

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

PROJECT 3.1 – DAIRY WASTE TO ENERGY PROJECT

REPORT PREPARED BY: COMMONWEALTH ENERGY TEAM

August 2003

Contractor Project Director:	Patrick Lilly (360) 906-0616
Contractor Project Manager:	Bill Kitto (503) 235-5022
Commission Project Manager:	Zhiqin Zhang (916) 654-4063

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

Activities planned for August were to focus on incorporating comments received from the Commission and Kurt Roos on the Digester Comparison Report. This report, which compares the existing digesters at RP-1 and RP-5 to other plug flow and complete mix digestion projects, was submitted previously to the Commission. In addition, it was anticipated that the draft Test Plans and Protocols Report would have been completed and made ready for review. All of this information was to be made available for use in completing the Prioritization Report and other reports for Project 1.1. Emphasis was to be placed on co-digestion, improved pretreatment and several other projects well suited to centralized dairy waste to energy projects in the Chino Basin and elsewhere in California.

Overall, efforts were to continue in defining an approach, which facilitates incorporation of the results of the comparative analysis of technologies (i.e., plug flow v. complete mix systems) and the Mini-Grid analysis into the process selection activities. We planned to continue to conduct such activities as preliminary information became available, however the early Project 3.1 tasks cannot be fully completed until the results from the Project 1.1 prioritization process are finalized.

**What we actually accomplished this period:**

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

- Efforts on this task continued in August with the primary focus being on responding to comments on the draft Digester Comparison Report. Responses and changes to the report were prepared in response to Energy Commission comments.
- Efforts were also initiated on responding to comments received from Kurt Roos on the Digester Comparison Report. A teleconference was held where Mr. Roos'

comments were discussed. One key point in his comments was that he felt it was important that digesters had 6 months to a year of good operating data before they were considered to be of “fully operational” status. Therefore, we re-contacted a number of projects cited in the report to obtain more complete data including the length of facility operation. We also sought to obtain new data from those projects recommended by Kurt Roos.

- Additional technology reviews continued using information provided by Niras and various vendors involved in manure digestion. These efforts focused on assessing different technologies that are applicable to dairy cluster projects with the intent of identifying those that could be evaluated at projects in the Chino Basin

#### Task 3.1.3. Develop Bench Scale and Other Test Plans and Protocols

- Efforts continued in August on the protocols for testing different processes for optimizing biogas performances at existing dairy cluster projects at RP-1 and RP-5. These protocols will enable bench and pilot scale tests to occur during design activities which will help ensure focused and successful projects. These test plans were compiled into a draft report; thereby enabling reviewers to assess the technologies and their potential benefits to the centralized dairy facilities in the Chino Basin and elsewhere in California. This draft report was completed and circulated within the Commonwealth Team for review and comment.

#### **How we are doing compared to our plan:**

As indicated above, delays in the completion and submittal of biogas and T&D impacts related reports in Project 1.1 have impacted the Project 3.1 schedule. Work on the project continues, and the CE team does not anticipate that the delays will adversely affect the revised schedule or project budget.

#### **Significant problems or changes:**

On Project 3.1, Dairy Waste to Energy, it is clear that a key element on the project is to define and quantify 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 Commonwealth Team is working with IEUA and is seeking to present cost information for the dairy waste to energy project at RP-5 in a form that can be appropriately used to present the relative benefits of on-farm and centralized facilities in Europe and North America. They are also seeking to identify an approach to monetize the environmental benefits to help the overall economic performance of the project. Related to this, the Chino Basin is very well suited for centralized dairy digestion projects. Efforts are needed, however, to see that such systems are optimized, as such systems will face increasing economic and environmental pressures as they are developed or expanded.

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 and within budget.

**What we expect to accomplish during the next period:**

September activities will focus on incorporating comments received from the Commission and Kurt Roos on the Digester Comparison Report. Information requests made in August from other project developers are anticipated to be received in September. The team also anticipates that the Test Plans and Protocols Report will be completed and provided to the Commission. It is the Commonwealth Team's intent that this information will be available for use in completing the Prioritization Report and other biogas-related reports for Project 1.1. Emphasis in Project 3.1 will be placed on co-digestion, improved pretreatment and several other projects, well suited to centralized dairy projects in the Chino Basin and elsewhere in California.

Overall, efforts will continue in defining an approach, which facilitates incorporation of the results of the comparative analysis of technologies (plug flow v. complete mix) and the Mini-Grid T&D impacts analysis into the process selection activities. We will continue to conduct such activities as preliminary information becomes available, but the tasks in Project 3.1 cannot be fully completed until the results from the biogas prioritization elements of Project 1.1 are finalized by the CE Team and the Commission.

**Status of Milestones and Deliverables:**

Table 1 below 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	03/17/03	04/04/03	06/27/03	06/27/03	90%
3.1.1a (2)	Preliminary Draft Process Recommendation Report	02/05/03	04/04/03	10/25/03		15%
3.1.1a (3)	Draft Processes Recommendations Report	02/05/03		11/18/03		
3.1.1.b	Assess Evaluate, and Select Animal Waste to Energy Technology	02/05/03		01/17/04		35%
3.1.2	Site Selection	02/05/03		12/20/03		
3.1.3a	Test Plan and Protocols	03/17/03	04/04/03	09/10/03		85%
3.1.8	Coordinate with Renewables Project Advisory Committee	2/05/03		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 3.1.1.(a).1 – Technical Memorandum Comparing Plug Flow and Complete Mix Digestion and Economics* – This report, initially planned to be submitted in mid-May was delayed. The primary cause of the delay was the length of time required to assemble the cost information for the RP-5 project so that it is in a form that it can be readily compared to the other digester projects. Comments received from the Commonwealth Team have been responded to and are ready for submission to the Commission. Comments received from Kurt Roos required contacting a number of developers and requesting additional information. It is not clear when the additional information requested in August will be received by the CE Team. Once this information is received, it will be incorporated into the final Technical Memorandum report.

Task 3.1.3.a – Test Plan and Protocols – This report builds on the finding of the digester comparison report submitted as a part of Task 3.1.1(a).1 described above. Thus, the initial submittal on this report was made without the benefit of a fully complete digester comparison report. The Test Plan and Protocols report has been submitted and completion of the final report will await completion of the digester comparison report and the receipt of comments from the draft Test Plan and Protocols report. Since the Test Plan and Protocols report is the initial part of the design task, with more detailed design activities to be completed in the second half of the year, the delay in the submittal of this document should not affect the overall task or project schedule.

**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
<b>Project 3.1 - Dairy Waste to Energy</b>	<b>765 days?</b>	<b>Mon 2/3/03</b>	<b>Fri 1/16/06</b>												
Task 3.1.1 - Assess, Evaluate, and Select Animal Waste to E	45 days	Mon 3/17/03	Fri 5/16/03												
Task 3.1.1a(1) - Technical Memorandum Comparing Plug Fi	75 days?	Mon 3/17/03	Fri 6/27/03												
Task 3.1.1a(2) - Preliminary Draft Process Recommendation	123 days?	Wed 2/5/03	Fri 7/25/03												
Task 3.1.1a(3) - Assess, Evaluate, and Select Animal Waste	134 days?	Wed 2/5/03	Mon 8/11/03												
Task 3.1.1.b - Assess, Evaluate, and Select Animal Waste to	151 days	Mon 2/3/03	Mon 9/1/03												
Task 3.1.2 - Site Selection	131 days	Wed 2/5/03	Wed 8/6/03												
<b>Task 3.1.3 - Prepare Pilot Plant Final Design &amp; Dairy Was</b>	<b>176 days?</b>	<b>Fri 4/4/03</b>	<b>Fri 12/5/03</b>												
Task 3.1.3a - Prepare Test Plan and Protocols	54 days?	Fri 4/4/03	Wed 6/18/03												
Task 3.1.3b - Conduct Bench Scall and Other Testing A	143 days?	Wed 5/21/03	Fri 12/5/03												
<b>Critical Project Review Meeting (Optional)</b>	<b>22 days</b>	<b>Thu 9/11/03</b>	<b>Fri 10/10/03</b>												
Task 3.1.4(a)1 - Construct Pilot Plant(s)	130 days	Mon 10/20/03	Fri 4/16/04												
Task 3.1.4(a)2 - Construct Pilot Plant(s)	174 days	Mon 10/20/03	Fri 6/18/04												
Task 3.1.4(a)3 - Construct Pilot Plant(s)	173 days	Mon 1/19/04	Thu 9/16/04												
Task 3.1.4(b) - Construct Pilot Plant(s)	130 days	Tue 8/3/04	Mon 1/31/05												
Task 3.1.4(c) - Construct Pilot Plant(s)	66 days	Tue 8/3/04	Tue 11/2/04												
Task 3.1.5 - Operate and Test Pilot Plant(s)	306 days	Thu 12/18/03	Thu 2/17/05												
Task 3.1.6.a - Conduct Economic and Environmental Assess	111 days	Fri 12/17/04	Fri 5/20/05												
Task 3.1.6.b - Conduct Economic and Environmental Assess	21 days	Mon 6/20/05	Tue 7/19/05												
Task 3.1.7.a - Prepare Final Report Outline for Project 3.1	16 days	Tue 8/12/03	Tue 9/2/03												
Task 3.1.7.b - Prepare Draft Report for Project 3.1	156 days	Fri 4/15/05	Fri 11/18/05												
Task 3.1.7.c - Prepare Final Report for Project 3.1	22 days	Mon 11/21/05	Tue 12/20/05												
Task 3.1.8 - Coordinate with RPAC	763 days	Wed 2/5/03	Fri 1/6/06												
Task 3.1.9.a - Evaluate Project 3.1: Draft Evaluation Report	96 days	Mon 8/23/04	Mon 1/3/05												
Task 3.1.9.b - Evaluate Project 3.1: Final Evaluation Report	22 days	Thu 2/3/05	Fri 3/4/05												

**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**

<b>Task Number</b>	<b>Budget</b>	<b>Invoiced To-Date</b>	<b>Fiscal Status *</b>
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
3.1.8	\$0	\$0	OT

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