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 in April were to have focused on preparing the technical memorandum comparing the existing digesters at RP-1 and RP-5 to other plug flow and complete-mix digestion projects. Digestion projects related to on-farm and dairy clusters in Europe and North America were to be considered in this analysis.

Other planned activities included further development of the testing protocols that will implement some of the suggested projects identified in Project 1.1. This was to include co-digestion, improved pre-treatment and several other types of projects. It should be noted, that the findings related to which projects should be recommended in the Task 1.1.10 prioritization and Project 1.1 Final Reports will influence how work on this project proceeds. Therefore, it was planned that in April, efforts would be undertaken to define an approach which facilitated incorporation of the results of the comparative analysis of technologies (i.e., plug flow v. complete-mix) and the Mini-Grid Power Flow analysis into the process and site selection activities.

What we actually accomplished this period:

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

- Efforts on this task continued and focused on assessing the different technologies to capture the energy value of the manure and how to most effectively convert it to useful energy. These alternatives include both European and North American technologies. It also involves using information collected during preparation of the Project 1.1 inventory reports, as well as information from various vendors and other organizations involved in the animal waste generation projects.

- Work with NIRAS, a Danish firm with expertise in biogas energy, continued in April. Clarification on information on their presentations was received, as was feedback on the potential dairy waste to energy projects to be identified within Project 1.1. As noted in last month's progress report, NIRAS findings related to co-digestion; the comparative benefits of complete mix as opposed to plug flow, digesters for regional plants; and biological treatment systems' applicability for gas and water systems were considered further in April.
- Efforts continued in April on the protocols for testing different processes for optimizing biogas performance at existing dairy cluster projects at IEUA plants RP-1 and RP-5. These protocols will enable bench and pilot scale tests to occur during design activities and will help ensure focused and successful projects.
- Also as a result of discussions held during the Project kickoff meeting, a comparative evaluation of plug flow and complete-mix digestion systems was initiated previously. This work continued in April. The analysis is focusing on on-farm and dairy cluster projects, and European and North American technologies are both being considered. Particular emphasis in this analysis is being placed on the economic and environmental analysis of these systems with the intent of helping to guide the Commonwealth Program towards pilot projects that will be most advantageous from a technical, economic and environmental viewpoint. This effort is scheduled to result in a technical memorandum to be finalized in May and presented to the Commission in late May.

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 portray the environmental and economic benefits of the dairy waste to energy projects. This is particularly true for diary cluster projects, which may offer the best potential for achieving environmental benefits for a range of dairy digestion projects. The technical memorandum being prepared to compare complete-mix and plug flow projects will be important in addressing these considerations. The Commonwealth Team plans to consult with US EPA and a number of State agencies to address this issue. The initial findings of this work will be presented to the Commission and their feedback will help set the objectives for the entire program.

There are no significant fiscal problems to report on 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 in May will 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. Analysis of digestion projects on-farm and for dairy clusters in Europe and North America will be undertaken by the Team.

Two important meetings have also been scheduled for April 30th and May 1st. On April 30th a meeting will be held in San Francisco involving Federal, State and local officials to review environmental considerations related to digestion projects. This forum will provide valuable insight into environmental considerations related to digestion projects. This meeting will provide valuable insights into the identification and evaluation of these factors which can drive such projects. The second meeting is a planned site visit to the Langerwerf Dairy in Durham, California. This facility, which has been successfully operating for over 20 years will provide a valuable reference point for on-farm projects for future analysis under this task.

Other activities in Project 3.1 will include 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 prioritization and in Project 1.1 final reports will influence how work on this project proceeds. Therefore in May, efforts will continue in defining an approach, which facilitates incorporation of the results of the comparative analysis of technologies (e.g., plug flow v. complete-mix) and the Mini-Grid Power Flow Analysis into the process and site selection activities. It is anticipated that the preliminary findings from Project 1.1 will be available in late May so that activities can continue for Project 3.1 according to the current schedule. If the results of the expanded power flow study are not available until later, the schedule for completing Project 3.1 will need to be adjusted.

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

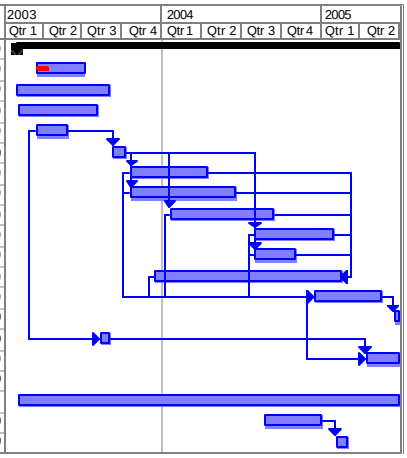
Task No.	Description	Start Date		Due Date		Status (%)
		Planned	Actual	Planned	Actual	
3.1.1a (1)	Assess, Evaluate, and Select Animal Waste to Energy Technology	03/17/03	01/24/03	05/16/03		25%
3.1.1a (2)	Assess, Evaluate, and Select Animal Waste to Energy Technology	02/05/03		07/25/03		
3.1.1a (3)	Assess, Evaluate, and Select Animal Waste to Energy Technology	02/05/03		08/11/03		
3.1.1.b	Assess Evaluate, and Select Animal Waste to Energy Technology	02/05/03		09/01/03		
3.1.2	Site Selection	02/05/03		09/01/03		
	Critical Project Review Meeting	09/11/03		10/11/03		
3.1.3a	Prepare Pilot Plant Final Design & Dairy Waste to Energy Project Test Plan	03/17/03		05/29/03		
3.1.7.a	Prepare Final Report Outline for Project 3.1	08/12/03		09/02/03		
3.1.8	Coordinate with Renewables Project Advisory Committee	02/05/03		01/07/06		

Explanation of any Difference(s) in Schedule

Work in proceeding as anticipated; however, it is possible that Task 3.1.1's deliverable date may be revised.

Overall Schedule for Project 3.1:

Task Name	Duration	Start Date	End Date	Cost
Project 3.1 - Dairy Waste to Energy	**765 days**	**Mon 2/3/03**	**Fri 1/6/06**	**$0.00**
Task 3.1.1.a - Assess, Evaluate, and Select Animal Waste to	81 days	Mon 3/17/03	Mon 7/7/03	$240,705.50
Task 3.1.1.b - Assess, Evaluate, and Select Animal Waste to	151 days	Mon 2/3/03	Mon 9/1/03	$240,705.50
Task 3.1.2 - Site Selection	131 days	Wed 2/5/03	Wed 8/6/03	$171,240.00
Task 3.1.3 - Prepare Pilot Plant Final Design & Dairy Waste I	54 days	Mon 3/17/03	Thu 5/29/03	$301,177.00
Critical Project Review Meeting (Optional)	22 days	Thu 9/11/03	Fri 10/10/03	$16,960.00
Task 3.1.4(a)1 - Construct Pilot Plant(s)	130 days	Mon 10/20/03	Fri 4/16/04	$200,000.00
Task 3.1.4(a)2 - Construct Pilot Plant(s)	174 days	Mon 10/20/03	Fri 6/18/04	$200,000.00
Task 3.1.4(a)3 - Construct Pilot Plant(s)	173 days	Mon 1/19/04	Thu 9/16/04	$198,466.00
Task 3.1.4(b) - Construct Pilot Plant(s)	130 days	Tue 8/3/04	Mon 1/31/05	$300,000.00
Task 3.1.4(c) - Construct Pilot Plant(s)	66 days	Tue 8/3/04	Tue 11/2/04	$100,000.00
Task 3.1.5 - Operate and Test Pilot Plant(s)	306 days	Thu 12/18/03	Thu 2/17/05	$587,358.00
Task 3.1.6.a - Conduct Economic and Environmental Assessi	111 days	Fri 12/17/04	Fri 5/20/05	$320,754.00
Task 3.1.6.b - Conduct Economic and Environmental Assessi	21 days	Mon 6/20/05	Tue 7/19/05	$80,189.00
Task 3.1.7.a - Prepare Final Report Outline for Project 3.1	16 days	Tue 8/12/03	Tue 9/2/03	$20,007.00
Task 3.1.7.b - Prepare Draft Report for Project 3.1	156 days	Fri 4/15/05	Fri 11/18/05	$150,052.00
Task 3.1.7.c - Prepare Final Report for Project 3.1	22 days	Mon 11/21/05	Tue 12/20/05	$30,010.00
Task 3.1.8 - Coordinate with RPAC	763 days	Wed 2/5/03	Fri 1/6/06	$0.00
Task 3.1.9.a - Evaluate Project 3.1: Draft Evaluation Report	96 days	Mon 8/23/04	Mon 1/3/05	$80,065.00
Task 3.1.9.b - Evaluate Project 3.1: Final Evaluation Report	22 days	Thu 2/3/05	Fri 3/4/05	$20,016.00



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	$240,706	$0	OT
3.1.1.b	$240,706	$0	OT
3.1.2	$171,240	$0	OT
3.1.3	$301,177	$0	OT
3.1.7.a	$20,007	$0	OT
3.1.8	$0	$0	OT

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