

MONTHLY PROGRAM REPORT

OCTOBER 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

Itron anticipated that the focus of activity in October would involve the follow-up after the first Critical Program Review (CPR) meeting on September 24th. Itron and the CE Team will draft the minutes recorded at the meeting and provide them to the Commission for review prior to submitting to the RPAC members and placement on the CE PIER Program Website. Additionally, Itron and the CE team will respond to any requests and /or question that either RPAC members or Commission Staff may have following the CPR meeting.

Schedule revisions and/or potential task level budget reallocations under Exhibit B of the contract will be finalized and presented to the Commission for approval.

Project Monthly Status Reports will be drafted for Projects 1.1, 2.1, 2.2, 3.1, 3.2 and 3.3 for the month of September, and reviewed internally prior to submittal to the Commission and posting on the Commonwealth PIER Mini-grid RD&D Program Website.

Project 1.1: Program Planning and Analysis

Activity in October was to focus on follow-up from the RPAC meeting held in late September as well as the continued response to comments received on deliverables previously submitted. It was anticipated that the CE Team would submit the Task 1.1.2, final report for review and comments to the Commission. The CE Team will also continue to focus on completing the Task 1.1.11 draft report, incorporating results from various Project 1.1 final reports that have been previously submitted and approved by the Commission, as well as from comments received from RPAC members and Commission staff at the September 24th Critical Program Review Meeting.

ZECO and Itron anticipated reviewing comments received from the Commission on the Task 1.1.9b final report, incorporating these comments into the deliverable and resubmitting them for final review and approval to the Commission.

Project 2.1: Enhanced Landfill Gas Production

The CE Team planned to continue responding to questions and issues raised at the Mid-Valley Bioreactor Project meeting held in late August and the Technical Advisory Committee (TAC) meeting held in mid September. At the direction of the RPAC members and Commission staff, the team will focus on one bioreactor rather than the previously discussed two bioreactors. A follow-up meeting is scheduled for October with San Bernardino County's design engineer. The overall objective for October was to reach consensus on the location of the bioreactor and to ensure that it would meet the Program's objectives and schedule.

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

CH₂ planned to continue data collection and analysis in relation to process selection. Activity will also resume in relation to enhanced energy production, gas cleaning and advanced energy recovery technology selection. It is anticipated that work on the enhanced anaerobic digestion tank will focus on more than one ultrasound technology per guidance received from the RPAC.

Project 3.1: Dairy Waste to Energy

Activities in October will focus on responding to RPAC comments as well as follow-up meetings after the September 24th CPR meeting. The CE Team planned to prepare an implementation plan based upon input from the Commission and RPAC. Other activities will be limited pending Commission staff review of this plan.

Information requests continued to be delayed or not received at all, however, the team will utilize information that had been provided in September as well as any new data, which may

be provided in October to revise and finalize the *Digester Comparison Report*. Additionally, the *Test Plans and Protocols Report* will be revised to focus on activities other than those at RP-5.

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

Endecon anticipated completing the installation and performing initial testing of all twelve individual systems for the *Large Systems Testing* effort. Additionally, it was anticipated that the installation of the metering and a significant portion of the data acquisition equipment was to be completed for the system evaluations.

Additionally, a paper was to be presented at two conferences providing an overview of Project work and continuing to develop PV industry interest in this Project.

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

REDI anticipated receiving the final comments from the Commission staff on the Task 3.3.2 draft *Evaluation Tools Package*, and integrating those comments into the final revised Package. Additionally REDI will continue working with the Public Sector BI-PV demonstration sites as well as Commonwealth Energy and other ESP third party financing representatives in order to develop matching funds for this project.

WHAT WAS ACCOMPLISHED THIS PERIOD:

Project 0: Program Administration

The Commonwealth Program Director and Contract Administrator worked with Commission staff and CE Team members, drafting and refining the CPR Minutes, for Commonwealth's first Critical Program Review Meeting held on September 24th. Upon Commission approval, the minutes were placed on the Commonwealth PIER Mini-grid RD&D Program Website.

Project Monthly Status Reports (Projects 1.1, 2.1, 2.2, 3.1, 3.2 and 3.3) and the Monthly Program Report were drafted for the month of September and submitted internally for review.

Project 1.1: Program Planning and Analysis

The CE Team addressed comments that were received from Commission Staff and TAC members on the Task 1.1.2, Task 1.1.7 and Task 1.1.8 draft reports submitted prior to the September 24th CPR meeting. Itron and ZECO finalized and submitted the revised Task 1.1.9b Final Report to the Commission for review.

Itron and CH₂ continued work on the Task 1.1.10 report, making revisions to the report based upon Commission Staff and RPAC member's input, as well as discussions in the follow-up meetings to the September CPR meeting. The primary revision was the elimination of the project at the RP-5 location. The CE Team has identified projects that could be completed at RP-1 in order to foster the development of effective centralized dairy digester projects.

Work continued on the Project 1.1 Final Report under Task 1.1.11b, and the CE Team anticipates submitting a draft internally and to the Commission staff in late December or early January. Key results from the previously completed tasks have been integrated into the report. Currently, finalization of the report awaits the completion of the revised prioritization list and a revised Project 3.1 implementation plan.

Project 2.1: Enhanced Landfill Gas Production Using Bioreactors

The previously submitted *Waste Characterization Report* was reviewed based upon the on-going discussions with San Bernardino County, its engineer and the local Regional Water Quality Control Board (RWQC) representative. The preferences of all involved were to develop the project at the Mid-Valley site, as opposed to the San Timoteo site. Upon further analysis and discussion, the Commission also determined that the original report, which focused on Mid-Valley was appropriate and the report was therefore resubmitted to the Commission for final review and approval.

Activities began on Task 2.1.3, the *Conceptual Design for the First Bioreactor*. A meeting was held with San Bernardino County officials, the SB County design engineer, and the RWQC Board representative. The outcome of the meeting was a decision by the County to proceed at the Mid-Valley site. At the same meeting, the conceptual development plan was discussed, and all agreed that the conceptual approach being pursued is consistent with the input received from the Project TAC, the RPAC and Commission staff.

Additionally, CH₂ has incorporated Brian A. Stirrat and Associates (BAS) into the CE Project Team, as BAS has recently been selected by the County to complete the next phase at Mid-Valley. This team incorporation will lead to an integration of both PIER-funded and matching fund activities.

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

CH₂ continued the review and analysis of the ultrasound technologies presented in the *Process Selection Report*. Vendors were contacted regarding their ability to provide the latest ultrasound technology as well as their ability to meet the Project schedule. Discussions with Riverside County continued, focusing on how these technologies would be integrated with their facilities.

Additional project planning was conducted related to the *Gas Cleaning for Microturbines* task within this Project. Technologies presented were evaluated based upon deployment at the RP-1 plant.

Efforts on the *Site Selection and Test Plan* continued, with the focus on working with vendors and hosts to ensure that the processes to be used at host sites would be compatible with existing systems. Additionally, discussions were held with project hosts to ensure that siting and other preferences were considered.

Project 3.1: Dairy Waste to Energy

Primary efforts focused on revising the Project 3.1 implementation plan. A draft was prepared featuring projects at locations other than RP-5. Key elements included monitoring projects – not developing new projects, identifying environmental benefits, identifying other dairy waste to energy opportunities and developing demonstration projects. These key findings will be assembled in a manner that can then be applied to future centralized projects in the Chino Basin and elsewhere in California.

Work continued on the previously submitted Digester Comparison Report. Revisions were made based upon input from Commission staff, as well as those received from TAC member Kurt Roos.

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

As planned, Endecon completed the initial testing on all twelve individual systems, and also completed the data acquisition system and the installation of pyranometers for evaluation purposes.

Discussions continued in regard to work commencing on the small systems testing at the PVUSA site. A review has been made of the DAS equipment at this site to determine if any additional equipment will be necessary. Kyocera Solar has agreed to a “system loan” for Small Systems Testing.

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

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. REDI continues to work with Commonwealth and other investors on ESP funding, as well as assisting BI-PV clients with system designs and bid solicitation.

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 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 will continue to closely follow and facilitate/monitor this process. Additionally, primary data was not available to the CE Team in electronic format.
- **Project 2.2:** Although this project is on track, there remains uncertainty regarding the project that will be recommended for funding, and this uncertainty may cause a slight delay in the deliverable date for the *Process Selection Report*.
- **Project 3.1:** This project has experienced a slight delay in the submittal of the *Technical Memorandum Comparing Plug Flow and Complete Mix Digestion* due to the unanticipated length of time required to assemble cost information on the RP-5 plug flow project, in a manner that would allow it to be compared to other digester projects. Additionally, as the *Test Plan and Protocols Report* builds on the results from the aforementioned *Digester Comparison Report*, there was a lag time between report submittals.
- **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 for the Large Systems. This delay has had a trickle down effect on subsequent tasks within this Project.
- **Project 3.3:** Task 3.3.2 has taken longer than originally anticipated to complete, due to multiple outside technical reviews. The draft deliverable, although essentially completed, continues to be in an evaluation phase. 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 are likely to impact overall Project completion dates, and as reported, a revised schedule (Contract Exhibit B) was submitted to the Commission for review and approval in September, addressing any necessary changes in schedule for these projects. However, note that current Program progress and expenditures should result in the Program being completed on time and within 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 a Program Status Report for the month of October, and reviewed internally prior to submittal to the Commission and posting on the CE Program Website.

Project 1.1: Program Planning and Analysis

Primary activity in November will focus on the completion of the Task 1.1.7, and Task 1.1.8 final reports. 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.

Project 2.1: Enhanced Landfill Gas Production

In November, the CE Team will focus on conceptual design issues related to the bioreactor project. A memo will be prepared and reviewed with San Bernardino County outlining project goals, and the roles and responsibilities of the County and the CE Team. Additionally, CH2 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. CH2 will coordinate with the two project hosts at IEUA and Riverside County, and on-going efforts on the Site Selection and Test Plan will continue to focus on integrating the two ultrasound systems into the Riverside plant.

Project 3.1: Dairy Waste to Energy

The primary activity in November will be focused on revising and finalizing a plan, which will describe the implementation process of this project in relation to the comments received at the meetings held in September.

Other activities, although limited until the aforementioned plan is approved, will focus on the completion and submission of the *Digester Comparison Report*, and the *Test Plans and Protocols Report*.

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

Endecon anticipates performing acceptance tests on all twelve systems and expects to receive clearance for a reservation request, in order to proceed with an interconnection agreement for the large system.

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

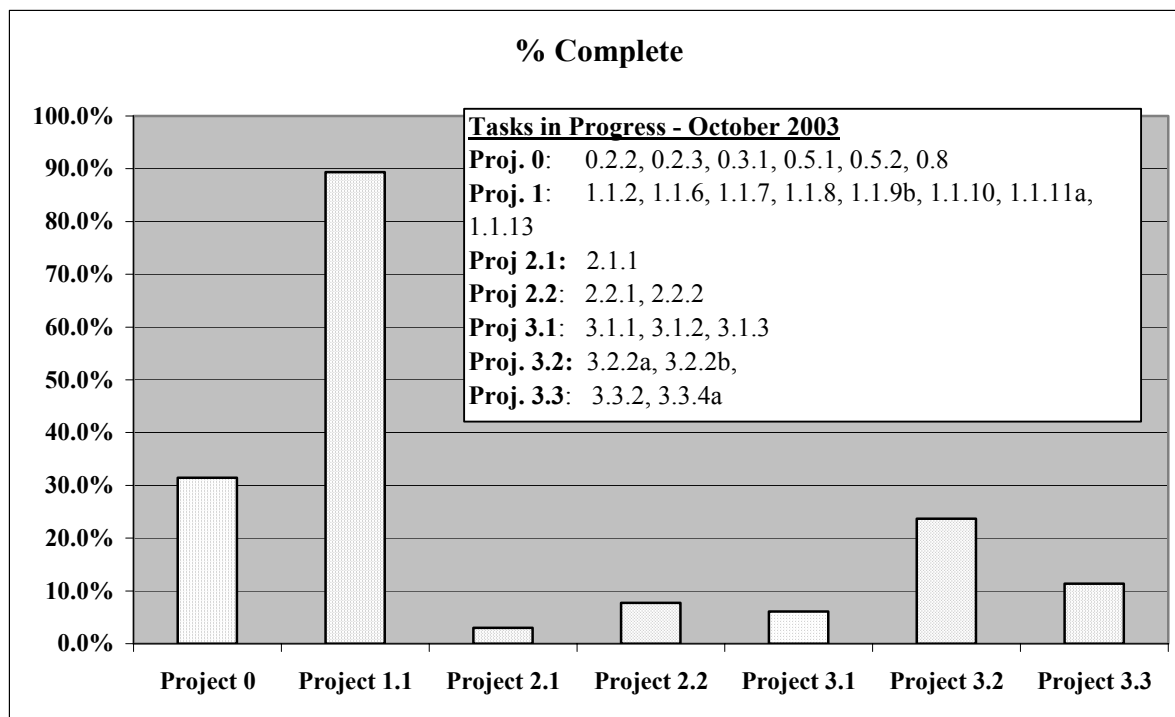
REDI will incorporate comments previously received into the final task 3.3.2 deliverable and will submit the Revised *Evaluation Tools Package* internally for review and then to the Commission for review and approval.

Upon approval of the *Evaluation Tools Package*, REDI will then complete its review all of the Public Sector BI-PV demonstration sites and will generate a report for internal review. REDI will continue to 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.

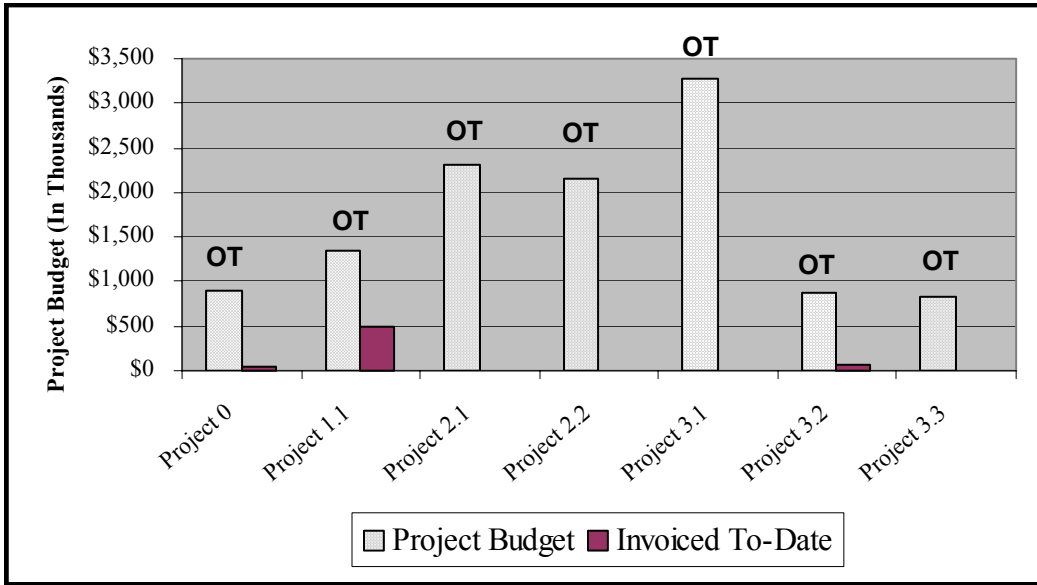
Table 1: Cumulative Program Fiscal Status By Project

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"

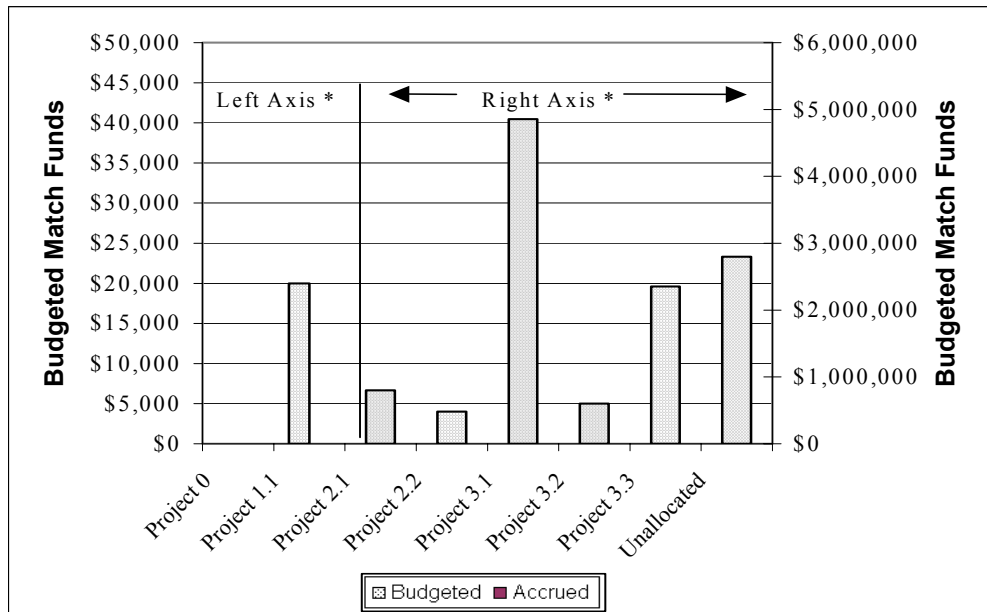
** Invoice Amount Shown after 10% retention withheld.

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.