

MONTHLY PROGRESS REPORT FOR CONTRACT NO. 500-00-036

PROJECT 2.2 – ENHANCED ENERGY RECOVERY THROUGH OPTIMIZATION OF
ANAEROBIC DIGESTION AND MICROTURBINES PROJECT

REPORT PREPARED BY: COMMONWEALTH ENERGY TEAM

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What we planned to accomplish this period:

It was anticipated that during November continued testing of the IWe Tech and Sonico ultrasound systems at the City of Riverside Wastewater Treatment Plant would continue. This was to include baseline data for the gas cleaning tasks at IEUA’s Regional Plant No. 1 (RP-1) and data from the first operating period for the two ultrasound systems. It was also anticipated that the documents marking completion of the ultrasound installation task would be completed and submitted to the Commission. These drawings were expected to include “as built” drawings, photographs and a letter signed by a representative of the City of Riverside certifying that the installation was complete. It was also anticipated that the design of the gas cleaning system would be completed and submitted to the Commission.

Work was to continue on the *First Quarterly Report*. Baseline data related to the ultrasound systems collected in the June through September timeframe was to be summarized and baseline data at RP-1 was to be incorporated as it became available. The data collection on the gas cleaning continues to lag the data collection on the ultrasound systems by two to three months and the quarterly reports to be prepared will reflect that fact. It was anticipated that the draft *First Quarterly Report* would be completed in November so that it could be reviewed internally by the CE Team in November and December prior to its anticipated submittal to the Commission.

What we actually accomplished this period:

Task 2.2.1 Process Selection:

- Work on this task is complete. The results have been have been incorporated into the design process and are being implemented into the project in the field.

Task 2.2.2 Site Selection and Test Plan:

- Work on this task is complete. The results have been incorporated into the design process and are being implemented into the project in the field.

Task 2.2.3.a. Design Gas Cleaning System:

- Efforts on this task continued in November. Design data and other information on site conditions collected earlier were incorporated into the design of the gas cleaning systems. Design drawings, showing the layout of the various gas cleaning elements (i.e., gas drying, H₂S removal and siloxane removal) were reviewed and finalized with the host (IEUA) staff so that efforts with the various vendors could be undertaken to ensure that the design incorporated all equipment requirements. Design data related to sizing of the piping, electrical, instrumentation/control and other project elements incorporated into the design earlier were reviewed with project host engineering and operations staff and finalized. The result of these efforts was a set of drawings that were finalized based upon comments received from the project team. These drawings were finalized so that the final completed design could be submitted to the Commission.

Task 2.2.3b Design Ultrasound System:

- Design activities were completed on this task previously and the design documents were submitted to the Commission in June. Efforts on this task were very limited in November, with the only activity being the use of the results of this task to complete the “as built” drawings prepared under Task 2.2.4.b.

Task 2.2.4b Install Ultrasound System:

- As reported previously, installation of the ultrasound systems was completed in August 2004. The installation allowed start-up and related testing to occur in August and September. Work continued with *IWe Tech* and *Sonico*, the two ultrasound vendors used on this project under operational tasks. Efforts undertaken in November included finalizing the “as built” drawings and submitting the letter certifying that the ultrasound units had been installed, which documented the completion of this task. Photos of the equipment were taken, drawings prepared, and a letter certifying completion of this task was finalized.

Task 2.2.5.a First Quarter Data Collection and Analysis

- Baseline data at the City of Riverside’s Treatment Plant for the ultrasound systems was collected starting in June and continued until September when start up began. For the gas cleaning project, baseline data collection activities began approximately two months later and continued into November. In both cases, it was important to have data that described the performance of the existing systems before the project started. Baseline information was needed to document operating conditions prior to startup so that the effectiveness of the units could be assessed. As part of this effort, close coordination with the City of Riverside continued

through the bi-weekly calls referenced previously. Regular coordination with IEUA also continued as the design of the gas cleaning system (See Task 2.2.3.b) continued and baseline data collection activities were initiated. During November the draft of the *First Quarterly Report* was assembled for internal CE Team review. The *First Quarterly Report* was to include baseline data for the City of Riverside waste treatment systems used in the ultrasound testing. Baseline data related to the gas cleaning project at RP-1 was collected during November, but it was not complete and therefore not included in the First Quarterly review circulated within the CE Team for review.

Task 2.2.5.b Second Quarterly Data Collection and Analysis

- In November, data collection during the ultrasound system operational phase continued. As noted previously, start up activities occurred during September and several performance issues with the ultrasound units being tested arose. Both vendors, IWe Tech and Sonico, provided technical support during this period so that the units would operate satisfactorily. Overall, the service provided on the Sonico units improved their performance substantially and they were running satisfactorily during November. The IWe Tech system continued to have performance issues, being down a substantial portion of the time and not performing as well as planned, during those periods when it was operating. On the gas cleaning project, baseline data collection continued and CE Project 2.2 team worked closely with IEUA host facility staff to coordinate data collection activity with facility operations. This activity was expected to continue throughout the quarterly data collection efforts. Baseline data indicated an unusually large presence of siloxane and the levels and source of siloxane during the baseline period was investigated during November.

How we are doing compared to our plan:

As reported previously, the redirection of the project approach (i.e., two ultrasound technologies, instead of one ultrasound and one thermal hydrolysis technology) will make the project findings more relevant to the State of California, but required additional consultation and planning with the technology vendors. This modified technology focus delayed completion of the *Site Selection and Test Plan Report*. However, the findings produced will clearly document how the use of ultrasound technology can help increase biogas production as well as improve the treatment process.

As part of the ongoing coordination with the technology vendors, the CE Team sought to streamline the site selection and design tasks by involving the vendors in the project planning. This allowed efforts to focus on project implementation, rather than evaluations and design activities. However, these additional processes/steps additionally delayed the finalization of the *Site Selection and Test Plan Report*. These challenges have been largely overcome, and the testing program was initiated in the second half of 2004. This will enable

all testing to be completed by the end of the third quarter of 2005, and the results being incorporated into the final report by the end of 2005.

Significant problems or changes:

There are no significant fiscal problems to report during this period and work is proceeding within budget. Progress and expenditures will result in project being completed on our revised project schedule and within the overall project budget.

What we expect to accomplish during the next period:

Continued testing of the *IWe Tech* and *Sonico* ultrasound systems at the City of Riverside Wastewater Treatment Plant will continue in December. Also baseline data for the gas cleaning tasks at IEUA's Regional Plant No. 1 will be collected during December. Data from the first operating period for the ultrasound systems will be reviewed and the *First Quarterly Report* will be finalized. It is also anticipated that documents marking completion of the ultrasound system installation task will be accepted by the Commission and that this Task will be officially completed. "As built" drawings, photographs and a letter signed by representatives of the City of Riverside certifying that the installation is complete will mark completion of this Task.

It is also anticipated that the design of the gas cleaning system will be completed and that steps will be taken to order the needed equipment and materials for this testing activity. These systems are to be installed at IEUA Regional Plant No. 1. Work will continue on the *First Quarterly Report*, which will include baseline data. Baseline data related to the ultrasound systems collected in the June to September time frames will be reviewed by the CE Team and will be finalized into the *First Quarterly Report*. The data collection on the gas cleaning lags the data collection on the ultrasound systems by two to three months and the first and subsequent quarterly reports will reflect that fact. It is anticipated that the draft *First Quarterly Report* will be completed in December for submittal to the Commission and Project 2.2 TAC members in January.

Status of Milestones and Deliverables:

Table 1 summarizes the status of Project 2.2 task deliverables as of the end of the current reporting period.

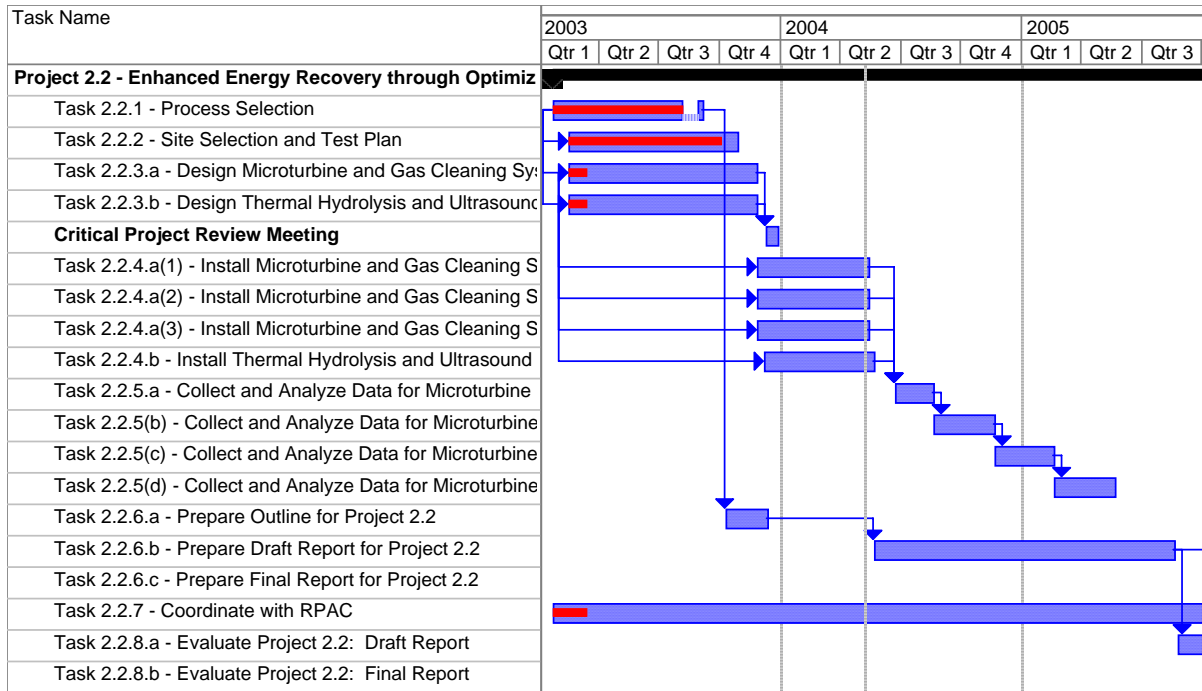
Table 1: Summary of Project Status and Deliverables – Project 2.2

Task No.	Description	Start Date		Due Date		Status (%)
		Planned	Actual	Planned	Actual	
2.2.1	Process Selection	01/24/02	01/24/03	09/04/03	11/10/03	100%
2.2.2	Site Selection and Test Plan	02/15/02	10/15/03	10/26/03	3/31/04	100%
2.2.3.a	Design Gas Cleaning System	02/15/02	11/10/03	11/24/03	11/12/04	95%
2.2.3.b	Design Ultrasound Systems	02/15/02	11/10/03	11/24/03	6/23/04	100%
2.2.4.b	Install Ultrasound System	12/5/03	6/1/04	5/21/04	11/09/04	100%
2.2.5.a	First Quarterly Report	6/20/04	6/1/04	8/20/04		90%
2.2.5.b	Second Quarterly Report	8/20/03	9/1/04	11/19/04		20%
2.2.7	Coordinate with TAC & RPAC	01/24/02	2/1/03	01/16/06		95%

Explanation of any Difference(s) in Schedule:

Task 2.2.2 – Site Selection and Test Plan – The findings of the Process Selection Report identified the technologies that are to be used at the Riverside plant for enhanced anaerobic digestion and at RP-1 for gas cleaning. As noted previously, additional coordination activities with vendors has been required. Efforts were undertaken to streamline the site selection and test plan and the design processes by conducting more detailed coordination with the vendors on their technologies. This approach shortened the time needed to secure the long lead-time equipment items and execute the project most efficiently.

Overall Schedule for Project 2.2:



Overview of Fiscal Status:

Table 2 below summarizes the fiscal status of Project 2.2 by task as of the end of the current reporting period.

Table 2: Fiscal Status by Task – Project 2.2

Task Number	Budget	Invoiced ¹ To-Date	Fiscal Status *
2.2.1	\$236,563	\$236,563	OT
2.2.2	\$182,543	\$182,543	OT
2.2.3.a	\$242,995	\$242,995	OT
2.2.3.b	\$215,842	\$0	OT
2.2.4.b	\$229,585	\$0	OT
2.2.5.a	\$87,073	\$0	OT
2.2.5.b	\$87,073	\$0	OT
2.2.7	\$22,557	\$0	OT

*Fiscal Status – Please indicate if you are “On Track” (OT), OverBudget (OB), or UnderBudget (UB)

¹ Invoice to-Date refers to amount invoiced prior to 10% retention withheld.