

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:

Activity planned for April included tasks related to the use of ultrasound for enhanced gas production, and on tasks related to gas cleaning on digester gas (H₂S removal, moisture control and siloxane removal). In addition to design and other engineering activities, general coordination activity with the project hosts at Inland Empire Utilities Agency (IEUA) and Riverside County was planned. Efforts on this project were to focus on integrating two ultrasound systems into the Riverside Plant and integrating gas drying, H₂S and siloxane removal systems into the IEUA RP-1 site. It was anticipated that comments on the *Site Selection and Test Plan* would have been received from the Commission and TAC members. The CE team planned to integrate comments and/or changes and the *Site Selection and Test Plan* and finalize the report in April. Design efforts were to continue on integrating the ultrasound and gas cleaning systems into the City of Riverside and IEUA's RP-1 plants respectively. Ongoing coordination with the technology vendors was planned to ensure that the intended six-month equipment testing period, would begin in a timely manner later this year. Additionally, the detailed planning for the fabrication of the planned test equipment was to continue in April so that the Vendors could begin fabrication in May thereby ensuring that the overall testing program will be achieved in contract timelines.

What we actually accomplished this period:

Task 2.2.1 Process Selection:

- The CE Team continued its follow up on the *Process Selection Report* submitted previously. Primary efforts continued to focus on the review and analysis of the technologies presented. Contact and coordination with the technology vendors continued in order to fabricate and provide the latest ultrasound technologies to the projects planned at Riverside County. The ultrasound vendors provided detailed

information about their technologies and continue to be heavily involved in the planning process in order to ensure a smooth process from selection to installation.

Task 2.2.2 Site Selection and Test Plan:

- The CE Team and the technology vendors continued to apply the information developed in the process selection phase, to the *Site Selection and Test Plan* and Design activities. Detailed plans regarding the location of the test equipment at each of the locations planned (RP-1) and the City of Riverside Treatment Plant continued to be analyzed and subcontracts were developed that reflected the *Site Selection and Test Plan*, the *MOU*, and the objectives of the PIER Program and Commonwealth Business Plan. This information was used in the design activities under Task 2.2.3.b.
- The *Site Selection and Test Plan Report*, which was reviewed by Commission Staff and TAC members in April, was used as one of the primary inputs in planning the Critical Project Review meeting scheduled for early May. The process flow and general location information outlines the projects and was used in the CPR meeting materials that were initiated in April. These materials were very useful in describing the information on the planned task included within the *Site Selection and Test Plan* describing the proposed testing plan (3 month baseline, six-month testing phase, and 3 month post testing evaluation phase was also useful in preparing for the CPR meeting.

Task 2.2.3.a. Design Gas Cleaning System:

- Design data and other information on site conditions were collected for the initiation of the design efforts on the gas-cleaning task. Preliminary conceptual drawings, showing the layout of the various gas cleaning elements (gas drying, H₂S removal and siloxane removal) and design concepts were discussed with the host (IEUA) staff in order to ensure that future details later in the design would be consistent with IEUA's plans and activities. Preliminary data related to sizing of the piping, electrical, instrumentation/control and other project elements was developed.

Task 2.2.3b Design Ultrasound System:

- Design activities were undertaken in close coordination with the City of Riverside in relation to integrating the two ultrasound test units into the plant's existing facilities. The City of Riverside staff worked closely with CE Team to ensure that piping, electrical, instrumentation/control and other design activities were initiated in a coordinated manner so that the ultrasound test units would be properly sized and function effectively. A preliminary set of 16 drawings was prepared. This information was to be used in the bi-weekly calls with the City of Riverside to ensure that the proposed design was compatible with existing operations. Also as a part of these calls a number of design related issues were discussed. Summaries

of these calls are prepared to document topics covered and to make sure follow up items are clearly defined for all participants.

How we are doing compared to our plan:

As reported previously, the redirection of our approach (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 require additional consultation and planning with the technology vendors. This modified 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 gas 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 will allow future efforts to focus on project implementation, rather than further 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 it is anticipated that the testing program can be initiated and implemented by the end of 2004. As reported earlier, the *Site Selection and Test Plan* was completed in March, and sent to the Technical Advisory Committee (TAC) for review and comment. Additional information will be presented to the TAC at the Critical Project Review meeting, anticipated to be held in early May.

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 budget.

What we expect to accomplish during the next period:

During May it is anticipated that a major focus of activity will be preparing for and participating in the Critical Project Review meeting for Project 2.2. This will involve coordinating with members of the Technical Advisory Committee (TAC), Energy Commission staff and representatives of the project host (City of Riverside and IEUA). Also in preparation for the meeting, presentation materials will be prepared and sent to meeting participants. Participation in the meeting will involve several staff members, in person in Sacramento, and by phone. Also in May, extensive work is anticipated on the design efforts for both the ultrasound and gas cleaning projects. The initial design package for the ultrasound project will be prepared for internal review with submittal to the Energy

Commission expected in June. Work on the gas cleaning design work should also continue with emphasis on coordination with IEUA to ensure that all design activities are conducted in a manner consistent with ongoing operations at the plant. Ultrasound vendor activity will be heavy as fabrication of the equipment and detailed planning and coordination activities related to the installation process proceeds. Another important coordination activity that is expected to continue in May and subsequent months are the bi-weekly calls involving CE Team staff and the City of Riverside. These call are important in ensuring that information flows smoothly on this project, particularly as the project moves to the field.

Status of Milestones and Deliverables:

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

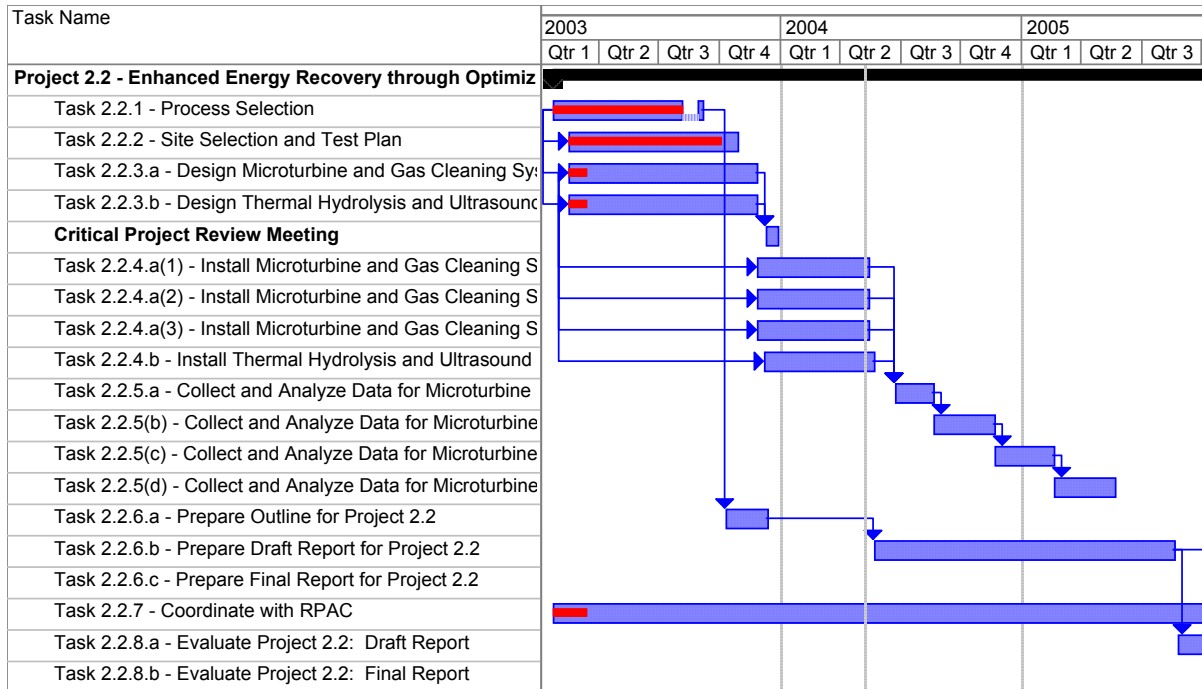
Table 1: Summary of Project Status and Deliverables – Project 2.2

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	95%
2.2.3.a	Design Gas Cleaning System	02/15/02		11/24/03		20%
2.2.3.b	Design Ultrasound Systems	02/15/02		11/24/03		40%
2.2.7	Coordinate with RPAC	01/24/02		01/16/06		

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 both 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 design processes by conducting more detailed coordination with the vendors on their technologies. This approach will shorten the time needed to secure the long lead-time equipment items. It will also improve the likelihood that demonstration pilot programs can be implemented most efficiently, but will delay the completion of the site selection and design tasks.

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	\$0	OT
2.2.3.a	\$242,995	\$0	OT
2.2.3.b	\$215,842	\$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.