

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

PROJECT 3.1 – DAIRY WASTE TO ENERGY PROJECT

REPORT PREPARED BY: COMMONWEALTH ENERGY TEAM

December 2003

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|------------------------------|------------------------------|
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What we planned to accomplish this period:

The CE Team planned to continue to focus on responding to comments made at the Program CPR and project follow-up meetings. The primary activity in December was expected to include the response to feedback on the Project 3.1 Implementation Plan, prepared in response to guidance received at the Program CPR and related meetings. Other activities on this project were to be limited until the Plan was reviewed with Commission staff. Additionally, the CE Team planned to focus on finalizing previously submitted work including the *Test Plan and Protocols Report* and would continue to work with Commonwealth to link these projects into its business plan under the PIER program.

What we actually accomplished this period:

Task 3.1.1: Assess, Evaluate and Select Animal Waste to Energy Technology

- Efforts on this task were limited and focused primarily on developing the revised Implementation Plan for Project 3.1. A draft of this plan was prepared and submitted in late November. The CE Team will continue to assemble findings in order to apply them to future centralized projects in the Chino Basin and elsewhere in California. Consideration was also given to how these potential projects related to the plans of Commonwealth Energy to expand its business activity in California. A preliminary review of how such projects would enhance Commonwealth's community aggregation and related activity was considered.

Task 3.1.3: Develop Bench Scale and Other Test Plans and Protocols

- CH₂ continued to integrate revisions to the prioritization list developed under Task 1.1.10 in response to a redirection of focus for locations other than the existing RP-5 plug flow facility. In December, work on the *Test Plans and Protocol*

Report was limited to incorporating the Commission's comments on proposed projects in relation to Commonwealth's Business Plan and the Project 3.1 Implementation Plan. Additional modifications to the draft test plans submitted previously will be undertaken to ensure that it will be consistent with the Commission's Test Plan guidelines. Finalization of this report is anticipated upon receipt of feedback on the Commonwealth Business Plan and the revised Project 3.1 Implementation Plan.

Task 3.1.6: Conduct Economic and Environmental Assessment

- Upon receiving approval from the Commission to initiate work on (the accelerated) Task 3.1.6, a site visit of a number of dairies was completed within the Chino Basin. This visit was part of the effort to establish baseline conditions and begin refinement of the Monitoring, Reporting and Verification Protocol for quantifying the environmental benefits of the centralized digestion projects. This information will be presented in subsequent phases of this project.
- Also in December, work was initiated on the Environmental Benefits Peer Review Team list. This list consists of over fifty individuals with a recognized interest in identifying and quantifying environmental benefits of dairy waste anaerobic digestion projects. This peer review group will be involved in reviewing findings of later phases of this project.
- Preliminary planning was implemented on a workshop planned for early February, which will outline the initial work completed on this task. It was determined that a workshop would be held in Sacramento and that members of the Peer Review Group would be invited to participate either by phone or in person. More detailed planning for the workshop will be completed in early January.

How we are doing compared to our plan:

As indicated previously, the CE Team is awaiting Commission comments on the Project 3.1 Implementation Plan.

Significant problems or changes:

It continues to be clear that a key element on the project is the definition and quantification of the environmental and economic benefits of the dairy waste to energy project. This is particularly true for centralized dairy projects, which may offer the best potential for achieving environmental benefits for a range of dairy digestion projects. The CE Team continued to work with IEUA and is seeking cost information for centralized dairy waste to energy projects in a form that can be appropriately used to present the relative benefits of on-farm and centralized facilities in Europe and North America. CH₂ also continues to identify an approach to quantify the environmental benefits to help the overall economic performance of the project. Related to this, the CE Team submitted a proposal to accelerate work on Task 3.1.6 quantifying some of the environmental benefits of centralized anaerobic digesters. As

reported earlier, this task acceleration was approved by the Commission and will be an important component of the overall program, as efforts are needed to ensure that future centralized systems are optimized in order to see that economic and environmental benefits are maximized.

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 time under a revised schedule and within budget based upon the near-term acceptance of the revised project plan.

What we expect to accomplish during the next period:

Activities in January will include continuing to respond to comments made at the CPR and follow-up meetings as they relate to the relationship of proposed projects to the Commonwealth Business Plan. In particular, efforts to reach a consensus on the project elements and then re-evaluate the project in light of Commonwealth's Business Plan will be a primary focus for the CE Team. This will include looking at how these projects can help Commonwealth work with communities within the Chino Basin and elsewhere; to not only make renewable energy more affordable, but also to advance Commonwealth's business objectives related to community aggregation. Other activities on will focus on finalizing previously submitted work including the *Test Plans and Protocols* and *Digester Comparison Reports* and on working with Commonwealth to link these projects into its business plan under the PIER program. This will be accomplished as Commission feedback becomes available on the Commonwealth Business Plan.

Other important activities to be conducted in January relate to Task 3.1.6. Efforts will continue on finalizing the task peer review group. Additionally, work will move forward on the baseline and the scheduling of the peer workshop in February. In preparation of this meeting, an expanded Monitoring, Reporting and Verification annotated outline will be developed and forwarded to the peer review team for discussion at the workshop.

Status of Milestones and Deliverables:

Table 1 on the following page summarizes the status of Project 3.1 task deliverables as of the end of the current reporting period.

Table 1: Summary of Project Status and Deliverables – Project 3.1

| Task No. | Description | Start Date | | Due Date | | Status (%) |
|------------|---|------------|----------|----------|----------|------------|
| | | Planned | Actual | Planned | Actual | |
| 3.1.1a(1) | Technical Memorandum Comparing Plug Flow and Complete-Mix Digestion Performance & Economics | 01/24/02 | 04/04/03 | 06/27/03 | 06/27/03 | 95% |
| 3.1.1a (2) | Preliminary Draft Process Recommendation Report | 01/24/02 | 04/04/03 | 10/25/03 | | 20% |
| 3.1.1a (3) | Draft Processes Recommendations Report | 01/24/02 | | 11/18/03 | | |
| 3.1.1.b | Assess Evaluate, and Select Animal Waste to Energy Technology | 01/24/02 | | 01/17/04 | | 35% |
| 3.1.2 | Site Selection | 01/24/02 | | 12/20/03 | | |
| 3.1.3a | Test Plan and Protocols | 03/25/02 | 04/04/03 | 09/10/03 | | 90% |
| 3.1.6a | Conduct Economic and Environmental Assessment | 07/12/05 | 12/04 | 12/13/05 | | 10% |
| 3.1.8 | Coordinate with RPAC | 01/24/02 | | 05/12/06 | | |

Explanation of any Difference(s) in Schedule

The following listing provides the explanation for the reported changes in the schedule at the project task/deliverable level.

Task 3.1.3.a – Test Plan and Protocols – The initial Test Plan and Protocols Report was originally based on plans to conduct tests at RP-5. Due to comments received from the Commission, no PIER projects are planned at RP-5. The Test Plan and Protocol Report has been revised to reflect that situation. In addition, the report will be revised to be consistent with the Commission Test Plan guidelines and the revised Implementation Plan for Project 3.1 that has been prepared as a follow up to discussions held in conjunction with the Program CPR meeting.

Once the Commission has accepted the plan for Project 3.1, the remaining tasks on Project 3.1 can be completed. The plan, which identifies a number of tasks that are to be implemented, will provide a sound platform for future centralized dairy projects. The overall schedule for Project 3.1 will be revised once the plan is approved.

Overall Schedule for Project 3.1:

| Task Name | Duration | Start Date | End Date | 2003 | | | | 2004 | | | | 2005 | | | |
|---|-------------------|--------------------|--------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| | | | | Qtr 1 | Qtr 2 | Qtr 3 | Qtr 4 | Qtr 1 | Qtr 2 | Qtr 3 | Qtr 4 | Qtr 1 | Qtr 2 | Qtr 3 | Qtr 4 |
| Project 3.1 - Dairy Waste to Energy | 1040 days? | Wed 2/5/03 | Tue 1/30/07 | | | | | | | | | | | | |
| Task 3.1.1 - Assess, Evaluate, and Select Animal Waste to Energy | 45 days | Mon 3/17/03 | Fri 5/16/03 | | | | | | | | | | | | |
| Task 3.1.1a(1) - Technical Memorandum Comparing Plug Flow and | 75 days? | Mon 3/17/03 | Fri 6/27/03 | | | | | | | | | | | | |
| Task 3.1.1a(2) - Preliminary Draft Process Recommendation Repo | 188 days? | Wed 2/5/03 | Fri 10/24/03 | | | | | | | | | | | | |
| Task 3.1.1a(3) - Assess, Evaluate, and Select Animal Waste to En | 205 days? | Wed 2/5/03 | Tue 11/18/03 | | | | | | | | | | | | |
| Task 3.1.1.b - Assess, Evaluate, and Select Animal Waste to Ener | 248 days | Wed 2/5/03 | Fri 1/16/04 | | | | | | | | | | | | |
| Task 3.1.2 - Site Selection | 228 days | Wed 2/5/03 | Fri 12/19/03 | | | | | | | | | | | | |
| Task 3.1.3 - Prepare Pilot Plant Final Design & Dairy Waste to I | 190 days? | Mon 3/17/03 | Fri 12/5/03 | | | | | | | | | | | | |
| Task 3.1.3a - Prepare Test Plan and Protocols | 128 days? | Mon 3/17/03 | Wed 9/10/03 | | | | | | | | | | | | |
| Task 3.1.3b - Conduct Bench Scall and Other Testing Activitie | 105 days? | Mon 7/14/03 | Fri 12/5/03 | | | | | | | | | | | | |
| Critical Project Review Meeting (Optional) | 29 days | Tue 12/30/03 | Fri 2/6/04 | | | | | | | | | | | | |
| Task 3.1.4(a)1 - Construct Pilot Plant(s) | 131 days | Thu 5/13/04 | Thu 11/11/04 | | | | | | | | | | | | |
| Task 3.1.4(a)2 - Construct Pilot Plant(s) | 174 days | Thu 5/13/04 | Tue 1/11/05 | | | | | | | | | | | | |
| Task 3.1.4(a)3 - Construct Pilot Plant(s) | 174 days | Wed 8/11/04 | Mon 4/11/05 | | | | | | | | | | | | |
| Task 3.1.4(b) - Construct Pilot Plant(s) | 130 days | Mon 2/28/05 | Fri 8/26/05 | | | | | | | | | | | | |
| Task 3.1.4(c) - Construct Pilot Plant(s) | 66 days | Mon 2/28/05 | Mon 5/30/05 | | | | | | | | | | | | |
| Task 3.1.5 - Operate and Test Pilot Plant(s) | 306 days | Mon 7/12/04 | Mon 9/12/05 | | | | | | | | | | | | |
| Task 3.1.6.a - Conduct Economic and Environmental Assessment | 251 days | Mon 12/1/03 | Thu 11/30/06 | | | | | | | | | | | | |
| Task 3.1.6.b - Conduct Economic and Environmental Assessment | 22 days | Fri 12/1/06 | Mon 1/1/07 | | | | | | | | | | | | |
| Task 3.1.7.a - Prepare Final Report Outline for Project 3.1 | 17 days | Fri 11/28/03 | Mon 12/22/03 | | | | | | | | | | | | |
| Task 3.1.7.b - Prepare Draft Report for Project 3.1 | 47 days | Wed 11/9/05 | Thu 1/12/06 | | | | | | | | | | | | |
| Task 3.1.7.c - Prepare Final Report for Project 3.1 | 21 days | Tue 1/2/07 | Tue 1/30/07 | | | | | | | | | | | | |
| Task 3.1.8 - Coordinate with RPAC | 853 days | Wed 2/5/03 | Fri 5/12/06 | | | | | | | | | | | | |
| Task 3.1.9.a - Evaluate Project 3.1: Draft Evaluation Report | 96 days | Fri 10/14/05 | Fri 2/24/06 | | | | | | | | | | | | |
| Task 3.1.9.b - Evaluate Project 3.1: Final Evaluation Report | 22 days | Tue 3/28/06 | Wed 4/26/06 | | | | | | | | | | | | |

Overview of Fiscal Status:

Table 2 below summarizes the fiscal status of Project 3.1 by task as of the end of the current reporting period.

Table 2: Fiscal Status by Task – Project 3.1

| Task Number | Budget | Invoiced To-Date | Fiscal Status * |
|-------------|-----------|------------------|-----------------|
| 3.1.1 a (1) | \$48,000 | \$0 | OT |
| 3.1.1 a (2) | \$72,000 | \$0 | OT |
| 3.1.1 a (3) | \$120,706 | \$0 | OT |
| 3.1.1.b | \$240,706 | \$0 | OT |
| 3.1.2 | \$171,240 | \$0 | OT |
| 3.1.3 | \$301,177 | \$0 | OT |
| 3.1.6a | \$320,754 | \$0 | OT |
| 3.1.8 | \$33,919 | \$0 | OT |

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