

MONTHLY PROGRAM REPORT

JANUARY 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 Team anticipates that potential Program RPAC and Project TAC members will be finalized and the Commission notified of the approved RPAC and TAC members. The 2nd invoice will be submitted in early January covering Project 1.1: (Task 1.1.3) and (Task 1.1.4).

Project specific administration support under Task 0.8 will continue. Updates will also continue to be addressed for Exhibit B. Monthly Status Reports are to be drafted and submitted for Project 1.1, Project 3.2 and Project 3.3.

Project 1.1: Program Planning and Analysis

It is anticipated that the agricultural waste database and the Final Inventory Report will be finalized and delivered to the Commission in early January. CH₂ also anticipates continuing its work on the project prioritization process seeking to identify projects, which meet the

project objectives contributing to the goal of making renewable energy more affordable. Additionally, work will continue on Task 1.1.11a – the Project 1.1 Final Report outline.

ZECO anticipates completing and delivering the PSLF local T&D database.

Itron and REDI anticipate that the BI-PV technical potential report will be submitted for final approval to Commission staff.

Project 2.1: Enhanced Landfill Gas Production Using Bioreactors

It is anticipated that work under Project 2.1 will be initiated in January.

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

It is anticipated that work under Project 2.2 will be initiated in January.

Project 3.1: Dairy Waste to Energy

It is anticipated that work under Project 3.1 will be initiated in January.

Project 3.2: Building-Integrated PV Testing and Evaluation Project

Endecon anticipates receiving final written approval from IEUA to Commonwealth Energy for the use of their new administration headquarters facility for the Large System testing task. All contractual and financial requirements will be agreed upon and submitted to the IEUA Board of Directors for approval.

Additionally, it is anticipated that all equipment will be obtained for the large system, with a target delivery of February.

Project 3.3: Building-Integrated PV on Public Facilities

REDI plans to incorporate the building performance modeling data into the Evaluation Tools Package and will be testing several case studies to verify performance. Additionally, a technical assistance booklet is being prepared.

REDI will continue to meet and work with architects to investigate potential BI-PV designs for schools in the Ontario/Montclair school district, and site visits will continue as REDI develops the technical and economic analysis reports. Finally, REDI will be meeting with Commission staff to explore funding opportunities/issues for BI-PV Public Sector Clients.

WHAT WAS ACCOMPLISHED THIS PERIOD:

Project 0: Program Administration

As anticipated, RER continued to move forward in the process of confirming the selected RPAC and TAC members. A date was confirmed for the first Program RPAC meeting, to be held at the Commission in Sacramento on February 27th. There are a few RPAC members that the CE Team is still in the process of confirming, however, the finalization of the Program RPAC members will be completed by the beginning of February.

The deliverables for Task 0.1; Program Kick-Off Meeting, and 0.2.2; Website and Program Software Standardization were submitted to the Commission for final review and approval, prior to invoicing.

The 2nd Contract Invoice was submitted in early January covering Project 1.1: (Tasks 1.1.3 and 1.1.4) and Project 3.3, (Task 3.3.1a and 3.3.1b).

Overall Project specific administration support under Task 0.8 continued by the Program Director. Revisions and/or potential reallocations of budget and/or schedule continue to be discussed between the Commission Project Manager and the Program Director. Once finalized, these changes will be incorporated into revised Contract Exhibit B. Monthly Status Reports were drafted and submitted for Project 1.1, Project 3.2 and Project 3.3.

Project 1.1: Program Planning and Analysis

CH₂ completed its work on the Agricultural Facilities database. Internal review continues on the Inventory Report. Although the Landfill Bioreactor and Sewage Treatment Plant databases and reports were previously submitted and approved, follow-up calls continued to come in.

Itron and REDI continue to respond to Commission comments on the BI-PV technical potential report and database. The public facility database has been revised to address the average number of buildings per standard NAIS category. The report is under final review by Itron and it is anticipated that it will be submitted to the Commission in February.

ZECO has completed developing data for the local T&D database and has inserted the data into the PSLF model for seven local systems in the mini-grid area. Additionally, they have begun developing the 2007 and 2012 peak and light load PSLF cases for the model.

An economic evaluation discounted cash flow based model has been developed for use in assessing the various PV and biogas generation technology prototypes. The Market Potential Report is being prepared by Itron.

Work has begun on the Prioritized List of Projects under Task 1.1.10, as technical information is being refined as it relates to specific projects under consideration. A working draft of the biogas components of the prioritization report has been submitted internally for review and comments in relation to organization and analytical approach.

Work has begun on the outline for the Project 1.1 Final Report. The structure will incorporate key previous findings as well as provide an updated and concise record of activities undertaken on the Project.

Project 2.1: Enhanced Landfill Gas Production Using Bioreactors

Work has begun on this project, with preliminary regulatory strategies being developed and information being collected for discussion amongst the members of the Project 2.1 Technical Advisory Committee (TAC).

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

Efforts began on this project using information collected during preparation of the Sewage Treatment Database and Inventory Report. Based upon the preliminary findings of the prioritization efforts, it appears that there will be two sets of projects. First, there will be projects to increase gas production using thermal hydrolysis and ultrasound technologies. Projects related to gas cleaning and improving quality will likely be conducted at IEUA plants within the mini-grid. During the initial project startup activities, consultations with vendors and host facilities were undertaken. Preliminary process concepts were formulated and evaluated by the Team.

Project 3.1: Dairy Waste to Energy

As work began on this project, initial efforts included assessing different digestion and energy conversion systems applicable for dairy power projects. This includes European and North American technologies. It also involves using information collected during preparation for the Project 1.1 Inventory reports. Overall, efforts will seek to identify and select the most applicable technologies for the potential dairy waste to energy projects.

Project 3.2: Building-Integrated PV Testing and Evaluation Project

Work continues on the Large Systems Testing task, as all major components have been ordered and received for the Data Acquisition System (DAS). Endecon prepared drawings and documentation and has continued to refine database requirements in order to proceed with this task. The provisional contract between IEUA and Commonwealth Energy was discarded, and work has begun on the contract itself. Pricing information for all large systems equipment has been obtained, and work continues to progress on the small systems testing task.

Project 3.3: Building-Integrated PV on Public Facilities

REDI continues to refine the evaluation tools package. Meetings were held with Commission staff to review and discuss the software evaluation tools. REDI has integrated various BI-PV modules into the evaluation tools package and is anticipating that it will be ready for submittal in February.

Two guideline books have been developed by REDI, with plans to submit them for approval to the Commission in February. Additionally, revisions have been undertaken on the Draft Facilities Test Plan.

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 are 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 experiences, should not impact the overall Project 1.1 or Project 3.2 targeted completion dates:

- **Project 1.1:** An important and on-going challenge has been gaining regulatory acceptance for the bioreactor landfill project. CH₂ is following up on discussions held at a Commission meeting, which will provide strategies for gaining this acceptance and expediting task completion. Itron and REDI continue to address questions on the technical potential report, it is anticipated that this report will be finalized and submitted in February.
- **Project 3.2:** Several of the tasks under 3.2.2 have fallen behind scheduled due to the difficulties over siting the large systems. As the contract is now being prepared between Commonwealth Energy and IEUA, it is anticipated that this situation will be resolved within the next reporting period.

SIGNIFICANT PROBLEMS OR CHANGES:

As indicated above, there are Project 1.1 and Project 3.2 tasks, which are currently behind schedule. However, these task delays are not expected to impact the overall Project completion dates, and as such, we report that 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 anticipates that the RPAC and TAC member selection and confirmation process will be completed, and that the 1st Commonwealth Program RPAC meeting will be held on February 27th at the Commission, as planned.

The 3rd Contract invoice will be submitted in early February covering Project 0: (Task 0.1 and 0.2.2) as well as Project 3.2: (Task 3.2.1)

Project specific administration support under Task 0.8 will continue per the schedule. Revisions and/or potential budget reallocations will continue to be reviewed and refined by the Contract Program Director. Monthly Status Reports will be drafted and submitted to the Commission for Project 1.1, Project 2.1, Project 2.2, Project 3.1, Project 3.2 and Project 3.3, and a monthly Program Report will be drafted and submitted as well.

Project 1.1: Program Planning and Analysis

It is anticipated that the Agricultural waste database and inventory report will be submitted to the Commission for review. Work will also continue on the project prioritization list and the task deliverable final report text and outline.

A visit has been planned for February by NIRAS, a Danish firm with biogas energy expertise. Presentations will be held in Sacramento in the 12th and 13th of February. Two NIRAS representatives will participate in these presentations and a dairy facility tour will take place on the 11th.

It is anticipated that the Task 1.1.5 inventory and technical potential report will be finalized and submitted to the Commission for review and approval. Additionally, the draft deliverable on generation profiles is expected to be finalized, and reviewed internally by the Team.

ZECO plans to complete the draft Task 1.1.6 and 1.1.9a T&D Inventory and Power Flow reports and deliver the draft PSLF model & database results to the Commission for review and approval.

Finally, the Project 1.1. Critical Project Review meeting will be held in Sacramento on the 27th of February, immediately following the RPAC meeting. This will be the 1st CPR meeting, and the first gathering of the Project 1.1 Technical Advisory Committee (TAC).

Project 2.1: Enhanced Landfill Gas Production Using Bioreactors

Work will continue to progress, as CH₂ moves forward on this project. A formal Project 2.1 kick-off meeting is expected to occur in late February.

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

Work will continue to progress, as CH₂ moves forward on this project. A formal Project 2.1 kick-off meeting is expected to occur in late February.

Project 3.1: Dairy Waste to Energy

Work will continue to progress, as CH₂ moves forward on this project. A formal Project 2.1 kick-off meeting is expected to occur in late February.

Project 3.2: Building Integrated PV Testing and Evaluation Project

It is anticipated that the IEUA Management Team and Board of Directors will approve the contract between Commonwealth Energy and IEUA. This will allow Commonwealth to provide and install the system on the new IEUA headquarters building, which will become the large system test site. Arrangements will be developed and coordinated with IEUA on all aspects of preparation and installation of the Large (60 kW) PV system. Additionally, equipment and material procurement are expected to begin.

Finally, the DAS Letter of Notification and DAS Manual may be submitted for review and approval.

Project 3.3: Building-Integrated PV on Public Facilities

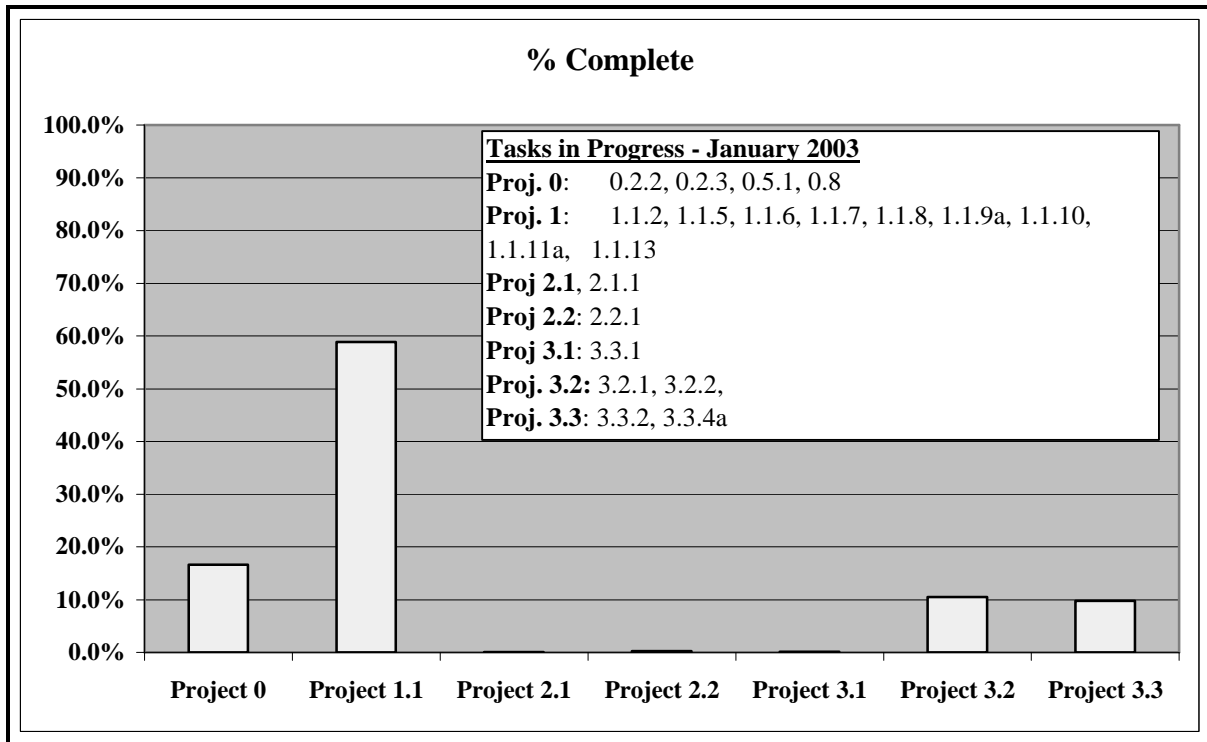
REDI anticipates completing the verification and test of the software evaluation tools, and submitting the Evaluation Tools package and Public Facilities Test Plan draft to RER for review and comments.

Work will continue as BI-PV projects are developed with public agencies within the mini-grid. REDI will continue to contact public agencies, for those which to-date have been either non-responsive or have yet to be contacted. A workshop will be developed in conjunction with the local Assembly Member to discuss reducing energy costs through BI-PV projects. And, a PV analysis paper will be sent to key facilities Managers to expedite the development process.

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.

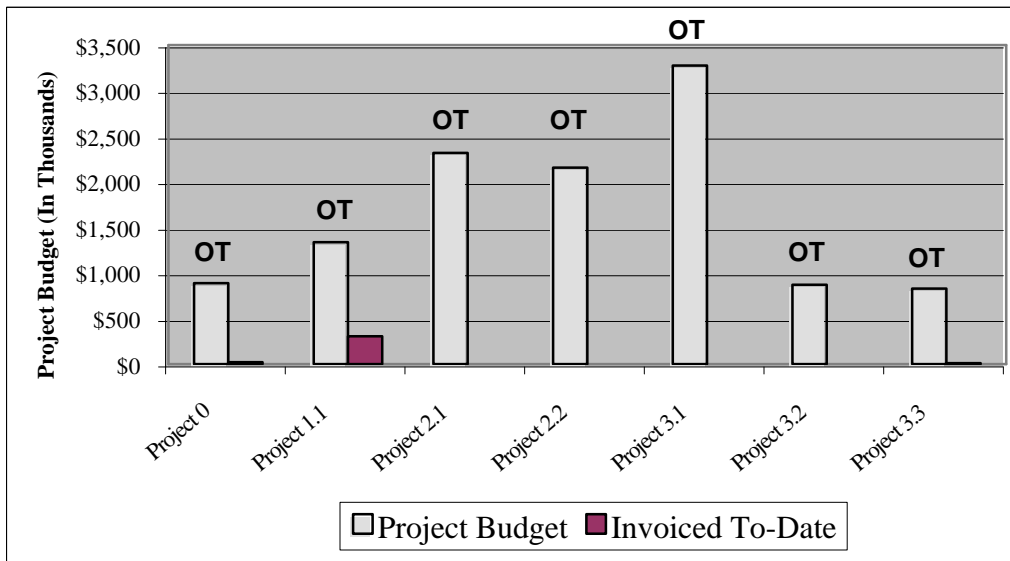
Table 1: Program Fiscal Status By Project

Project Number	Project Budget	Invoiced To-Date (\$)	Fiscal Status *
Project 0	\$ 889,771	\$20,133 **	OT
Project 1.1	\$1,336,613	\$305,014**	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	\$9,000**	OT

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

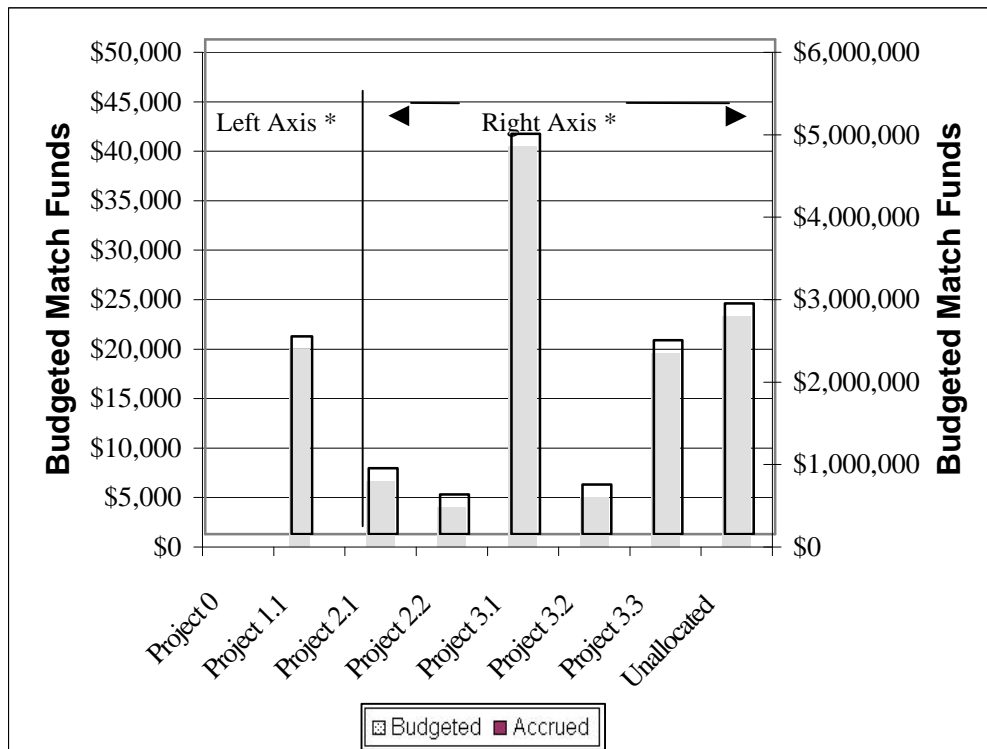
** Invoice Amount Shown after 10% retention withheld.

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.