

Phase I Ex Ante Review Findings

Table 1-1: Project Information

IOU	PG&E
Application ID	NC0124247
Application Date	02/22/13
Program ID	PGE2221
Program Name	California Wastewater Process Optimization (NRNC)
Program Year	2013
Itron Project ID	X326
IOU Ex Ante Savings Date	TBD
ED Measure Name	NC Waste Water Treatment Plant Processes
Project Description	As part of the construction of a new water recycling facility, the EE measures include the installation of aeration blower, DO controls, low-pressure, high-intensity UV lamps and fine bubble diffusers in the oxidation ditch.
Date of ED Review(s)	06/14/13
Primary Reviewer / Firm	Sepideh Shahinfard/ Itron
Review Supervisor / Firm	Joseph Ball/ Itron
ED Project Manager	██████████ / California Public Utilities Commission, Energy Division
ED Policy Authorization (as needed)	
Type of Review (Desk, On-site, Full M&V, Tool)	Desk Review
ED Recommendation	The ex ante savings are conditionally approved, pending submission of the revised savings for UV disinfection measure using the correct ISP baseline, and submission of the post-install M&V data.

Measure Description

The project involves the implementation of the following measures on the planned construction of a waste water recycling facility.

- Installation of low-pressure high-intensity UV lamps with dose pacing control,
- Installation of fine bubble diffuser aeration system with automatic DO control and high efficiency blowers in the oxidation ditch, and

The average wastewater flow of the plant at build-out (2015) is expected to be 0.72 MGD with average biochemical oxygen demand (BOD) of 2,307 lbs-O₂/day. The facility is expected to complete construction of the water recycling facility by end of 2015. The wastewater treatment system is expected to be operational 8,760 hours per year and the solids treatment system is expected to operate 30 hours per week, 52 weeks per year, for a total of 1,560 hours per year.

The annual kWh and kW savings estimated for this project are 1,513,993 kWh/yr and 157 kW. The estimated incentive associated with these savings is \$151,916. The total cost of the project is \$2,260,000. The payback of the project is 11.6 years.

Summary of Review

The Investor Owned Utility (IOU) submitted the following documents for Data Request (DR) 3791 on 04/10/13 for this review:

- Signed application;
- Savings calculation spreadsheet “05_County of SLO – Calculations;”
- Customized new construction report “06_County of XXX - XXX WWTP_final;”
- CMT report “07_XXX_CEE history” and
- Customer history “08_County of XXX_customer history.”

This review looked closely at the proposed measures and their baselines to verify both the calculation methodology and assumptions employed in the saving calculations spreadsheet. The industry standard practice baselines for the diffuser and aeration blower measure are discussed in the points below:

- EFM No.1: Installation of Low-Pressure High-Intensity UV Lamps with Dose Pacing Control. According to the project feasibility study, the baseline for this measure is medium pressure high intensity UV system with manual control. ED indicates that the Industry Standard Practice (ISP) baseline for new construction is low pressure UV disinfection; reported to be standard design practice since early 2000s. Because the project is a new construction, the baseline for this measure is the industry practice baseline and PG&E is required to revise the savings calculation using the correct baseline. During parallel review the IOU third party implementer claimed that the predominance of 3 out of 5 small plants in **existence in**

California in 2006 used medium pressure UV disinfection is not sufficient evidence of ISP for 2013 new construction design practices. Furthermore, where there are no space constraints as in the case of this plant, medium pressure high intensity disinfection is not a requirement.

- EEM No. 2: Installation of fine bubble diffused aeration system with automatic DO control and high efficiency blowers in the oxidation ditch. ED accepts that the industry standard practice baseline for the type of the aerator used in oxidation ditch for small waste water treatment plants (< 1 MGD influent flows) is mechanical aerator with manual control. Therefore, PG&E claimed savings for this measure is conditionally approved; pending submission of actual post-install M&V data.

Review Conclusion

The ex ante savings are conditionally approved; pending submission of the revised savings for UV disinfection measure using the correct ISP baseline. The third party implementer proposes the preliminary verification process to inspect the installation of proposed equipment, as well as verification of the performance characteristics of the proposed equipment. ED request PG&E to conduct post-installation M&V, during which data loggers will be installed to record the true kW of the aeration blowers over a minimum two-week period (including three peak days of September 3rd, 4th and 5th for climate zone 5 if possible). Also, post-installation influent flows, BOD loading, aeration blower airflows (CFM), and DO levels should be collected from SCADA system.

Summary of ED Requested Action by the IOU

ED requests that the IOU undertake the recommended steps and submit the following information due on 07/03/2013 (or 14 days from submittal date to IOU):

- Adjust the incremental measure costs associated with the adjusted baseline, and provide itemized quotations, including breakdown of material, labor, and shipping costs of both baseline and proposed equipment.
- Provide EULs for aeration blowers, dose pacing controls, DO sensors, diffusers, and UV disinfection system.

In addition, ED requests that the IOU undertake the recommended steps and submit the following information after project implementation:

- Updated energy savings calculation using ISP baselines.
- Submit post-installation M&V plan.
- Upon project implementation and the post-install inspection report, ED requests that the IOU provide detailed, itemized invoices and any other pertinent documentation used to verify the project's actual measure cost.

- Submit the IR & revised live savings calculations for ED review.

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: Dominant technologies for waste water treatment plants
	ED Assessment: Industry standard practice for small waste water treatment plants
	ED Recommendation: Revise the savings using ISP baseline of low-pressure low-intensity UV system
Project Cost Basis (Full Incremental, or Both. Note: For early retirement projects, include RUL through EUL cost basis treatment)	IOU Proposal: Total cost
	ED Assessment: Incremental costs apply
	ED recommendation: Determine and submit incremental measure costs supported by itemized contractor invoices
RUL (required for early retirement projects only, otherwise N/A)	IOU Proposal: N/A
	ED Assessment: N/A
	ED recommendation: None
EUL (for each measure)	IOU Proposal: Not provided
	ED Assessment: TBD
	ED Recommendation: Provide EUL of the proposed equipment
Savings Assumptions	IOU Proposal: Medium pressure UV system and high-speed turbine aeration system have been used as the baseline
	ED Assessment: Baseline used to calculate the savings associated with UV disinfection system is not correct
	ED Recommendation: Revise the savings using low-pressure low-intensity UV system
Calculation Methods/Tool review	IOU Proposal: Savings were calculated using an excel spreadsheet.
	ED Assessment: Calculation method is acceptable

Reviewed Parameter	Analysis
	ED Recommendation: Revise for correct disinfection baseline
Pre- or Post-Installation M&V Plan	IOU Proposal: The third party implementer proposes the preliminary verification process to inspect the installation of proposed equipment, as well as verification of the performance characteristics of the proposed equipment.
	ED Assessment: Submit M&V plan and conduct post-installation M&V
	ED Recommendation: conduct post-installation M&V, during which data loggers will be installed to record the true kW of the aeration blowers over a minimum two-week period (including three peak days of September 3rd, 4th and 5th for climate zone 5 if possible). Also, post-installation influent flows, BOD loading, aeration blower airflows (CFM), and DO levels should be collected from SCADA system.
Net-to-Gross Review	IOU Proposal: Not provided
	ED Assessment: Not assessed
	ED Recommendation: TBD

Table 1-3 Energy Savings Summary

Description	IOU Ex Ante Claim	ED Recommendations
First Year kWh Savings	1,513,993	TBD
First Year Peak kW Savings	157	TBD
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)	N/A	N/A
Peak kW Savings (RUL thru EUL Period)	N/A	N/A
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

