

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 June were to focus on finalizing the draft technical memorandum comparing the existing digesters at RP-1 and RP-5 to other plug flow and complete mix digestion projects. Additionally, digestion projects on farm and for centralized dairy clusters in Europe and North America were to have been presented. The primary remaining activity for this task was to assemble the cost information for the RP-5 project so that it could be readily compared to other projects

Other activities focused on were the further development of the testing protocols that will implement some of the suggested projects identified in Project 1.1. This will include co-digestion, improved pretreatment and several other type projects. It should be noted, that the findings related to which projects should be recommended in the prioritization and Project 1.1 final reports will influence how work on this project proceeds. Therefore, 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 analysis into the process and site selection activities. It was anticipated that the preliminary findings for Project 1.1 were to have be available in June so that activities could have continued for Project 3.1 according to the current schedule. It was planned that if such results of the expanded power flow study were not available as planned, the schedule for completing Project 3.1 would need to be adjusted.

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 June. These efforts focused on assessing different technologies to capture the energy value of the manure and most effectively

- convert it to energy. Information on European technologies and practices was provided by NIRAS from Denmark.
- Efforts continued in June 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.
 - As a result of discussions held during the kickoff meeting, a comparative evaluation of plug flow and complete mix digestion systems was initiated earlier. This work continued in June. The results of the analysis which is evaluated “on farm” and “centralized dairy” projects in European and North American was completed. CH2M HILL worked with IEUA to assemble cost information for the project at RP-5 and present it in a way that will enable an “apples to apples” comparison.

How we are doing compared to our plan:

Work is proceeding as anticipated on this project.

Significant problems or changes:

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.

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:

Activities will focus on finalizing the draft report comparing the existing digesters at RP-1 and RP-5 to other plug flow and complete mix digestion projects. Comments received from the Energy Commission will be responded to. The primary remaining activity for this task is to assemble all the comments and incorporate the changes into the report

Additionally, further development and finalization of the testing protocols that will implement some of the suggested projects identified in Project 1.1 will continue. This will include co-digestion, improved pretreatment and several other type projects. It should be noted, that the findings related to which projects should be recommended in prioritization and Project 1.1 final reports will influence how work on this project proceeds. . It was anticipated that the preliminary findings for Project 1.1 were to have been available in June. Because that information was not available by the end of June, additional effort on Project 3.1 scheduled for June and July will be conducted in July and August.. 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 analysis into the process and site selection activities. We will continue to conduct such activities as preliminary information becomes available, but the tasks in 3.1 cannot be fully completed until the results from Project 1.1 are finalized.

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)	Assess, Evaluate, and Select Animal Waste to Energy Technology	02/05/03		11/18/03		
3.1.1.b	Assess Evaluate, and Select Animal Waste to Energy Technology	02/05/03		1/17/04		
3.1.2	Site Selection	02/05/03		12/20/03		
3.1.3a	Test Plan and Protocols	03/17/03	04/04/03	05/29/03		60%
3.1.3b	Conduct Bench Scale and Other Testing Activities	07/14/03	12/05/03			

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 May 16 has been delayed by approximately a month. The primary cause of the delay has been 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. The balance of the report is virtually complete so once the cost information is assembled the report can be finalized in approximately a week. It is anticipated that this report will be completed in the second half of June.

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. There is a lag time between delivery of the digester comparison report and the delivery of this report. Due to the delay of the digester comparison report, this task has been similarly delayed. Once the deliverable for Task 3.1.1.(a).1 is completed, this task’s deliverable should be submitted approximately two weeks later. Thus, it is now expected that the Test Plan and Protocols report will be submitted in July or August.. Since this test plan and protocol 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				
Project 2.2 - Enhanced Energy Recovery through Op	716 day:	Tue 1/21/03	Tue 10/18/05	[Gantt bar spanning from Q1 2003 to Q4 2005]															
Task 2.2.1 - Process Selection	128 day	Fri 1/24/03	Sat 7/26/03	[Gantt bar from Q1 2003 to Q2 2003]															
Task 2.2.2 - Site Selection and Test Plan	119 day	Wed 2/12/03	Mon 7/28/03	[Gantt bar from Q1 2003 to Q2 2003]															
Task 2.2.3.a - Design Microturbine and Gas Cleaning	162 day	Wed 2/12/03	Thu 9/25/03	[Gantt bar from Q1 2003 to Q3 2003]															
Task 2.2.3.b - Design Thermal Hydrolysis and Ultras	162 day	Wed 2/12/03	Thu 9/25/03	[Gantt bar from Q1 2003 to Q3 2003]															
Critical Project Review Meeting	14 day:	Fri 9/26/03	Wed 10/15/03	[Gantt bar from Q3 2003 to Q4 2003]															
Task 2.2.4.a(1) - Install Microturbine and Gas Cleani	121 day	Wed 2/12/03	Wed 7/30/03	[Gantt bar from Q1 2003 to Q2 2003]															
Task 2.2.4.a(2) - Install Microturbine and Gas Cleani	121 day	Wed 2/12/03	Wed 7/30/03	[Gantt bar from Q1 2003 to Q2 2003]															
Task 2.2.4.a(3) - Install Microturbine and Gas Cleani	121 day	Wed 2/12/03	Wed 7/30/03	[Gantt bar from Q1 2003 to Q2 2003]															
Task 2.2.4.b - Install Thermal Hydrolysis and Ultraso	120 day	Wed 2/12/03	Tue 7/29/03	[Gantt bar from Q1 2003 to Q2 2003]															
Task 2.2.5.a - Collect and Analyze Data for Microturt	44 day:	Tue 8/19/03	Fri 10/17/03	[Gantt bar from Q3 2003 to Q4 2003]															
Task 2.2.5(b) - Collect and Analyze Data for Microtur	65 day:	Mon 10/20/03	Fri 1/16/04	[Gantt bar from Q4 2003 to Q1 2004]															
Task 2.2.5(c) - Collect and Analyze Data for Microtur	65 day:	Mon 1/19/04	Mon 4/19/04	[Gantt bar from Q1 2004 to Q2 2004]															
Task 2.2.5(d) - Collect and Analyze Data for Microtur	66 day:	Mon 4/19/04	Mon 7/19/04	[Gantt bar from Q2 2004 to Q3 2004]															
Task 2.2.6.a - Prepare Outline for Project 2.2	44 day:	Mon 7/28/03	Thu 9/25/03	[Gantt bar from Q3 2003 to Q4 2003]															
Task 2.2.6.b - Prepare Draft Report for Project 2.2	325 day	Fri 9/26/03	Thu 12/23/04	[Gantt bar from Q3 2003 to Q4 2004]															
Task 2.2.6.c - Prepare Final Report for Project 2.2	42 day:	Fri 12/24/04	Mon 2/21/05	[Gantt bar from Q4 2004 to Q1 2005]															
Task 2.2.7 - Coordinate with RPAC	716 day	Tue 1/21/03	Tue 10/18/05	[Gantt bar from Q1 2003 to Q4 2005]															
Task 2.2.8.a - Evaluate Project 2.2: Draft Report	64 day:	Fri 12/24/04	Wed 3/23/05	[Gantt bar from Q4 2004 to Q1 2005]															
Task 2.2.8.b - Evaluate Project 2.2: Final Report	14 day:	Thu 3/24/05	Tue 4/12/05	[Gantt bar from Q1 2005 to Q2 2005]															

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 *
3.1.1a (1)	\$48,000	\$0	OT
3.1.1a (2)	\$72,000	\$0	OT
3.1.1a (3)	\$120,706	\$0	OT
3.1.1.b	\$240,706	\$0	OT
3.1.2	\$171,240	\$0	OT
3.1.3a	\$61,000	\$0	OT
3.1.3b	\$40,000	\$0	OT
3.1.3c	\$200,177	\$0	OT

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