

MONTHLY PROGRESS REPORT FOR CONTRACT NO. 500-00-036

PROJECT 1.1 – PROGRAM PLANNING AND ANALYSIS

REPORT PREPARED BY: COMMONWEALTH ENERGY TEAM

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**What we planned to accomplish this period:**

Activity will focus on the continuing effort to define and prioritize the top projects to be recommended for funding in Project 1.1. The final identification of such projects will await the completion of the power flow analysis of the Mini-Grid, but in the absence of those findings the team will evaluate the projects that address the other criteria and objectives of the Program.

ZECO plans to finalize the *Data Collection & Development of Mini-Grid T&D Information* (Task 1.1.6) and *Development of Local Area Mini-Grid T&D Model* (Task 1.1.9a) as well as begin the Task 1.1.9b power flow analysis with and without (baseline) the projected renewable generation capacity.

Iron/ RER will continue to work on the biogas and PV economic and market potential analysis under Task 1.1.7.

**What we actually accomplished this period:**

*Task 1.1.2 Develop Database of Agricultural Facilities in So. California, targeting the Chino Basin:*

- CH2M HILL continued its efforts to respond to the Energy Commission comments on the draft Agricultural database and inventory report. Efforts focused on collecting additional information on food processing facilities and clarifying and/or supplementing information previously collected from dairies in the Chino Basin. Most of the effort to respond to the comments has been completed. The primary remaining task is to conduct field activity to supplement electrical load information collected previously, and evaluate it in conjunction with information available from other sources. As noted earlier, dairy operators are reluctant to

provide much in the way of detailed information about their operations that could be considered proprietary.

- Staff continued to provide limited support to efforts to refine the technical and market potential evaluations that will be used in subsequent work.

*Task 1.1.3 Landfill Bioreactor Database and Inventory Report:*

- As reported in March, the Landfill Bioreactor Database and Inventory Report have been previously completed. Only minor follow on work related to subsequent tasks was completed during this reporting period. This type of work included follow up calls with landfill owners and operators, as well as with regulators to facilitate the completion of the Project Prioritization task and the initiation of project activity under the Landfill Bioreactor Project 2.1.

*Task 1.1.4 Collect Information on Sewage Treatment Plants:*

- As reporting in March, the Sewage Treatment Plant Database and Inventory Report were previously submitted, and as such, only work in support of follow up tasks is being undertaken on this task.
- Staff continued to provide limited support to efforts to refine the technical and market potential evaluations being used in subsequent work.

*Task 1.1.6 Collect Information on Transmission/Distribution System:*

- ITRON/RER AND ZECO met to discuss the team's proposed response comments on the report with the Commission Project Manager on April 2<sup>nd</sup>, and delivered the response to the CPR meeting and Commission comments.

*Task 1.1.7 Assess Market Potential within Min-grid:*

- Itron/RER continued to run cash flow analyses for the expected-case, low and high economic potential scenarios for the three categories of biogas fuel resources (dairy/food processing, enhanced wastewater and landfill bioreactors) and nonresidential BI-PV prototypes. Additionally, Itron/RER developed economic (internal rate of return) results through the market potential model that were developed for each technology with the three scenarios.
- Itron/RER began developing the draft report components addressing the economic and market potential results for biogas and BI-PV within the Mini-grid.

*Task 1.1.9 a and b Conduct Power Flow Analysis within Mini-Grid Target Area:*

- As reported under Task 1.1.6, ITRON/RER AND ZECO met with the Commission Project Manager on April 2<sup>nd</sup>, and delivered the response to the CPR meeting and Commission staff comments.

- Itron/RER and ZECO began discussions on the integration of the market potential and load profile task results for input to the power flow analysis during the following periods of time: 2003, 2007 and 2012.

Task 1.1.10 Prepare Prioritized List of Projects for PV and Biogas Systems

- CH<sub>2</sub> continues work on the preliminary working draft of the prioritization report. As much of the technical work has been completed to date, finalization will await completion of the Mini-Grid analysis. Work on this report will continue until the Mini-Grid analysis is completed and results can be factored into the Biogas and BI-PV Project prioritization effort.

Task 1.1.11 Prepare Final Report

- Work continues on the Program Planning and Analysis (Project 1.1) Draft Final Report. This includes assembling information from earlier tasks as well as other information related to the selection of projects for more detailed evaluation. Ongoing work by NIRAS on European technologies and practices was also evaluated for incorporation. In general, limited work is being completed on this task pending approval of the report outline and completion of the power flow studies. As noted in the previous monthly report, coordination of the preliminary key findings of this project with the initial activities of Projects 2.1, 2.2, 3.1 and 3.3 was also undertaken so that efforts on these subsequent tasks would be aligned with the preliminary key findings of Project 1.1 that will be presented in the final report. Some of these initial findings include:
  - Continue to work with leading landfill bioreactor host candidate site (San Bernardino County) so that the landfill bioreactor project (Project 2.1) can be implemented in a manner that takes advantage of their existing facility and builds on *lessons learned* from the Yolo County bioreactor project.
  - Efforts related to increased energy production from enhanced anaerobic digestion at wastewater treatment plants (Project 2.2) should focus on the development of pilot projects using ultrasound and thermal hydrolysis at the Riverside wastewater treatment plant. This plant has several characteristics including a favorable process configuration making it well-suited for more detailed analysis.
  - Focus potential *dairy waste to energy* projects (Project 3.1) on dairy cluster projects. Special emphasis should be on building on lessons learned at existing projects, and placing special emphasis on defining environmental and other factors that will drive current and future project implementation and their economics.

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

Work continues to progress under Project 1.1 generally as anticipated during the last month. Although there have been some challenges within a few of the tasks, the majority of these challenges have been resolved to date, and have not seriously affected Program Planning and Analysis task schedules or budgets.

**Significant problems or changes:**

There are no significant fiscal problems to report during this period, and work is proceeding within budget for the Planning and Analysis project as a whole. There have been a number of task-level budget transfers under Project 1.1, however progress and expenditures will result in the project being completed on time under the revised schedule and within the original Project 1.1 budget.

The Commission has requested that the Commonwealth Team address additional out-of-scope items concerning the design implications and interconnection requirements of the PV and biomass renewable generation to the existing T&D impacts analysis statement of work. These additional scope expansion issues will be addressed at a later time when available Commonwealth Program resources can be more clearly determined.

**What we expect to accomplish during the next period:**

Itron/RER and CH<sub>2</sub> anticipates that activity in May will focus on the continuing effort to define and prioritize the top projects to be recommended for funding through the analysis implemented under Project 1.1. The final prioritization projects will await the completion of the power flow analysis of the Mini-Grid, but in the absence of those findings the team will identify and evaluate other prioritization criteria for identified projects that meet the other objectives of the Program.

ZECO will begin the Task 1.1.9b power flow model implementation analysis, both with and without the identified expected renewable resources. Additionally, Itron/RER and ZECO anticipates submitting the final Task 1.1.6 and Task 1.1.9a reports to the Commission.

Itron / RER anticipates it will complete the bulk of the preparation of the BI-PV and biogas market potential assessment and draft final report for Task 1.1.7. Itron / RER also expects it will complete the draft final report on the generation profiles for task 1.1.8 and route this draft internally to the Commonwealth Team for review.

**Status of Milestones and Deliverables:**

Table 1 below summarizes the status of Project 1.1 task deliverables as of the end of the current reporting period.

**Table 1: Summary of Project Status and Deliverables – Project 1.1**

Task No.	Description	Start Date		Due Date		Status (%)
		Planned	Actual	Planned	Actual	
1.1.1	Review previous CA technical and market potential assessments.	6/5/02	6/5/02	8/4/02	10/31/02	100%
1.1.1	“Preliminary definition” of Program mini-grid region	6/5/02	6/5/02	8/4/02	10/31/02	100%
1.1.2a	Develop DB of Agricultural Facilities.	6/19/02	7/20/02	01/17/03		98%
1.1.2b	Develop Ag GIS report.	6/19/02	8/12/02	01/17/03		98%
1.1.3a	Develop Landfill DB.	6/19/02	6/19/02	10/25/02	10/31/02	100%
1.1.3b	Develop Landfill GIS report.	6/19/02	6/19/02	10/25/03	10/31/02	100%
1.1.4a	Develop WWT facility DB.	6/19/02	6/19/02	10/31/02	10/31/02	100%
1.1.4b	Develop WWT GIS report.	6/19/02	6/19/02	10/31/03	10/31/02	100%
1.1.5	Develop BIPV systems DB	8/5/02	8/5/02	12/03/02	2/5/03	100%
1.1.6	Develop T&D System DB	6/5/02	6/26/02	02/16/03	02/14/03	96%
1.1.7	Market Assessment	9/13/02	9/13/02	05/16/03		95%
1.1.8	Develop Generation Profiles	10/14/02	8/15/02	05/21/03		85%
1.1.9 a	Conduct Power Flow Analysis (T&D Model)	09/04/02	09/23/02	02/16/03	02/13/03	95%
1.1.9 b	Conduct Power Flow Analysis (Summary Reports)	09/26/02	01/02/03	06/28/03		68%
1.1.10	Prepare Prioritized List of Projects for PV and Biogas Systems	10/19/02	11/04/02	07/15/03		45%
1.1.11a	Prepare Draft Rpt Outline	9/19/02	02/10/03	02/21/03	02/12/03	30%
1.1.13	Develop M&E Plans	6/5/02	7/15/03	05/29/03		12%

*Explanation of any Difference(s) in Schedule*

The following listing provides the explanation for the reported changes in the schedule at the project task/deliverable level:

*Task 1.1.2 Develop Database of Agricultural Facilities* – The difficulties in obtaining information on the representative dairy loads delayed completion of this database and

the Inventory Report. Information has been collected and the draft document submitted. Comments were received from the Energy Commission and the appropriate responses are being prepared by the Team within the constraints of the available information. The anticipated completion of this document in May or early June will not impact the overall schedule as other tasks, and not Task 1.1.2, are on the critical path for completion of Project 1.1.

Task 1.1.3 Inventory Landfill Facilities – The schedule for this task was delayed because data requests were not responded to in as timely a manner as anticipated. This delayed the completion of the Inventory Report but did not affect the overall Project's schedule.

Task 1.1.4 Collect Information on Sewage Treatment Plants – The schedule for this task changed because data requests were not responded to in as timely a manner as anticipated. This delayed the completion of the Inventory Report but did not affect the overall Project's schedule.

Task 1.1.7 Assess Market Potential within Mini-Grid – Progress has been slow in identifying credible information on the value of certain externalities (i.e. greenhouse gas emissions and groundwater cleanup) that are important environmental benefits associated with the dairy waste resource. This has delayed the completion of the dairy waste to energy portion of the market potential assessment within the mini-grid.

Task 1.1.9b – Conduct Mini-Grid Power Flow Analysis (T&D Model) – Due to the hold-up in receiving comments on the Task 1.1.6 draft report and completion of the Market Potential analysis, progress and expenditures will likely result in this task being completed in June 2003, rather than February 2003. However, this task remains on budget.

Task 1.1.10 Prepare Prioritized List of Projects for PV and Biogas Systems – This task started on schedule. Its completion will be delayed by approximately one to two months. This delay is required to allow incorporation of the findings of the expanded Mini-Grid power flow analysis in the prioritized list of projects.

Task 1.1.11 – Prepare Final report - The start of this task has been delayed by approximately six weeks. This change was made to accommodate the completion of the tasks related to the agricultural waste database and inventory and market potential reports. These changes should not, however, seriously affect the scheduled completion date of the overall project as that is dictated by the timeframe needed to incorporate the findings of the Mini-Grid Analysis.

**Overall Schedule for Project 1.1:**

Task Name	Duration	Start Date	End Date	Cost	2003				2004					
					Qtr 2	Qtr 3	Qtr 4	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Qtr 1	Qtr 2	Qtr 3
<b>Project 1.1 - Program Planning and Analysis</b>	<b>362 days?</b>	<b>Wed 6/5/02</b>	<b>Thu 10/23/03</b>	<b>\$0.00</b>										
Task 1.1.1 Review Tech & Market Assessments	103 days	Wed 6/5/02	Thu 10/31/02	\$18,902.00										
Task 1.1.2a - Dev. DB of Agri. Facilities	130 days	Sat 7/20/02	Fri 1/17/03	\$85,561.50										
Task 1.1.2b - Agri Facilities GIS Inventory Rpt	153 days	Mon 8/12/02	Wed 3/12/03	\$85,561.50										
Task 1.1.3a - Landfill DB	97 days	Wed 6/19/02	Thu 10/31/02	\$66,865.00										
Task 1.1.3b - Landfill GIS Inventory Rpt.	97 days	Wed 6/19/02	Thu 10/31/02	\$66,865.00										
Task 1.1.4a - WWT DB	97 days	Wed 6/19/02	Thu 10/31/02	\$93,136.00										
Task 1.1.4b - WWT GIS Inventory Rpt.	97 days	Wed 6/19/02	Thu 10/31/02	\$93,136.00										
Task 1.1.5 - BIPV DB	133 days	Mon 8/5/02	Wed 2/5/03	\$78,177.00										
Task 1.1.6 T&D System DB	168 days	Wed 6/26/02	Fri 2/14/03	\$63,391.00										
Critical Program Review Meeting	21 days	Thu 3/27/03	Thu 4/24/03	\$20,678.00										
Task 1.1.7 - Market Potential Assessment	131 days	Fri 9/13/02	Fri 5/16/03	\$44,896.00										
Task 1.1.8 - Generation Profiles	158 days	Thu 8/15/02	Wed 5/21/03	\$11,363.00										
Task 1.1.9a - Power Flow Analysis Model	117 days	Wed 9/4/02	Thu 2/13/03	\$29,000.00										
Task 1.1.9b - Power Flow Analysis Report	185 days	Thu 9/26/02	Wed 6/11/03	\$165,623.00										
Task 1.1.10 - Prioritized List of Pilot Projects	120.7 days	Mon 11/4/02	Sun 6/15/03	\$172,132.00										
Task 1.1.11a Prepare Draft Rpt Outline	112 days	Thu 9/19/02	Fri 2/21/03	\$18,540.00										
Task 1.1.11b - Draft Report for Proj. 1.1	84 days	Mon 3/10/03	Thu 7/3/03	\$139,046.00										
Task 1.1.11c - Final Report for Proj. 1.1	23 days	Wed 7/23/03	Fri 8/22/03	\$157,586.00										
Critical Program Review Meeting	15 days	Mon 9/8/03	Mon 9/29/03	\$20,679.00										
Task 1.1.12 - Coordination with RPAC	44 days	Mon 8/25/03	Thu 10/23/03	\$0.00										
<b>Task 1.1.13 - M&amp;E Plans</b>	<b>229 days?</b>	<b>Mon 7/15/02</b>	<b>Thu 5/29/03</b>	<b>\$0.00</b>										
Task 1.1.13a - M&E Plans for Proj. 3.2	115 days	Mon 7/15/02	Fri 12/20/02	\$0.00										
Task 1.1.13b - M&E Plans for Overall Program	105 days?	Fri 1/3/03	Thu 5/29/03	\$35,251.00										

**Overview of Fiscal Status:**

Table 2 below summarizes the fiscal status of Project 1.1 by task as of the end of the current reporting period.

**Table 2: Fiscal Status By Task – Project 1.1**

<b>Task Number</b>	<b>Budget</b>	<b>Invoiced To-Date</b>	<b>Fiscal Status *</b>
1.1.1	\$ 18,902.00	\$18,902.00	OB
1.1.2a	\$ 85,562.00	\$0	OT
1.1.2b	\$ 85,562.00	\$0	OT
1.1.3a	\$ 66,865.00	\$66,865.00	OT
1.1.3b	\$ 66,865.00	\$66,865.00	OT
1.1.4a	\$ 93,136.00	\$93,136.00	OT
1.1.4b	\$ 96,136.00	\$93,136.00	OT
1.1.5	\$ 78,177.00	\$85,780.00	OT
1.1.6	\$ 63,391.00	\$0	OT
1.1.7	\$ 44,896.00	\$0	OB
1.1.8	\$ 11,363.00	\$0	OT
1.1.9	\$194,623.00	\$0	OT
1.1.10	\$172,132.00	\$0	OT
1.1.11a	\$ 18,540.00		OT
1.1.13	\$ 35,251.00	\$0	OT

\*Fiscal Status – Please indicate if you are “On Track” (OT), OverBudget (OB), or UnderBudget (UB)

*Task 1.1.7* - The effort required to obtain BI-PV and biogas technology data on capital and O&M costs, mini-grid specific growth forecasts, energy price information, and the estimated value of environmental benefits was not anticipated. In addition, the effort to incorporate all of these elements into the non-automated cash flow models and to run all the necessary scenarios was not anticipated. Consequently, this task is currently over budget relative to the amount of progress towards its completion and has been re-budgeted for completion.