

MONTHLY PROGRAM REPORT

AUGUST 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 support under Task 0.8 was to continue relative to each Project under the CE Program. Revisions and/or potential budget reallocations were to 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 Critical Program Review (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 were to 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 was to 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 were to be incorporated into the Digester Comparison draft report. In addition, it is anticipated that the Test Plans and Protocols draft report should 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 Commonwealth Energy will issue the remaining purchase orders and contracts for the large systems. 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.

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, and contacted RPAC members to schedule the first Critical Program Review Meeting. It was determined that this meeting would be held on September 24th at the Commission's Hearing Room B. The CE Team began drafting an agenda, for Commission approval.

On August 26th – August 28th, The Contractor Program Director traveled to Ontario, California to attend the Bioreactor Technical Advisory Committee Meeting.

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 June were drafted and submitted internally for review.

Project 1.1: Program Planning and Analysis

Itron has received biogas comments on the Market Potential draft report, and will be reviewing and if appropriate revising the draft report to reflect these comments. As anticipated, Itron submitted the Draft Generation Profiles report internally to the CE Team for review and comments prior to forwarding it on to the Commission and TAC Members.

ZECO has incorporated cost assumptions provided by Southern California Edison into the benefit and cost calculations and has revised the appropriate sections of the Task 1.1.9b report to reflect these revised calculations.

CH₂ has continued its work on the Prioritized List of Project sites. In August, the emphasis was focused on the projects that will foster effective centralized dairy digester projects. This work was coordinated with the PV team in order to assure consistency within the project and the draft report. The draft report was completed and submitted for internal CE Team review.

The CE Team continues to make progress on the Project 1.1. Draft Final Report. Key findings have been compiled, and upon the completion of the Prioritized List of Projects, will be finalized.

Project 2.1: Enhanced Landfill Gas Production Using Bioreactors

Emphasis continued on the preparation of the Draft Waste Characterization Report. CH₂ received data from the San Bernardino County landfills and added it to the existing data received previously from statewide solid waste sources. The Draft report was completed and submitted for internal CE Team review.

A meeting was held in late August in San Bernardino County involving regulatory representatives, design engineers and the CE Team. Conceptual designs were presented, with a key directive from this meeting suggesting a review of the San Timoteo site as a potential demonstration bioreactor project site; as from the County's perspective San Timoteo offers potential advantages over Mid-Valley. Additionally, several options were identified for the availability of water for the bioreactor site. Following the meeting, site tours were conducted at both the Mid-Valley and San Timoteo sites.

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

The draft Task 2.2.1 Process Selection Report was prepared and submitted internally for CE Team review. The draft report addresses the differing processes being analyzed for gas cleaning of microturbines as well as the enhanced anaerobic digestion process. Meeting continued with project sponsors, and a meeting was scheduled in order to review the ultrasound status with the Riverside Treatment Plant staff.

Project 3.1: Dairy Waste to Energy

As anticipated, the primary focus in August was on the response to comments received on the draft Digester Comparison report. Responses were drafted and the report was revised to reflect the issues presented. Additionally, CH2 began addressing comments received from Kurt Roos; and a teleconference was held for clarification and discussion. One key factor Mr. Roos brought to the CE Team was the desire to have approximately 6 month to one year of good operating data prior to considering the sites "fully operational". Based upon this input, CH₂ sought to obtain more complete data including length of facility operation.

Additionally, efforts continued on the protocols for testing processes, for the optimization of biogas performance at existing dairy clusters. Test plans were included in the draft report allowing reviewers access to the technologies and their potential benefits. By month end, the draft report was completed and circulated internally with the CE team for review and comment.

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

As anticipated, a PV installation-training workshop was held in order to familiarize IEUA staff with the large systems installation and operation of the systems to be installed on their headquarters rooftop. The purchase orders and contracts, which have been delayed, were issued by Commonwealth Energy in August. Subsequently, all but 4 of the 60 kW PV arrays were installed and significant progress was made on the electrical conduit.

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

As anticipated, the revised draft Evaluation Tools package was submitted to the Commission for review and comments. Work continued on the assembly of data for the draft Demonstration Project Site report under Task 3.3.4.

REDI continued its on-going support with Commonwealth Energy and other investors on ESP funding for BI-PV public sector clients. REDI is also assisting BI-PV clients with system designs and bid solicitation documents, and continues to develop new contacts with public sector funding sources.

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 continues to experience a delay in submitting the Monthly Project Status and Program Progress Reports.
- **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 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 plug flow 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:** Task 3.2.2 (1) activity has previously been delayed due to negotiations and related contract approvals in relation to the Commonwealth-IEUA agreement. 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) is in process, and will be submitted to the Commission for review and approval, 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

Itron anticipates that the focus of activity in September will involve the preparation and follow-up for the first Critical Program Review (CPR) meeting to be held on September 24th. Itron and the CE Team will work closely with the Commission to finalize the meeting agenda, submit meeting invitations to the RPAC members, and prepare a meeting presentation. Additionally, it is anticipated that numerous project draft and final reports will be submitted for Commission review, within 10 days of the CPR meeting. Each of these Program deliverables will be placed on the private side of the CE PIER Program website.

Scheduled revisions and/or potential task level budget reallocations 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 July, and reviewed internally prior to submittal to the Commission and posting on the CE Program Website.

Project 1.1: Program Planning and Analysis

Activity in September will focus on the draft and final draft reports, which will need to be submitted prior to the Critical Program Review meeting scheduled for the end of September. It is anticipated that the CE Team will submit the Task 1.1.7, Task 1.1.8, Task 1.1.9b and Task 1.1.10 draft reports for review and comments to the Commission and TAC Members.

Additionally, CH₂ anticipates that their response to the Commissions comments on the Task 1.1.2 Draft Agricultural Inventory Report will be completed and ready for re-submittal to the Commission.

Finally, the CE Team anticipates that work on the Draft Final Report for Project 1.1. under Task 1.1.11b will re-start in response to comments from RPAC members and Commission Staff following the September 24th Critical Program Review Meeting.

Project 2.1: Enhanced Landfill Gas Production

Primary focus will be placed on responding to questions and issues raised at the Mid-Valley bioreactor project meeting held in late August. CH₂ and the CE Team will also prepare for the Project 2.1 TAC meeting to be held on September 10th, as well as for the Critical Program Review Meeting on September 24th.

It is anticipated that the completion of the Waste Characterization report will be finalized, incorporating comments received from the Commission and TAC members.

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

The emphasis of activity will continue to be data collection and analysis in relation to process selection. CH₂ anticipates that the draft Process Selection Report will be completed and forwarded to the Commission and TAC members for review. A brief Project 2.2 presentation will be prepared for the September 24th Critical Program Review meeting.

Project 3.1: Dairy Waste to Energy

Comments received from the Commission and Mr. Roos on the Draft Digester Comparison Report, will be integrated by the Project Team. Several information requests submitted in August are expected to be received in September.

Additionally, CH₂ anticipates completing and submitting the Draft Test Plans and Protocols report to the Commission for review. A brief Project 3.1 presentation will be prepared for the September 24th Critical Program Review meeting.

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

Endecon anticipates completing the installation of the remaining PV-arrays as well as the electrical conduit for the Large Systems testing effort. Additionally, it is anticipated that the installation of the metering and a significant portion of the data acquisition equipment will be prepared in order to interconnect with the Southern California Edison system. Additionally, a brief Project 3.2 presentation will be prepared for the September 24th Critical Program

Review meeting.

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

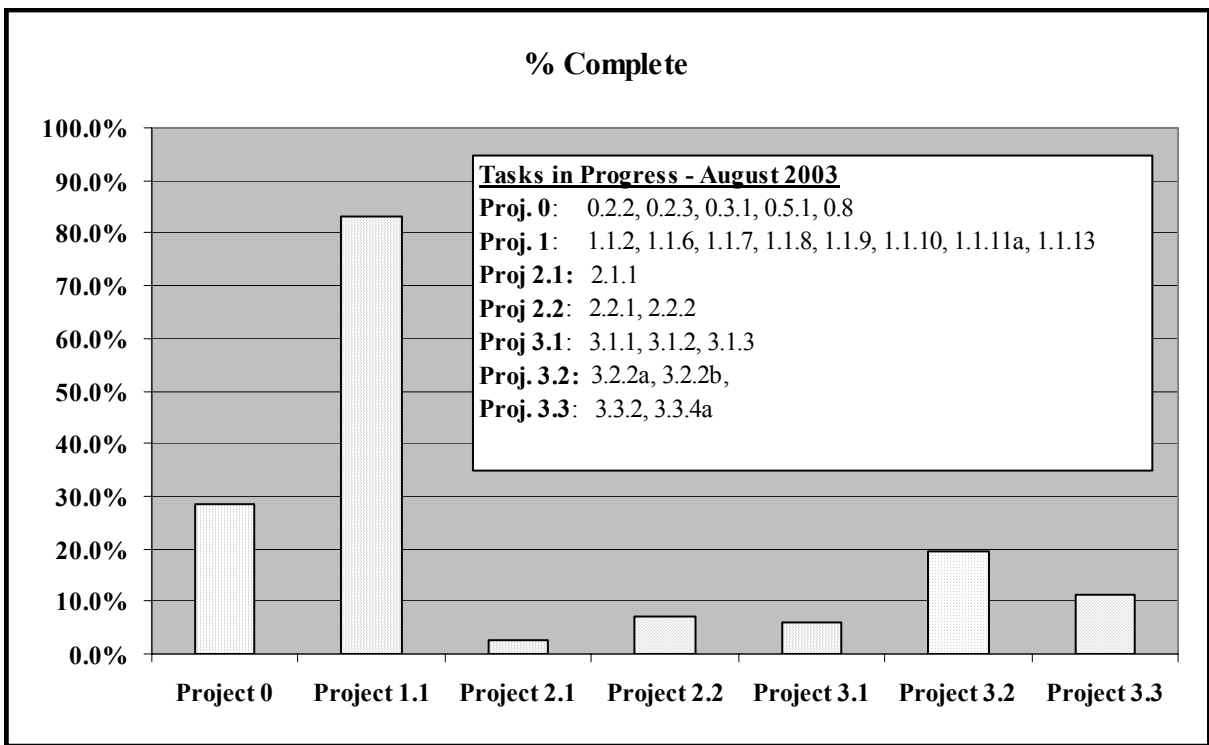
REDI anticipates receiving the final comments from the Commission staff on the Task 3.3.2 draft Evaluation Tools Package, and will begin responding to these comments upon receipt.

Additionally REDI will prepare a brief Project 3.3 presentation for the September 24th Critical Program Review meeting.

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:

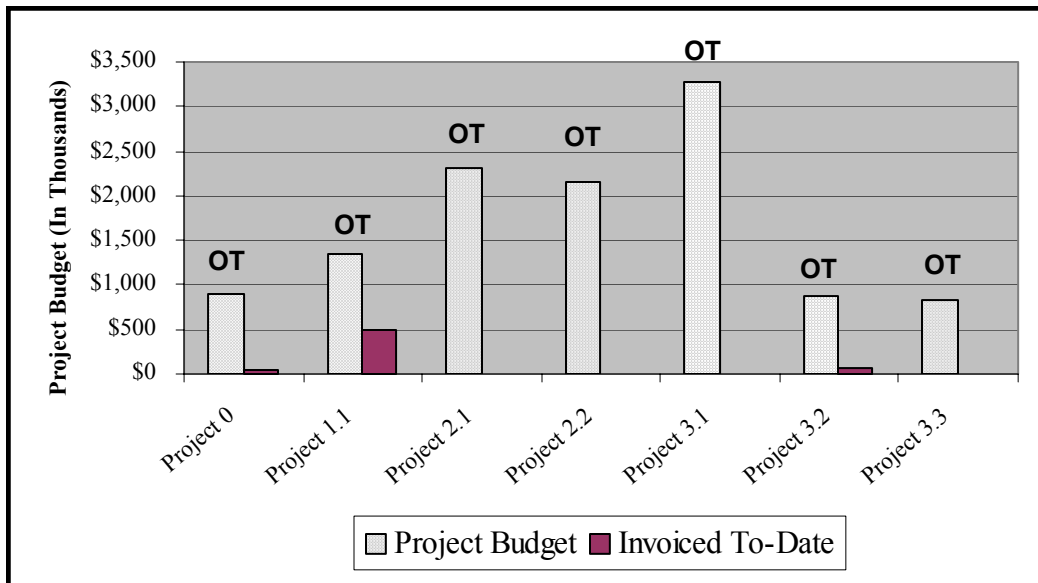
Table 1 and Figure 2 below summarize the fiscal status of the Commonwealth Program by Project as of the end of the current reporting period.

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

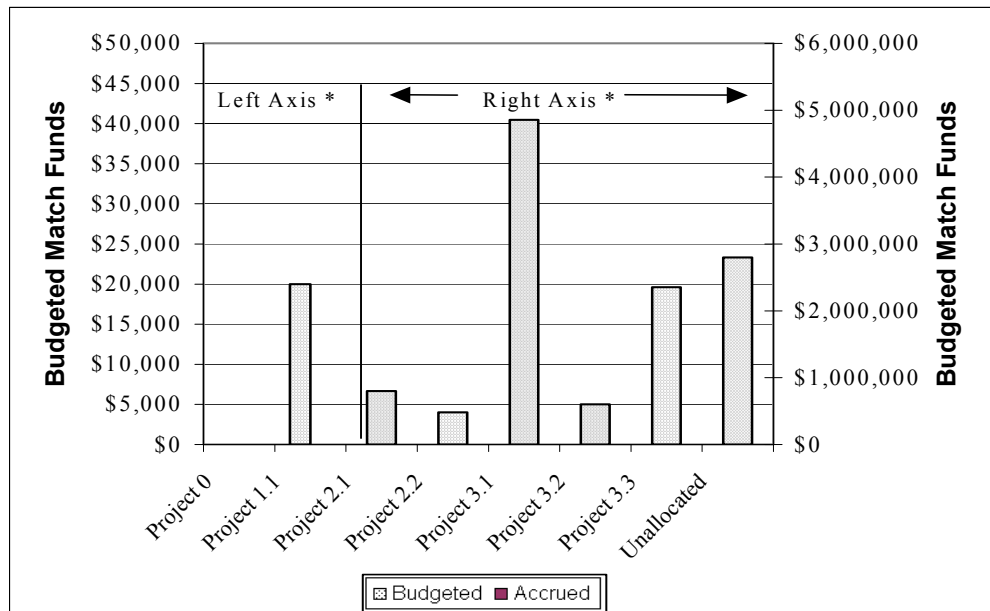
*Fiscal Status = (OT) "On Track", (OB) "OverBudget", (UB) "UnderBudget"
 ** Invoice Amount Shown after 10% retention withheld.

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.