

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 September included incorporation of comments received on the Task 3.1.1 *Interim Report* submitted in August. In addition, comments received during the internal review of the Task 3.1.1 draft report were to be incorporated into the report so that it could be submitted to the Commission. Efforts were planned to continue with IEUA staff in working with potential suppliers of feed stocks for co-digestion projects and in formulating co-digestion mixtures and digestion options. The European experience in this area was to be considered drawing on NIRAS' expertise. NIRAS also planned to support efforts in gas cleaning as European experience in this areas exceeds that in the US. Efforts were also to continue in identifying infrastructure improvements needed at RP-1 to accommodate the additional gas produced through this program.

On Task 3.1.6 additional input was to be obtained from the South Coast AQMD to make sure the environmental benefits work reflected the new rules the District is implementing. In addition, comments were anticipated on the report and they were to be incorporated into the deliverable so that it would be ready to submit to the Commission.

What we actually accomplished this period:

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

- Efforts on this task focused on finalizing the *Draft Process Recommendation Report*, Task 3.1.1a (3), which expanded on the *Interim Report*, Task 3.1.1a(2) submitted in August. The internal draft of this report was completed in September, and was sent out for internal CE Team review prior to submission to the Commission. Additional project activity was undertaken related to the *Final Process Recommendation Report*, Task 3.1.1.b. This work is focusing on activities related to the Project's primary focus, co-digestion and gas cleaning, as

identified through the prioritization activity under Task 1.1.10 and in accordance with the work completed under this Project. Once the Task 3.1.1.b report is submitted, expected in December 2004 or January 2005, all work on Project 3.1., Task 3.1.1 will be completed. This will include the *Digester Comparison Report*, Task 3.1.1a (2) submitted last year and finalized earlier this year as well as the other Project 3.1.1 reports described above.

Task 3.1.2: Site Selection

- Efforts on this task continued, focusing on selecting the optimal sites for the various components of the co-digestion system anticipated to be installed at RP-1. This included, preliminary locations for materials handling systems, improvements to the gas distribution system to handle the additional gas produced as well as the associated infrastructure and related equipment. In general, information gathered under previous tasks confirmed that co-digestion of manure and food waste offers the most potential to make these dairy waste-to-energy projects economical. This task focused on siting considerations related to such equipment.

Task 3.1.3: Develop Bench Scale and Other Test Plans and Protocols and Prepare Final Design and Test Plan

- Efforts on this task in September included work on three activities; Expanding the *Bench Scale and Other Test Plans and Protocols*, Task 3.1.3.a, *Implementing the Bench Scale and other tests*, Task 3.1.3.b) and the *Final Design and Test Plan*, Task 3.1.3.c . The initial draft of the *Test Plan and Protocols* prepared last year was revised so that it focused on co-digestion. A testing sequence was developed that laid out a strategy where the test bench scale test results would be undertaken in a stepwise manner so that the full scale testing of co-digestion would be optimized. A preliminary draft of this *Test Plan and Protocol* was prepared and reviewed in September and distributed to project team members. In addition, as a part of the planning of the bench scale testing, preliminary consultations were held with various laboratories about the use of their facilities for co-digestion tests involving a range of food waste feedstocks. Other planning for the bench scale testing was undertaken including working with food waste providers to provide the various wastes to be tested. Work on the *Final Design and Test Plan* included efforts to integrate the bench scale testing with the Final Design. The iterative Test Plan proposed will enable the bench scale testing to be used to refine and update the full scale testing plan. This will enable optimization of the design as well as refining the full scale testing approach to reflect the ongoing bench scale work that is completed.

Task 3.1.6: Conduct Economic and Environmental Assessment

- Work continued on Task 3.1.6 in September. Minor updates of the *Monitoring, Reporting and Verification* protocol for quantifying the environmental benefits of the centralized digestion projects, were made using input received during the digester summit held at IEUA's headquarters. The Task 3.1.6 report 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. Particularly relevant are findings related to the new South Coast Air Quality Management District (SCQAM) rules that will affect dairy operations. Air emissions estimates being developed under this task are being considered in light of the ongoing regulatory activity of the SCAQMD. Extensive coordination with the SCAQMD was undertaken 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.

- The findings of this environmental benefit work Tasks 3.1.6(0) through Task 3.1.6(6) were assembled into a summary report, which was reviewed by the Project team. Once it is finalized and approved for release, by the Commission, it will be made available to the Peer groups involved in the project.

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. The overall direction for this project will be further refined and enhanced based on input from the advisory committee and Commission staff.

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 developed in 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 October include completion of the Task 3.1.1a (3) *Draft Process Recommendation Report Assessing, Evaluating and Selecting Dairy Waste to Energy Technologies*. This is planned to be followed by the completion of the *Draft Final Process Recommendation Report* for internal CE Team Review. It is also planned to include technical review of co-digestion technologies practices and experience both in the US and in Europe. The Final Process Recommendation Report, Task 3.1.1 (b) is to include the incorporation of comments on the Draft Process Recommendation Report as well as the detailed system design, energy and material balances for the identified processes. Also in October bench scale testing is to begin and related design and Test Plan activities (Task 3.1.3) to continue. Another area of activity planned in October is the completion of the draft reports describing environmental benefits of manure digester projects as a part of Project 3.1.6. These are to be prepared and reviewed internally so they can be submitted to peer review group set up under this task. The final major activity planned for October is a meeting on Project 3.1 involving Commonwealth Team members, representatives of the host site – IEUA, and Commission staff.

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	100%
3.1.1a (2)	Preliminary Draft Process Recommendation Report	01/24/02	04/04/03	10/25/03	8/6/04	100%
3.1.1a (3)	Draft Processes Recommendations Report	01/24/02		11/18/03		90%
3.1.1.b	Assess Evaluate, and Select Animal Waste to Energy Technology	01/24/02		01/17/04		80%
3.1.2	Site Selection	01/24/02		12/20/03		50%
3.1.3a	Bench Scale and Other Test Plan and Protocols	03/25/02	04/04/03	09/10/03		95%
3.1.3b	Conduct Bench Tests	7/14/03	10/18/04	12/5/03		5%
3.1.3c	Design Memorandum and Draft and Final Test Plans	11/20/03	9/16/04	4/8/2004		5%
3.1.6.0 through 3.1.6.6	Conduct Economic and Environmental Assessment – Environmental Benefits Task	07/12/05	12/15/04	12/13/05		95%

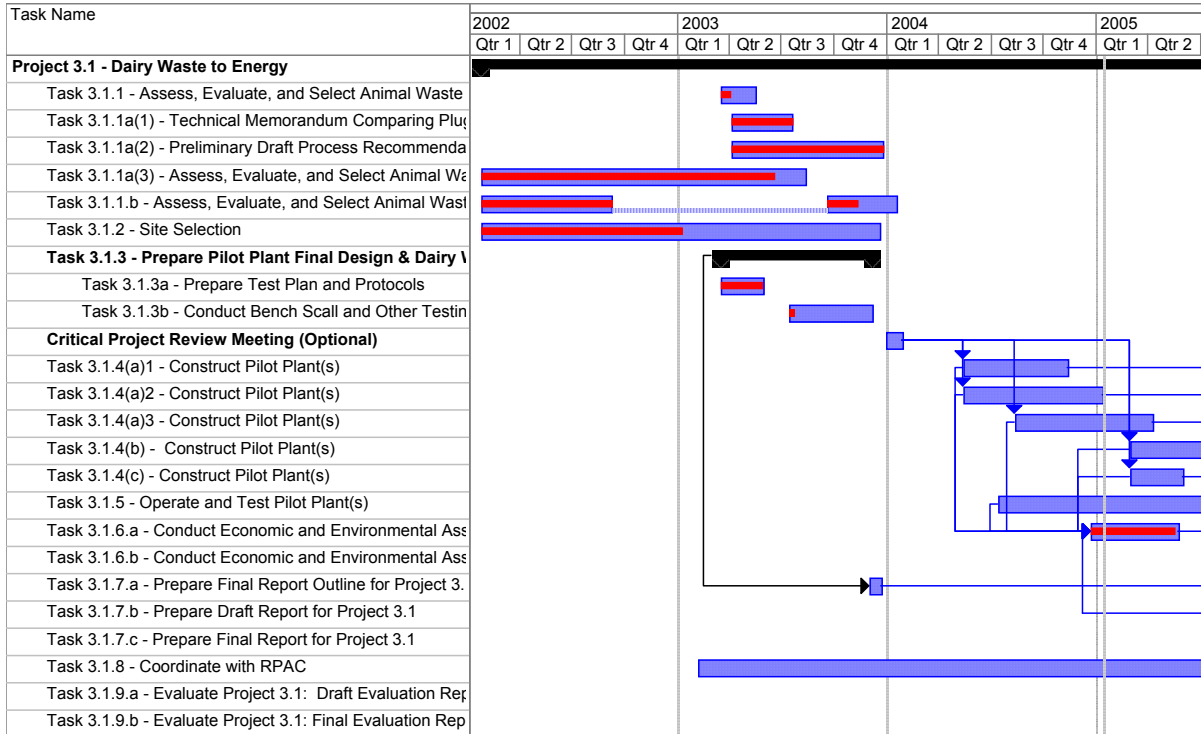
Explanation of any Difference(s) in Schedule

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

Task 3.1.1.(a) 3 and 3.1.1.b Draft and Final Process Recommendation Report – The Draft process recommendation report will be finalized once comments are received on the interim and draft reports. When completed, it will provide a technical supporting information for making biogas energy projects more affordable using co-digestion. This is expected in early 2006.

Task 3.1.3.a – Test Plan and Protocols – The initial Test Plan and Protocols Report was 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 Test Plan has been revised to be consistent with the Commission Test Plan guidelines and to reflect the results of the discussions held with Commission staff in March and the prioritization effort which identified co-digestion as the primary focus of Project 3.1.

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	\$48,000	OT
3.1.1 a (2)	\$72,000	\$72,000	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
3.1.6.0 through 3.1.6.6	\$103,910	\$0	OT

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