

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

Activities planned for August included submission of the Task 3.1.1 *Interim Report* and completion of the Task 3.1.1 Draft report for internal review. In addition, efforts were planned to continue with IEUA staff in working with potential suppliers of feedstocks 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 was also to support efforts in gas cleaning as European experience in this area exceeds that in the US. Efforts were 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 gathered from the South Coast AQMD to make sure the environmental benefits work reflects the new rules the District is implementing. In addition, the final report for this task was to be circulated within the team for review so that it could be submitted to the Commission in September.

**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 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. In addition a revised Project 3.1 Implementation Plan submitted to the Commission previously was considered in the completion of this task. This plan reflected the results of the March 9<sup>th</sup> meeting with Commission staff and subsequent Project 1.1 analysis where it was recognized that efforts on this project would focus on co-digestion and gas cleaning. The plan also reflected subsequent evaluations conducted since the meeting where co-digestion feedstocks and strategies were identified and evaluated. Also as a part of this task,

input for the Task 1.1.10 report was also provided. This 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. 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. 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 efforts should focus on co-digestion and gas cleaning. Efforts continued on the Interim Task 3.1.1 report which was finalized and submitted to the Commission in August. Effort also continued on the Task 3.1.1 Draft Report. This report summarizes technologies considered and identifies the rationale for focusing on the selected technologies. The interim report provides the basis for defining future co-digestion projects while the draft report presents additional information on the technologies considered and co-digestion and gas cleaning. 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.

Task 3.1.2. Site Selection

- Efforts on this task focused on selecting the optimal location for the various co-digestion and gas cleaning work to be undertaken. Input was received from NIRAS on considerations that effect the siting of such equipment in Europe. Basic design and operating requirements of the systems to be installed were assembled and considered in the siting process. Alternative sites were evaluated at a conceptual level to determine which would be the most economic and otherwise be the most optimal location for such facilities.

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

- Efforts on this task in August focused on considering the information assembled in Task 3.1.1 in formulating bench scale testing involving co-digestion. Preliminary plans for bench scale testing continued and these plans involved tests using several mixtures of feedstocks and wastes to be tested at the bench scale. Bench scale testing will be undertaken so that the full scale testing can be undertaken most effectively. For example, waste from cheese making operations in the region was identified as an important source and it is available in large quantities. It digests moderately easily and would increase gas generation. Waste oils from salad dressing production operations were also identified, but in smaller quantities. Such oils digest easily and would greatly increase biogas production. Information collected to date suggest that it would be most logical to develop a blend of cheese and salad dressing production wastes that could be used with manure as part of co-digestion project. Bench scale tests are being planned to test such mixtures. Further, the details of these and other tests will be finalized after the Task 3.1.1 efforts are completed and relevant feedback is considered. 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. Minor updating of the baseline analysis was completed as it was determined previously 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 minor revision of the *Monitoring, Reporting and Verification* protocol for quantifying the environmental benefits of the centralized digestion projects, which was distributed earlier.
- Comments received from the review of the preliminary draft of the *Monitoring, Reporting and Verification* protocol were collected and considered by the team as part of the review. The comments that were collected and the information generated as a part of this evaluation were assembled and used along with input obtained at the digester summit at IEUA's headquarters in Chino California. This included information on environmental emissions both before and after a digester project. The 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 these benefits. Particularly relevant are findings related to the new 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 South Coast Air Quality Management District (SCAQMD). Extensive coordination with the SCAQMD was undertaken in order to insure 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. The plan was updated to reflect the results of the co-digestion analysis and the review of potential suppliers. It also incorporates input of the host facility including plans for work in fiscal year 2005. The revised plan being developed will allow for implementation of the codigestion projects involving three test conditions. This is to be accomplished within the same time period as shown in the existing Exhibit B.

**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 also being addressed earlier in the program than originally envisioned. Similarly the program's focus has been redirected to co-digestion and gas cleaning. These areas offer considerable potential to make renewable energy more affordable and also aligns well with Commonwealth's Business objectives and the overall priorities of the Program as reflected in the prioritization report being developed in Task 3.1. These topics were also an important part of the focus of activities in the Digester Summit held at IEUA's Headquarters in late June.

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 September include 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 will be incorporated into the report so that it can be submitted to the Commission. Efforts will 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 will be considered drawing on NIRAS' expertise. NIRAS will also support efforts in gas cleaning as European experience in this area exceeds that in the US. Efforts will also 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 obtained from the South Coast AQMD to make sure the environmental benefits work reflects the new rules the District is implementing. In addition, comments received on the report for this task will be incorporated so that it will be ready to submit to the Commission in September.

**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 |          | 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 |          | 65%        |
| 3.1.2      | Site Selection  | 01/24/02   |          | 12/20/03 |          | 10%        |
| 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 |          | 95%        |
| 3.1.8      | Coordinate with RPAC  | 01/24/02   |          | 05/12/06 |          |            |

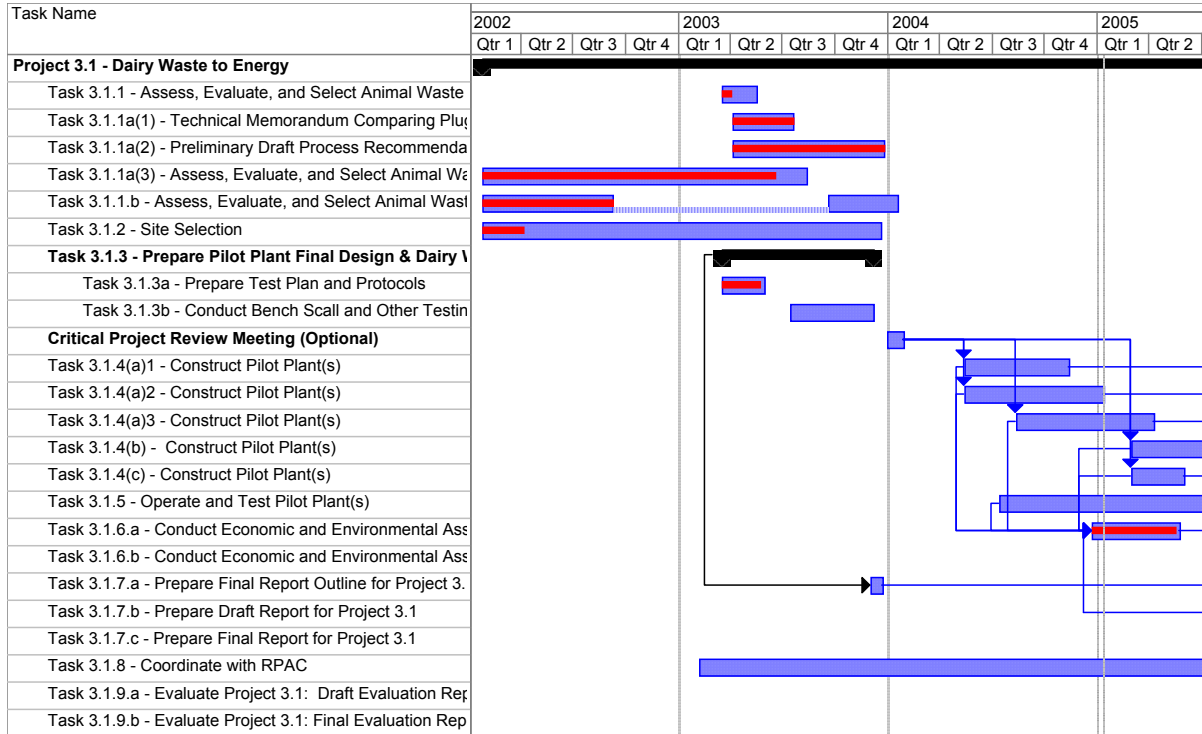
*Explanation of any Difference(s) in Schedule*

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 plan for Project 3.1 will be finalized once the prioritization effort is complete and when implemented, 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)