

Phase 1 Ex Ante Review Findings

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

IOU	PG&E
Application ID	1071-02
Application Date	Not Provided
Program ID	PGE2223
Program Name	Heavy Industry Energy Efficiency Program
Program Year	2013
Itron Project ID	X328
IOU Ex Ante Savings Date	4/24/13
ED Measure Name	Process Compressed Air System Modifications
Project Description	Install central low pressure blower systems, reduce high pressure compressed air consumption, and recover heat from blower system.
Date of ED Review(s)	5/14/2013
Primary Reviewer and Firm	Keith Rothenberg/Energy Metrics
Review Supervisor and Firm	Phani Pagadala/Itron
Type of Review (Desk, On-site, Full M&V, Tool)	Desk
ED Recommendation	Savings estimates conditionally approved pending submission of M&V plan and post installation true-up of savings estimates.
ED Project Manager	██████████ / California Public Utilities Commission, Energy Division
ED Policy Authorization (as needed)	

Measure Description

The project feasibility study describes the customer's operations as follows:

“The customer manufactures paper cups in various sizes and styles for both hot and cold beverages on 39 separate “cup machines” and paper buckets for food products on a dedicated bucket machine. High pressure (~100 psig) compressed air is used in open blowing nozzles to separate the stack of blanks at the machine in-feed, hold down the blanks on the first mandrel, and to heat the edges of the blanks and discs after passing over a heater. Each cup line has an eductor to facilitate transfer of the cups from the forming machines to the cartoners. An eductor is a device that uses the venturi effect to boost the volume of air in a pneumatic transfer line. Dedicated low pressure eductor blowers are mounted either singly or in pairs on each cup machine to pneumatically transport the finished cups from the cup machines to packaging machines on the perimeter of the production area. Each eductor is supported by an independent regenerative blower.”

The project documents describe the following measures:

EEM-1: Central LP Blower System (Eductors)

A Central Low Pressure (LP) Blower system is proposed to replace the dedicated machine mounted regenerative eductor blowers for the pneumatic transport of finished cups. The basic premise for the energy savings is the specific power difference (kW/CFM) between the two types of blowers, coupled with a reduction in the volume of air produced.

EEM-2: Central LP Blower System (In-feed & Hold Down)

Blank handling in the cup machines is facilitated by the use of open blowing using high pressure compressed air and nozzles to direct the flow. Each cup machine has blow nozzles at the blank in-feed to help separate the blanks and also at the first and second mandrel positions to help hold the blanks against the mandrels. The open blows will be converted from high pressure compressed air to the low pressure blower air supplied from the same Central LP Blower described in EEM-1 above.

EEM-3: Hot LP Blower System (Compressor)

Cups are made from two pieces of “carton stock” which is a specially formulated paper with a wax-like coating. Hot air is used to heat the seams before they are sealed. For this process, the air is supplied from the high pressure compressed air system. The high pressure compressed air is regulated down to less than 5 PSIG, and is then heated to 500 °F and strikes the edges of the coated paper. Similar to EEM-2, this measure involves replacing the high pressure compressed air supplied to the heaters with blower air.

EEM-4: Hot LP Blower System (Thermal)

As described in EEM-3, the air temperature exiting the heaters is 500 °F. Heat is supplied either by electric resistance heating elements or natural gas fired burners. This measure proposes to utilize the heat of compression from a particular style of low pressure blower to provide a supply air temperature of 225 °F to the heaters. Allowing for a 25 °F drop in transit from the blower,

the air will be delivered to the cup machines at 200 °F, where the individual cup machine heaters will boost it to 500 °F. This measure will decrease the amount of heat required from the electric and gas heaters.

Summary of Review

The Investor Owned Utility (IOU) submitted the following documents for Data Request (DR) EEGA 3793 on 4/24/13 for this review:

- Transmittal Memorandum for DR EEGA 3793;
- Project feasibility study dated 4/24/13
- Calculations
- High pressure compressed air system logging data
- High pressure compressor manufacturer's performance data
- Low pressure blower manufacturer's performance data
- 15 minute electric interval data
- The IOU's Air Compressor Savings Calculator analysis
- The IOU reviewer's comments forwarded by email.

The project was discussed on a phone conference between ED representatives, the IOU and the project implementation team on 5/8/13. The IOU has proposed that the measures are retrofit add-on measures. ED recommends that measures be considered retrofit measures. Retrofit measures require establishing the RUL of the existing equipment and defining the ISP so that the baseline can be defined for the EUL-RUL period analysis.

ED understands that the project is in an early stage of development. The project feasibility study describes verification activities for each measure. ED recommends that a detailed M&V plan be prepared for the project describing how the measure level impacts will be verified. The IOU reviewer has also recommended that an M&V plan be prepared for the project. It is unclear if EEM-4 will claim electric or gas savings, or both and how the savings will be segregated. ED requests clarification on the same.

Review Conclusion

The ex ante savings estimates are conditionally approved pending submission of M&V plan and post installation true-up of savings estimates.

Summary of ED Requested Action by the IOU

ED requests that the IOU undertake the recommended steps and submit the following data and documentation by 6/13/2103:

1. Provide the RUL for each measure.
2. Provide the EUL for each measure.
3. Provide the ISP baseline for each measure for the EUL-RUL period.
4. Provide the savings analysis for each measure for the EUL-RUL period.
5. Provide a detailed M&V plan for ED review. ED recommends that a conceptual plan be prepared and sent to ED for review prior to finalizing the plan to ensure a consensus is achieved for the proposal. The M&V plan should address if EEM-4 will claim electric or gas savings, or both, and how the savings will be segregated.

ED is likely to ask for further clarifications and additional information as the details of this project become more clearly defined. ED requests that the IOU:

1. Keep ED informed of the progress and next steps taken on this project.
2. Inform ED of any future site visits, in case it chooses to send a representative on-site.
3. Provide sufficient opportunity for ED 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
Project Baseline Type (Early Replacement, Normal Replacement, Capacity Expansion, New Construction, System Optimization, Add-on Measures)	Add-on Measures	Retrofit measures
Project Cost Basis (Full Cost, Incremental Cost)	Full cost	Full cost
RUL (Early retirement projects only, otherwise N/A (not applicable))	Not provided	Provide the RUL for each measure.
EUL	Not provided	Provide the EUL for each measure.
First Year kWh Savings	2,202,317 total (EEM1: 478,104 EEM2: 293,593 EEM3: 1,213,045 EEM4: 217,575)	TBD
First Year Peak kW Savings	249.4 total (EEM1: 61.7 EEM2: 35.6 EEM3: 125.7 EEM4: 26.4)	TBD
First Year Therms Savings	0	TBD; ED requests the IOU to provide clarification on whether if EEM-4 will claim electric and/or gas savings; ED also requests information on how the savings will be segregated.
kWh Savings (RUL Period)		TBD
Peak kW Savings (RUL Period)		TBD

Description	IOU Proposed Ex Ante Data	ED Recommendations
Therms Impact (RUL Period)		TBD
kWh Savings (RUL thru EUL Period)	2,202,317 total (EEM1: 478,104 EEM2: 293,593 EEM3: 1,213,045 EEM4: 217,575)	TBD
Peak kW Savings (RUL thru EUL Period)	249.4 total (EEM1: 61.7 EEM2: 35.6 EEM3: 125.7 EEM4: 26.4)	TBD
Therms Savings (RUL thru EUL Period)	0	TBD; ED requests the IOU to provide clarification on whether if EEM-4 will claim electric and/or gas savings; ED also requests information on how the savings will be segregated.
Annual Non-IOU Fuel Impact (RUL Period)		NA
Annual Non-IOU Fuel Impact (RUL thru EUL Period)		NA
Net-to-Gross Ratio	Not addressed	TBD

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: In situ
	ED Assessment: Correct
	ED Recommendation: None
Project Cost Basis (for early retirement projects only, include RUL through EUL cost basis treatment)	IOU Proposal: Full cost.
	ED Assessment: Correct
	ED Recommendation: None
RUL (required for early retirement projects only, otherwise n/a)	IOU Proposal: Not addressed
	ED Assessment: RUL should be provided for retrofit measures.
	ED recommendation: Provide the RUL for each measure.
EUL	IOU Proposal: Not provided
	ED Assessment: EUL should be provided.
	ED recommendation: Provide the EUL for each measure.
Savings Assumptions	IOU Proposal: Analysis performed using measured data, data collected from other projects, manufacturer’s data for equipment performance and assumptions regarding air flow characteristics of cup machines.
	ED Assessment: Reasonable approach for preliminary estimates
	ED Recommendation: None
Calculation Methods/Tool review	IOU Proposal: Spread sheet analysis
	ED Assessment: Reasonable approach for preliminary savings estimates.
	ED Recommendation: None
Pre- or Post-Installation M&V Plan	IOU Proposal: Little detail provided
	ED Assessment: A detailed M&V plan should be provided for this project
	ED Recommendation: Submit a detailed M&V plan for ED review. The M&V plan should address if EEM-4 will claim electric or gas savings, or both, and how the savings will be segregated
Net-to-Gross Review	IOU Proposal: Not addressed
	ED Assessment: TBD
	ED Recommendation: TBD