

MONTHLY PROGRAM REPORT

JULY 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

Project-specific development/implementation under Task 0.8 will continue relative to each active Project under the CE Program. Revisions and/or potential budget reallocations will continue.

Monthly Status reports were drafted and it is anticipated that they will be submitted to the Commission for all six active projects. Additionally a Monthly Program Status Report will be drafted and reviewed.

Project 1.1: Program Planning and Analysis

Activity will continue to focus on defining and prioritizing the top projects to be recommended for funding. Additionally, The CE Team anticipates reviewing internally and finalizing the Task 1.1.7 Market Potential draft report.

ZECO will continue its work on the Task 1.1.9b Power Flow Analysis draft report.

Project 2.1: Enhanced Landfill Gas Production

Activity under Project 2.1 will focus on the completion of the Waste Characterization Report. Information that was previously requested, but was not available until late June, should now allow the completion of this draft report. Additionally, it is anticipated that several meetings will be held in July in order to review the design of the Mid-Valley Landfill to assure adaptability to the bioreactor concept. An additional value to these meetings will be the information exchanged between participants, which will enable the efficient development of a bioreactor at the Mid-Valley Landfill site.

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

Information collection and analysis will continue with additional activity focusing on enhanced energy production, gas cleaning and energy recovery. A planning meeting is scheduled with Ingersoll-Rand (IR) and the CE Team to more fully identify and subsequently evaluate gas cleaning options for this project.

Project 3.1: Dairy Waste to Energy

July activities will focus on the finalization of the draft Digester Comparison Report, with Commission comments addressed. Further identification and development of the Testing Protocols will continue. It is important to note that the findings related to the projects recommended within the Planning & Analysis Project 1.1. Prioritization list may influence how work proceeds on this Project.

Overall, work will continue on defining the appropriate approach, which will incorporate the results of the comparative analysis of technologies, as well as the Mini-Grid analysis into the process and site selection activities.

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

Endecon anticipates that the remaining purchase orders and contracts for the large systems (2 kW sub system) will need to be issued. Additionally, preparation for the installation of the large systems will continue, with a current target start date of August.

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

Project assessment reports will be prepared for the ten identified BI-PV Public Sector project locations, and technical assistance will be offered to the BI-PV Public Sector Clients.

WHAT WAS ACCOMPLISHED THIS PERIOD:

Project 0: Program Administration

As anticipated, project-specific administration support under Task 0.8 continued. Revisions and/or potential budget reallocations continue to be refined. The Contractor Program Director worked with Commission staff and CE Team members, in order to schedule the first Critical Program Review Meeting originally anticipated to be held in July.



Project Monthly Status Reports were drafted for Projects 1.1, 2.1, 2.2, 3.1, 3.2 and 3.3 for the month of May and were submitted internally and to the Commission for review and approval. May's Monthly Program Report was drafted and submitted internally for review. Upon Approval, all monthly status and program reports are placed on the PIER Website for public viewing.

Project 1.1: Program Planning and Analysis

CH₂ finalized their response to the Commission's comments on the Task 1.1.2 Agricultural Database and Inventory Report, and included additional information collected on dairies and food processing facilities.

As anticipated, Itron completed the draft final Market Potential Report and submitted it to the Commission for review.

ZECO completed the Task 1.1.9b Power Flow Analysis draft report, and submitted it for internal CE Team review. Changes to the renewable resource market penetration levels were received, these revisions were then included in the Task 1.1.9b draft report, and it was then resubmitted internally for further review. ZECO also received T&D equipment cost assumptions from SCE. Additionally, ZECO and Itron prepared and presented the draft results of the Task 1.1.9b study to the Commission SAFARI workshop in mid-July.

The CE Team continued its analysis of projects for the process of completing the List of Prioritized Projects under Task 1.1.10. Information from the Mini-Grid analysis that the team had been waiting for became available in mid-July. Notable progress was made on the draft report, and initial efforts were undertaken to integrate the Biogas and PV portions of the Prioritization Report.

Work continues on the Project 1.1. Final Report. This work encompasses the compilation of the key findings for each task of this project and also highlights and emphasizes the Project and overall Program linkage. Coordination of the preliminary key findings from this project will occur in order to ensure that future efforts on Projects 2.1, 2.2 and 3.1 are aligned with these findings.

Project 2.1: Enhanced Landfill Gas Production Using Bioreactors

As anticipated, CH₂ completed their data collection activities. The draft Waste Characterization Report was submitted within the CE Team for internal review prior to submission to the Commission.

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

Information continues to be assembled on the different processes currently being analyzed within the Process Selection task of this Project. Additionally, the process concepts continued to be refined in relation to anaerobic digestion. As anticipated, meetings were held with Ingersoll Rand (IR) and IEUA in order to review IR's fuel conditioning system, and how it may be integrated into this project. A second meeting was held where the options for installing new systems based upon June's site visit, were discussed.

Work on process selection also continued with ultrasound and thermal hydrolysis data being collected for potential use at the Riverside plant. Preliminary results indicate that the ultrasound technology offers the most potential. Vendors were contacted, and the results of this analysis will be presented in the draft Process Selection Report.

Project 3.1: Dairy Waste to Energy

Efforts in July focused on assessing the differing technologies that may be applicable to the dairy cluster projects. Data, which was developed for the digester comparison report was assessed in order to facilitate the evaluation of these processes to facilities within the Chino Basin.

Comments were received from the Commission and Kurt Roos of the US EPA Ag Star Program on the Digester Comparison Report; these comments focused primarily on the quality of data available. CH₂ is currently responding to the comments received, and where appropriate will revise the draft report.

Additionally, efforts continued on the protocols for testing different processes in order to optimize biogas processes at existing dairy cluster projects. Test plans will be compiled into a draft report, which will allow reviewers to assess technologies and potential benefits to dairy facilities in the Chino Basin and greater California.

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

Progress is being made on the purchase orders for the large and small systems, however they remained un-signed in July. The Contract between Endecon Engineering and Commonwealth Energy was finalized for the engineering and installation of the 60 kW large

systems. Additionally, progress continues with the coordination at the IEUA site for the installation of the large PV rooftop systems.

Currently work on the data acquisition system for small system has been placed on hold. The CE Team anticipates that by August this task will be back on track.

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

Internal CE Team comments have been incorporated into the draft final Evaluation Tools Package. REDI anticipates submitting the final package to the Commission in August.

Project data continues to be assembled for the draft Select Demonstration Project Sites Report. REDI continued working with both Commonwealth Energy and other project inventors on ESP funding for the BI-PV public sector clients.

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 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 0:** Itron has experienced delays in submitting the Monthly Project Status and Program Progress Reports.
- **Project 1.1:** The CE Team continues to experience difficulties in the gathering of dairy site-specific data, which has delayed the completion of the Agricultural Facilities Database and Inventory Report. Additionally ZECO experienced delays in receiving and being able to address comments within the Task 1.1.6 and 1.1.9a reports, and as such, the task 1.1.9b Power Flow analysis results have been moved back slightly. Itron and CH₂ continue to await the results of the power flow analyses in order to complete the remaining elements of the Prioritized List of BI-PV and Biogas Projects.
- **Project 2.1:** As reported in March's Program Report, the overall project start-date was delayed pending the completion of the Landfill Bioreactor Database and Inventory Report (Task 1.1.3). As of June, the Project continues to move forward and work is proceeding as anticipated. 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.
- **Project 2.2:** Although this project is on track, there remains uncertainty regarding the project which 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 project, in a manner, which 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 will be a lag time between report submittals.
- **Project 3.2:** The previous legal delays surrounding the signed Commonwealth-IEUA BI-PV power sales agreement continue to have residual affects on other Project 3.2 tasks, and will additionally affect the schedule for Project 3.3. However, as the contractual issues are anticipated to be resolved soon, Project 3.2 and Project 3.3 are expected to move forward quickly. The majority of the legal questions from the parties have been answered, however a few remaining issues continue to hold up this process.
- **Project 3.3:** Task 3.3.2 has taken longer than originally anticipated to complete, due to multiple outside technical reviews and the draft deliverable, although essentially completed, continues under outside evaluation.

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) is in process, and will be submitted to the Commission for review and approval, addressing any necessary changes in schedule for these projects. However, it is important to note 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

Project-specific support under Task 0.8 will continue relative to each Project under the CE Program. Revisions and/or potential budget reallocations will be refined, finalized and submitted to the Commission for review and approval.

The CE Program Director will continue to review potential dates for the First CPR meeting. As of this date, it is anticipated that it will be held at the Commission in mid-to-late September.

Monthly Project and Program Status Reports will be drafted for the month of June and submitted internally for CE Team review and then to the Commission for review and approval. prior to posting on the CE Program Website.

Project 1.1: Program Planning and Analysis

August activity will focus on the effort to define and prioritize top project for recommendation for funding. Final identification of these projects will come from results of the power flow analysis of the mini-grid. The CE Team anticipates incorporating these findings into ongoing activity. The "Project Champions" for each of these projects will be of significant importance, and as such, dialog will continue with various project sponsors.

Project 2.1: Enhanced Landfill Gas Production

CH₂ will continue to develop the conceptual design information on the Mid-Valley bioreactor project. This information will be essential for a meeting scheduled in late August with the Water Quality Control Board - Santa Ana Region. Additionally, CH₂ anticipates the completion of the Waste Characterization Report, which will incorporate the response to comments received in July from Commission and TAC Members.

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

Information collection and analysis will continue in relation to the process selection task. Additionally, on-going activity will continue as related to enhanced energy production, gas cleaning and energy recovery.

Project 3.1: Dairy Waste to Energy

Comments will be incorporated into the Digester Comparison draft report. In addition, it is anticipated that the Test Plans and Protocols draft report will be ready for review.

Efforts will continue in defining an approach to incorporate the results of the comparative analysis of technologies and the Mini-Grid analysis into the Process selection activities.

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

It is anticipated that the remaining purchase orders and contracts for the large systems will be issued by Commonwealth Energy. A portion of the Large System will be installed and prepared for operation pending legal approvals.

A PV installation-training workshop will be held for the IEUA staff in order to familiarize them with the installation and operation of the systems installed on their headquarters rooftop.

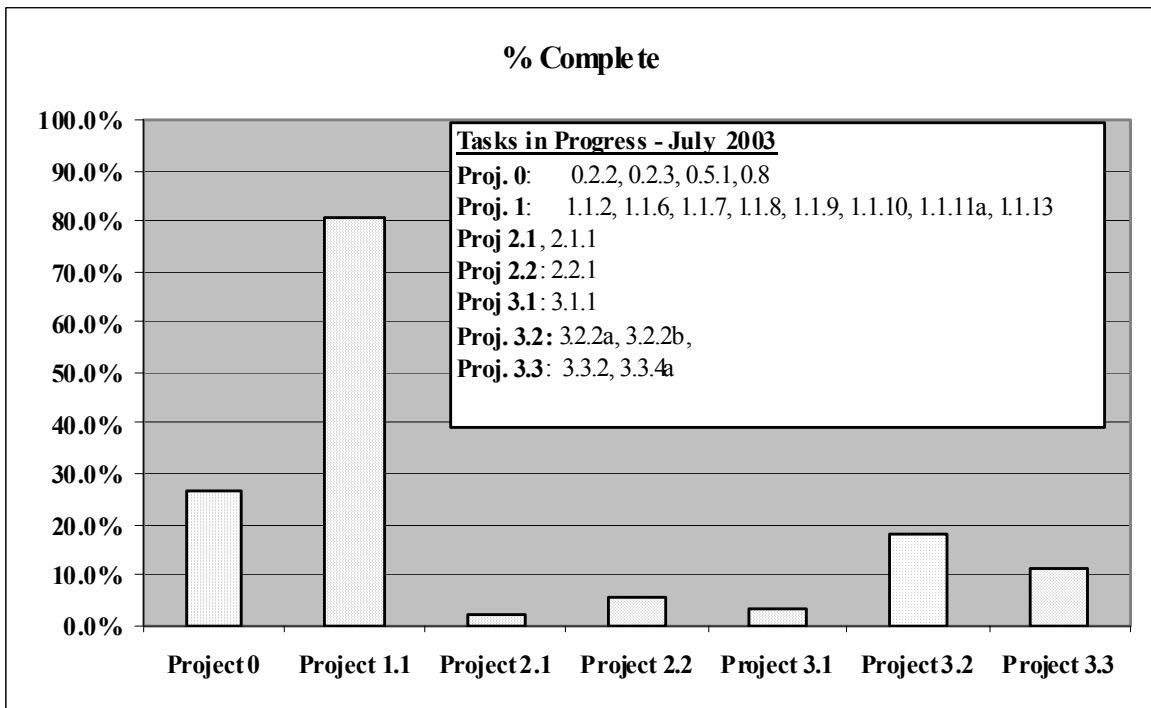
Project 3.3: Building-Integrated PV (BI-PV) on Public Facilities

REDI anticipates submitting the Final Draft of the Evaluation Tools Package to the Commission for review and approval. On-going technical assistance will continue to be provided to the BI-PV Public Sector Clients for proposed projects.

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:

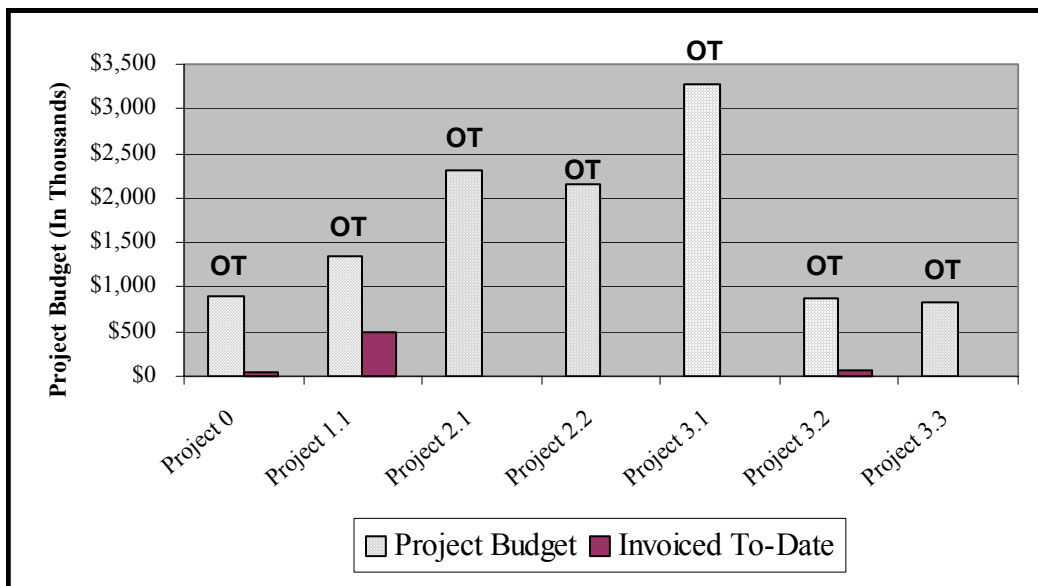
Table 1 and Figure 2 below summarize the fiscal status of the Commonwealth Program by Project as of the end of the current reporting period.

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

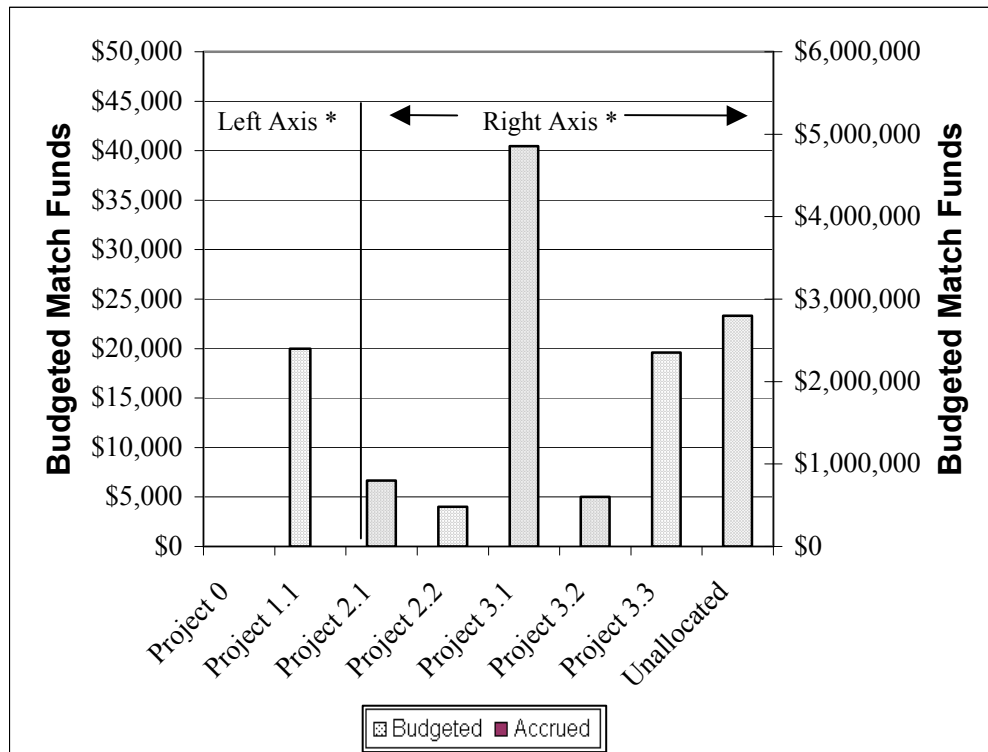
*Fiscal Status = (OT) "On Track", (OB) "OverBudget", (UB) "UnderBudget"
 ** Invoice Amount Shown after 10% retention withheld.

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.