

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

PROJECT 3.1 – DAIRY WASTE TO ENERGY PROJECT

REPORT PREPARED BY: COMMONWEALTH ENERGY TEAM

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What we planned to accomplish this period:

Activities planned for May were to focus on completing the technology review under Project 3.1. It was anticipated that a draft of the *Interim Report* would be completed and circulated internally to team members. It was also anticipated that a draft technology review on co-digestion would be completed as well. This review was anticipated to be important in several respects. First it was to provide a basis for detailed planning and design of co-digestion projects to be implemented, and second, it was to serve as a building block in working with the project host and in developing the final plans for Project 3.1. Third, it was to be a key element of the Task 3.1.1 draft report, supplementing information presented in the *Interim Report*. Another activity planned was the identification of potential co-digestion feedstock providers. This was to enable the testing of various feedstocks on digestion performance and increased gas production. Initial efforts to re-evaluate the project in light of Commonwealth's Business Plan initiated earlier this year, were to be finalized. Further, with finalization of the Task 1.1.10 *Prioritization Report* under Project 1.1 it was anticipated that detailed work on the co-digestion project could proceed.

For gas cleaning projects, it was anticipated that vendors would have been contacted to determine their interest in participating in gas cleaning tasks. As noted in previous reports, gas cleaning was identified as a Tier 2 project and was to be conducted if it did not divert focus from co-digestion efforts and is otherwise consistent with the prioritization activity under Task 1.1.10. The focus of Project 2.2 on gas cleaning facilitates further activity on gas cleaning in an efficient manner consistent with linkages that are desirable given the overall project and Commonwealth business plan objectives.

Activities were also planned to continue to move forward on Task 3.1.6. Discussions were anticipated with representatives of South Coast Air Quality Management District (SCAQMD) about their proposed rules and their impact on dairy operations.

What we actually accomplished this period:

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

- Efforts on this task were focused in two primary areas. First, on providing input to the prioritization process under Task 1.1.10 and second on completing the assessment, evaluation and selection of technologies in light of the Project's previous work and the project's focus on co-digestion and gas cleaning. Input for Task 1.1.10 included evaluation of co-digestion technologies in light of their ability to increase gas and electricity production and also their ability to be applied elsewhere in California. As anticipated, efforts continued on evaluating technologies that would be most relevant for meeting the objectives of the Commonwealth Business Plan and the overall objectives of the Commonwealth PIER program. The findings in this area were used to shape the future direction of Project 3.1, in light of the comments received from the Commission. Specific technologies evaluated under this task previously, were analyzed in the context of the objectives of the Commonwealth Business Plan. Findings of the prioritization effort suggested that activity should focus on co-digestion and gas cleaning. Efforts restarted on the interim Task 3.1.1 report late in April and continued in May. The Task 3.1 Report will summarize technologies considered and identify the rationale for focusing on the selected technologies. This *Interim Report* will also provide the basis for defining future co-digestion projects. Once the prioritization effort is finalized this report will be completed and detailed test plans and designs for the planned co-digestion projects will be finalized.
- As reported in the previous monthly reports, as a result of discussions with Commission staff in March, it was determined that CE Team efforts should focus on a limited number of technologies and projects in order to concentrate on those projects and technologies most aligned with Commonwealth's objectives and, which would be most beneficial elsewhere in California. These included (one) Tier 1 Project on Co-digestion, and (one) Tier 2 Project, on gas cleaning. Emphasis was placed on the Tier 1 co-digestion technologies project, with secondary emphasis placed on the Tier 2 gas cleaning project. As part of the focus on co-digestion, a technical review of co-digestion was initiated in April and continued in May. This review is to summarize technical issues associated with co-digestion and the relative merit of different feedstocks in terms of which offer the most benefit for increased gas production and overall economic performance of the digester.
- Efforts also were initiated in two key areas. First, available co-digestion suppliers were identified and a preliminary assessment of the key parameters for these supplies was developed. This was needed so that initial consultation with

suppliers could be planned. Second, an evaluation of the host (RP-1) facility's ability to handle the increased gas production was initiated. With the direction of the program changing from the initial plan of "construct a new digester" to a new focus on "co-digestion and gas cleaning to improve the performance of anaerobic digestion projects", it became necessary to determine what steps would be needed to modify the existing infrastructure at RP-1 to handle the increase in gas production as a result of co-digestion. This analysis was initiated and the host, IEUA, has been actively involved in evaluating how the increased gas production can be accommodated most effectively within the plant's gas collection and distribution infrastructure.

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

- Efforts on this task were limited as the plans related to bench scale testing were dependent on the results of the prioritization effort on Task 1.1.10. Further, the technology review of co-digestion technologies discussed above will help guide future efforts on this task. The results of this task were being used in the overall technology assessment of dairy waste to energy projects and will be incorporated into the interim Task 3.1.1 report. Finalization of the bench scale test plan is anticipated upon completion of the interim Task 3.1.1 report. The revised *Test Plans and Protocols Report* will focus on co-digestion and gas cleaning and will be consistent with feedback from the Commission on the Commonwealth Business Plan, prioritization report and the revised Project 3.1 *Implementation Plan*.

Task 3.1.6: Conduct Economic and Environmental Assessment

- Work continued on Task 3.1.6. Additional activities were required as preliminary review of the baseline analysis determined that it would be necessary to use actual emissions information from the existing operations instead of general emission rate data that was not specific to the projects being evaluated. Additional work on this task included further analysis and revision of the *Monitoring, Reporting and Verification* protocol for quantifying the environmental benefits of the centralized digestion projects, which was distributed earlier.
- The preliminary draft report of the *Monitoring, Reporting and Verification* (MRV) protocol was circulated within the team for review. This *MRV* addressed conditions with and without the dairy waste projects, and once finalized will be useful in achieving and documenting emission reductions. This document, when finalized, will not only define the environmental benefits in accordance with the scope of this project, but will also enable those changes to be documented so that others interested in credits associated with these benefits have information that defines them. Air emissions estimates being developed under this task are being considered in light of ongoing regulatory activity of the South Coast Air Quality Management District (SCAQMD). Extensive coordination with the SCAQMD was initiated in order to ensure that the findings of this task would be consistent with the District's pending rules related to emissions from dairy operations.

How we are doing compared to our plan:

As indicated in previous reports, the overall efforts on Project 3.1 were delayed pending incorporation of the results of the Commonwealth Business Plan and subsequent guidance from Commission staff. The meeting held with the Commission in March enabled development of a revised schedule and also permitted CE Team members to focus their efforts on developing a co-digestion and gas cleaning program that meets the Commonwealth Business Plan and overall PIER program objectives.

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 continues 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. This topic is being addressed under Task 3.1.6 and is being addressed earlier in the program than originally envisioned. Similarly the program's focus has redirected to co-digestion and gas cleaning. These areas offer considerable potential to make renewable energy more affordable and also align well with Commonwealth's Business objectives and the overall priorities of the Program as reflected in the prioritization report being developed in Project 1.1, Task 1.1.10.

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 planned for June include completion of the Task 3.1 *Interim Report* for internal review. This is to include the initial assessment and evaluation of the technologies relevant to dairy waste to energy. In parallel, it is anticipated that a technical review of co-digestion will be undertaken and circulated within the team for review. After review comments are received and the Prioritization Report under Project 1.1, Task 1.1.10 is completed, these findings will be incorporated into the Draft 3.1 Report. Also in June, plans will be developed regarding how to consider available co-digestion sources for this project. CE Team members will work with IEUA staff to develop an approach for determining, which co-digestion feedstock sources are most suited for work on this program. It is anticipated that work on the environmental benefits of digestion projects will continue as well. The initial draft of the

sections of this report, except for the air quality section, are anticipated to be completed in June. The air quality section is lagging the other sections due to the ongoing regulatory activity in this area by the South Coast Air Quality Management District. Two rules have been proposed with expected adoption later this summer. The effect of these rules will be considered in the evaluation of environmental benefits and in identifying steps that can be taken to increase the likelihood that economic benefits could be realized for air quality benefits as related to criteria pollutants.

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		60%
3.1.1a (3)	Draft Processes Recommendations Report	01/24/02		11/18/03		40%
3.1.1.b	Assess Evaluate, and Select Animal Waste to Energy Technology	01/24/02		01/17/04		50%
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 – Environmental Benefits Task	07/12/05	12/04	12/13/05		70%
3.1.8	Coordinate with RPAC	01/24/02		05/12/06		

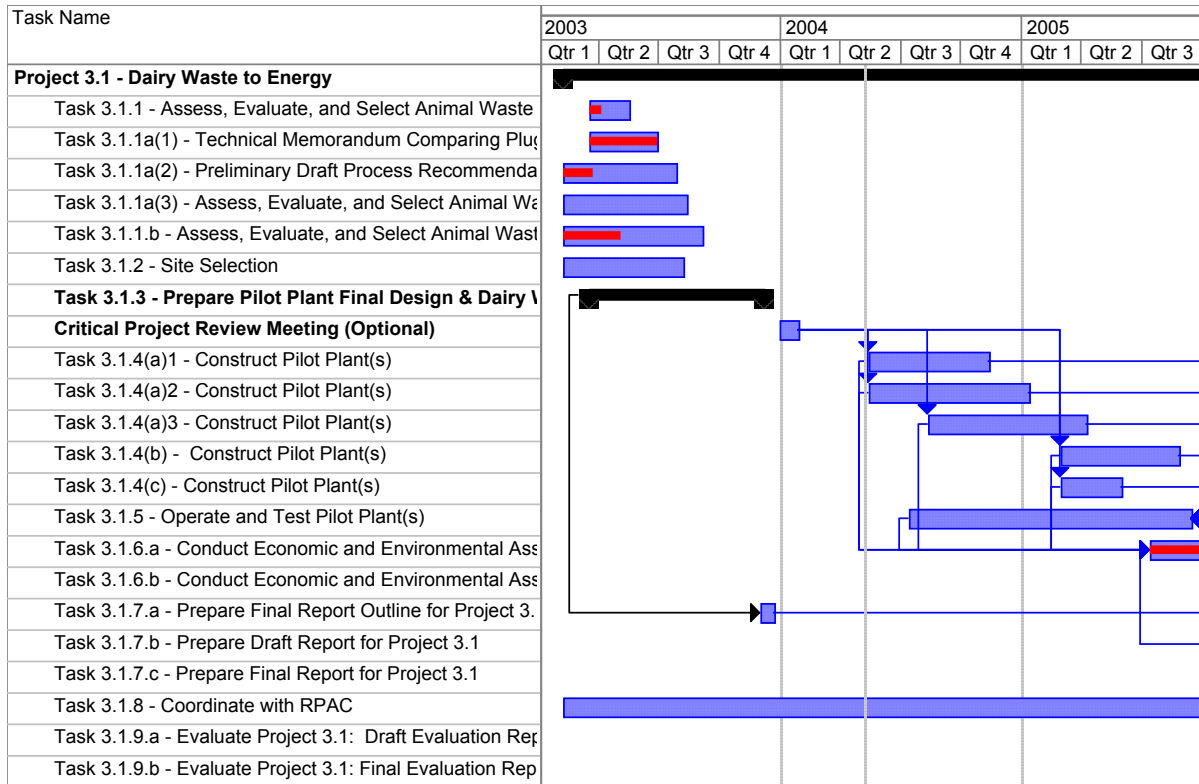
Explanation of any Difference(s) in Schedule

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 to reflect the results of the discussions held with Commission staff in March and the prioritization effort, which identified co-digestion and gas cleaning as the primary focus of Project 3.1. The revised protocols are complete and the plan for the redirection of Project 3.1 is finalized. The plan for Project 3.1 when implemented is an emphasis on co-digestion and gas cleaning, which will provide a sound platform for

future centralized dairy projects. The overall schedule for Project 3.1 will be revised once the revised *Prioritization Report* is approved.

Overall Schedule for Project 3.1:



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

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