

MONTHLY PROGRAM REPORT

MAY 2004

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

It was anticipated that the Commonwealth Program Administrative Team would continue to provide ongoing support to the CE Project Teams and Commission PIER Program management staff. Additionally, work would continue on the PIER Program 1st Annual Report, with a draft of the report to be reviewed internally. Project and Program Monthly Status Reports would be drafted for all projects (#s 1.1, 2.1, 3.1, 3.2 and 3.3) for the month of April, and reviewed internally prior to submittal to the Commission and posting on the Commonwealth PIER Mini-Grid RD&D Program Website.

The Contract Administration Team was to continue to provide support to the CE Project Team as Program task deliverables are presented for internal and TAC review prior to submittal to the Commission. It was anticipated that Contract Invoice # 9, drafted in April, would be submitted in early May to the Commission.

Project 1.1: Program Planning and Analysis

In May, primary efforts were to focus on submitting the revised *Prioritization Report* as well as incorporating feedback on the prioritization framework, and then facilitating the application of these results to the implementation phase of the Program.

Additionally, the CE Team planned to continue to finalize the *Project 1.1 Final Report*, incorporating the results of the updated prioritization process.

Project 2.1: Enhanced Landfill Gas Production

May's focus of activity was to be on finalizing the design of the bioreactor project, including preparing detailed cost estimates for individual elements of the bioreactor based upon the *Conceptual Design Report*. Discussions would also continue with Mid-Valley in relation to finalizing the *Memorandum of Understanding (MOU)*.

Additionally, the CE Team anticipated scheduling the next Technical Advisory Committee (TAC) meeting.

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

It was anticipated that primary activity was to focus on preparing for, and participating in, the Critical Project Review (CPR) meeting. Additionally, extensive work was planned on the design efforts for both the ultrasound and gas cleaning projects.

Project 3.1: Dairy Waste to Energy

In May, CH₂ planned to focus on completing the technology review, and anticipated that a draft of the *Interim Report* would be submitted for internal team review. Additionally, a key activity to be undertaken was to be the identification of potential co-digestion feedstock providers.

Vendors were to continue to be contacted in reference to participation in the gas cleaning tasks, and CH₂ planned to continue their discussions with representatives of South Coast Air Quality Management District in regard to proposed rules and impact on dairy operations.

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

In May, Endecon planned to schedule a teleconference with the Industry Advisory Committee to review on-line data. Additionally, the PowerLight 20 kW system Initial Characterization Report was to be submitted to the Commission.

Endecon planned to complete the installation of three small PV systems, as well as the installation of the data acquisition systems for all three 2 kW systems at PVUSA.

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

In May, REDI anticipated continuing its coordination with the 10 Public Sector BI-PV Demonstration site representatives, in order to develop project specifications and solicitation documents. Additionally, work was to continue with Commonwealth and other third party financing representatives in order to develop project funding for the match funds component of this project.

WHAT WAS ACCOMPLISHED THIS PERIOD:

Project 0: Program Administration

As anticipated, *Project Monthly Status* reports were drafted for all Projects (#s 1.1, 2.1, 2.2, 3.1, 3.2 and 3.3), for the month of April, and reviewed internally.

The Commonwealth Program Director continued to hold 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 Projects 2.1, 2.2 and 3.1.

As anticipated, the Commonwealth Contract Administrator continued to provide support to the CE Project Teams on various pending project deliverables, and Contract Invoice # 9, which included the following deliverables: Project 2.2 – Task 2.2.2, Project 3.2 – Task 3.2.2a(4), Project 3.2 – Task 3.2.3(1), and Project 3.2 – Task 3.2.3(4)a, was submitted to the Commission.

Additionally, the CE Team continued to work on the Annual Program Report.

Project 1.1: Program Planning and Analysis

As anticipated, Itron completed its internal review of the *Task 1.1.10 Prioritization Report*. As outlined in previous Program reports, Itron has been incorporating the prioritization framework and the objectives from the Commonwealth Business Plan and the Mini-Grid analysis along with the technical PIER Program objectives, into this report. Initial numeric weights previously assigned were finalized, and used to provide updated prioritization results. Itron anticipates submitting the revised draft report to the Commission in June.

The CE Team continued to integrate approved project planning key results into the draft *Project 1.1 Final Report*, under Task 1.1.11b.

Project 2.1: Enhanced Landfill Gas Production Using Bioreactors

Activities in May focused on incorporating the results of the *Conceptual Design Report for the First Bioreactor*, into the *Construction and Test Plans* along with on-going participation

in consultations with the Host and BAS. CH₂ continued its work on the first phase, which was previously submitted to the Commission, implementing environmental permitting and design activities linking the CE PIER Bioreactor Project to the County's ongoing program. As indicated above, CH₂ moved forward on the *Construction and Test Plans*. A design addendum was created by the County's design engineer, which will allow the County's design contractor to proceed with implementation of the bioreactor elements of the project, upon Commission approval.

Conference calls involving BAS, the County's design engineer and CH₂ continued to address these ongoing elements of the project. Extensive coordination will continue to be required to ensure that the proposed bioreactor elements are fully compatible with the County's ongoing project.

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

CH₂ completed its follow-up work on the Draft *Process Selection Report* submitted previously, and prepared summary material for the Critical Project Review Meeting. Discussions continued with the technology vendors and County staff in order to ensure that appropriate and efficient plans were under way, and in order to apply the information from the *Process Selection* Phase of the project and the *Site Selection and Test Plan* report to design activities. Additionally, subcontracts were developed, which reflected these objectives. As anticipated, the Project 2.2 *Critical Project Review* meeting was scheduled and held at the Energy Commission on May 12th.

In May, design activities were undertaken in close coordination with the City of Riverside as CH₂ moved to integrate the two ultrasound test units into the plant's existing facilities. The preliminary drawings prepared in April were reviewed and refined in May based upon input from the City of Riverside.

Project 3.1: Dairy Waste to Energy

In May, efforts were focused on providing input to the *Task 1.1.10 Prioritization* process, and on completing the assessment, evaluation and selection of technologies. Specific technologies were analyzed in the context of the Commonwealth Business Plan and the PIER Program's objectives. As reported in April, CH₂ restarted their work on the interim Task 3.1.1.a(2) preliminary draft report, summarizing the technologies considered and identifying the rationale for these selected technologies. Work was initiated on the identification of available co-digestion suppliers and a preliminary assessment was developed outlining key parameters for these suppliers. Additionally, evaluation of the host biogas distribution facilities at the RP-1 Facility began in order to determine the ability to handle the increased gas production.

Additional activities were required for a preliminary review of the baseline analysis, as it was determined that it would be necessary to utilize actual emissions information over time from the existing operations – instead of transient rate data, which was not related to the projects being evaluated. Further analysis was undertaken on the *Monitoring, Reporting and Verification (MRV) Protocol* and reviewed internally. Extensive coordination with the South Coast Air Quality Management District (SCAQMD) began to ensure that the findings of the task would be consistent with the District’s pending dairy operations emissions rules.

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

As anticipated, Endecon finalized and submitted to the Commission for review, the *PowerLight Initial Characterization Report*, and work continued on the *Multi-Array Initial Characterization Report*.

Enhancements continued to be made to the website in order to improve the ability to understand the data which is now streaming for review.

Additionally in May, Endecon finalized the installation of all three small systems at the PVUSA site, as well as the data system, and ensured that they were operational and gathering data.

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

In May, Project 3.3 task development was minimal, due to pending key personnel redirection issues. Itron and REDI discussed the pending personnel changes at REDI, and began discussions regarding the appropriate potential replacement for REDI’s Project Manager.

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:** The CE Team continues to closely follow and facilitate/monitor this process of regulatory acceptance. 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 had caused a slight delay, but was 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 *ETP*. The final draft deliverable has now been approved and the work, which was previous delayed under Task 3.3.4a, can now resume. Currently, a key personnel redirection has limited task work, while an appropriate replacement is determined.

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

It is anticipated that the Commonwealth Program Director will continue to provide ongoing support to the CE Team and Commission staff. Additionally, work will continue on the PIER Program 1st Annual Report, with an anticipated draft to be submitted internally in late July. Project Monthly Status Reports will be drafted for all projects (#'s 1.1, 2.1, 3.1, 3.2 and 3.3) and a Program Status report will be drafted for April and May for internal review prior to submittal to the Commission and posting on the Commonwealth PIER Mini-Grid Program Web-Site.

The Contract Administrator will continue to provide ongoing support to the CE Team and Commission staff, as project deliverables are presented for internal review prior to submittal to the Commission. In June, it is anticipated that Contract Invoice # 10 will be drafted, reviewed and submitted to the Commission, for Project 3.2 – Task 3.2.2a(3).

Project 1.1: Program Planning and Analysis

In June, Itron and the CE Team plan to focus primarily on the completion of the *Project 1.1 Draft Final Report* under Task 1.1.11b. Efforts will also continue on incorporating Commission and other comments on the *Task 1.1.10 Prioritization Report*, with final results being incorporated into the Task 1.1.11b report.

Project 2.1: Enhanced Landfill Gas Production

CH₂ anticipates that the bioreactor design will be finalized in June including the incorporation of comments received from the *Conceptual Design Report*. Preparation will continue on the *Construction and Test Plans*, to ensure that the design contractor has the appropriate details and requirements and unit cost bid prices.

Additionally, CH₂ anticipates that a *Critical Project Review* meeting will be scheduled in order to provide the *Technical Advisory Committee* (TAC) and Commission staff the opportunity to provide direct comments and guidance on the proposed implementation of the project. Discussions will continue in order to resolve outstanding issues related to the *Memorandum of Understanding* (MOU). CH₂ anticipates that resolution will occur in June and the MOU will be finalized in early July.

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

In June, activities will continue on design work on the ultrasound and gas cleaning systems. It is anticipated that the ultrasound design will be submitted to the Commission, and that the fabrication of the equipment will be completed and shipped to Riverside. Design activity on the gas cleaning task will also continue as will the ongoing coordination with the host facility staff.

It is anticipated that the results of the May 12th Critical Project Review meeting will be available, and that task implementation will begin.

Project 3.1: Dairy Waste to Energy

In June, the primary focus of activity will surround the completion of the Task 3.1 *Interim Report*, and a *Technical Review* of the co-digestion. Both will be submitted internally for review prior to submittal to the Commission.

Work will continue on the environmental benefits of *Digestion Projects* report, with the initial sections to be completed in June.

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

In June, Endecon plans to develop a draft of the *Multi-Array Initial Characterization Report* for internal review, prior to submittal to the Commission. Additionally, Endecon will continue to monitor the output of the small and large systems

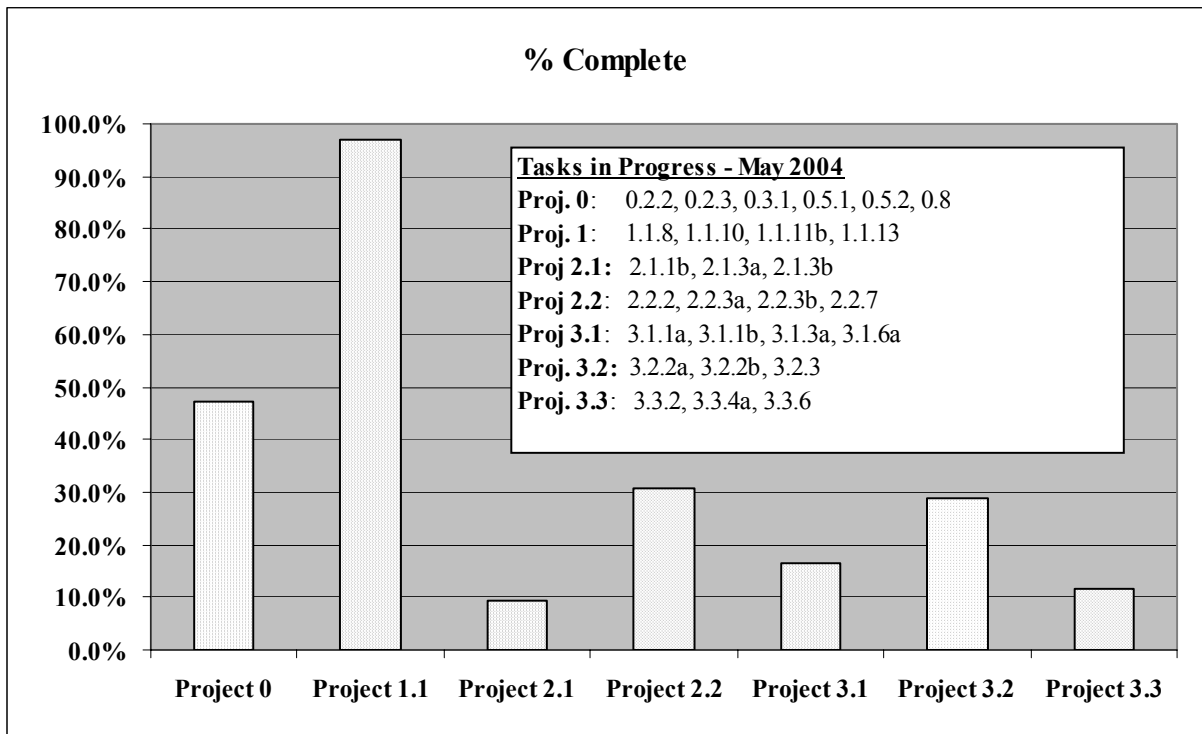
Project 3.3: Building-Integrated PV (BI-PV) on Public Facilities

In June, the REDI Board of Directors anticipates making a final decision regarding the key personnel redirection, which arose in May. A search will begin for an appropriate replacement, and REDI will consult with the PIER Project Director to ensure that program requirements are met.

OVERVIEW OF PROGRAM STATUS:

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

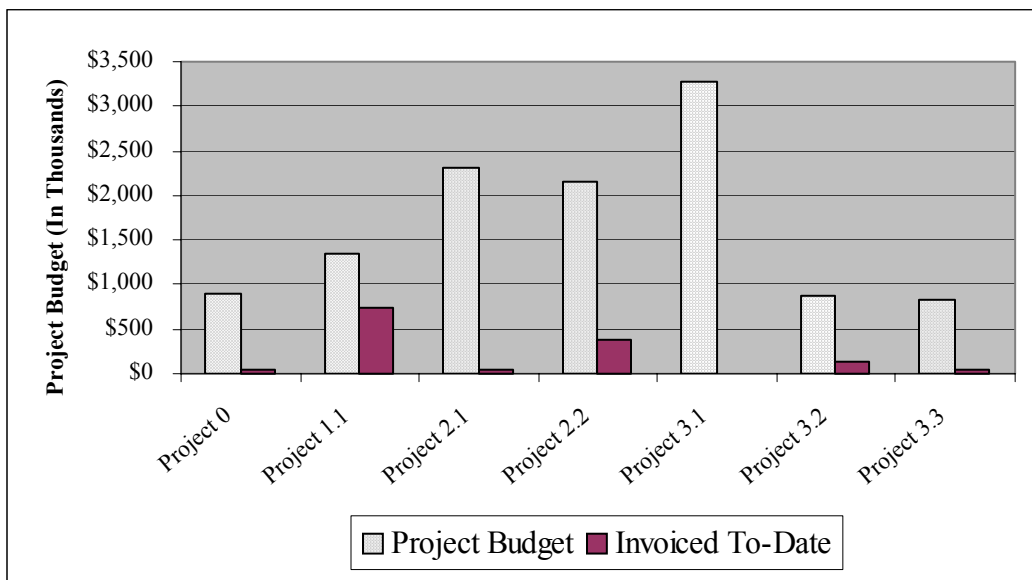
Table 1: Cumulative Program Fiscal Status by Project

Project Number	Project Budget	Invoiced To-Date (\$)	Fiscal Status *
Project 0	\$ 889,771	\$43,375 **	OT
Project 1.1	\$1,336,613	\$741,926 **	OT
Project 2.1	\$2,315,999	\$46,905 **	OT
Project 2.2	\$2,153,740	\$377,195 **	OT
Project 3.1	\$3,274,664	0	OT
Project 3.2	\$ 870,099	\$139,499**	OT
Project 3.3	\$ 827,686	\$45,000**	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"

OT OT

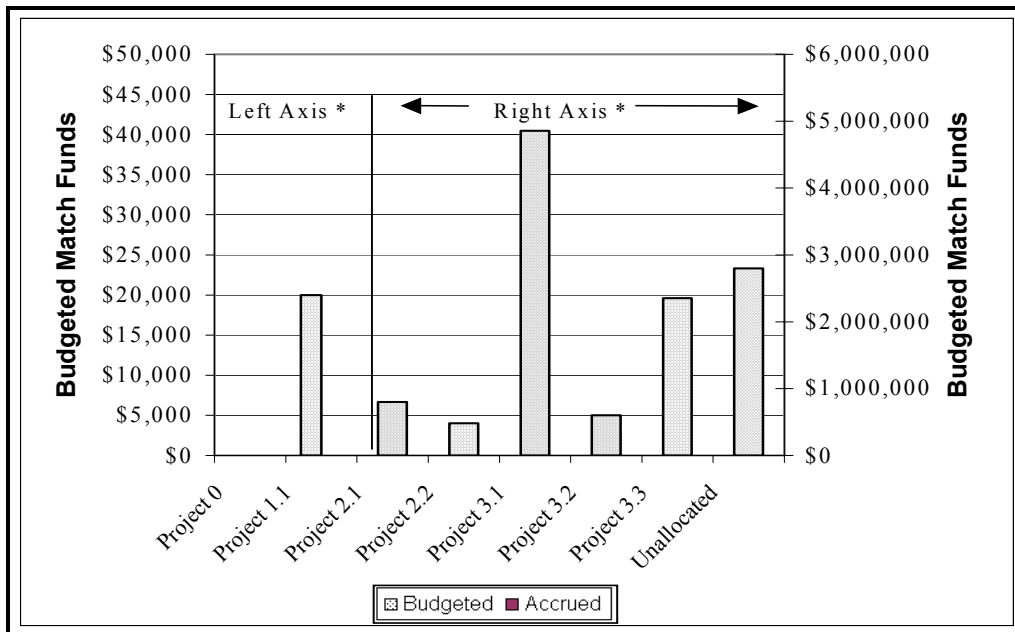
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Figure 3: Program Fiscal Status - Match Funds



* 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.