

Phase II Ex Ante Review Findings

Table 1-1: Project Information

IOU	PG&E
Application ID	1445-13-1436
Application Date	5/24/2013
Program ID	PGE
Program Name	Oil and Gas Production Energy Efficiency Program
Program Year	2012
Itron Project ID	X364
IOU Ex Ante Savings Date	7/26/2013
ED Measure Name	New Steam Generator
Project Description	The project entails installing 2 measures: 1) VFDs on new steam generator feedwater pump and combustion air fan, and 2) a split pass design of the steam generator in lieu of the standard single pass configuration.
Date of ED Review(s)	07/01/2013 & 10/21/2013
Primary Reviewer / Firm	Kunal Desai / Itron
Review Supervisor / Firm	Joseph Ball / Itron
ED Project Manager	██████████ / California Public Utilities Commission, Energy Division
ED Policy Authorization (as needed)	TBD
Type of Review (Desk, On-site, Full M&V, Tool)	Desk
ED Recommendation	Savings for this project are conditionally approved, pending review of post-installation M&V data and savings true-up. ED found strong evidence that the proposed measures are ISP and would like to expand the ISP research for these measures collaboratively with PG&E. In the interest of time, the proposed project savings have been approved. However, ED recommends that PG&E not accept applications for these measures going forward until the ISP study results do not corroborate the initial findings. This measure hold does not apply to previously waived projects.

Measure Description

The project consists of two energy-saving measures on a new 85 MMBTU/HR steam generator. The first measure is to install an efficient split pass design in the new steam generator over the standard single pass configuration. The second measure is to install two (2) VFDs, one (1) on a new 250 HP steam generator feedwater pump and one (1) on a 150 HP combustion air fan motor.

Summary of Review

Pacific Gas & Electric (PG&E) submitted the following documents to the Energy Division (ED) for the Phase I review process:

- Response to ED's data request,
- Cover letter EEGA 6825 and,
- Revised Energy Savings Calculations spreadsheet,

In response to ED's data request, PG&E stated that the existing lease has six (6) split pass steam generators in operation which were installed in 2012 to 2013. The site engineer stated during the NTG interview that an engineering consideration was given before choosing split pass vs. single pass steam generator arrangement. Pressure requirements for steam and piping runs are usually the governing factors in the selection of steam generator design. The split pass configuration was chosen for this application based on the pressure requirement at the well for steam.

The ED consultant interviewed a leading local manufacturer and installer of single and split pass steam generators. The representative advised during the interview that 90% of his customers choose the VFD option with the split pass design. This interview findings appear to provide very strong evidence that the VFD as an add-on measure on split pass steam generators is industry standard practice (ISP). The interviewee also indicated that using the split pass design is cost-effective for large operators and it is their standard practice to prefer and install split pass generators over single pass steam generators. The IOU did not provide any supporting documentation for its non-ISP claim. Considering the strength of findings, ED would like to initiate a low-rigor study collaboratively with PG&E and elects not to apply its preliminary ISP findings to this project.

The IOU has proposed a one month post M&V period for savings true up. ED suggests that period be revised to at least two (2) months. During the phase I review the IOU submitted a five-year forecasting method for calculating savings. ED requested the IOU to resubmit the energy savings calculation per CPUC guidance from the energy manual, which does not permit forecasting. The IOU revised and resubmitted the savings calculations. The preliminary annual energy savings estimates using the forecasting method are 84.61 kW and 726,374 kWh resulting in a project cost and incentive estimated to be \$200,000 and \$73,832, respectively.

Review Conclusion

The project is conditionally approved subject to savings true-up after post-installation M&V has been completed.

Summary of ED Requested Action by the IOU

ED requests and recommends that in order to complete an ex ante review the ED recommends that the IOU perform the following action:

1. Provide a final energy savings estimate after the post M&V true up.
2. Submit invoices that list the equipment and labor breakdown, and include incremental measure costs at this time and trued up later.
3. State the EUL for proposed measure.
4. Provide make, model, capacity and efficiency of the new split pass steam generator installed in either a submittal or specification cut-sheet.
5. ED suggests that the post M&V period be revised to atleast two months.

Table 1-2 Review Findings

Reviewed Parameter	Analysis
Project Baseline Type (Early Replacement, Normal Replacement, Capacity Expansion, New Construction, System Optimization, Add-on Measures) Note: For early retirement projects only, include RUL through EUL baseline)	IOU Proposal: New Construction
	ED Assessment: New Construction
	ED Recommendation: None
Project Baseline Technology (in situ equipment, Title 24 (specify year), other code or other efficiency level (specify), industry standard practice - ISP)	IOU Proposal: The proposed measures are not ISP.
	ED Assessment: The proposed measures – split pass design and VFDs – appear to be ISP.
	ED recommendation: These measures are waived from the ISP requirement. A low-rigor study will be conducted to fully assess ISP.
Project Cost Basis (Full Incremental, or Both. Note: For early retirement projects, include RUL through EUL cost basis treatment)	IOU Proposal: Incremental cost
	ED Assessment: Increment cost
	ED recommendation: Provide estimated breakdown of equipment + labor costs, for the proposed and baseline equipment.
RUL (required for early retirement projects only, otherwise N/A)	IOU Proposal: N/A
	ED Assessment: N/A
	ED recommendation: N/A
EUL (for each measure)	IOU Proposal: Not provided
	ED Assessment: VFDs on pumps and fan motors is 15 years; design layout configuration measure will need further assessment
	ED Recommendation: Provide EUL for split pass steam generator
Savings Assumptions	IOU Proposal: IOU expects the plant will operate for 6,570 hours in the first year.
	ED Assessment: Exit pressure and DP values need to be verified using on-site SCADA data during the post-install M&V period.
	ED Recommendation: Log hours of operation and steam production using SCADA or other monitoring method. Also, verify the pump efficiency, operating pressure, GPM, motor & drive efficiencies during the post M&V period.

Reviewed Parameter	Analysis
Calculation Methods/Tool review	IOU Proposal: A live energy savings calculation spreadsheet was provided for ED review.
	ED Assessment: Calculation methodology acceptable
	ED Recommendation: None
Pre- or Post-Installation M&V Plan	IOU Proposal: M&V plan was submitted for ED review
	ED Assessment: One month of post M&V period was specified by the IOU
	ED Recommendation: ED recommends that the post M&V period be revised to at least two (2) months. The M&V plan should establish that electric usage for the assumed baseline design has been estimated for the as-observed post-installation conditions.
Net-to-Gross Review	IOU Proposal: Not provided
	ED Assessment: The factors considered important in the decision to install the split pass configuration for the steam generator included the availability of the rebate (8), previous experience with this type of measure and this program (7 and 7), payback on the investment (9), age of the existing equipment (8), recommendation from a vendor (8), corporate policy and guidelines (9), and compliance with air regulations (9). When the respondent was asked how 10 points would be allocated across programmatic and non-programmatic factors, the respondent gave 5 points to the program and 5 to non-program factors. In addition, if the program did not exist, the respondent said the likelihood of installing the same equipment was 5 out of 10.
	ED Recommendation: 0.41

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

Description	IOU Ex Ante Claim	ED Recommendations
First Year kWh Savings	668,008	N/A
First Year Peak kW Savings	77.81	TBD
First Year Therms Savings	N/A	TBD
kWh Savings (RUL Period)	N/A	N/A
Peak kW Savings (RUL Period)	N/A	N/A
Therms Impact (RUL Period)	N/A	N/A
kWh Savings (RUL thru EUL Period)	668,008	TBD
Peak kWh Savings (RUL thru EUL Period)	77.81	TBD

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Description	IOU Ex Ante Claim	ED Recommendations
Therms Savings (RUL thru EUL Period)	N/A	N/A
Annual Non-IOU Fuel Impact (RUL Period)	N/A	N/A
Annual Non-IOU Fuel Impact (RUL thru EUL Period)	N/A	N/A
Project Costs for Baseline #1 (RUL or EUL)	\$200,000	TBD, based on incremental costs
Project Costs for Baseline #2 (EUL minus RUL period)	N/A	N/A
Project Incentive Amount	\$61,222	TBD