MONTHLY PROGRAM REPORT

NOVEMBER 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

It was anticipated that the Commonwealth Program Director, would continue to provide support to the CE Team members and Commission staff, as Project scope and/or timelines are reviewed in light of redirection from RPAC members and Commission staff on several projects. Potentially, schedule revisions and/or potential task level budget reallocations under Exhibit B of the contract will also continue to be reviewed as necessary due to changing Task start-up/completion dates and when firmed up these project schedule and budget revisions will be presented to the Commission for approval.

Project Monthly Status Reports will be drafted for all Projects (#s 1.1, 2.1, 2.2, 3.1, 3.2 and 3.3) for the month of October, 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 November was to focus on working toward the completion of the remaining open tasks within Project 1.1. Specifically, Task 1.1.2, Task 1.1.7, Task 1.1.8, Task 1.1.10, Task 1.1.13 and the draft Project 1.1 Final Report, under Task 1.1.11b. It is anticipated that the Task 1.1.11b deliverable will largely be completed, and will 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.

ZECO and Itron anticipated reviewing additional comments received from the Commission on the Task 1.1.9b Final Report. These comments were to be addressed by the CE Team, incorporated into the deliverable and resubmitted for final review and approval to the Commission.

Project 2.1: Enhanced Landfill Gas Production

The planned focus for November was to be the continued coordination with the San Bernardino County engineer in relation to the conceptual design for the bioreactor project. Additionally, the CE Team was to draft a *Memorandum of Understanding,* which would outline 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_2 planned to continue data collection and analysis in relation to the process selection task. Activity would also continue in relation to enhanced energy production, gas cleaning and advanced energy recovery technology selection. As the CE Project Team has determined previously, efforts on the Site Selection and Test Plan were to focus on the integration of two ultrasound systems into the Riverside Plant; and gas drying, H_2S and siloxane removal at the RP-1 facility.

Project 3.1: Dairy Waste to Energy

In November, the CE Team planned to continue to respond to RPAC and Commission staff comments following September 24th's CPR and follow-up meetings. The primary focus was to be the completion of an implementation plan for this project based upon input received at these meetings.

The CE Team also planned on utilizing data provided in September and any new data that became available, to finalize the previously submitted *Digester Comparison Report*. Additionally, the CE Team anticipated revising the *Test Plans and Protocols Report* to focus on locations other than RP-5.

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

Endecon anticipated performing acceptance tests on all twelve individual systems for the *Large Systems Testing* effort. Additionally, Endecon planned on receiving SGIP incentives reservation request clearance in order to purse an interconnection agreement with SCE for the entire Large System.

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

REDI anticipated incorporating revisions based upon the final comments received from the Commission staff on the Task 3.3.2 draft *Evaluation Tools Package*. Additionally, REDI planned to continue working with the Public Sector BI-PV demonstration sites, as well as with Commonwealth Energy and other ESP third party financing representatives in order to develop matching funds for these pubic sector BI-PV projects.

WHAT WAS ACCOMPLISHED THIS PERIOD:

Project 0: Program Administration

As anticipated, the Commonwealth Program Director held numerous teleconference meetings and met with Commission staff and CE Team members, to review and discuss potential revisions to Project work plans/scope/focus for Project 2.1, 2.2 and 3.1. Additionally, the CE Program Director reviewed the revisions to the draft evaluation tools package.

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 October and submitted internally for review.

Project 1.1: Program Planning and Analysis

The CE Team made revisions to the Task 1.1.2, Task 1.1.7, Task 1.1.8, and Task 1.1.9b reports based upon comments that were received from Commission Staff and TAC members at or following the September 24th CPR meeting. The Task 1.1.2, Task 1.1.7 and Task 1.1.9b reports were resubmitted to, and approved by the Commission in mid-to-late November. All three reports were placed on the PIER Commonwealth Program Website. The finalization of the Task 1.1.2 Report marks the completion the Inventory and Database Reports under Project 1.1. The CE Team began integrating these task's key results into the draft Project 1.1 Final Report, under Task 1.1.11b, which currently awaits the completion of the revised project prioritization list under Task 1.1.10 and a revised Project 3.1 implementation plan.

Work continues on the Prioritization Report under Task 1.1.10. Revisions have been made based upon comments received by Commission and RPAC members, as well as the decision to eliminate projects that were proposed for RP-5. The CE Team continues to identify

projects that could be completed at RP-1 in order to foster the development of effective centralized diary digester projects. The draft Task 1.1.10 report will be finalized based upon the outcome of the submitted Project 3.1 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 Commission has determined that the original report, as it was previously submitted is appropriate and the report was resubmitted to and approved by the Commission.

Activities continued on Task 2.1.3, the *Conceptual Design for the First Bioreactor*. Information received from the County in regard to Mid-Valley was reviewed, and numerous consultations transpired between the CE Team and BAS, the County's design engineer, in order to create a detailed project plan for the Mid-Valley bioreactor.

The planned approach is to develop a bioreactor in a portion of the Unit 3 cell at Mid-Valley, which, if successful, could eventually be expanded to include the entire cell.

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

CH_2 continued to focus on the Draft *Process Selection Report* submitted previously, and the integration of guidance received from the RPAC members and Commission staff, to develop two ultrasound technologies instead of one ultrasound and one thermal hydrolysis technology. Vendors continued to be contacted, and plans established in order to secure the latest ultrasound technologies for the projects planned at Riverside County. The discussions with the vendors were detailed, as they will be heavily involved in the entire process to ensure that the transition from process selection, to site selection, to design and then to installation goes smoothly.

Efforts continued on the *Site Selection and Test Plan* with the focus of utilizing information developed during process selection, and integrating it into the site selection and test plan development activities. Discussions were held with the technology vendors to review the project protocols in order to ensure that the systems to be installed would appropriately meet the project objectives of increasing gas production, while also ensuring that the treatment process can be maintained, or improved.

Project 3.1: Dairy Waste to Energy

The CE Team continued its work on the Project 3.1 Implementation Plan. As reported in October, a draft was prepared, which has been revised in November based upon further input from the CE Team and Commission staff. In conjunction with the revisions to this plan, new activity was undertaken to accelerate the environmental analysis. On-going consultations continued with IEUA staff, as a detailed proposal was developed to conduct this work under Task 3.1.6. The CE Team is working to ensure that the PIER project work effort will be integrated into future IEUA plans - which IEUA has proposed to the USDA.

Final revisions were made to the *Digester Comparison Report*, which was then submitted to the Commission for final review. Additionally, revisions were also made to the *Test Plans and Protocols Report* in relation to the decision to pursue projects at locations other than RP-5. This report was modified to be applicable to RP-1. Finalization of the Test Plan is anticipated upon receiving final feedback on the Project 3.1 plan.

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 the Small Systems Testing task.

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/ESPs on project match funding, as well as assisting BI-PV clients with system designs and bid solicitation documents.

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 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 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 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 digester 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 and the SGIP Incentives reservation request to SCE 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 review 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 necessary changes in schedule 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 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*, 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 December will focus on the completion of the Task 1.1.7, Task 1.1.8 and Task 1.1.10 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 December, 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, CH_2 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_2 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 December 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 resolving the PowerLight Array issue, and expects to receive clearance for the SGIP incentive reservation requests, in order to proceed with an interconnection agreement for the large system. Additionally, Endecon plans to submit the interconnection agreement application to SCE for the Large System.

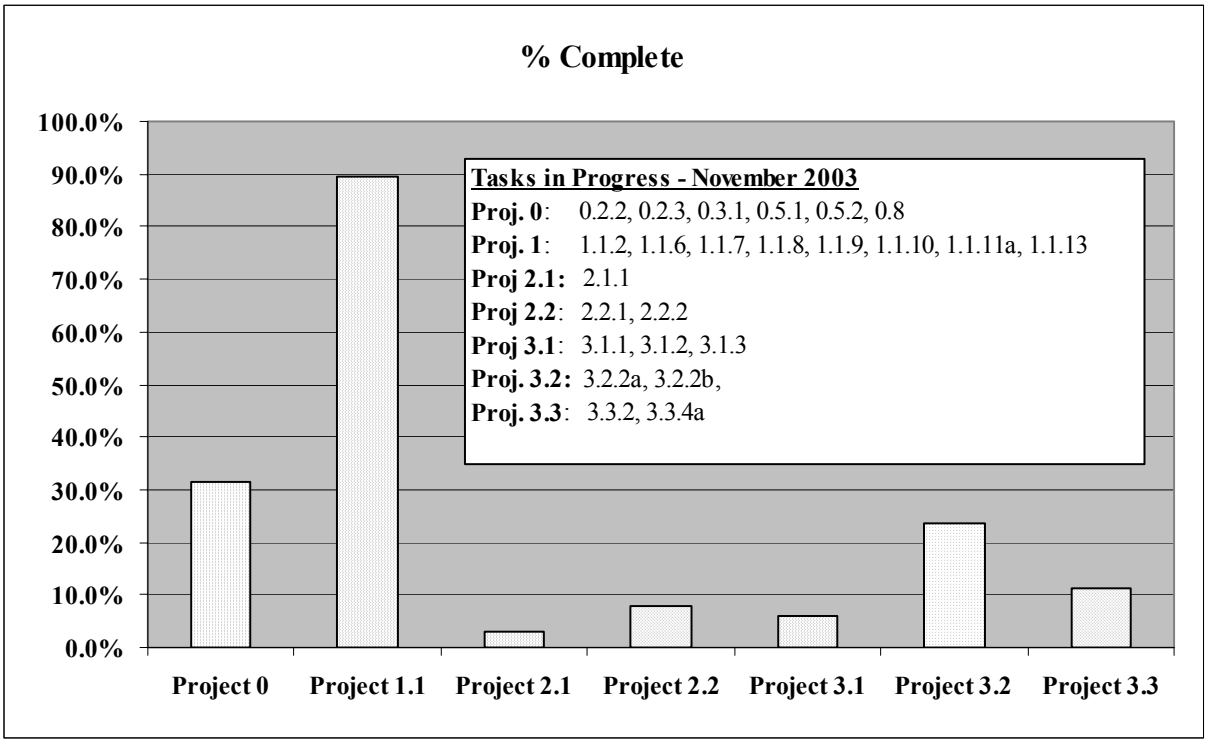
Project 3.3: Building–Integrated PV (BI-PV) on Public Facilities

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:

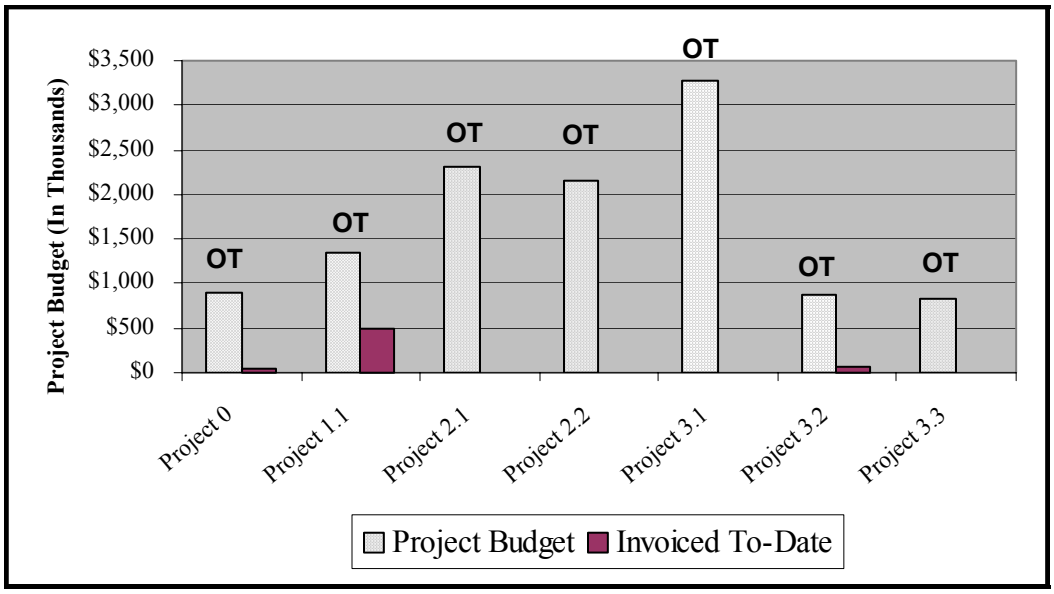
Table 1 and Figure 2 below summarize the fiscal status of the Commonwealth Program by Project as of the end of the current reporting period.

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

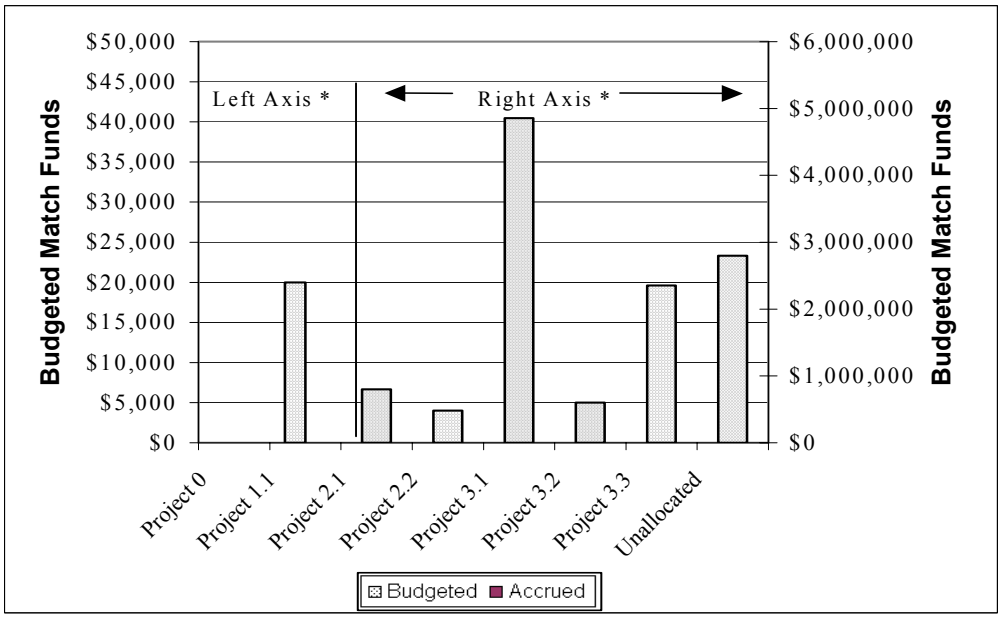
*Fiscal Status = (OT) "On Track", (OB) "OverBudget", (UB) "UnderBudget"
** Invoice Amount Shown after 10% retention withheld.

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.