

## Phase I Ex Ante Review Findings

**Table 1-1: Project Information**

<b>IOU</b>	Pacific Gas & Electric
<b>Application ID</b>	NC0128326
<b>Application Date</b>	10-18-2013
<b>Program ID</b>	PGE21042
<b>Program Name</b>	Savings By Design
<b>Program Year</b>	2013
<b>Itron Project ID</b>	X505
<b>IOU Ex Ante Savings Date</b>	12-13-2013
<b>Measure Name</b>	New Pipeline
<b>Project Description</b>	New oil pipeline diameter increased from baseline 12" to 16".
<b>Date of CPUC Staff Review(s)</b>	
<b>Primary Reviewer / Firm</b>	John Hill/ James J. Hirsch & Assoc.
<b>Review Supervisor / Firm</b>	Nikhil Gandhi / Strategic Energy Technologies, Inc.
<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, measure incremental cost and incentive estimates are not approved at this time. However, this project may proceed subject to: post-installation savings true-up, submitting the requested documentation on baseline labor cost, removing the VFD from the proposed case, and revising the M&V plan as specified in the Summary of staff Requested Actions.

## **Measure Description**

This project claims savings as a result of upsizing a crude oil transport pipeline from 12” diameter to 16” diameter. The increased pipe diameter results in reduced frictional pumping losses for the proposed 3.71 mile pipeline. This reduces the pumping electric load, producing energy and demand savings.

## **Summary of Review**

The Investor-Owned-Utility (IOU) submitted the following documents for this Phase I review:

- Project application documentation; *X505-127691 NC0128326-Application.pdf*;
- Project report; *X505-127691 NC0128326-CNC Report.pdf*;
- Calculation worksheet; *X505-127691 NC0128326-Pipe Diameter Opt. for Design.xlsx*; and
- Customer letter confirming 12” diameter baseline; *X505-127691 NC0128326-ProjectHistory-CustomerLetter.pdf*.

An initial CPUC staff review of supplied documentation noted a number of inconsistencies between the project report and calculation worksheet. Additional clarification was requested in a 08-05-2014 data request. The clarifications were addressed in a 08-27-2014 submittal. The clarifying documents include the following used in this Phase I review:

- A response document to the review request; *X505 DataRequest 08052014 With Reviewer Responses.pdf*;
- Revised project report; *X505 127691 NC0128326 Plains Marketing CNC Report Rev 3.pdf*;
- Revised calculation worksheet; *X505 127691 NC0128326-Pipe Upsize Incentive - New Calc.xlsx*;
- Response to ISP question on 12” pipe as appropriate for a baseline; *X505 127691 NC0128326Response to email Questions from [REDACTED].pdf*; and
- Revised project cost worksheet; *X505 127691 NC0128326-Pipe Price Estimating Sheet FBE.xlsx*.

An initial CPUC review was made of the baseline assumption, savings calculation method and cost estimate. Summary findings are as follows:

- 12” as baseline - Within reason (as set by velocity limits) pipe sizes are based on an economic decision. The 12” baseline assumption provides flow with acceptable velocities. The pressure drop per 100 feet of piping is estimated at 4.5 feet for heavy crude and 3.4 feet for light crude. While the two pressure drop values may be considered at the high end of a typical range, those associated with the next larger size pipe (14” diameter) would be considered low. As such, the 12” diameter pipe baseline is accepted

as one that could be categorized as meeting good design practices. It is accepted as a baseline design.

- Savings calculation method – Savings estimates are based on standard engineering calculations for pumping power requirements via a live calculation spreadsheet. Issues with the calculation approach from the initial submittal were outlined in the data clarification document. Those were resolved in the revised calculation spreadsheet. However, the revised calculation spreadsheet added a variable frequency drive (VFD) system efficiency to the calculation. The assumption that the VFD drive is present in both the baseline and measure systems cannot be confirmed at this point. PG&E claims that a VFD measure is being considered in a separate submittal. If so, the impact of the VFD should be addressed in that project and removed from this project.
- Project incremental costs – Incremental costs are well documented for the cost of materials. Those for labor are not. A representative labor cost for the installation of 16” diameter pipe is provided from costs associated with another project. The labor cost for the baseline installation is prorated from that associated with the installation of the 16” diameter pipe. No breakdown of the labor cost associated with the installation of the 16” diameter pipe is provided. No details were provided on how the labor cost for the baseline pipe was obtained from those for the 16” diameter pipe other than there are reduced welding costs based on bead length. Additional labor cost details are needed before incremental costs are approved. This is critical as incentives for this project are currently limited by incremental measure cost.

## **Review Conclusion**

The ex-ante savings, measure incremental cost and incentive estimates are not approved at this time. Savings estimates are to assume that no VFD is in place. Incremental labor costs are not approved based on the information provided. Additional details on labor costs are needed. Finally, the proposed incentive to the client is not approved until possible limits based on the incremental project costs are resolved.

## **Summary of CPUC Staff Requested Action by the IOU**

CPUC Staff requests that the IOU undertake the recommended steps and submit the following information due on *09/22/2014* (or 14 days from submittal date to IOU):

1. Remove the VFD efficiency estimate from ex-ante savings calculations.
2. Provide details to support claimed labor cost differences used in incremental cost estimates.
3. Revise project incentive if revisions to the measure incremental cost are found to be appropriate.

4. Provide specific details on the duration of all site measurements. Include a provision in the M&V plan that data collection is to include periods of WCS and Bakken crude transport or reasons why this requirement would be unrealistically burdensome.

**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: New Construction
	CPUC Staff Recommendation: none
<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: 12” diameter pipe
	CPUC Staff Assessment: 12” diameter pipe
	CPUC Staff Recommendation: Baseline found to be acceptable based on nominal frictional pressure drops for heavy and light crude oil.
<b>Project Cost Basis</b> (Full Incremental, or Both. Note: For early retirement projects, include RUL through EUL cost basis treatment)	IOU Proposal: Incremental
	CPUC Staff Assessment: Incremental
	CPUC Staff Recommendation: none
<b>RUL</b> (required for early retirement projects only, otherwise N/A)	IOU Proposal: n/a
	CPUC Staff Assessment: n/a
	CPUC Staff Recommendation: n/a
<b>EUL</b> (for each measure)	IOU Proposal: not provided
	CPUC Staff Assessment: Pipe EUL should be capped by the maximum EUL allowed by the CPUC policy.
	CPUC Staff Recommendation: 20 years

*Ex Ante Review Findings*

Reviewed Parameter	Analysis
<b>Savings Assumptions</b>	IOU Proposal: Savings based on reduced piping frictional losses associated with the larger measure pipe diameter.
	CPUC Staff Assessment: Savings assumptions appropriate
	CPUC Staff Recommendation: none
<b>Calculation Methods/Tool review</b>	IOU Proposal: Live calculation spreadsheet using standard engineering calculations. Energy and demand savings based on both heavy and light crude delivered via the pipeline at differing times.
	CPUC Staff Assessment: Overall calculation approach is appropriate with the exception that an assumed VFD drive is in place. This has not been determined and the impact of the drive efficiency should be removed.
	CPUC Staff Recommendation: Correct calculations to remove the impact of VFD from this project.
<b>Pre- or Post-Installation M&amp;V Plan</b>	IOU Proposal: Collection of all project invoices. Collection of nameplate data on all installed equipment. A minimum of one month evaluation period where typical operating data is collected. Pump flow and status to be collected at hourly intervals. Fluid properties to be collected as well as pipeline flow and pressure readings at the entrance and exit of the pipeline.
	CPUC Staff Assessment: The data collection process is somewhat vague in what data are collected and at what interval. The M&V data collection period does not include a provision that periods of both heavy and lighter crude transport are to be included.
	CPUC Staff Recommendation: Provide specific details on the duration of all site measurements. Include a provision in the M&V plan that data collection is to include periods of WCS and Bakken crude transport or reasons why this requirement would be unrealistically burdensome.
<b>Net-to-Gross Review</b>	IOU Proposal: none
	CPUC Staff Assessment: not recommended
	CPUC Staff Recommendation: None

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

<b>Description</b>	<b>IOU Ex Ante Claim</b>	<b>CPUC Staff Recommendations</b>
<b>First Year kWh Savings</b>	10,764,073 kWh	TBD
<b>First Year Peak kW Savings</b>	1,382 kW	TBD
<b>First Year Therms Savings</b>	N/A	N/A
<b>kWh Savings (RUL Period)</b>	N/A	N/A
<b>Peak kW Savings (RUL Period)</b>	N/A	N/A
<b>Therms Impact (RUL Period)</b>	N/A	N/A
<b>kWh Savings (RUL thru EUL Period)</b>	N/A	N/A
<b>Peak kW Savings (RUL thru EUL Period)</b>	N/A	N/A
<b>Therms Savings (RUL thru EUL Period)</b>	N/A	N/A
<b>Annual Non-IOU Fuel Impact (RUL Period)</b>	N/A	N/A
<b>Annual Non-IOU Fuel Impact (RUL thru EUL Period)</b>	N/A	N/A
<b>Project Costs for Baseline #1 (RUL or EUL)</b>	Incremental Measure Cost \$990,153	Incremental Measure Cost TBD
<b>Project Costs for Baseline #2 (EUL minus RUL period)</b>	N/A	N/A
<b>Project Incentive Amount</b>	\$495,076.63	TBD