

MONTHLY PROGRAM REPORT

AUGUST 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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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 on Task 0.2.2 , the PIER Commonwealth Biogas/PV-Mini-grid Renewable Resources RD&D Program Website, will continue into the next reporting period. The Commonwealth Team expected to have a visual presentation by August, which would enable the Program Team and Commission staff to provide input based upon site aesthetics and ease-of-use.

Under Task 0.2.3, the Commonwealth Project Director and the CEC will continue to compile and review potential participants for the RPAC. We expect to compile a draft list of names for review and input.

Program and Project specific administrative tasks will continue, including coordination of the Commonwealth Team Members, Monthly Progress Reports, Monthly Program Highlights

and Monthly Program Reports. It is anticipated that the invoicing process may begin during the next reporting period.

Project 1.1: Program Planning and Analysis

The Project Team expected to have the Task 1.1.1 Assessment Review Draft Report completed and delivered to the Commission Program Manager for review. Work would continue as the Team refined the preliminary Study Area.

Database development for sewage treatment plants and landfill facilities was expected to near its completion. Additionally, the Team planned to begin developing the information associated with the Task 1.1.3 and Task 1.1.4 inventory reports. Additionally, we planned to initiate the Task 1.1.2 data collection and development work on agricultural facilities and its associated inventory report.

Project 2.1: Enhanced Landfill Gas Production Using Bioreactors

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

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

Initial work on this project is expected 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 project.

Project 3.2: Building Integrated PV Testing and Evaluation Project

The Team expected to have selected its Project 3.2 Technical Advisory Committee (TAC). Additionally, the Commonwealth Team planned to have the Task 3.2.1 BI-PV Test and Evaluation Plan in draft format, submitted to the Commission and the Project 3.2 TAC for their review and comments.

Project 3.3: Building Integrated PV on Public Facilities

Work was expected to continue on refinement of the BI-PV databases in response to the Team's comments, and in acquiring/developing BI-PV Evaluation tools for use in the Program.

WHAT WAS ACCOMPLISHED THIS PERIOD:

Project 0: Program Administration

RER and the Commonwealth Team continued the work on the Program Website under Task 0.2.2, with approximately 90% of the development work completed in August.

Under Task 0.2.3, REDI submitted to RER their recommendations for RPAC members with BI-PV experience.

Team members began identifying the required permits as requested in Task 0.2.5. Several entities were contacted including the County of San Bernadino, regarding the Conditional Use Permit for grid-connected photovoltaic systems. Copies were obtained of the building permit application forms for many of the cities mentioned above.

Overall Program and Project contract administration tasks under Task 0.8 continued, as the Commonwealth Team reviewed and confirmed the PIER Contract terms and conditions regarding invoice and status report structures. Monthly Status Reports under Task 0.5.1 were drafted for the following Commonwealth Renewables Affordability Mini-Grid Projects:

- Project 1.1: Program Planning and Analysis
- Project 3.2: Building-Integrated PV Testing and Evaluation
- Project 3.3: Building-Integrated PV on Public Facilities

Project 1.1: Program Planning and Analysis

A great deal of work was initiated and continued during this reporting period for the month of August, within Project 1.1. Work progressed on Task 1.1.1 as RER developed and sent the draft Resource Assessment Review Report to the Commission Manager for review. Comments were received from the Commission, and RER began addressing the issues and making revisions where applicable. Additionally, comments were received on the initial mini-grid definition and map, and RER began the process of reviewing and addressing those comments.

REDI and CH₂MHill continued their work under Task 1.1.2, with REDI providing BI-PV requirement data fields, which will be included in the Biomass databases. CH₂ continued both the data collection and database development activities for agricultural facilities.

The Commonwealth Team continued with data collection under Task 1.1.3, collecting databases and information from facilities. Although the team was successful in collecting much of the data requested and finalizing the database structure, they did not receive all of the information requested, and are unable to complete this database as planned, at this time.

The Commonwealth Team has begun the drafts of the Inventory Reports for the program elements are requested.

Data collection and database development was continued under Task 1.1.4, for sewage treatment facilities. CH₂ was successful in collecting much of the data requested, however, as in Task 1.1.3, they did not receive all of the information requested, and are unable to complete this database as planned, at this time. The Commonwealth Team has begun the drafts of the Inventory Reports for the program elements are requested.

RER and REDI began the search for publicly available information on commercial and industrial buildings in Southern California under Task 1.1.5. Initial sources of this information have included City Departments of Economic Development, the U.S. Census Bureau as well as certain Internet websites. REDI determined the number of public agency buildings located within the Chino Basin and developed a preliminary target estimate of the technical potential for photovoltaic systems within this area. REDI is currently contacting local planning agencies to determine expected growth within the target area in order to estimate the future technical potential.

Again under Task 1.1.5, REDI researched, reviewed and compiled data from numerous sources, including the Governor's Office of Planning & Research, the Southern California Association of Governments, Capital Improvement Programs, GIS data, the State Architect's office and Property Management Departments. In most cases, the information being compiled was in regard to planned growth, location of existing facilities and the schedule for new and/or planned modernization for public schools that were being considered for BI-PV opportunities.

Additionally, data was acquired regarding kilowatt-hour consumption per square foot and was organized by building type and SIC code.

Under Task 1.1.6, ZECO requested and received information on substations within the greater Chino Basin study area from Southern California Edison. The information compiled included locations and distribution circuit sizes for the substations.

RER began Task 1.1.8 work, developing photovoltaic generation profiles for use in the power flow-modeling element of Task 1.1.9. This task has begun ahead of schedule, with several commercial system configurations being examined.

Additionally, work has begun under Task 1.1.13a, as the Commonwealth Team develops the measurement and evaluation (M&E) plans for Task 3.2. The project evaluation plans were reviewed in order to ensure that they support the needs of the overall program M&E objectives.

All of the tasks under Project 1.1 are on schedule, with the exceptions being Tasks 1.1.2a, 1.1.3 and 1.1.4, where complete information was not received, and as such the Commonwealth Team, was unable to complete the tasks as originally planned within this reporting period. Work will continue to progress into the next reporting period.

Project 2.1: Enhanced Landfill Gas Production Using Bioreactors

Work has yet to begin on this project, per 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

Progress continued on the first deliverable under Task 3.2.1, as Endecon developed the Project Test Plan for Project 3.2. The first draft of the Project Test Plan was submitted to the Technical Advisory Committee (TAC) for review and comment on August 14th. The comments were received through the end of August. Endecon will begin addressing these comments in the next reporting period.

Endecon held a meeting to review Task 3.2.2a (1), in regard to the siting and financing of the 60kW Evaluation Large System to be monitored by Endecon. Commonwealth Energy is currently considering ownership of the system, which may be sited at an IEUA facility and then sell the power that is generated on-site directly to IEUA.

Project 3.3: Building Integrated PV on Public Facilities

REDI prepared and transmitted a first draft of deliverables for Task 3.3.1a and Task 3.3.1b for internal team review.

Under Task 3.3.2, REDI continued the development of the economic analysis tools for BI-PV applications, researched photovoltaic data logging and sensor equipment and collected energy audit form examples, as well as solar customer evaluation forms in order to review for potential use under this task.

REDI worked with the Local Government Commission under Task 3.3.4a to identify entities that may have indicated an interest in participating as a demonstration project site. REDI attended a workshop held in Sacramento by the Office of Planning & Research and the California Power Authority to discuss public sector projects. Additionally, REDI contacted numerous organizations including but not limited to, the California Association of Councils of Governments, the California State Association of Counties, League of California Cities and California Water Agencies, to alert members in the Chino Basin area of the BI-PV opportunities. Various Cities, Counties and Airports in the Chino Basin area were also contacted as potential candidates.

Outreach materials were prepared by REDI and a system was organized for tracking leads of potential public facilities interested in the BI-PV projects.

How we are doing compared to plan:

Of the projects that are currently active, most are proceeding on schedule and in accordance with the Program's work plan. Following are the exceptions:

- Task 1.1.2a, Task 1.1.3 and Task 1.1.4 are slightly behind scheduled due to a difficulty in receiving the information requested in a timely manner. The specific details of the delays are highlighted below under "Significant Problems or Changes".
- As reported previously, Project 2.2 has yet to begin pending clarification of certain project scoping/implementation issues.
- Project 3.3/Task 3.3.2 was initiated one month early.

SIGNIFICANT PROBLEMS OR CHANGES:

Task 1.1.2a:

CH₂MHill initiated the database collection in late July and into August. Currently there is some concern regarding obtaining the necessary information from individual parties, in order to move forward. The Commonwealth Team will continue to track, and will review progress, and/or continued delays, in next month's report.

Task 1.1.3 and Task 1.1.4:

Another delay experienced surrounded collecting data from sewage treatment plants and landfill facilities. In general, staff was not as available, or as able to respond to the Commonwealth Team's requests, as rapidly as hoped. In all cases, the entities we contacted were helpful and willing to provide the requested data. The difficulties arose because staff were on vacation and/or had higher priorities than responding to our requests. The Team followed up with staff regarding this matter and are confident that all of the requested information will be provided in the following month.

Current progress on all other active projects will result in the Program being completed on time and within budget.

EXPECTED ACCOMPLISHMENTS DURING THE NEXT PERIOD:

Project 0: Program Administration

Although work under Task 0.2.2 is running slightly behind schedule, the Commonwealth Team expects to have the Program's website operational within the first half of September.

Program and Project specific administrative tasks will continue, including program initiation coordination of the Commonwealth Team Members, Monthly Progress Reports, Monthly Program Highlights and Monthly Program Reports. It is anticipated that the invoicing process may begin during the next reporting period.

Project 1.1: Program Planning and Analysis

The Commonwealth Team plans to finalize the comments from the Commission on the Renewable Resource Assessment Review Report under Task 1.1.1. and present a final of the report as well as the mini-grid definition and map. The databases under Tasks 1.1.3 and 1.1.4 are planned to be completed, along with the associated inventory reports. The Commonwealth Team also hopes to complete most of the data collection and database development work on the agricultural facilities database under Task 1.1.2, however, it is

anticipated that this task will not be ready for submittal until November. Additionally, it is expected that work on the Agricultural Waste Inventory Report will begin in September.

Under Task 1.1.5, the Commonwealth Team plans to continue developing the BI-PV database emphasizing the detail information on public buildings within the mini-grid area, this information will also be used to support the prioritization for potential sites under Project 3.3.

The Commonwealth Team plans to complete much of the local T&D data collection under Task 1.1.6, and will begin the development of the local T&D model under Task 1.1.9a.

Work is also expected to begin on Task 1.1.7 and Task 1.1.8. This work will include collecting cost information on various technologies to be examined within the mini-grid area, as well as the development of the PV generation profiles and the waste water treatment, landfill and dairy waste generation profiles.

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 will 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

The Commonwealth Team expects to begin incorporating the comments received from the Technical Advisory Committee (TAC) into the plan. It is anticipated that the Final Plan will be submitted as the first deliverable for this Project in September. Additionally, the sites, which fall under Task 3.2 projects, will be reviewed in order to present them to the TAC.

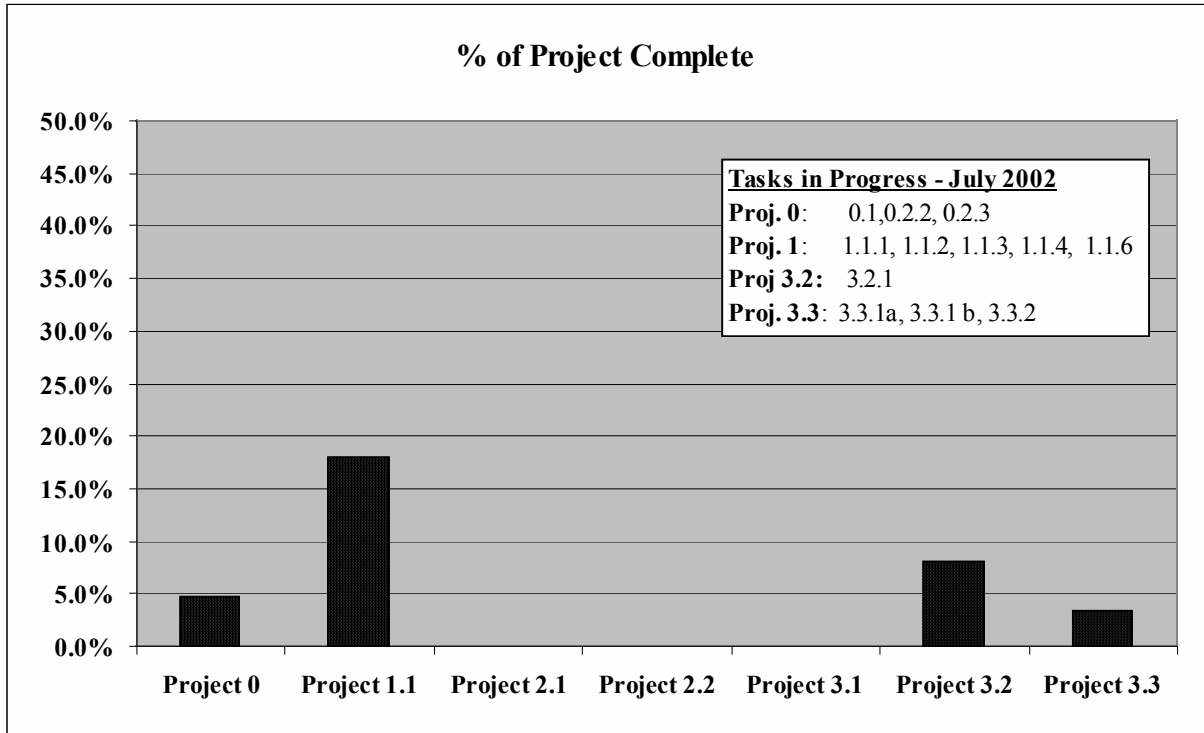
Project 3.3: Building Integrated PV on Public Facilities

REDI will continue to develop the evaluation tools for Task 3.3.2, and will additionally under Task 3.3.4a, continue making contacts from the database in order to locate applicable facilities.

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:

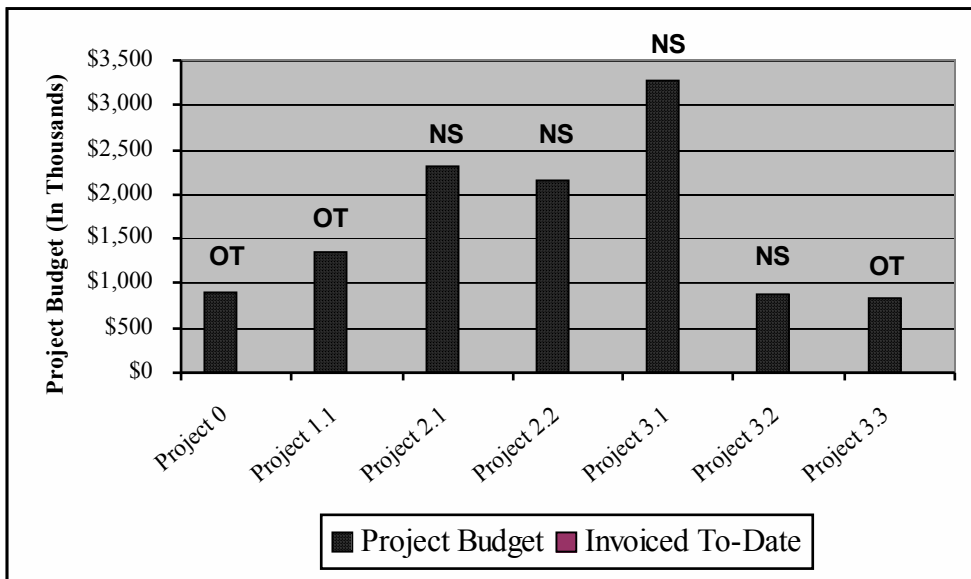
Table 1 and Figure 2 below summarize the fiscal status of the Commonwealth Program by Project as of the end of the current reporting period.

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

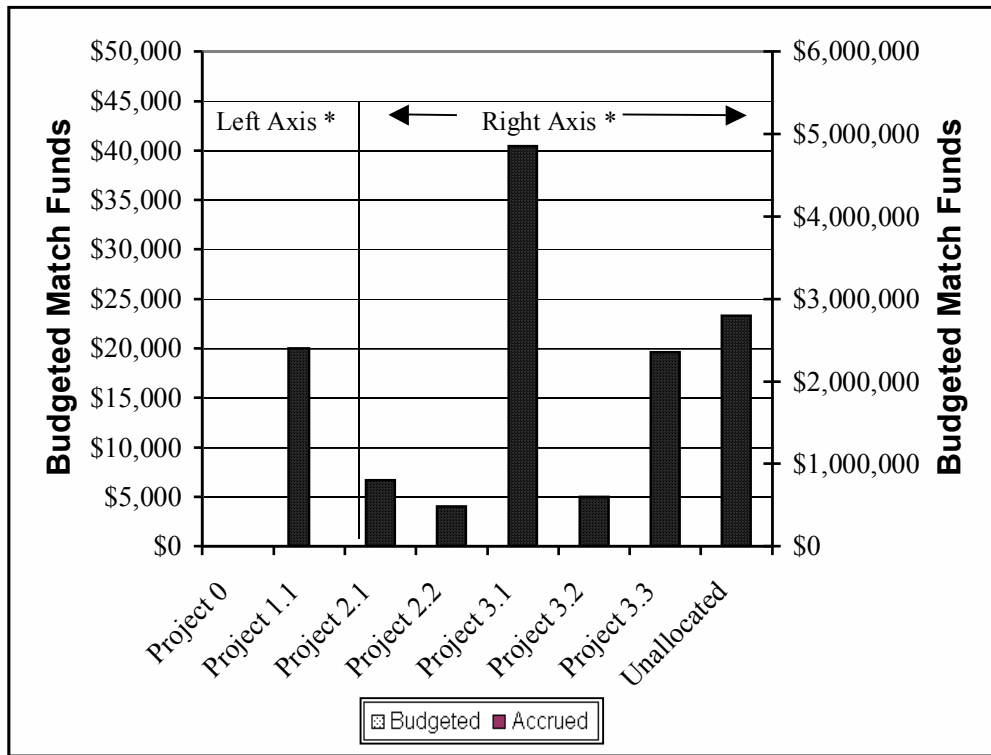
*Fiscal Status = (OT) "On Track", (OB) "OverBudget", (UB) "UnderBudget"

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.