

Final Phase III Ex Ante Review Findings

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

IOU	PG&E
Application ID	WEP1031653
Application Date	Not provided
CPMA Sample Date	4/29/2013
Program ID	PGE2236
Program Name	Agriculture and Food Wastewater Energy Program (WEP)
Program Year	2012
Itron Project ID	X344
IOU Ex Ante Savings Date	6/7/2013
CPUC Staff Measure Name	Wastewater treatment
Project Description	Water recovery, filtration, pump controls, and improve piping and pump seals.
Date of CPUC Staff Review(s)	6/11/13 and 12/10/2013
Primary Reviewer / Firm	Blake Ringeisen / Itron
Review Supervisor / Firm	Joseph Ball / Itron
CPUC Staff Project Manager	██████████ / California Public Utilities Commission, Energy Division
CPUC Staff Policy Authorization (as needed)	
Type of Review (Desk, On-site, Full M&V, Tool)	Desk
CPUC Staff Recommendation	Final ex ante savings for this project are approved at the CPUC staff_ approves revised levels of the post install, IOU revised estimated energy savings for this project (142,258-84,720 kWh and; 46.5-34.6 kW peak demand reduction). EEM4a throttles down an existing valve and is considered an operating practice change, which are not allowed in custom programs.

Measure Description

Of the seven measures included in the original application and reviewed by CPUC staff in phases I and II ex ante reviews, the customer installed five measures - with one (measure 4) of the five being modified - as described below:

1. Recover a Portion of the MPE Recirculation Water and Send to Clean Unloading Water Pit
2. Recover Water from Diced Tomato Heat Exchanger Collection Tank and Route to Secondary Paste Flume
3. Recover a Portion of the Discharge Water from Paste Flume after Rotary Screen and Offset Elevator Jet Makeup Water
4. ~~Install an Alternative Filtration System for the Pump Seal Flush Water~~ Reduce the Flow Rate through the Pump Seals
5. **Not implemented under this application** - Recover Water from the Pump Seal Flush Systems in Various Areas of the Plant
6. Install Variable Frequency Drives on Central Pit Pumps
7. **Not implemented under this application** - Install Automatic Dissolved Oxygen Control on the Aerators in Ponds B and C

Measures 1, 2, and 3 are water recovery measures. The facility currently disposes tomato processing wastewater into open fields, and proposes to reuse a portion of the water from several processes. This will save vast amounts of water in addition to the associated pumping energy. The modified measure 4 reduces flow rate and is considered a system optimization measure.

Annual energy savings are estimated to be 142,258 kWh and demand savings are estimated to be 46.5 kW, in addition to water savings of 43,919,118 gallons/yr. Incentive rates of \$0.09/kWh and \$100/kW were used to estimate a project incentive of \$10,244. Total implementation costs for the five measures were \$22,629.

Summary of Review

The Investor-Owned-Utility (IOU) submitted the following four documents as part of the post-install inspection report (IR) review:

- [Customer Name & Location]_Verification_Updated.pdf, entitled Post-Installation Verification Report
- [Customer Name & Location]_Verification Calculations BASE.xlsx
- Summary of Wastewater Pumps.xlsx
- Water Comparison Data BASE.xlsx

[It appears that PG&E has yet to perform an internal review of this project.](#)

Final Phase III Ex Ante Review Findings

EEM4a throttles down an existing valve and is considered an operating practice change, which are not allowed in custom programs. EEM4a is deemed ineligible and the IOU cannot claim custom savings for this measure.

~~Four of the five implemented measures are add-on equipment retrofits; one measure, EEM 4, is a system optimization measure. All The fivefour remaining measures (EEM1, 2, 3 and 6) are eligible under program rules. CPUC staff concurs that the EUL for all fiveeach of the four measures is 15 years. In situ equipment is the appropriate technical baseline in each case.~~

~~Full measure costs apply for these measures. Although EEM4 had negligible implementation costs that did not figure into the overall project incentives, energy savings were claimed by the 3rd party implementer.~~

Per previous CPUC staff request for post-installation M&V operating hours were logged, but flow rates could not be measured due to the high particulate content of the recovered fluid mixture, and therefore, the recommended M&V plan could not be followed precisely. Instead the piping system (bends, system losses), cross-sectional flow areas, and fluid characteristics were monitored and subsequently used with appropriate pipe flow kinematic equations and pumping efficiencies determined with a pump test on the Well Pump and measurements taken on both the Wastewater Lift Pump and the Wastewater Central Pit Pump.

Between the original CMPA project data submission and this final phase III post-install review the project savings of the four implemented measures (EEM1, 2 3 and 6) have been revised as depicted in the table below.

<u>Description</u>	<u>Original CMPA Ex Ante Claim (7 EEMs)</u>	<u>Phase II IOU Ex Ante Claim (5 EEMs)</u>	<u>Phase III IOU Ex Ante Claim (5 EEMs)</u>	<u>Final CPUC Staff Approved Ex Ante Savings (4 EEMs)</u>
<u>First Year kWh Savings</u>	<u>308,923</u>	<u>234,994</u>	<u>142,258</u>	<u>84,720</u>
<u>First Year Peak kW Savings</u>	<u>129.3</u>	<u>102.2</u>	<u>46.5</u>	<u>34.6</u>
<u>Project Incentive Amount</u>	<u>\$40,733</u>	<u>\$31,369</u>	<u>\$10,244</u>	<u>\$10,244</u>

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Review Conclusion

Final ex ante savings for this project are approved at the CPUC staff-revised levels of 84,720 kWh and 34.6 kW peak demand reduction. EEM4a throttles down an existing valve and is considered an operating practice change, which are not allowed in custom programs; this measure is ineligible under custom programs. The IOU needs to remove it from their custom

Final Phase III Ex Ante Review Findings

claims for this project. ~~CPUC staff approves the post install, IOU revised estimated energy savings of 142,258 kWh and 46.5 kW peak load reduction.~~

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: Measures (1-3 and 6) are add-on measures. Measure 4 is a system optimization measure.
	CPUC Staff Assessment: Accept
	CPUC Staff 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: In situ equipment with current operations
	CPUC Staff Assessment: Accept
	CPUC Staff Recommendation: None
Project Cost Basis (Full Incremental, or Both. Note: For early retirement projects, include RUL through EUL cost basis treatment)	IOU Proposal: Full cost of \$22,629. (Reduced from \$124,600.)
	CPUC Staff Assessment: Accept
	CPUC Staff recommendation: None
RUL (required for early retirement projects only, otherwise N/A)	IOU Proposal: N/A
	CPUC Staff Assessment: N/A
	CPUC Staff recommendation: N/A
EUL (for each measure)	IOU Proposal: 15 years for all <u>the four eligible</u> measures
	CPUC Staff Assessment: Accept
	CPUC Staff Recommendation: None
Savings Assumptions	IOU Proposal: Modified energy savings estimates included the following assumptions: <ul style="list-style-type: none"> 1. BASE Energy measured pump efficiencies: <ul style="list-style-type: none"> a. Wastewater Lift Pump Eff. = 80.84 gpm/kW b. Wastewater Central Pit Pump Eff. = 1329.83 gpm/kW 2. Power Hydrodynamics pump test: Well Pump Eff. = 0.00217 kWh/gal, flow rate = 121.7 gpm, and velocity of 15.7 ft/s 3. Fluid cross-sectional area of North Discharge estimated to be 0.00723 ft² 4. RO filtration supply:

Final Phase III Ex Ante Review Findings

Reviewed Parameter	Analysis
	<p>a. Pump motor efficiency = 0.93</p> <p>b. Pump load factor: 0.75</p> <p>c. Feed rate: 237.7 gpm</p> <p>d. Reject water rate: 61.8 gpm</p> <p>CPUC Staff Assessment: Accepted</p> <p>CPUC Staff Recommendation: None</p>
Calculation Methods/Tool review	<p>IOU Proposal: Custom spreadsheet analysis</p> <p>CPUC Staff Assessment: Accepted</p> <p>CPUC Staff Recommendation: None</p>
Pre- or Post-Installation M&V Plan	<p>IOU Proposal: The phase II recommended M&V plan was modified based on the high particulate count in wastewater recovery flows and that the flow meters could not provide accurate results. The adjusted M&V plan included verification of the physical properties of the pumping and piping systems, bends, friction losses, system heads, and fluid characteristics. Additionally, loggers were installed to determine the seasonal operating hours of the pumps.</p> <p>CPUC Staff Assessment: Accepted</p> <p>CPUC Staff Recommendation: None</p>
Net-to-Gross Review	<p>IOU Proposal: Not addressed</p> <p>CPUC Staff Assessment: Not accessed</p> <p>CPUC Staff Recommendation: None</p>

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

Description	IOU Ex Ante Claim	CPUC Staff Recommendations
First Year kWh Savings	142,258	Accepted <u>84,720</u>
First Year Peak kW Savings	46.5	Accepted <u>34.6</u>
First Year Therms Savings	N/A	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 (RUL thru EUL Period)	142,258	Accepted <u>84,720</u>
Peak kW Savings (RUL thru EUL Period)	46.5	Accepted <u>34.6</u>
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)	\$22,629	Accepted. Costs reduced from \$76,600 from pre-install estimates of the five <u>four eligible</u> measures
Project Costs for Baseline #2 (EUL minus RUL period)	N/A	N/A
Project Incentive Amount	\$10,244	Accepted. Incentive reduced from \$31,369 from pre-install estimates of the five <u>four eligible</u> measures