

## Phase II Ex Ante Review Findings

**Table 1-1: Project Information**

<b>IOU</b>	PG&E
<b>Application ID</b>	NC0127206
<b>Application Date</b>	9/18/2013
<b>Program ID</b>	PGE21042
<b>Program Name</b>	Savings by Design
<b>Program Year</b>	2013
<b>Itron Project ID</b>	X436
<b>IOU Ex Ante Savings Date</b>	6/26/2014
<b>Measure Name</b>	Install mechanical vapor re-compressor (MVR)
<b>Project Description</b>	Install mechanical vapor re-compressor (MVR) to recover waste heat and increase production capacity.
<b>Date of CPUC Staff Review</b>	7/2/2014, 8/11/2014
<b>Primary Reviewer / Firm</b>	Keith Rothenberg/ Energy Metrics
<b>Review Supervisor / Firm</b>	JJ Hirsch & Associates
<b>CPUC Staff Project Manager</b>	██████████ / California Public Utilities Commission, Energy Division
<b>CPUC Staff Policy Authorization (as needed)</b>	
<b>Type of Review (Desk, On-site, Full M&amp;V, Tool)</b>	Desk
<b>CPUC Staff Recommendation</b>	The ex ante savings estimates are not approved. The M&V plan is not approved. Commission staff will continue to review the project pending submittal of additional requested information described below.

## Measure Description

The project documentation describes an existing tomato processing facility that will increase its tomato paste production capacity by adding a mechanical vapor re-compressor (MVR) to re-compress waste heat. The recovered heat will be used to pre-concentrate raw product before it enters the existing three effect evaporator, increasing the system throughput.

## Summary of Review

This document is Commission Staff's second review for this project. The Investor-Owned-Utility (IOU) submitted the following documents on 8/1/2014 for this Phase II review:

- 126591-██████ AESC Calcs R1.xlsx
- 126591 [Customer Name] Plant 2 Evaporator Application.pdf
- AESC Response.docx

Commission staff have reviewed the documents provided by the IOU on August 1, 2014. The documentation provides some additional detail for the project, however some of the Commission staff requested action in the Phase I review has not been adequately addressed and there are additional requirements as described below. The IOU should carefully review the requirements of the Phase I EAR and the requirements of this document in its next response.

## Review Conclusion

The ex ante savings estimates are not approved. The M&V plan is not approved. Commission staff will continue to review the project pending submittal of additional requested information described below.

## Summary of CPUC Staff Required Action by the IOU

CPUC Staff require that the IOU undertake the recommended steps and submit the following information **due on 9/2/2014 (or 14 days from submittal date to IOU):**

1. In response to the Phase I EAR for this project, the IOU has indicated that the project construction may be complete. Commission staff are concerned that the IOU may not have followed the program guidelines.<sup>1</sup> In particular, the program is designed so that the IOU demonstrates its influence by identifying measures and offering incentives encouraging the customer to adopt more efficient alternatives during the course of the design of the project. To be eligible for Savings By Design, projects must be at a point where design changes are feasible, preferably in the conceptual or schematic design phase. Prior to ordering, purchasing, and/or installing the selected energy efficient options The Owner signs, dates, and returns the Agreement to the SBD Representative.

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<sup>1</sup> <http://www.savingsbydesign.com/book/savings-design-online-program-handbook>

The simple statement of influence from the IOU account representative included in the documentation for this project is an insufficient demonstration of the IOU's influence.

Provide any documentation not previously submitted which has been prepared for this project, including earlier versions of the documents submitted, demonstrating how the IOU has influenced the customer to adopt a more efficient design. Commission staff would expect a document showing the incremental costs, energy savings, potential Program incentive, simple payback, etc. of various alternatives would have been prepared to influence the customer's decision to implement a more efficient design alternative. Commission staff note that the application provided by the IOU is dated 9/18/2013. The project was selected by Commission staff for review in October 2013. Were any additional reports or analysis not previously provided to Commission staff prepared for this project? If so, provide these documents.

2. Provide the firm name and individual's first and last name of who prepared each of the following documents:

**From the 6/26/2014 IOU Submission:**

- a. 126591-██████ AESC Calcs.xlsx
- b. NRNC 126591 [Customer Name] MVR Pre-Install Final Report.docx
- c. X436 - NC0127206 - [Customer Name] Plant 2 Expansion Check list.xlsx

**From the 8/1/2014 IOU Submission:**

- d. 126591-██████ AESC Calcs R1.xlsx
- e. AESC Response.docx

3. Provide the firm name and individual's first and last name of who performed Quality Control (QC) for each of the following documents:

**From the 6/26/2014 IOU Submission:**

- a. 126591-██████ AESC Calcs.xlsx
- b. NRNC 126591 [Customer Name] MVR Pre-Install Final Report.docx
- c. X436 - NC0127206 - [Customer Name] Plant 2 Expansion Check list.xlsx

**From the 8/1/2014 IOU Submission:**

- d. 126591-██████ AESC Calcs R1.xlsx
- e. AESC Response.docx

4. Did the IOU internally review the following documents? If so, provide the IOU reviewer's first and last name for each of the following documents:

**From the 6/26/2014 IOU Submission:**

- a. 126591-██████ AESC Calcs.xlsx

- b. NRNC 126591 [Customer Name] MVR Pre-Install Final Report.docx
- c. X436 - NC0127206 - [Customer Name] Plant 2 Expansion Check list.xlsx

**From the 8/1/2014 IOU Submission:**

- d. 126591-██████ AESC Calcs R1.xlsx
  - e. AESC Response.docx
5. The IOU has provided natural gas billing data for the project.

Does the customer also purchase electricity from the IOU?

6. In the Phase I review, Commission staff requested that the IOU provide an update on the status of this project. The IOU has responded that “Completion of project likely since tomato season starts in early July”. Commission staff expect that the IOU will confirm the status of the project with the customer or other knowledgeable representative when responding, not simply offer a best guess based on an assumption.

Provide dates, as precise as possible for the following project steps by contacting a knowledgeable customer representative:

- a. Date conceptual design began
  - b. Date detailed design began
  - c. Date of completion of design
  - d. Date order placed for the new MVR
  - e. Construction start date
  - f. Construction completion date
  - g. Commissioning completion date
7. In the Phase I EAR, Commission staff requested that the IOU provide a detailed description of the facility describing how Plant 2 is related to the site as a whole, how many other plants and other buildings are on site and what their functions are. The IOU has responded that there are two plants at this location and that each plant has a separate physical address and is “completely self-contained”.

Does each plant have its own boiler system? Is each plant separately metered for natural gas and electricity?

8. In the Phase I review, Commission staff requested that the IOU describe if any electric pumps or other electric power source equipment is associated with this project. The IOU responded “Yes electric pumps or other electric power source equipment is associated with this project but they would be the same for the baseline and proposed conditions.”

The IOU has not provided detailed diagrams for the baseline and proposed systems. Simply comparing an MVR to a three effect evaporator is inadequate. The entire system should be considered. For instance, it would appear that the IOU proposed baseline three effect evaporator system would also include additional boiler capacity, condensers,

pumps and cooling towers. These, and other pertinent system components must be accounted for in the IOU cost analysis and savings analysis.

9. In the Phase I review, Commission staff observed that the calculation methodology and M&V plan provided in the documentation are general and lack specific details of what parameters will be measured, at what intervals the data will be collected, a specific duration required for the measurements. Commission staff requested that the IOU provide system diagrams or screen captures from SCADA graphics showing measurement points for the existing and proposed systems. The IOU replied “Unknown, SCADA graphics and capabilities cannot be confirmed at this since it is a new construction project”.

Considering that the IOU is proposing that the three effect evaporator system be used as the baseline, it would seem that diagrams and SCADA graphics associated with the pre-project three effect evaporator system installed in the customer’s Plant 2 should be available and can be used as a response to this Commission staff request. Additionally, the IOU has implied that the project construction may be complete. While SCADA graphics may not yet be available (although it seems possible they might be available since the IOU believes the construction may be completed), system diagrams associated with the design should be available. Commission staff require that the IOU make a more diligent effort to respond to this request, providing an M&V plan as required in the Phase I EAR.

10. Commission staff requested that the IOU provide a calculation methodology demonstrating how the data collected will be used to verify the project impacts. The IOU has provided a description of a calculation methodology.

Commission staff require that the IOU provide the actual equations (proposed formulae) that will be used to calculate the savings impacts for this project. The proposed formulae are required to be provided in a written format. Simply referring to an Excel spreadsheet where Commission staff and other reviewers are required to hunt through each cell to determine its formula is not an acceptable method to convey this information.

As stated in the Phase I EAR, the calculation methodology description and equations should be comprehensive and complete leaving only the final verified variables and data to be determined after project completion. All that should be required after the project is completed is to input final project post verified data and assumptions into the proposed formulae to determine the ex ante impacts. The project documentation submitted to date does not meet these requirements.

11. Commission staff note that the new MVR turbine will have a significant volume of steam exhaust at low pressure.

How will the IOU analysis and verification confirm that all of the steam exhausted at low pressure is used elsewhere in the facility and not vented or sent to condensers? This use of the turbine exhaust steam appears to be a critical assumption inherent in the IOU analysis.

12. In response to the Phase I EAR, the IOU advised “The calculations have been modified to include the ancillary equipment loads.”

Demonstrate how the calculations have been modified when responding to item 10., above.

13. In the Phase I EAR Commission staff requested that the IOU consider a measurement period of an entire 110 day season, data collection in 15 minute or less intervals. The IOU has responded that “We are ok with 15 min interval data if that is obtainable but need to confirm if the plant is capable of doing it. Waiting the entire season is also ok with us, but the question is regarding customer satisfaction, if they can wait that long.”

The total season production level is a critical factor in assessing the impacts associated with this project. Commission staff expect that the M&V plan, which is required to be submitted for this project, will be complete in every detail including the measurement period and measurement interval. Refer to the Phase I EAR for a description of the required information for the M&V plan.

14. Provide a revised incremental measure cost for the project. As noted above, commission staff believe that the IOU has not considered the complete system design for the baseline system in determining the incremental cost. The analysis should not just be a comparison of the cost of an MVR versus a three effect evaporator. The baseline system would include several so far unaccounted for components, such as additional boiler capacity, controls, condensers, cooling towers, piping and pumps. These must be accounted for in an incremental cost analysis for the project.
15. Commission staff requested that the IOU provide an EUL for the project. The IOU has asked if an EUL has been established for a similar project reviewed by commission staff, X475. Commission staff advise that we have not received a response from the IOU for X475.

CPUC staff are likely to ask for further clarifications and additional information as the details of this project become more clearly defined.

***For all future projects (submitted after receipt of this review) Commission staff require that the IOU:***

1. During the project review, the IOU should ensure that the program policies and guidelines are being followed.

For example, Commission staff have not been presented significant evidence that the IOU has influenced the customer to implement a more efficient design for this project. The savings by design program guidelines clearly outline the process that the IOU is supposed to follow under this program. That process includes review of the customer's design at various stages with documentation to show alternatives to the design that impact the cost and savings associated with the project.

2. Carefully review the Commission staff required action when responding to ex ante review dispositions.

Commission staff have found many of the responses to the Phase I EAR for this project to be inadequate. Commission staff expect that the IOU will make a diligent effort to obtain accurate information when responding to ED dispositions. For instance, for this project, the IOU indicated that they believe the construction may have already been completed. Commission staff expect that the IOU will confirm the status of the project when responding to commission staff's request for additional information.

**Table 1-2 Review Findings**

Reviewed Parameter	Analysis
<b>Project Baseline Type</b> (Early Replacement, Normal Replacement, Capacity Expansion, New Construction, System Optimization, Add-on Measures, Major Renovation) Note: For early retirement projects only, include RUL through EUL baseline)	IOU Proposal: New Construction
	CPUC Staff Assessment: TBD
	CPUC Staff Recommendation: IOU to clarify if vapor entering the proposed MVR will be from both the existing 3 stage evaporator and/or other sources. IOU to explain why this project is not classified as a capacity expansion project type.
<b>Project Baseline Technology</b> (in situ equipment, Title 24 (specify year), other code or other efficiency level (specify), industry standard practice - ISP)	IOU Proposal: ISP
	CPUC Staff Assessment: TBD
	CPUC Staff Recommendation: Further investigation into ISP may be warranted depending upon determination of the project baseline type.
<b>Project Cost Basis</b> (Full Incremental, or Both. Note: For early retirement projects, include RUL through EUL cost basis treatment)	IOU Proposal: Incremental cost
	CPUC Staff Assessment: commission staff believe that the IOU has not considered the complete system design for the baseline system in determining the incremental cost. The analysis should not just be a comparison of the cost of an MVR versus a three effect evaporator. The baseline system would include several so far unaccounted for components, such as additional boiler capacity, controls, condensers, cooling towers, piping and pumps. These must be accounted for in an incremental cost analysis for the project.
	CPUC Staff Recommendation: IOU to revise the incremental cost estimate.
<b>RUL</b> (required for early retirement projects only, otherwise N/A)	IOU Proposal: NA
	CPUC Staff Assessment: NA
	CPUC Staff Recommendation: None
<b>EUL</b> (for each measure)	IOU Proposal: Not provided
	CPUC Staff Assessment: TBD
	CPUC Staff Recommendation: IOU to provide the EUL for the project.
<b>Savings Assumptions</b>	IOU Proposal: Complex spreadsheet analysis based on measured data,

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<b>Reviewed Parameter</b>	<b>Analysis</b>
	assumptions and thermodynamic principals.
	CPUC Staff Assessment: Reasonable approach for providing a preliminary placeholder project impacts estimate.
	CPUC Staff Recommendation: None
<b>Calculation Methods/Tool review</b>	IOU Proposal:
	CPUC Staff Assessment:
	CPUC Staff Recommendation:
<b>Pre- or Post-Installation M&amp;V Plan</b>	IOU Proposal: High level conceptual proposal to measure certain parameters, assume other parameters
	CPUC Staff Assessment: The M&V plan lacks detail.
	CPUC Staff Recommendation: M&V plan is not approved.
<b>Net-to-Gross Review</b>	IOU Proposal: .Not addressed
	CPUC Staff Assessment: TBD
	CPUC Staff Recommendation: TBD

**Table 1-3 Energy Savings Summary, Project Costs & Incentive**

Description	IOU Ex Ante Claim	CPUC Staff Recommendations
First Year kWh Savings	0	TBD
First Year Peak kW Savings	0	TBD
First Year Therms Savings	360,000	TBD
kWh Savings (RUL Period)	NA	TBD
Peak kW Savings (RUL Period)	NA	TBD
Therms Impact (RUL Period)	NA	TBD
kWh Savings (RUL thru EUL Period)	0	TBD
Peak kW Savings (RUL thru EUL Period)	0	TBD
Therms Savings (RUL thru EUL Period)	360,000	TBD
Annual Non-IOU Fuel Impact (RUL Period)	NA	TBD
Annual Non-IOU Fuel Impact (RUL thru EUL Period)	NA	TBD
Project Costs for Baseline #1 (RUL or EUL)	\$1,550,323	TBD
Project Costs for Baseline #2 (EUL minus RUL period)	NA	TBD
Project Incentive Amount	\$360,000	TBD