of Review**

The documentation reviewed includes an application dated 2/8/2012 and a single sheet attached to the application with a brief description of the project and preliminary energy impact calculation. Energy Metrics attended the pre-installation site visit for the chiller plant project on March 8, 2012. The purpose of the meeting was for PG&E's reviewers to gather more information about the project to facilitate the preparation of energy impact calculations and an incentive offer for the project.

The project is in an early stage of development the baseline appears to be T24 and savings calculated as incremental over the T24 baseline. If the application is to be considered as an early retirement claim, additional justification will be needed.

We note that the savings impacts for the project shown on the application do not match those shown in the calculation attached to the application. This is not important since the IOU reviewer's are planning to prepare their own calculations for the project.

The incentive application documents an annual savings impact of 1,971,000 kWh and 300 kW with an incentive amount of \$207,390. The estimated project cost is \$2,000,000.

## **Review Conclusion**

Energy Division will review this project in parallel with PG&E. The project is in an early stage of development. The IOU reviewers have recently commenced gathering details regarding this project. There are numerous complex issues to investigate if the baseline is to be considered as early replacement. An ex ante NTG interview may be appropriate.

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

In order to complete an ex ante review the ED recommends that PG&E submit the following documentation as they become available:

1. Provide a baseline determination for the project if it is not T24. Baseline determination should include an analysis of the existing chiller plant's ability to meet the facility loads and requirement for N+1 redundancy and consider if the new chiller is replacing existing operating chiller(s) (Baseline = in situ) or replacing existing non-operating chiller(s) (Baseline = T24).
2. If the in situ baseline is proposed, PG&E to justify this choice and propose the RUL of the equipment being replaced. Dual baseline calculations will be required if the in situ baseline is proposed- one calculation for the RUL period (in situ as baseline) and another for the RUL-EUL period (Title 24 as baseline).
3. For each chiller in the existing chiller plant, PG&E to provide the Chiller number, manufacturer, model, date of installation, nominal capacity, full load efficiency, full load amps, operating voltage, whether the chiller is constant speed or variable speed for ED review. Also provide the current status of each chiller, ("operational", "down for maintenance" and expected repair date, "not in service", etc.), vintage, nameplate specifications and the remaining useful life.
4. Provide the "preferred" or usual sequence for energizing the chillers based on interview with the plant operators.
5. For the proposed new chiller, PG&E to provide the nominal capacity, full load efficiency, whether the chiller is constant speed or variable speed for ED review. Provide 10 point manufacturers' selection data (10%-100% capacity at the existing plant condenser water set point) for both the new proposed chiller and the Title 24 baseline chiller.
6. Provide a copy of the Salas O'Brien chiller plant study referred to by the customer that evaluated the chiller plant operation during the summer.
7. Work with ED to determine what data may exist to generate an accurate annualized load profile for the chiller plant, including plant operator chiller logs, capacity studies, and archived trend data from the control system. Provide data as requested by ED.
8. Provide a description of how the calculations for the project will be prepared considering the complexities of the project and the potential requirement for dual baseline calculations. Special attention should be paid to defining how the system currently operates in a typical year and what energy usage the new proposed chiller will replace in the current system operation. Determine if it is feasible to use plant operator logs and weather data to create an annual chiller load profile for the facility. Determine if it is possible to obtain manufactures' specification data for the chillers that currently operate-either from the customer's records or directly from the manufacturers.
9. Provide a determination of whether or not M&V will be planned for the project and describe any proposed M&V plan.

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10. Provide copies of studies performed by others that are proposed to be used as a basis for the calculations.
11. ED is likely to request additional information as the details of this project become better defined.
12. ED requests that PG&E to continue to keep ED informed of progress and next steps on this project.
13. ED requests the opportunity to review the requested data, analysis and calculations prior to the freezing of ex ante savings impacts for this project.

**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>	TBD	TBD
<b>Project Cost Basis (Full Cost, Incremental Cost)</b>	TBD	TBD
<b>RUL (Early retirement projects only, otherwise N/A (not applicable))</b>	TBD	TBD
<b>EUL</b>	TBD	TBD
<b>First Year kWh Savings</b>	1,971,000 (preliminary)	TBD
<b>First Year Peak kW Savings</b>	300 (preliminary)	TBD
<b>First Year Therms Savings</b>	0	0
<b>kWh Savings (RUL Period)</b>	TBD	TBD
<b>Peak kW Savings (RUL Period)</b>	TBD	TBD
<b>Therms Impact (RUL Period)</b>	TBD	TBD
<b>kWh Savings (EUL thru RUL Period)</b>	TBD	TBD
<b>Peak kW Savings (EUL thru RUL Period)</b>	TBD	TBD
<b>Therms Savings (EUL thru RUL Period)</b>	0	0
<b>Annual Non-IOU Fuel Impact (RUL Period)</b>	NA	NA
<b>Annual Non-IOU Fuel Impact (EUL thru RUL Period)</b>	NA	NA
<b>Net-to-Gross Ratio</b>	Not provided	Assessment not completed

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

Reviewed Parameter	Analysis
<b>Project Gross Savings Baseline</b> (for early retirement projects only, include RUL through EUL baseline)	IOU Proposal: Project is in an early stage of development. The IOU reviewers have just commenced gathering details regarding this project. The customer is proposing an in situ baseline.
	ED Assessment: TBD; it appears to be T24 baseline.
	ED Recommendation: TBD
<b>Project Cost Basis</b> (for early retirement projects only, include RUL through EUL cost basis treatment)	IOU Proposal: Project is in an early stage of development. The IOU reviewers have just commenced gathering details regarding this project. The customer is proposing total cost.
	ED Assessment: TBD
	ED recommendation: TBD
<b>RUL</b> (required for early retirement projects only, otherwise n/a)	IOU Proposal: Not addressed at this point.
	ED Assessment: TBD
	ED recommendation: TBD
<b>EUL</b>	IOU Proposal: Not addressed at this point.
	ED Assessment: 20 years
	ED Recommendation: 20 years
<b>Savings Assumptions</b>	IOU Proposal: Project is in an early stage of development. The IOU reviewers have just commenced gathering details regarding this project. The customer has provided a simple calculation/estimate.

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Reviewed Parameter	Analysis
	ED Assessment: To be reviewed as the project progresses.
	ED Recommendation: IOU to submit proposed approach for ED review.
<b>Calculation Methods/Tool review</b>	IOU Proposal: TBD
	ED Assessment: TBD
	ED Recommendation: IOU to submit proposed approach for ED review.
<b>Pre- or Post-Installation M&amp;V Plan</b>	IOU Proposal: TBD
	ED Assessment: Some level of M&V may be warranted.
	ED Recommendation: PG&E should provide proposed M&V plan.
<b>Net-to-Gross Review</b>	IOU Proposal: TBD
	ED Assessment: The customer stated that an incentive from the IOU program will be an important factor in determining if the project will be funded by the customer's management.
	ED Recommendation: An early NTG interview may be warranted.

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