

# MONTHLY PROGRAM REPORT

MARCH 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 CE Team planned to review and revise the RPAC meeting minutes from the first RPAC meeting held on February 27<sup>th</sup>. Once finalized, these minutes will be forwarded to the Commission for review and approval, and then sent on to the RPAC members prior to the next RPAC meeting.

It is anticipated that the 4<sup>th</sup> Contract Invoice will be submitted in mid-to-late March and will cover Project 1.1: Task 1.1.5.

Project-specific administration tasks under Task 0.8 will continue. Revisions and/or potential budget reallocations will continue to be reviewed and refined by the Contract Project 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. It is anticipated that by May, these reports will be current and up-to-date.

*Project 1.1: Program Planning and Analysis*

CH2's activity will focus on continuing the effort to define and prioritize the projects to be recommended for funding in Project 1.1. Additionally, they anticipate that the Agricultural database and draft report should be ready for its final submission to the Commission for review and approval.

Iron will finalize prototypes for the market assessment and run market potential analyses, and ZECO will complete the expansion of the mini-grid from the base case.

*Project 2.1: Enhanced Landfill Gas Production Using Bioreactors*

The primary focus will be to work with the leading candidate for the primary hosts of the bioreactor project, the Mid Valley Landfill in Fontana. A meeting will be scheduled with San Bernardino County staff to review County interest in the bioreactor project and to consider how the project would proceed. Regulatory strategizing will continue with the assistance of regulatory agency personnel.

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

Information collection and analysis will continue for the process selection task. Communications will continue with developers for the technologies that are under consideration.

*Project 3.1: Dairy Waste to Energy*

The primary focus will be to respond to the discussions held at the Project kick-off meeting, specifically in relation to accelerating the analysis of economic and environmental aspects of various plug flow and complete-mix digestion technologies. Additionally, a new approach will be developed to modify the Project activities that can be finalized earlier in the project timeline and these results could therefore be used later in the project.

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

It is anticipated that the IEUA-Commonwealth contract approval will be delayed until April. Preparations continue, but will focus on small system comparison as it can be run independently of the large system comparison. An update will be forwarded to the TAC members on the developments within the large system as well as the plans for the small system. A proposal will be forwarded to Commonwealth for the procurement of the small systems installation at the PVUSA site in Davis.

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

Drafts of the Software Evaluation Tools package will be submitted to the Commission for review. A meeting will be held with Joseph McCabe of the Commission to review a “walk-through” of the software capabilities.

**WHAT WAS ACCOMPLISHED THIS PERIOD:**

*Project 0: Program Administration*

The 4<sup>th</sup> Contract Invoice was submitted as expected, in late March. This invoice covered Project 1.1: (Task 1.1.5).

The Project 1.1 CPR and Program RPAC minutes were drafted and submitted internally for review and comments.

Project-specific administration support under Task 0.8 continued. Revisions/and or potential budget reallocations continue to be reviewed and refined by the Commission Project Manager and Commonwealth Program Director. Project Monthly Status Reports were drafted for Projects 1.1, 3.2 and 3.3 and submitted for internal Team review.

*Project 1.1: Program Planning and Analysis*

As anticipated, CH2 began addressing the comments received from the Commission on the draft Agricultural database and inventory report, with their efforts focused on the collection of additional material on food processing facilities as well as the clarification of end-use consumption characteristics.

Follow-up continued with the landfill owners, operators and regulators previously contacted for the landfill bioreactor database and inventory report in order to facilitate the completion of the prioritization report, as well the initiation for Project 2.1 activities. Additionally, follow-up calls were made to the potential hosts previously contacted for the sewage treatment plant database and inventory report. CH2 staff continued to provide support to refine the potential evaluations of the inventory data for work on subsequent tasks.

Itron/RER and ZECO awaited Commission comments on the draft Mini-grid report, which had been submitted immediately prior to the Project 1.1 CPR meeting in February. Additionally, Itron/RER and ZECO continued the work on the expansion of the Commonwealth Mini-grid baseline characterization out to 2007 and 2012.

Itron/RER completed the development of the technology cost data and continued to refine the biogas and BI-PV prototype specifications as well as the economic and market scenarios for the market assessment analysis, and began the cash flow analysis.

CH2 moved forward on the working draft of the Prioritized List of Projects for BI-PV and various biogas systems. Although the majority of the technical work for the biogas aspects of the report is completed, it will not be finalized until the completion of the mini-grid power flow analysis, and the results have been factored into the project prioritization process.

Work has continued on the Project Final Report under Task 1.1.11, with input received from NIRAS on European technologies, as well as input received from the meetings held in Sacramento and the Chino Basin, all of which will help to define projects, which will be recommended for additional analysis under Project 3.1. Coordination of Project 2.1, 2.2 and 3.1 findings began in order to assure alignment with the key finding under Project 1.1. all of which will be presented within the Project Final Report.

*Project 2.1: Enhanced Landfill Gas Production Using Bioreactors*

In March, waste characterization activities related to Task 2.1.1 were undertaken, which will serve as the foundation of this Project. At a meeting with the San Bernardino County staff, a strong interest in participating in our project was expressed, with staff citing the successful coordination and implementation of the Yolo County landfill bioreactor demonstration site, with the Commission, as a key factor for their interest in the development of the Mid-Valley site.

As both the Commonwealth Team and the County Staff all wish to expand on the lessons learned from the Yolo County site, several consultations were initiated in order to develop a regulatory strategy.

The formal kick-off meeting for this Project has been rescheduled for April 17<sup>th</sup>, along with a visit to the Yolo County project.

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

Process Selection began as information was collected and is being analyzed under Task 2.2.1. Data on enhanced anaerobic digestion systems previously assembled under the Sewage Treatment database and inventory report task of Project 1.1 will be incorporated into the detailed information on the technologies, which are being considered.

Work will continue on the process selection report, although it cannot be finalized until the power flow work within Project 1.1 is completed. CH<sub>2</sub> anticipates that the power flow results will be available in late May and the report will be concluded at that point.

*Project 3.1: Dairy Waste to Energy*

Efforts continue on the assessment of the technologies needed to capture the energy value of the manure and convert it to energy. Information gained from previous inventory reports

under Project 1.1. (Task 1.1.3 and Task 1.1.4), and information received from vendors and firms involved in this process are being reviewed as well.

A presentation was made by NIRAS, providing invaluable information to the CE Team from their experience with this process. Protocols were initiated for testing the different processes for the optimization of the biogas performance at RP-1 and RP-5.

A summary of the kick-off meeting held in late February was prepared. As a direct result of this meeting, a comparative evaluation of plug flow and complete-mix digestion system has been initiated, and will focus on farm and dairy cluster projects. Particular emphasis will be placed on the economic and environmental analysis of these systems with the intent to help guide the Commonwealth Program toward the most advantageous pilot projects on various levels.

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

Progress has continued although the actual equipment acquisition for the Large Systems is on hold pending IEUA Board approval. The IEUA Board has submitted questions and received answers, and it is believed that approval is expected soon.

Updates were provided to the Technical Advisory Committee on the development of both the large system and small system comparisons. Procurement and planning continues and progress was made on the assembly of the data acquisition system.

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

Refinements continued on the Software Evaluation Tools package, with revisions made to the “building type” modeling. REDI is addressing comments received from the Commission and will be integrated into the final deliverable. A sample of the Evaluation Tools Kit was sent to several PV industry professionals to gain their input on usefulness.

Site visits continued for potential BI-PV clients, and as anticipated a half-day workshop on Energy Budget for the Public Sector was held in conjunction with Assemblywoman McLeod. Workshops participants discussed energy issues and specifically how the PIER BI-PV project could offer lower operating costs. REDI presented information on the PIER Commonwealth Program, and highlighted the economics of the BI-PV work they have done for public sector clients. Follow-up site visits are planned for the development of potential BI-PV projects.

**How we are doing compared to plan:**

Of the currently active projects, Project 0, Project 1.1, Project 2.1, Project 2.2, Project 3.1, Project 3.2 and Project 3.3, Project 0, Project 1.1 and Project 3.2 have task components, which are running behind schedule. However, the majority of the 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 individual Project's targeted completion dates.

- **Project 0:** Itron has experienced delays in presenting the Project Monthly Status and Program Monthly Progress Reports. It is anticipated that by May, the submitted reports will be up-to-date and current.
- **Project 1.1:** Itron continues to experience difficulties in the gathering of data, as well as the development of biogas project prototypes. This continues to delay the completion of the Mini-Grid market potential assessment report. CH2 continues to await the regulatory R&D exemption, which could affect the bioreactor pilot research projects. Additionally they continue to wait for the new regulation, which may be issues in April or May that may have a serious impact on the success of the Landfill bioreactor projects.
- **Project 2.1:** CH<sub>2</sub> experienced delays in the start of this project, pending the completion of the Landfill Bioreactor Database and Inventory Report (Task 1.1.3) as well as on-going discussions with regulators.
- **Project 3.2:** This project continues to be held up due to the delays in the approval of the Commonwealth-IEUA BI-PV power sales agreement. This delay will have residual effects on other Project 3.2 tasks, and the CE anticipates that by April the contract will be finalized and executed by both parties.

#### **SIGNIFICANT PROBLEMS OR CHANGES:**

As indicated above, Project 0, Project 1.1, Project 2.1 and Project 3.2 all have tasks, which are currently behind schedule. Some of these task delays may 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. 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 administration support under Task 0.8 will continue relative to each active Project under the CE Program. Revisions and/or potential budget reallocations will continue to be reviewed and refined by the CE Project 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. Additionally, a monthly Program Report will be drafted and submitted as well.

*Project 1.1: Program Planning and Analysis*

Activity will continue to focus on defining and prioritizing the top projects to be recommended for funding for Project 1.1.

ZECO will begin the power flow analysis under Task 1.1.9b incorporating the projected BI-PV and biogas renewable generation capacity within the mini-grid.

Itron/RER will continue its market potential work under Task 1.1.7 and will also address the comments received from the Commission on the draft final report outline and resubmit it to the Commission for review.

*Project 2.1: Enhanced Landfill Gas Production Using Bioreactors*

The primary focus will be on working with the leading candidate for the host bioreactor project, the Mid-Valley Landfill in Fontana, San Bernardino County. A formal kick-off meeting will be held in mid-April and the Project team will visit the Yolo County Landfill Bioreactor site.

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

Information collection and analysis will continue as related to process selection. Additionally, communication with developers of the technologies under consideration will also continue by CH<sub>2</sub>.

*Project 3.1: Dairy Waste to Energy*

The primary focus will be centered on the preparation of a technical memorandum comparing existing digesters at RP-1 and RP-5 to other plug flow and complete-mix digestion projects.

Additionally, further developments of the testing protocols, which will implement some of the suggested projects identified in Project 1.1, will continue. Efforts will be undertaken to define an approach incorporating the results of the comparative analysis of technologies and the Mini-grid analysis into the process and site selection activities.

*Project 3.2: Building-Integrated PV Testing and Evaluation Project*

It is hoped that the IEUA-Commonwealth contract issues associated with the large systems testing will be resolved, which will enable the purchase orders for the equipment to be processed.

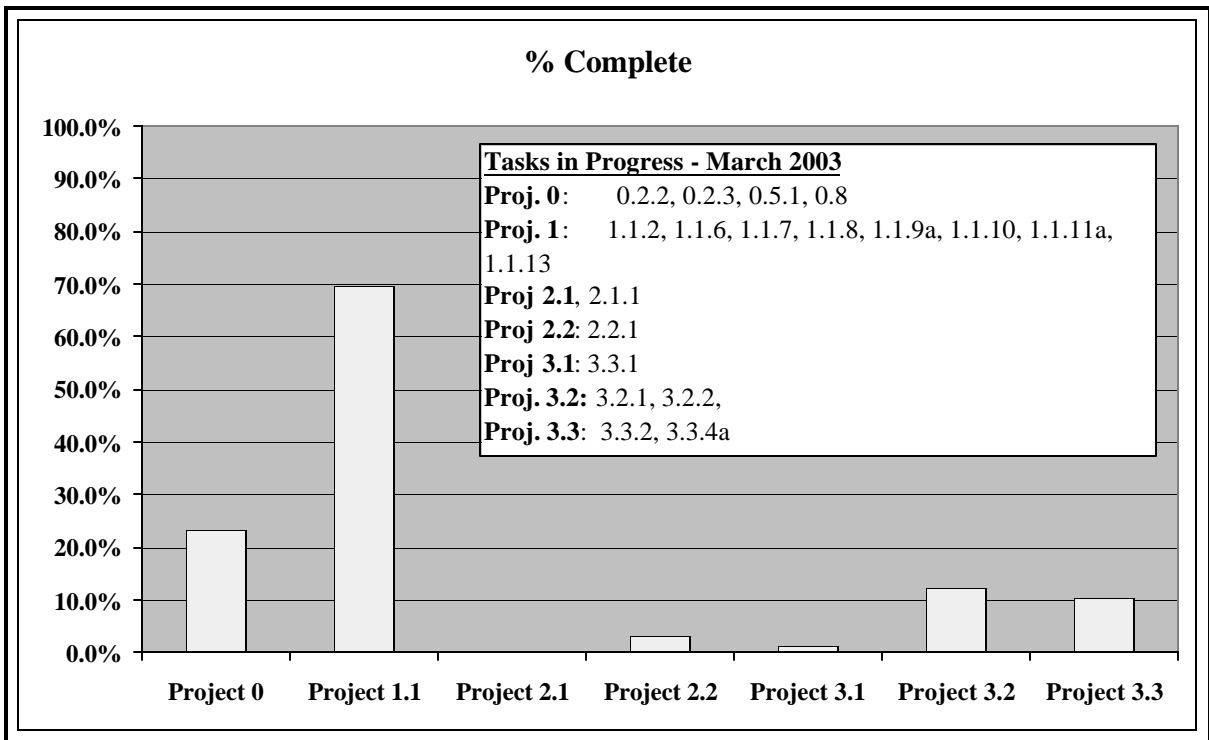
Project 3.3: Building Integrated PV on Public Facilities

REDI anticipates that the draft Evaluation Tools Package (ETP) will be submitted internally for review and comment, and that once comments are received they will be integrated and the ETP will be submitted to the Commission for review. Additionally, site visits will continue to collect information on potential BI-PV Public Sector Project sites.

**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.

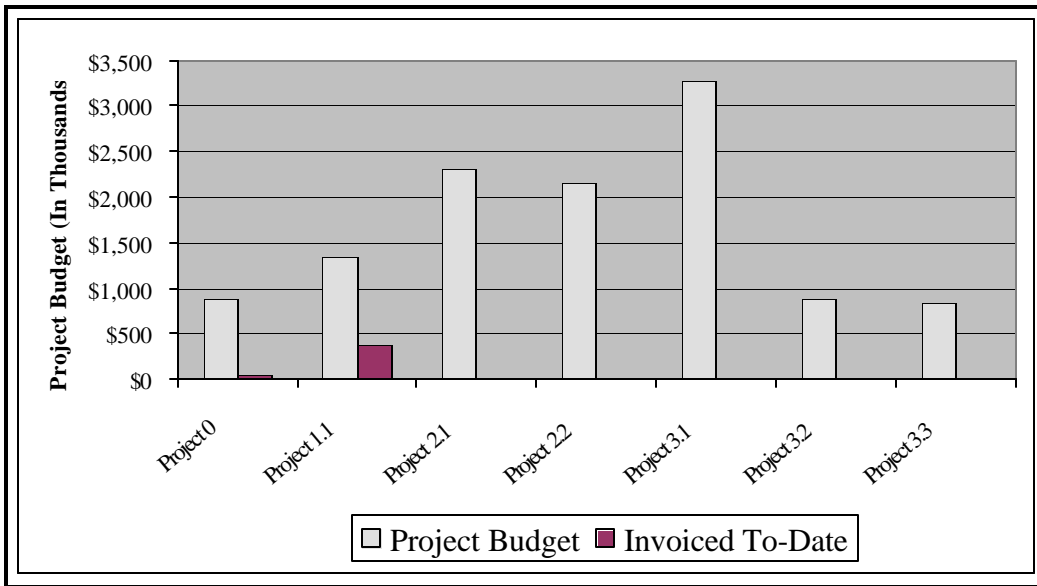
**Table 1: Cumulative Program Fiscal Status By Project**

<b>Project Number</b>	<b>Project Budget</b>	<b>Invoiced To-Date (\$)</b>	<b>Fiscal Status *</b>
Project 0	\$ 889,771	\$43,375 **	OT
Project 1.1	\$1,336,613	\$382,216**	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	\$8,514**	OT
Project 3.3	\$ 827,686	\$9,000**	OT

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

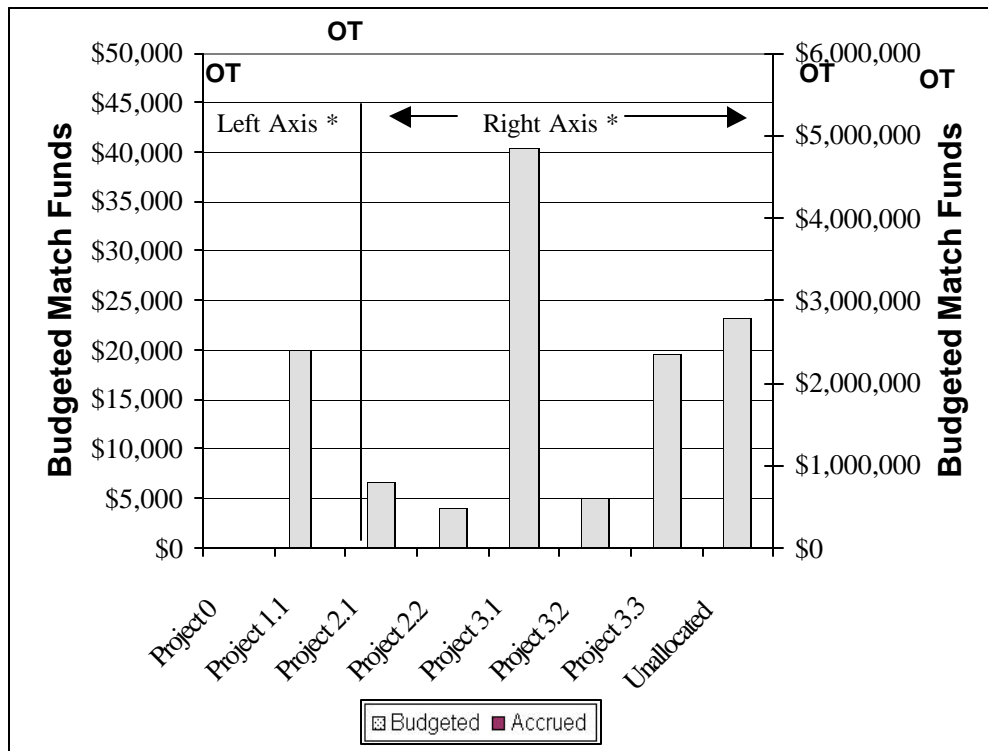
\*\* Invoice Amount Shown after 10% retention withheld.

**Figure 2: Program Fiscal Status**



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

**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.