

# MONTHLY PROGRAM REPORT

DECEMBER 2003

COMMONWEALTH BIOGAS/PV MINI-GRID RENEWABLE RESOURCES  
RD & D PROGRAM

*Making Renewables Part of an Affordable and Diverse  
Electric System in California*

CONTRACT NO. 500-00-036

REPORT PREPARED BY: COMMONWEALTH ENERGY TEAM

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## PLANNED ACCOMPLISHMENTS FOR THIS PERIOD:

### Project 0: Program Administration

The Commonwealth Program Director will continue to provide on-going support to the CE Team and Commission staff, as potential project or task-level redirection/revisions continue under Projects/task 1.1(Task 1.1.10), 2.1 and 3.1 that may impact project schedules and/or budgets. Additionally, the Commonwealth Program Administration Team anticipated providing support in preparation of the monthly project and program status reports and in preparing Contract Invoice # 7.

### Project 1.1: Program Planning and Analysis

Activity in December was to focus on the completion of the remaining open tasks within Project 1.1. Specifically, Task 1.1.7, Task 1.1.8, and Task 1.1.10, in order to update and finalize the draft Task 1.1.10 report. The CE Team anticipated that the prioritization work under Task 1.1.10 would be ready for internal review. It was anticipated that the Task 1.1.11b deliverable would largely be completed, and would continue to be updated with key results from each of the aforementioned tasks, as each task's final reports are submitted and

approved by the Commission. The CE Team anticipated that the Draft Final Project 1.1 Report will be ready for internal review in January prior to submittal to the Commission.

**Project 2.1: Enhanced Landfill Gas Production**

The planned focus for December was expected to include the continued coordination with the San Bernardino County engineer on conceptual design for the Mid-Valley bioreactor project. CH<sub>2</sub> planned to develop a schedule and budget for the development of the commercial scale project. Additionally, the CE Team planned to review the draft *Memorandum of Understanding*, which outlined the goals of the project, as well as the roles and responsibilities of both County and the CE Team staff. Additionally, it was anticipated that the *Waste Characterization Report* would be completed, reviewed and prepared for submittal to the Commission.

**Project 2.2: Enhanced Energy Recovery through Optimization of Anaerobic Digestion and Microturbines**

CH<sub>2</sub> planned to continue data collection and analysis in relation to the process selection task. The CE Team planned to continue its coordination efforts with the project host at IEUA and Riverside County. Additionally, coordination with the technology vendors was expected to continue as the CE Team moves forward on an efficiently implemented design and construction phase. Efforts on the *Site Selection and Test Plan* were also expected to continue, as the redefined approach was to be integrated into the existing plan.

**Project 3.1: Dairy Waste to Energy**

In December, the CE Team planned to continue its response to RPAC and Commission staff comments following the September 24, 2003 Critical Program Review (CPR) meeting and follow-up meetings. Primary activity will continue to focus on integrating comments received at these meetings into the Project 3.1 Implementation Plan.

Additionally, the CE Team anticipated revising the *Test Plans and Protocols Report* to focus on locations other than IEUA's RP-5 plug flow digester facility, and would continue to work with Commonwealth, linking these projects with Commonwealth's Business Plan.

**Project 3.2: Building-Integrated PV (BI-PV) Testing and Evaluation Project**

Endecon's primary focus in December was expected to include resolving the PowerLight Array issue within the Large Systems element of the project. Additionally, Endecon planned on receiving the SGIP incentives reservation request clearance/approval in order to pursue an interconnection agreement with SCE for the entire Large System.

**Project 3.3: Building-Integrated PV (BI-PV) on Public Facilities**

REDI anticipated completing revisions to the Task 3.3.2 draft *Evaluation Tools Package*, including independent peer review guidance. Upon submittal, REDI anticipated receiving approval from the Commission on the revised Evaluation Tools Package. Given Commission approval of the tools package, REDI planned to review the Public Sector BI-PV demonstration sites and utilizing the *Evaluation Tools Package*, generate a report. Additionally, REDI expected to continue to work with Commonwealth Energy and other ESP third party financing representatives in order to develop matching funds for these public sector BI-PV projects.

**WHAT WAS ACCOMPLISHED THIS PERIOD:**

**Project 0: Program Administration**

As anticipated, the Commonwealth Program Director continued to hold numerous teleconference meetings and met with Commission staff and CE Team members, to review and discuss potential redirection/revisions to Project work plans/scope/focus for Project 2.1, 2.2 and 3.1. A conference call was held on December 9 to address open issues related to the Dairy Waste project goals and opportunities and the inclusion of the Commonwealth Business Plan within the PIER Program. The Commonwealth Contract Administrator coordinated with CE Team members in order to prepare Contract Invoice # 7 for submittal.

**Project 1.1: Program Planning and Analysis**

The CE Team substantially completed revisions to the Task 1.1.7, Task 1.1.8, and Task 1.1.10 reports based upon previous comments received. The CE Team is currently incorporating the Commonwealth Business Plan goals and objectives within the project prioritization activities under Task 1.1.10, and is adding generation profile information over time developed under Task 1.1.7 to the Task 1.1.8 report. The CE Team continued to integrate the approved Task 1.1.2 and Task 1.1.9b key results into the draft Project 1.1 Final Report, under Task 1.1.11b. This deliverable awaits the completion of the revised project prioritization effort under Task 1.1.10 and a revised Project 3.1 implementation plan, prior to being finalized for submission.

**Project 2.1: Enhanced Landfill Gas Production Using Bioreactors**

Activities continued on Task 2.1.3, the *Conceptual Design for the First Bioreactor*. Consultations between BAS and the CE Team are ongoing as the CE Team continues to draft detailed plans for developing the bioreactor at Mid-Valley. Due to the requirements for public bidding on this project, as well as the pending expansion of Unit 3 later this summer, the CE Team is working diligently to prepare an expedited conceptual design. The Team is

preparing a plan, which will jointly implement the bioreactor project with the proposed expansion of Unit 3.

**Project 2.2: Enhanced Energy Recovery through Optimization of Anaerobic Digestion and Microturbines**

CH<sub>2</sub> continued to focus on the Draft *Process Selection Report* submitted previously, with emphasis placed on the review and analysis of the presented technologies. The CE Team also continued its coordination with the technology vendors in order to establish appropriate and efficient plans and fabrication of the technologies planned at Riverside County. These detailed discussions will continue with the technology vendors and County staff to assure that the transition from process selection through installation goes smoothly and on schedule. Further coordination between Riverside County and the CE Team was undertaken regarding the *Memorandum of Understanding (MOU)*, as it relates to the implementation at their facility.

The CE Team, along with the technology vendors, continued to apply information from the *Process Selection* phase, into the *Site Selection and Test Plan* development activities. Plans were analyzed regarding siting preferences at both RP-1 and the City of Riverside Treatment Plant. The Project Team continues to work to ensure that the processes deployed are compatible with existing systems, while also ensuring that the overall project goal of increasing production while maintaining or improving treatment processes are adhered to in the approach and design efforts.

**Project 3.1: Dairy Waste to Energy**

The CE Team continued to work on the Project 3.1 Implementation Plan. Efforts were focused on revisions to be integrated into the plan, and the CE Team continues to assemble compiled results, which could be applied to future centralized projects. Additionally, work continues toward the integration of these potential projects into Commonwealth's Business Plan. Specifically, how these projects might enhance community aggregation along with expanded business activity within the State of California.

Final revisions continue to be incorporated into the *Test Plans and Protocols Report*, with modifications being made to ensure that the draft test plans are consistent with the Commission's Test Plan guidelines. Finalization of this report is expected upon receipt of comments, and finalization and approval of the Project 3.1 Implementation Plan.

In December, CH<sub>2</sub> received approval from the Commission to initiate work on Task 3.1.6, *Conduct Economic and Environmental Assessment*. Site visits were held at various dairies within the Chino Basin, in order to establish a baseline condition and start the process of preparing a *Monitoring, Reporting and Verification Protocol* in order to quantify environmental benefits associated with centralized digestion projects.

The CE Team also has compiled a Peer Review Team (PRT) list, consisting of approximately 50 individuals who have indicated interest in quantifying the environmental benefits of dairy waste digestion projects. A workshop has been planned for February that will outline the work to be completed, and the PRT will be invited to participate either in person or via teleconference.

**Project 3.2: Building- Integrated PV (BI-PV) Testing and Evaluation Project**

Endecon completed testing on all systems, with the exception of the PowerLight array, which has experienced a problem. Although this problem continued, substantial progress was made in understanding the issue and we expect it to be resolved by January. All of the thermocouples have been installed, as well as both sensors (one under the roof array, the other under the SI Technologies array).

Discussions progressed with NUON regarding the Small Systems testing project at the PVUSA site. It is anticipated that an agreement will be in place for this site by January.

**Project 3.3: Building-Integrated PV (BI-PV) on Public Facilities**

As anticipated, REDI completed the revisions to the *Evaluation Tools Package*, which was submitted for internal review prior to submitting to the Commission. Project work under Task 3.3.4a, *Select Demonstration Project Sites*, continues to await final approval of the *Software Evaluation Tool Package*, as this product will be used in its final form for site/project assessment under Task 3.3.4a.

**HOW WE ARE DOING COMPARED TO PLAN:**

Of the active projects, Project 1.1, Project 2.1, Project 3.1, Project 3.2 and Project 3.3 have some task elements that are running behind our original Program schedule. However, the majority of the Project Tasks being implemented are proceeding along the (09/17/03) revised Exhibit B schedule. The following discussion summarizes the delays that have been encountered to date. Note that these individual task delays may impact the individual Project's targeted completion dates.

- **Project 1.1:** Although the CE Team has experienced challenges in gathering certain data, completing responses to comments, which has in some instances, delayed the completion of reports that were in turn crucial to the completion of another task, the majority of these issues have been resolved.
- **Project 2.1:** As reported previously, an important challenge has been gaining regulatory acceptance of the bioreactor landfill project. The CE Team continues to closely follow and facilitate/monitor this process. Additionally, a delay in receiving primary data, affected the completion of the Task 2.1.1.a report.

- **Project 2.2:** Although this project is on track, due to project redirection and specifically a change of focus to the RP-1 site, additional coordination activities have been required with the technology vendors. This redirection will improve the implementation of the pilot programs, but has delayed the completion of the Site Selection and design tasks.
- **Project 3.1:** As the *Test Plan and Protocols Report* builds on the results from the aforementioned *Digester Comparison Report*, there has been a lag time between report submittals. These reports will be revised based upon the approved Project 3.1 Implementation Plan, prior to final submittal.
- **Project 3.2:** Task 3.2.2(1) activity has previously been delayed due to negotiations and related contract approvals in relation to the Commonwealth-IEUA Power Purchase agreement, as well as approval of the purchase orders and the SGIP Incentives reservation request to SCE for the 60 kW Large Systems. This delay has had a trickle down effect on subsequent tasks within this Project. Additionally, a problem with the PowerLight Array has caused a slight delay, but is expected to be resolved in January.
- **Project 3.3:** Task 3.3.2 has continued to take much longer than anticipated to complete, due to multiple outside technical reviews and related revisions implemented to the *BI-PV Evaluation Tools Package*. The final draft deliverable has been revised and resubmitted to the Commission. Additionally, the delays in the *Large Systems Testing* task under Project 3.2, has also affected the schedule for Task 3.3.4.

**SIGNIFICANT PROBLEMS OR CHANGES:**

As indicated above, many of the Projects have work elements, which are currently behind schedule. Some of these task delays may impact overall Project completion dates, and as reported, a revised program schedule (i.e., contract Exhibit B) was submitted to the Commission for review and approval, which addressed schedule and task-level budget changes for these projects and their tasks. However, note that current Program progress and expenditures should result in the Program being completed on time under this revised schedule and within the Program's budget.

**EXPECTED ACCOMPLISHMENTS DURING THE NEXT PERIOD:**

**Project 0: Program Administration**

*Project Monthly Status* reports will be drafted for Projects 1.1, 2.1, 2.2, 3.1, 3.2 and 3.3, as well as *Program Status Reports* for November and December, and reviewed internally prior to submittal to the Commission and posting on the CE Program Website. Additionally, it is anticipated that Contract Invoice # 7 will be submitted in January and will include the following deliverables: Project 1.1 – Task 1.1.2, Task 1.1.9b and Task 1.1.11a; Project 2.1 – Task 2.1.1.a; and Project 2.2 – Task 2.2.1.

**Project 1.1: Program Planning and Analysis**

Primary activity in January will focus on completing and submitting the Task 1.1.7, Task 1.1.8 Final Reports and preparation of revisions to the Task 1.1.10 draft report. Additionally, as these final reports are submitted, the CE Team will incorporate the analysis and conclusions from these tasks into the draft Project 1.1 Final Report, under Task 1.1.11b.

**Project 2.1: Enhanced Landfill Gas Production**

In January, the CE Team will continue to focus on conceptual design issues related to the bioreactor project. A memo will be reviewed with San Bernardino County outlining project goals, and the roles and responsibilities of the County and the CE Team. Additionally, CH<sub>2</sub> anticipates completing and submitting the *Waste Characterization Report* for Commission review.

**Project 2.2: Enhanced Energy Recovery through Optimization of Anaerobic Digestion and Microturbines**

Information collection and analysis will continue for the implementation of technologies outlined in the *Process Selection Report*. CH<sub>2</sub> will also continue to coordinate with the two project hosts at IEUA and Riverside County, and on-going efforts on the *Site Selection and Test Plan* will focus on integrating the two ultrasound systems into the Riverside Plant.

Detailed planning related to fabrication of the test equipment will begin in January, with the technology vendors working closely with the CE Team.

**Project 3.1: Dairy Waste to Energy**

The primary activity in January will be focused on revising and finalizing the draft plan, which describes the implementation process of this project, and how it relates to the Commonwealth Business Plan goals and objectives. The CE Team will review how the project options can interact and help Commonwealth integrate the projects into their business objectives related to green energy sales and community aggregation.

Other activities will focus on the finalization and submission of, the *Digester Comparison Report* and the *Test Plans and Protocols Report*. As with the *Implementation Plan*, Commonwealth's business objectives will be reviewed and linked where appropriate.

**Project 3.2: Building-Integrated PV (BI-PV) Testing and Evaluation Project**

As Endecon was able to identify the specific problem with the PowerLight Array issue in late December, they anticipate having this problem resolved in January. Additionally, Commonwealth expects to receive approval of their SGIP incentive reservation request, in order to have Endecon proceed with an interconnection agreement for the 60 kW large systems.

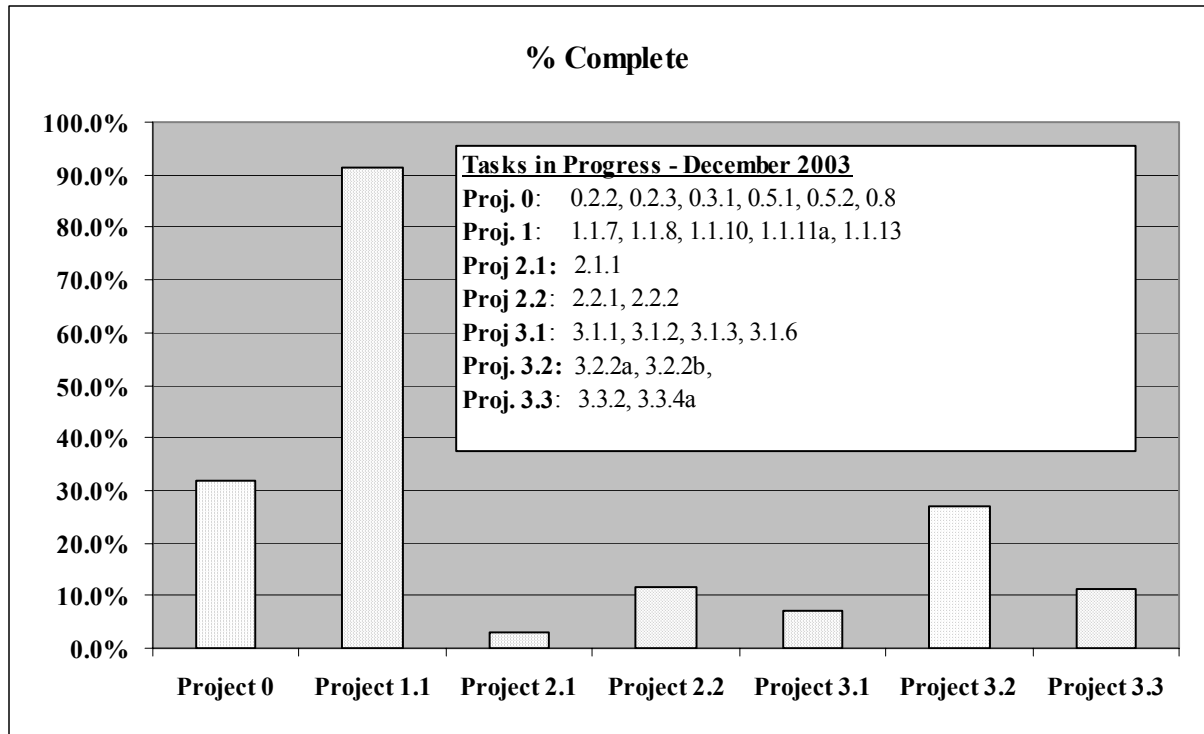
**Project 3.3: Building-Integrated PV (BI-PV) on Public Facilities**

REDI anticipates receiving final approval of the *Evaluation Tools Package* (ETP) from the Commission. With this important deliverable finalized and approved, REDI plans to use the ETP to complete its review of the Public Sector BI-PV demonstration sites and will generate a draft report for internal review. REDI will continue its ongoing work with representatives of the demonstration project sites, as well as with Commonwealth Energy and other ESP/project funding representatives.

**OVERVIEW OF PROGRAM STATUS:**

Figure 1 on the following page summarizes the overall Commonwealth Program status for each project and identifies the active tasks as of the end of the current reporting period.

**Figure 1: Summary of Program and Project/Task Status**



**OVERVIEW OF PROGRAM FISCAL STATUS:**

Table 1 and Figure 2 below summarize the fiscal status of the Commonwealth Program by Project as of the end of the current reporting period.

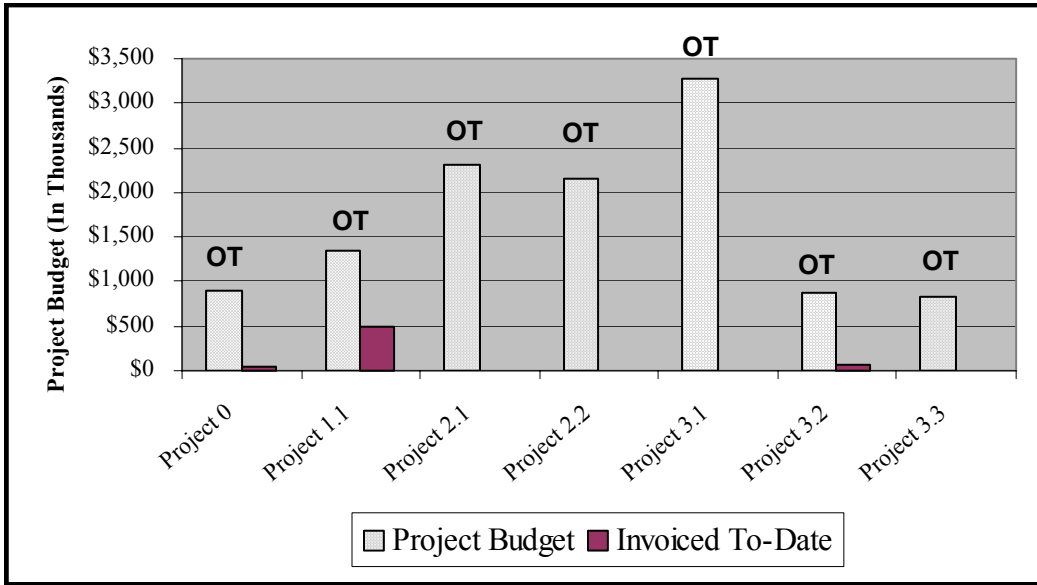
**Table 1: Cumulative Program Fiscal Status by Project**

Project Number	Project Budget	Invoiced To-Date (\$)	Fiscal Status *
Project 0	\$ 889,771	\$43,375 **	OT
Project 1.1	\$1,336,613	\$504,508**	OT
Project 2.1	\$2,315,999	0	OT
Project 2.2	\$2,153,740	0	OT
Project 3.1	\$3,274,664	0	OT
Project 3.2	\$ 870,099	\$76,014**	OT
Project 3.3	\$ 827,686	\$9,000**	OT

\*Fiscal Status = (OT) "On Track", (OB) "OverBudget", (UB) "UnderBudget"

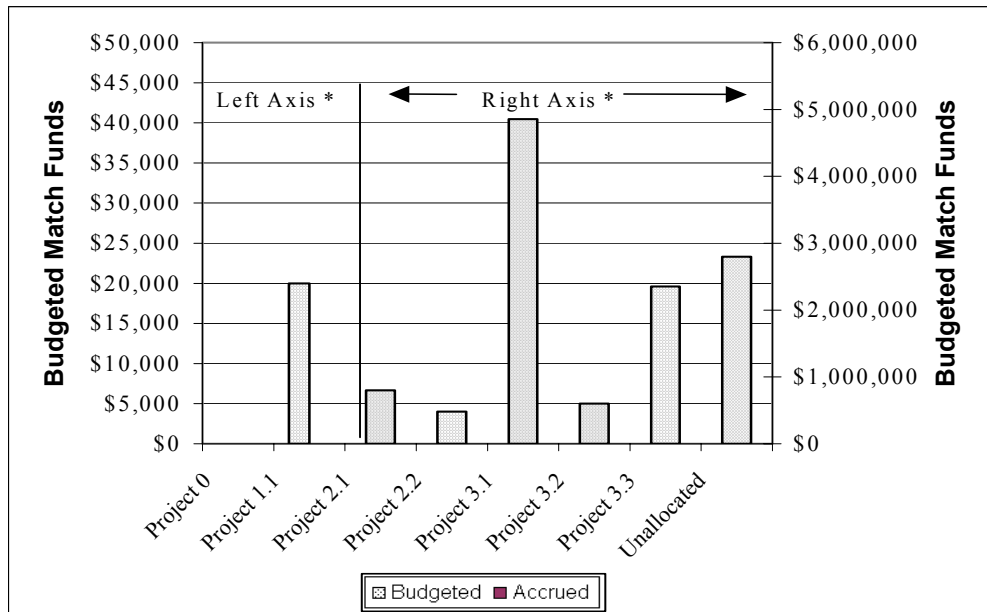
\*\* Invoice Amount Shown after 10% retention withheld.

**Figure 2: Program Fiscal Status - PIER Expenditures**



\*Fiscal Status = (OT) "On Track", (OB) "OverBudget", (UB) "UnderBudget"

**Figure 3: Program Fiscal Status - Match Funds**



\* The Budgeted Match Funds for Project 1.1 are significantly lower than Projects 2.1 through Project 3.3, therefore, we have utilized a left and right axis with differing value levels, which allows us to better highlight the Project Match Funds.