

MONTHLY PROGRAM REPORT

OCTOBER 2002

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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Program Team Members: Commonwealth Energy Corporation (Commonwealth),
Regional Economic Research/Itron (Itron), CH2MHill (CH₂), Endecon Engineering
(Endecon), Renewable Energy Development Institute (REDI), Zaininger Engineering
(ZECO).

PLANNED ACCOMPLISHMENTS FOR THIS PERIOD:

Project 0: Program Administration

Work was to continue under Task 0.2.2, as RER addressed the comments and input received from the Commonwealth Team and the Commission regarding the PIER Program Website. RER was to forward two alternate views of the website homepage for comments, and once a consensus had been reached, the changes would be instituted and the website would be ready for access/viewing. RER planned to submit new passwords to each Team member, and begin the process of placing Program documents including draft and final deliverable, and Status Reports on the website for Team and public access.

Program and Project specific administrative tasks will continue. Although draft invoices have been submitted to RER for review, the final deliverables have yet to be approved by the Commission; therefore final invoices have yet to be submitted.

Project 1.1: Program Planning and Analysis

RER planned to complete and submit the final version of both the Draft Renewable Resource Assessment Review Report and the initial mini-grid definition map, to the Commission for final approval.

CH₂MHill planned to complete and submit the Sewage Treatment Plant and Landfill Facilities Databases and associated Inventory Reports under Tasks 1.1.3 and 1.1.4. The delay in receiving load information from the dairies under Task 1.1.2 should be resolved. Data collected thus far will continue to be analyzed, with the focus on the potential sites for demonstration projects. Meetings between RER and CH₂ were to occur in order to prioritize projects and commence work in the appropriate emphasis areas.

RER and REDI planned to complete the database under Task 1.1.5. Work was to commence on the BI-PV technical potential target area, with results to be used in Task 1.1.7 and Task 1.1.9. Work shall continue and involve collecting cost information and developing business models to be used in the mini-grid market potential for Task 1.1.7. A report was to be developed highlighting the process used for PV generation profiles and wastewater treatment, landfill and dairy waste to energy generation profiles. ZECO planned to complete much of the local T&D data development and model development under Tasks 1.1.6 and 1.1.9.

Project 2.1: Enhanced Landfill Gas Production Using Bioreactors

Per the Program schedule, work will not begin on this task.

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

Initial work on this project is expected to continue to be delayed pending resolution of several project implementation issues.

Project 3.1: Dairy Waste to Energy

Per the Program schedule, work will not begin on this task.

Project 3.2: Building Integrated PV Testing and Evaluation Project

Endecon Engineering and The Commonwealth Team planned to submit a second draft of the BI-PV Evaluation Test Plan to the Project 3.2 Technical Advisory Committee (TAC) members. It was anticipated that a joint conference call would be held to discuss incorporating comments into the Test Plan. Available BI-PV product research will be reviewed in order to provide a selection for the TAC to review in order to select for the large systems comparison element under this task.

Project 3.3: Building Integrated PV on Public Facilities

Under Task 3.3.2, RER planned to complete an experimentation of the data loggers, in order to determine if they were able to send the necessary information remotely, and provide this information to REDI. The inventory of existing evaluation tools was expected to be identified and a draft report will be outlined and submitted for review. REDI planned to follow-up with contacts made under Task 3.3.4. Additionally, REDI planned to work with Commonwealth and IEUA to develop an ownership model for the purpose of deploying the first public sector BI-PV system at an IEUA facility.

WHAT WAS ACCOMPLISHED THIS PERIOD:

Project 0: Program Administration

RER continued its work on the PIER Program website, under Task 0.2.2. As planned, two alternate website home pages were forwarded to the Commonwealth Team members in late October. By the end of October, comments had been received, and a consensus had been reached. Additionally, RER began collecting information from the Commonwealth Team in order to compile and present to the Commission, the File Formats and Operating Systems, which will be used by the Commonwealth Team ensuring uniformity throughout the duration of the contract.

Project-specific contract administration tasks under Task 0.8 continued, as the Commonwealth Team continues to review and confirm the PIER Contract terms and conditions regarding invoice and status report structures. Additionally, Exhibits B and C are being reviewed for clarity as well as for any potential changes or reallocations. Monthly Status Reports were drafted and submitted for Project 1.1, Project 3.2 and Project 3.3., and a Monthly Progress Report was submitted to the Commission for September.

Project 1.1: Program Planning and Analysis

RER completed the revisions on the Draft Renewable Resource Assessment Review Report as well as the mini-grid definition map and the final report to the Commission Project Manager.

CH₂ continued reviewing and updating the database for agricultural facilities. The Commonwealth Team continued to have some difficulties with collecting site-specific information on electrical loads at the dairies. They have however, received assistance from the Milk Producer's Council, and are making progress toward the resolution of this issue.

Additionally, CH₂ continued its data collection and database development for landfill bioreactors and sewage treatment facilities. By the end of October, they had received all the data needed to complete and submit the database and inventory report. RER reviewed the

landfill database as well as the Inventory report, and a draft report was submitted to the Commission for review. REDI provided information regarding PV systems at the wastewater facilities, which was then added to the CH₂M reports. A database of PV specifications and technical potential was also added to the CH₂ database. RER reviewed and provided comments on both the database and report, comments were addressed, and the report and database were submitted to the Commission for review.

The methodology for determining BI-PV technical potential was reviewed, and RER continued development of the technical potential for PV power systems within the target area. The public sector database was refined by REDI and the draft report is being finalized.

Zaininger Engineering (ZECO) reviewed data collected from Southern California Edison and has begun preparing a memo summarizing the T&D data collected for this project.

RER continued the process of collecting cost information on the biogas technology systems, which included capital, operating and maintenance costs.

ZECO continued developing the representative local T&D model. Additionally, ZECO developed electrical distribution system assumptions for the transformers and overhead and underground feeders used by Southern California Edison.

Project 2.1: Enhanced Landfill Gas Production Using Bioreactors

Work has yet to begin on this project, per the Program schedule.

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

Work has yet to begin on this project, due to the need to re-assess the anaerobic digestion optimization technology implementation options available inside and out of the mini-grid and related stakeholder match funding issues.

Project 3.1: Dairy Waste to Energy

Work has yet to begin on this project, per the Commonwealth Program schedule.

Project 3.2: Building Integrated PV Testing and Evaluation Project

Endecon Engineering submitted a second draft of the BI-PV Evaluation Test Plan to the TAC members in early October. A conference call was held in mid October between the TAC members and the Project Team, to discuss the overall plan, as well as location options for the large system comparison. The TAC members indicated that a desire to see a proper roof/building configuration for the large system comparison test systems. Following this

meeting, along with the TAC member comments, the BI-PV Evaluation Test Plan was finalized and submitted to the Commission Project Manager for review.

Under Task 3.2.2.a, progress continued to be made on the development of specifications of equipment and drawings for the data acquisition system for the large system comparison. Available BI-PV products were researched, and two new systems were identified, and plan to be announced at the Solar Electric Power Association annual conference in November.

Additionally, progress was made on the development of specifications and drawings for the data acquisition system for the small system comparison.

Project 3.3: Building-Integrated PV on Public Facilities

REDI continued its work on the Commonwealth Mini-Grid BI-PV Site Assessment Software Tool, allowing it to be more “user friendly”. Additionally, TMY data options were added to ensure that the software was all-inclusive and would not need to rely on outside sources for hourly data. REDI continued to refine the BI-PV energy audit forms and also began writing the Draft Public Facilities Test Plan.

REDI followed up with prior contacts made under the BI-PV Public Sector, and continued to make new contacts. There are several clients identified to-date.

How we are doing compared to plan:

Of the projects that are currently active, several of Project 1.1’s and Project 3.2's tasks, along with one of Project 3.3’s tasks have fallen behind schedule. However, the remaining active Projects / Tasks are proceeding along schedule. Following are summaries of the delays that have been encountered, it is important to note, that the minor delays experienced, should not impact the overall Project 1.1. or Project 3.3 targeted completion dates:

- *Project 1.1:* Task 1.1.1.has fallen behind as a result of the need to address questions and comments raised by the Commission. Task 1.1.2a, Task 1.1.3 and Task 1.1.4 continue to be slightly behind schedule due to the previously reported difficulty in receiving the information requested in a timely manner.
- *Project 2.2:* As reported previously, Project 2.2 has yet to begin pending clarification of certain project scoping/implementation issues.
- *Project 3.2:* Several of the tasks under 3.2.2 have fallen behind schedule due to difficulties over siting the large systems. These issues are being resolved and it appears that the schedule will be set back approximately eight weeks overall.
- *Project 3.3:* Task 3.3.2 and 3.3.4a are both on track with plan. Site visits are planned for November to view public sector facilities and gather site load data.

SIGNIFICANT PROBLEMS OR CHANGES:

Project 1.1

As noted previously, the most significant challenge has been the unavailability of data on the loads at individual dairies. Although this issue continues to be a concern this month, the Commonwealth Team has taken steps with the Milk Producers Council, which we believe will resolve the situation. Overall, the Project 1.1 schedule is behind by approximately one month, however, these delays should not impact the overall plan for the Project, as the information collected will be readily available in subsequent phases.

The current delays being experienced with the siting of the large systems, were foreseen before the program began, as a portion of the issue lies in the delay of the overall program.

Overall, there are no significant problems or changes encountered during this reporting period. Current Program progress and expenditures will result in the Program being completed on time and within budget.

EXPECTED ACCOMPLISHMENTS DURING THE NEXT PERIOD:

Project 0: Program Administration

The Commonwealth Team will finalize the PIER website and will forward individual passwords to all Team members. Three notification letters will be drafted and submitted to the Commission for review; the Website Acknowledgement Letter, the Operating Systems and the File Format letters. Work will continue under Task 0.2.3 as the CE Team contacts potential RPAC and TAC members.

Program and Project specific administrative tasks will continue. Although draft invoices have been submitted to RER for review, the final deliverables have yet to be approved by the Commission, therefore final invoices have yet to be submitted.

Project 1.1: Program Planning and Analysis

Work will continue on the agricultural facilities database and inventory report, with the goal of submitting these deliverables to the Commission in November. Project prioritization will begin as individual projects are defined, compared and prioritized. Work will also begin on the outline of the Project Final Report.

Work will continue to progress on developing the BI-PV technical potential for the mini-grid area.

Project 2.1: Enhanced Landfill Gas Production Using Bioreactors

Work may be initiated, however, there are still several key factors that need to be reviewed with the Commission staff prior to work actually beginning.

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

Work may be initiated, however, there are still several key factors that need to be reviewed with the Commission staff prior to work actually beginning.

Project 3.1: Dairy Waste to Energy

Work may be initiated, however, there are still several key factors that need to be reviewed with the Commission staff prior to work actually beginning.

Project 3.2: Building Integrated PV Testing and Evaluation Project

A list of systems will be disseminated with the TAC Members and a determination of the top three options will be made. Data acquisition specifications will continue once the top three have been chosen. The sites for both large and small systems will continue to be finalized.

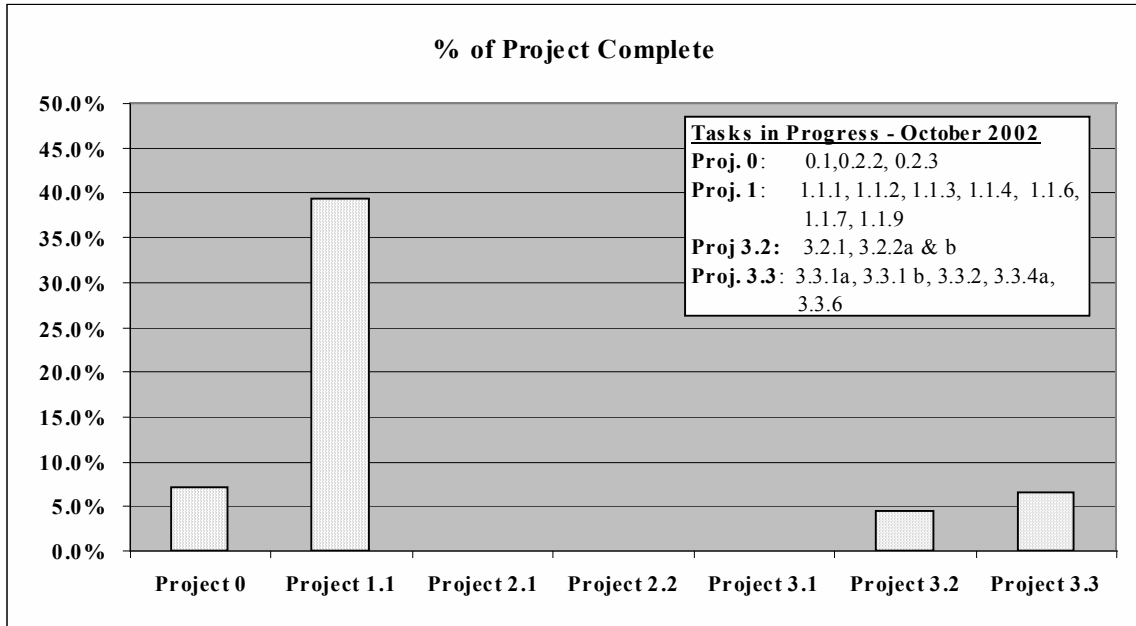
Project 3.3: Building Integrated PV on Public Facilities

REDI expects to finalize the Draft Public Facilities Test Plan and the Project Development Guidelines. Contacts will continue to be made and new leads will be developed. All public facilities within the mini-grid area will be contacted as potential candidates for BI-PV applications.

OVERVIEW OF PROGRAM STATUS:

Figure 1 below summarizes the overall Commonwealth Program status by project number and task as of the end of the current reporting period.

Figure 1: Summary of Program Status – Project Percentage Complete



Overview of Program Fiscal Status:

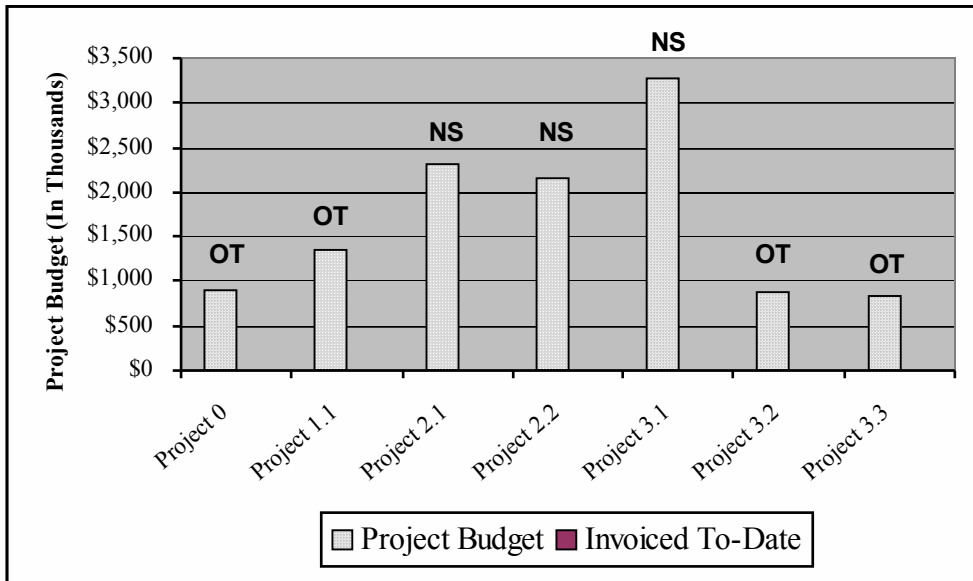
Table 1 and Figure 2 below summarize the fiscal status of the Commonwealth Program by Project as of the end of the current reporting period.

Table 1: Program Fiscal Status By Project

Project Number	Project Budget	Invoiced To-Date (\$)	Fiscal Status *
Project 0	\$ 889,771	0	OT
Project 1.1	\$1,336,613	0	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	0	OT
Project 3.3	\$ 827,686	0	OT

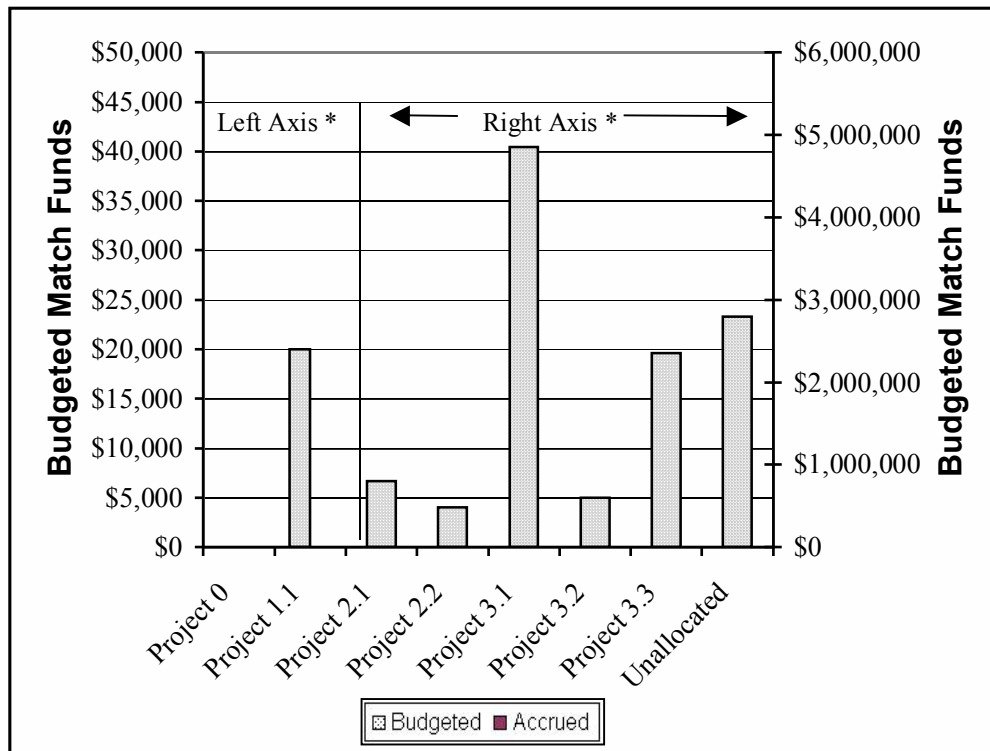
*Fiscal Status = (OT) "On Track", (OB) "OverBudget", (UB) "UnderBudget"

Figure 2: Program Fiscal Status



*Fiscal Status = (OT) "On Track", (OB) "OverBudget", (UB) "UnderBudget" (NS) "Not Started"

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.