

Phase I Ex Ante Review Findings

Table 1-1: Project Information

IOU	PG&E
Application ID(s)	1445-13-1214 and 1445-13-1162
Application Date	02/12/2013
Program ID	PGE2222
Program Name	Energy Efficiency Services for Oil and Gas Production
Program Year	2013
Itron Project ID	X308
IOU Ex Ante Savings Date	Not provided
ED Measure Name	Pump Off Controllers (POCs) for Rod Beam Pumping Units
Project Description	For Project ID: 1445-13-1214: Installation of 23 POCs on existing rod beam pumps. For Project ID:1445-13-1162: Installation of 32 POCs on existing rod beam pumps
Date of ED Review(s)	3/26/13
Primary Reviewer and Firm	Phani Pagadala/Itron
Review Supervisor and Firm	Joseph Ball/Itron
Type of Review (Desk, On-site, Full M&V, Tool)	Desk Review
ED Recommendation	Conditional approval subject to post-installation data collection and savings true up

Measure Description

The proposed project entails installing POCs on a total of fifty five (55) rod beam pumps at the facility (23 for Project ID: 1445-13-1214 and 32 for Project ID: 1445-13-1162). The POC will shut the well down based on downhole conditions, resulting in energy savings. The baseline equipment for this project is claimed to be the existing rod beam pumps without any controls. According to the submitted project description report, the combined annual energy savings estimated for the POC installation are 337,802 kWh with a demand reduction of 60.52 kW. The project incentive is estimated at \$36,454.

Summary of Review

Included within the application packet that was received and reviewed for the two separate projects were the following: project agreement letter, project description report and the preliminary savings calculations.

The project's energy savings estimates were calculated utilizing well design data (motor HP, pump diameter, stroke length and well production rates) in conjunction with algorithms based on the standard performance contract (SPC) POC calculator.

ED agrees with the IOU/TPI baseline equipment selection of system optimization for this project. The ED approves the IOU proposal of determining the actual measure costs after project completion.

The TPI contractors intend to carry out post-installation verification activities using actual production data, stroke length, strokes per minute, pump size, and motor horsepower to re-calculate the savings. As part of the site level data collection activities, ED recommends that the IOU monitor power consumption (for baseline and post-installation periods), operating hours of the optimized wells and POCs for a period of at least two weeks (one week prior to and one week after the retrofit) for a combined sample of 13 pumps, drawn at 90/20 and 0.5 CV for a total of 55 wells (23 for Project ID: 1445-13-1214 and 32 for Project ID: 1445-13-1162), in order to re-calculate the savings for the true-up. The effort is expected to be consistent with ED's evaluation techniques for similar measures as explained in the *Engineering Approach for POCs* section of the *2006-2008 Evaluation Report for PG&E Fabrication, Process and Manufacturing Contract Group*¹.

Review Conclusion

ED conditionally approves the savings for the proposed project and requests an opportunity to review the savings estimates after the recommended M&V work is completed. A proposed post-installation M&V plan was included within the scoping document. However, the M&V plan

¹ 3.4.9. *Engineering Approach for POCs* (p.3-15);

Calmac ID: CPU 0017.01 (http://calmac.org/publications/PG%26E_Fab_06-08_Eval_Final_Report.pdf)

does not include actual measurements of the well pump motor kW and kWh values. ED suggests that well pump power measurements prior to and after the installation of the POCs be included in the plan, and the POC impacts be re-estimated with the measured data in conjunction with runtime data informed via the POC screens. In addition, ED requests that the IOU provide the revised M&V plan for review.

Summary of ED Requested Action by the IOU

ED requests that the IOU submit the following documentation:

1. Provide the revised M&V Plan and schedule that incorporates measurements of the baseline and post-installation well pump motor demand and power factors to accurately estimate the baseline and post-installation power consumption.

ED requests that the IOU submit the following once the measure installation and the post-installation measurements are completed:

1. Submit revised savings calculations for true-up, and
2. Provide supporting documentation on the project’s actual measure cost estimates.

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)	System Optimization	System Optimization
Project Cost Basis (Full Cost, Incremental Cost)	Full Cost	Full cost appears reasonable; however, ED recommends that the IOU submit the actual itemized project invoices, when they become available.
RUL (Early retirement projects only, otherwise N/A (not applicable))	N/A	N/A
EUL	Not provided	ED recommends an EUL of 10 years (based on IOU supplied EUL values for

Description	IOU Proposed Ex Ante Data	ED Recommendations
		prior POC evaluation projects).
First Year kWh Savings	337,802	TBD; pending post-installation M&V true-up
First Year Peak kW Savings	60.52	TBD; pending post-installation M&V true-up
First Year Therms Savings	Not provided	N/A
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 (EUL thru RUL Period)	N/A	TBD; pending post-installation M&V true-up
Peak kW Savings (EUL thru RUL Period)	N/A	TBD; pending post-installation M&V true-up
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	Not recommended

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: System Optimization
	ED Assessment: IOU baseline selection is appropriate
	ED Recommendation: No change recommended
Project Cost Basis (for early retirement projects only, include RUL through EUL cost basis treatment)	IOU Proposal: Full cost of approximately \$4,000 per POC.
	ED Assessment: Full costs appear reasonable.
	ED recommendation: Submit the actual installed measure costs, when available.
RUL (required for early retirement projects only, otherwise n/a)	IOU Proposal: N/A
	ED Assessment: N/A
	ED recommendation: N/A
EUL	IOU Proposal: None provided
	ED Assessment: 10 years (based on IOU supplied EUL values for prior POC evaluation projects).
	ED Recommendation: 10 years
Savings Assumptions	IOU Proposal: The IOU/ TPI utilized calculations based on the SPC POC calculator. Assumptions were made for the pump sizes and production levels. The baseline operation of the wells was assumed to be variable ranging from 1,095 hours per year to 8,585 hours per year.
	ED Assessment: The SPC POC calculator based calculations and assumptions are reasonable. Utilization of measured data to establish the post-installation operating

Reviewed Parameter	Analysis
	<p>characteristics will result in accurate savings estimation.</p> <p>ED Recommendation: ED recommends the use of baseline and post-installation measurement data.</p>
Calculation Methods/Tool review	<p>IOU Proposal: The IOU utilized a spreadsheet base approach based on the SPC POC calculation tool.</p>
	<p>ED Assessment: The IOU methods appear reasonable.</p>
	<p>ED Recommendation: ED recommends the use of actual post-installation operating data.</p>
Pre- or Post-Installation M&V Plan	<p>IOU Proposal: The IOU intends to perform a post-installation verification to collect the following data:</p> <ul style="list-style-type: none"> ■ actual production data, ■ stroke length, ■ strokes per minute, ■ pump size, and ■ motor horsepower
	<p>ED Assessment: ED approves the IOU/TPI post-installation data collection activities. However, ED recommends the additions (provided below) to the current plan.</p>
	<p>ED Recommendation: ED recommends execution of the submitted M&V plan with the addition of measurement of the baseline and post-installation kW and kWh of a random sample of 13 well pump motors for a period of two weeks (one week prior to, and one week after the retrofit), in order to accurately estimate the savings. ED also requests that the revised M&V plan be provided for review</p>
Net-to-Gross Review	<p>IOU Proposal: Not provided</p>
	<p>ED Assessment: Not assessed</p>
	<p>ED Recommendation: None</p>