

Ex Ante Review Findings

Table 1-1: Project Information

IOU	PGE
Application ID	1445-13-1197
Application Date	01/31/2013
Program ID	PGE2222
Program Name	Energy Efficiency Services for Oil Production
Program Year	2013
Itron Project ID	X319
IOU Ex Ante Savings Date	TBD
ED Measure Name	Progressive Cavity Pumping Unit w/ VSD
Project Description	Install new Progressive Cavity Pumps (PCPs) with variable speed drives (VSDs)
Date of ED Review(s)	04/05/2013
Primary Reviewer and Firm	Phani Pagadala – Kumar Chittory/Itron
Review Supervisor and Firm	
Type of Review (Desk, On-site, Full M&V, Tool)	Desk Review
ED Recommendation	Savings are not approved until the baseline claim is substantiated and all necessary documentation is submitted to the ED for further review.

Measure Description

Measure involves installation of three (3) new Progressive Cavity Pumping (PCP) units with variable speed drives (VSDs) for oil extraction, in lieu of conventional rod-beam pumping units without any controls.

Summary of Review

The IOU submitted the following documents for this initial ex ante review:

- Project Description Report,
- Project Commitment Agreement,
- Calculations contained in an MS Excel workbook

The proposed project involves the installation of three (3) PCPs with VSDs. The rotary motion of a progressing cavity pump eliminates the cyclic loading and the associated losses typical of rod-beam pumping units. The difference in energy consumption from the progressive cavity pumping and a hypothetical standard rod beam pumping will result in kWh savings. The PCP is equipped with a VSD and it will control the speed of the progressive cavity pump to match the dynamic flow conditions of the well to optimize energy consumption and production.

The calculation spreadsheet estimates the total system efficiency of the baseline unit at 45% based on SPE paper (37499). The spreadsheet also estimates 65% total system efficiency for the PCP unit based on published data from multiple manufacturers. The IOU claims that the baseline for this measure is an uncontrolled rod-beam pump that operates 24 hours per day year round.

However, the ED believes that this baseline claim is unsubstantiated. ED requests that the IOU prove the validity of this hypothetical baseline claim. To evaluate the potential of utilizing an uncontrolled rod-beam pump as the baseline, ED requests the IOU to furnish the following information:

- a. Confirm if the project entails an actual well conversion. Specify the type of pump and control method that was in use before the well conversion.
- b. Deviation applicability (whether the well is a horizontal drill or a vertical section) from the geological testing documentation or by the pre-drill well design engineering documentation.
- c. Confirmation of the actual/ expected volume lifted per day (informed via DOGGR for existing wells or by geological testing or by the pre-drill well design engineering documentation).
- d. The geological testing/ pre-drill design documentation is also expected to provide the potential sanding/ solids and gas tolerance of the wells.

Since well conversions involve changing out the entire pumping equipment, ED recommends using a new construction/ natural turnover baseline, in which case ED would like to receive confirmation that this conversion is program induced and not a standard operational practice being carried out by the oil field operator. During a recent industry standard practice (ISP) assessment study by the ED, it was revealed that well conversions, such as this project, usually are done as part of normal/ routine operations and not necessarily for energy efficiency purposes. ED requests the IOU to provide operation manuals or facility energy efficiency plans, etc. to establish the program influence. It was evident from the savings calculations spreadsheet that these are new drills. New drills and regular well conversions usually involve a complete change-out of the pumping equipment and thus trigger a *New Construction/ Normal Replacement* baseline event with the current ISP as the baseline. Since the recently conducted artificial lift ISP assessment study does not explicitly detail the baseline pumping equipment choices for such projects, ED requests that the IOU provide additional baseline information (as detailed above) in order to establish the applicability of a hypothetical baseline to evaluate the savings potential.

The ISP study did however establish the standard practices for well pump controls. For the current project, ED recommends that the savings from the VSD units should be removed from the savings claim as installation of VSDs on PCPs was found to be ISP for all oilfield sizes, should the baseline claim be approved by the ED.

Review Conclusion

The ex ante savings estimates are not approved until the baseline claim is substantiated and all necessary documentation is submitted to the ED for further review.

Summary of ED Requested Action by the IOU

ED requests that the IOU submit the following documentation by **4/23/13**:

1. Provide the following baseline substantiation documents:
 - Confirm the type of drill (new or well conversion) and provide baseline pumping method, if well conversion.
 - Provide the geological testing or the pre-drill well design engineering documentation to establish well deviation.
 - Provide the actual/ expected well production rates.
 - Also, from the geological testing or the pre-drill well design engineering documentation, identify the sanding/ solids and gas tolerance of the wells.