

MONTHLY PROGRAM REPORT

JANUARY 2004

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 Monthly Status reports were to be drafted for Projects 1.1, 2.1, 2.2, 3.1, 3.2 and 3.3, as well as *Program Status Reports* for November and December, and reviewed internally prior to submittal to the Commission and posting on the CE Program Website. Additionally, it was anticipated that Contract Invoice # 7 would be submitted in January and would include the following deliverables: Project 1.1 – Task 1.1.2, Task 1.1.9b and Task 1.1.11a; Project 2.1 – Task 2.1.1.a; and Project 2.2 – Task 2.2.1.

Project 1.1: Program Planning and Analysis

Activity in January was to focus on completing and submitting the Task 1.1.7 and Task 1.1.8 Final Reports as well as incorporating revisions to the Task 1.1.10 draft report. Additionally, as these final reports are submitted, the CE Team was to incorporate the analysis and conclusions from these tasks into the draft Project 1.1 Final Report, under Task 1.1.11b.

Project 2.1: Enhanced Landfill Gas Production

In January, the CE Team planned to continue to focus on conceptual design issues related to the bioreactor project. A memo was to be reviewed with San Bernardino County outlining project goals, and the roles and responsibilities of the County and the CE Team.

Additionally, CH₂ anticipated completing and submitting the *Waste Characterization Report* for Commission review.

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

Information collection and analysis was to continue for the implementation of technologies outlined in the *Process Selection Report*. CH₂ planned to continue to coordinate with the two project hosts at IEUA and Riverside County, and on-going efforts on the *Site Selection and Test Plan* would focus on integrating two ultrasound systems into the Riverside Plant. Detailed planning related to fabrication of the test equipment was to begin in January, with the technology vendors continuing to work closely with the CE Team.

Project 3.1: Dairy Waste to Energy

The primary activity in January was to focus on revising and finalizing the draft plan, which describes the implementation process of this project, and how it relates to the Commonwealth Business Plan goals and objectives. The CE Team planned to review how the project options can interact with and help, Commonwealth integrate the projects into their business objectives related to green energy sales and community aggregation.

Other activities were to focus on the finalization and submission of the *Digester Comparison Report* and the *Test Plans and Protocols Report*. As with the *Implementation Plan*, Commonwealth's business objectives would be reviewed and linked where appropriate.

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

As Endecon was able to identify the specific problem with the PowerLight Array issue in late December, they anticipated having this problem resolved in January. Additionally, Commonwealth expected to receive approval of their SGIP incentive reservation request, in order to have Endecon proceed with an interconnection agreement for the 60 kW large systems.

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

REDI anticipated receiving final approval of the *Evaluation Tools Package (ETP)* from the Commission. With this important deliverable finalized and approved, REDI planned to use the ETP to complete its review of the Public Sector BI-PV demonstration sites and will generate a draft report for internal review. REDI will continue its ongoing work with

representatives of the demonstration project sites, as well as with Commonwealth Energy and other ESP/project funding representatives.

WHAT WAS ACCOMPLISHED THIS PERIOD:

Project 0: Program Administration

As anticipated, *Project Monthly Status* reports were drafted for all Projects (#s 1.1, 2.1, 2.2, 3.1, 3.2 and 3.3), as well as *Program Status* reports for the months of November and December, and reviewed internally prior to submittal to the Commission and posting on the Commonwealth PIER Mini-grid RD&D Program Website.

The Commonwealth Program Director continued to hold numerous teleconference meetings and met with Commission staff and CE Team members, to review and discuss potential redirection/revisions to Project work plans/scope/focus for Project 2.1, 2.2 and 3.1. The Commonwealth Program Director and various CE Team members traveled to Sacramento on January 15th to meet with Commission staff in order to review and present the Commonwealth Energy Business Plan, and to outline the PIER Program linkages with the CE Business plan, to the Commission.

Additionally, the Commonwealth Contract Administrator coordinated with CE Team members on the preparation and submittal of Contract Invoice # 7, which was finalized to include: Project 1.1 – Task 1.1.2, Task 1.1.9b and 1.1.11a; Project 2.1 – Task 2.1.1.a; and Project 2.2 – Task 2.2.1.

Project 1.1: Program Planning and Analysis

As anticipated, Itron completed the revisions to the Task 1.1.7 report, and submitted it to the Commission for review. Approval was provided to Itron in mid-January, and the report was finalized and placed on the CE Program website. Itron continued to revise the Task 1.1.8 report, incorporating the generation profiles from the anticipated CE Program RD&D generation, as well as the fully realized mini-grid. Additionally, work continued on the Task 1.1.10 report, with the primary focus of activity in January placed on the development of the decision-making model, which will consider a variety of factors in the prioritization of projects to be implemented under this program. As reported under Project 0, the CE Team participated in a meeting with the Commission to obtain feedback on the Commonwealth Business Plan, as this feedback will provide crucial guidelines and concepts for incorporating the CE Business Plan into the Project Prioritization process.

The CE Team continued to integrate the approved Task 1.1.7 key results into the draft Project 1.1 Final Report, under Task 1.1.11b. As with the *Project Prioritization Report*, this deliverable awaits the completion of the revised project prioritization effort under Task

1.1.10, the finalized Commonwealth Business Plan and a revised Project 3.1 Implementation Plan, prior to being finalized for submission.

Project 2.1: Enhanced Landfill Gas Production Using Bioreactors

Activities continued on Task 2.1.3, the *Conceptual Design for the First Bioreactor*. Consultations and coordination with BAS and the CE Team are ongoing as we continue to draft detailed plans for developing the bioreactor at Mid-Valley. In January, the detailed plans were further refined to cover all phases from conceptual design to operation. The CE Team also provided an overall environmental permitting schedule and a plan, which outlined how the match funding for construction and operations would be applied. Additionally, detailed staff plans were developed to assure that the team members working together would be available.

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

CH₂ continued to follow-up on the Draft *Process Selection Report* submitted previously, with emphasis placed on the review and analysis of the presented technologies. The CE Team will continue its on-going coordination with the technology vendors in order to establish appropriate and efficient plans and fabrication of the technologies planned at Riverside County. Detailed discussions continue with the technology vendors and County staff in order to ensure a smooth transition from process selection through installation. Further coordination between Riverside County and the CE Team was undertaken regarding the *Memorandum of Understanding (MOU)*, as it relates to the implementation at their facility.

The CE Team and technology vendors, continued to apply information from the *Process Selection* phase, into the *Site Selection and Test Plan* development activities. Plan analysis of the siting preferences at both RP-1 and the City of Riverside Treatment Plant also continued. The Project Team continues to work to ensure that the processes deployed are compatible with existing systems, while also ensuring that the overall project goal of increasing production while maintaining or improving treatment processes are adhered to in approach and design efforts.

Project 3.1: Dairy Waste to Energy

The CE Team continued to work on the Project 3.1 Implementation Plan. Efforts were focused on revisions to be integrated into the plan, and the CE Team continued to assemble compiled results, which could be applied to future centralized projects. Additionally, work continues on the integration of these potential projects into Commonwealth's Business Plan. Specifically, how these projects might enhance community aggregation along with expanded business activity within the State of California.

In January, work on the *Test Plans and Protocols Report*, was limited to incorporating the Commission's comments, and outlining the linkage to the Commonwealth Business Plan. Finalization of this report is expected upon receipt of comments, as well as finalization and approval of the *Project 3.1 Implementation Plan*.

As reported previously, CH₂ received approval from the Commission to initiate work on Task 3.1.6, *Conduct Economic and Environmental Assessment*. Work continued with the team building upon information obtained from the December site visits. Additionally, an expanded annotated outline of the *Monitoring, Reporting and Verification* protocol was prepared in order to quantify environmental benefits associated with centralized digestion projects.

The CE Team contacted the Peer Review Team (PRT), and provided the Monitoring, Reporting and Verification outline for their review prior to the scheduled February 5th meeting.

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

In January, Endecon resolved the previously reported problem with the PowerLight array. The inverter manufacturer was able to reprogram the inverter, which resolved the erratic system operation. As was anticipated, clearance was provided by the Self-Generation Incentive Program confirming that the submitted reservation request was approved, and was eligible for funding at the completion of the project. Additionally, an interconnection agreement application was submitted for the whole large system.

Discussions continued with NUON regarding the Small Systems testing project at the PVUSA site. An agreement for the use of the facility was drafted, however an insurance liability coverage issue arose. Endecon is reviewing its coverage and the insurance requirements in more detail.

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

As anticipated the *Evaluation Tools Package* was circulated for internal review, and then was submitted to the Commission for final review. Project work under Task 3.3.4a, *Select Demonstration Project Sites*, continues to await final approval of the *Software Evaluation Tool Package*, as this product will be used in its final form for site/project assessment under Task 3.3.4a.

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 original Program schedule. However, the majority of the Project Tasks being implemented are proceeding along the (09/17/03) revised

Exhibit B 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 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 continues to closely follow and facilitate/monitor this process. Additionally, a delay in receiving primary data, affected the completion of the Task 2.1.1.a report.
- **Project 2.2:** Although this project is on track, due to project redirection and specifically a change of focus to the RP-1 site, additional coordination activities have been required with the technology vendors. This redirection will improve the implementation of the pilot programs, but has delayed the completion of the Site Selection and design tasks.
- **Project 3.1:** As the *Test Plan and Protocols Report* builds on the results from the aforementioned *Digester Comparison Report*, there has been a lag time between report submittals. These reports will be revised based upon the approved Project 3.1 Implementation Plan, prior to final submittal.
- **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 Power Purchase agreement, as well as approval of the purchase orders and the SGIP Incentives reservation request to SCE for the 60 kW Large Systems. This delay has had a trickle down effect on subsequent tasks within this Project. Additionally, a problem with the PowerLight Array has caused a slight delay, but is expected to be resolved in January.
- **Project 3.3:** Task 3.3.2 has continued to take much longer than anticipated to complete, due to multiple outside technical reviews and related revisions implemented to the *BI-PV Evaluation Tools Package*. The final draft deliverable has been revised and resubmitted to the Commission. 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 may impact overall Project completion dates, and as reported, a revised program schedule (i.e., contract Exhibit B) was submitted to the Commission for review and approval, which addressed schedule and task-level budget changes for these projects and their tasks. However, note that current Program progress and

expenditures should result in the Program being completed on time under this revised schedule and within the Program's budget.

EXPECTED ACCOMPLISHMENTS DURING THE NEXT PERIOD:

Project 0: Program Administration

The Commonwealth Program Director will continue providing on-going support to the CE Team and Commission staff, as the potential project or task-level redirection/revisions continue under Projects 2.1, and 3.1 that may impact project schedules, budgets and/or deliverables.

Project Monthly Status reports will be drafted for all Projects (#s 1.1, 2.1, 2.2, 3.1, 3.2 and 3.3) as well as a *Program Status* report for the month of January, and reviewed internally prior to submittal to the Commission and posting on the Commonwealth PIER Mini-grid RD&D Program Website.

Project 1.1: Program Planning and Analysis

The CE Team will continue to prioritize projects, and integrate the Commonwealth Business Plan into the prioritization process. Additionally, Itron anticipates that comments on the Task 1.1.8 final report will be received from the Commission, and those comments will be incorporated into the final deliverable. Additionally, integration of approved task deliverable results will continue to be incorporated into the *Project 1.1. Final Report* under Task 1.1.11.

Project 2.1: Enhanced Landfill Gas Production

In February, the focus will remain on the continued collaboration with the San Bernardino County's engineer in relation to design concept issues at the bioreactor projects. The team will also focus on the preparation of technical information to be included in the Conceptual Design Report, as well as the construction and test plans.

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

Information collection and analysis activities will continued in relation to the implementation of the technologies identified in the *Process Selection Report*. CH₂ will focus on finalizing the *Site Selection and Test Plan* report, with significant emphasis placed on coordination with the vendors in order to ensure that the six-month testing period can begin in a timely manner. Additionally, further refinements are expected on the *Memorandum of Understanding* (MOU).

Project 3.1: Dairy Waste to Energy

The focus to re-evaluate the project in light of the Commonwealth Business Plan will continue, and the proposed project prioritization decision-making framework will be undertaken. Once this information has been developed, it will be incorporated into the *Implementation Plan* in order to develop a focus for future program activities. Additionally, CH₂ will continue to finalize the *Test Plan and Protocol* and *Digester Comparison Reports*, and will continue to work with Commonwealth Energy to link these projects with the CE Business Plan.

Activities will continue to move forward as the CE Team prepares for the February 5th *Environmental Benefits Peer Review Team* workshop. It is anticipated that this team will provide input on the baseline analysis as well as the expanded annotated outline for the *Monitoring, Reporting and Verification* protocol.

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

Endecon anticipates finalizing the interconnection agreement, in order to proceed with the start-up of the small system. Additionally, it is expected that the inverters will be shipped for testing.

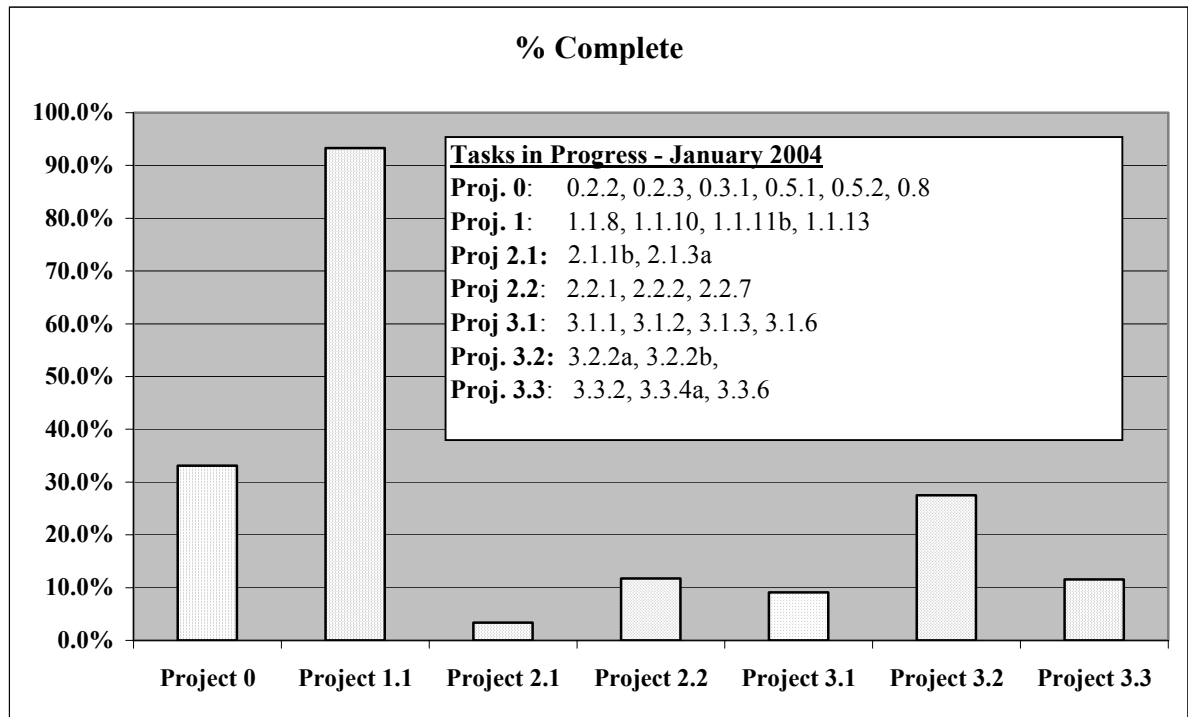
Project 3.3: Building-Integrated PV (BI-PV) on Public Facilities

REDI anticipates receiving approval of the *Evaluation Tools* deliverable. Once this has been received, REDI will review the Public BI-PV Demonstration sites, and a report will be drafted. Additionally, REDI will continue its work with the 10 Public Sector site representatives, developing projects specifications and documentation as needed.

OVERVIEW OF PROGRAM STATUS:

Figure 1 on the following page 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.

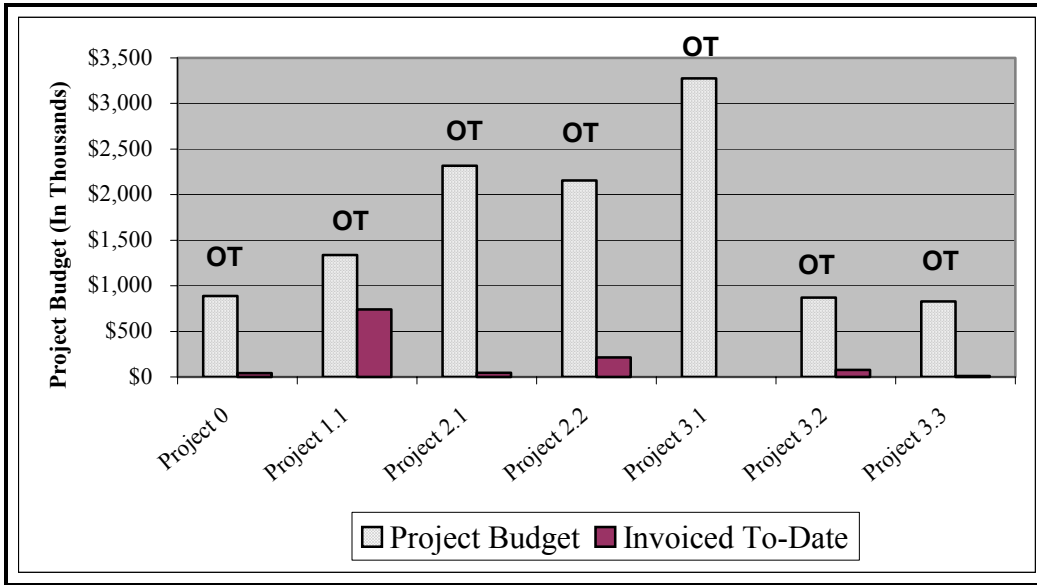
Table 1: Cumulative Program Fiscal Status by Project

Project Number	Project Budget	Invoiced To-Date (\$)	Fiscal Status *
Project 0	\$ 889,771	\$43,375 **	OT
Project 1.1	\$1,336,613	\$741,926 *	OT
Project 2.1	\$2,315,999	\$46,905 **	OT
Project 2.2	\$2,153,740	\$212,907 **	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"

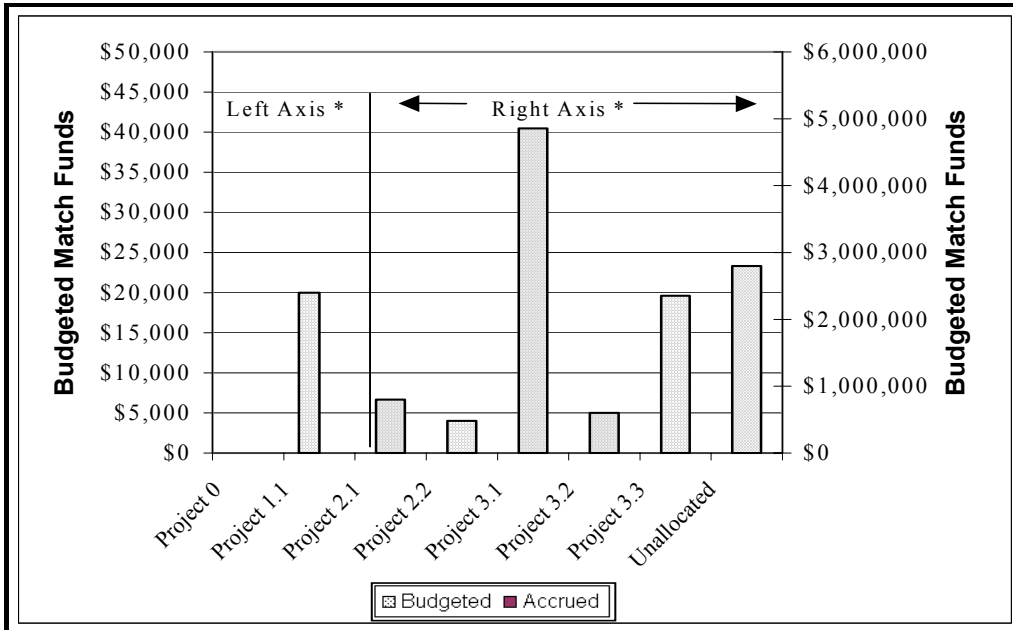
** Invoice Amount Shown after 10% retention withheld.

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.