

GRANTS/CONTINGENT AWARD REQUEST



To: Grants and Loans Office

Date: 3/4/2010

Project Manager: Rizaldo Aldas

Phone Number: 916-327-1417

Office: Energy Generation Research Office

Division: Energy Research and Development

MS- 43

Project Title: SMUD Community Renewable Energy Deployment

Type of Request: (check one)

New Agreement: (include items A-F from below) Agreement Number: PIR-11-005

Program: PIER E / Renewables

Solicitation Name and/or Number: PON08011.17-02 (ARRA Cost Share: Community Renewable Energy

Legal Name of Recipient: Sacramento Municipal Utility District

Recipient's Full Mailing Address: 6201 S ST # MS-B257
SACRAMENTO, CA 95817-1899

Recipient's Project Officer: Elaine Sison-Lebrilla Phone Number: 916-732-7010

Agreement Start Date: 6/15/2012 Agreement End Date: 6/30/2014

Amendment : (Check all that apply) Agreement Number: _____

Term Extension – New End Date: _____

Work Statement Revision (include Item A from below)

Budget Revision (include Item B from below)

Change of Scope (include Items A – F as applicable from below)

Other: _____

ITEMS TO ATTACH WITH REQUEST:

- A. Work Statement
- B. Budget
- C. Recipient Resolution, if applicable. (Resolution may be requested in Special Conditions if not currently available.)
- D. Special Conditions, if applicable.
- E. CEQA Compliance Form
- F. Other Documents as applicable
 - Copy of Score Sheets
 - Copy of Pre-Award Correspondence
 - Copy of All Other Relevant Documents

California Environmental Quality Act (CEQA)

CEC finds, based on recipient's documentation in compliance with CEQA:

Project exempt: _____ NOE filed: _____

Environmental Document prepared: _____ NOD filed: _____

Other: _____

CEC has made CEQA finding described in CEC-280, attached

Funding Information:

*Source #1: PIER-E Amount: \$ 500,000.00 Statute: 10- FY: 11-12 Budget List #: 501.0271

*Source #2: _____ Amount: \$ _____ Statute: _____ FY: _____ Budget List #: _____

*Source #3: _____ Amount: \$ _____ Statute: _____ FY: _____ Budget List #: _____

If federally funded, specify federal agreement number: _____

* Source Examples include ERPA, PIER-E, PIER-NG, FED, GRDA, ARFVT, OTHER.

Business Meeting Approval: (refer to Business Meeting Schedule)

Proposed Business Meeting Date: 5/9/2012 Consent Discussion

Business Meeting Participant: Rizaldo Aldas Time Needed: 5 minutes

Agenda Notice Statement: (state purpose in layperson terms)

Possible approval of a Grant / Contingent Award to...

Possible approval of Agreement PIR-11-005 for a grant of \$500,000 to the Sacramento Municipal Utility District, and approval of the first phase of work to demonstrate and deploy renewable energy technologies. The first phase involves ~~the~~ tasks on bioenergy subprojects, namely: ~~co~~-digestion of fats, oil, ~~and~~ grease, and liquid food wastes; ~~and~~ anaerobic digestion systems for ~~New Hope and Van Warmerdam~~ two dairies. The second phase of the work ~~under this agreement~~, if later approved by the Energy Commission, will include the design, construction, commissioning, and performance monitoring of ~~the a~~ solar energy subproject ~~called Simply Solar~~. This award will be cost-share for the Recipient's \$5 million American Recovery and Reinvestment Act of 2009 award. (PIER electricity funding)
 Contact: Rizaldo Aldas. (5 minutes)

Project Manager _____ Date _____ Office Manager _____ Date _____ Deputy Director _____ Date _____

GRANTS/CONTINGENT AWARD REQUEST



Exhibit A WORK STATEMENT

TECHNICAL TASK LIST

Task #	CPR	Task Name
1	N/A	Administration
2	X	Simply Solar PV Generation Facility
3	X	Co-Digestion Facility
4	X	Anaerobic Digestion System for the New Hope Dairy Farm
5	X	Anaerobic Digestion System for the Van Warmerdam Dairy Farm

KEY NAME LIST

Task #	Key Personnel	Key Subcontractor(s)	Key Partner(s)
1	Elaine Sison-Lebrilla Sacramento Municipal Utility District (SMUD)		
2	Kathleen Ave (SMUD)		
3	Kathleen Ave (SMUD)	Sacramento Regional County Sanitation District (SRCSD)	Western Water
4	Valentino Tiangco (SMUD) , Marco Lemes (SMUD)	ABEC New Hope LLC	California BioEnergy, New Hope Dairy
5	Valentino Tiangco (SMUD), Marco Lemes (SMUD)	Maas Energy Works, Inc.	Four Creeks Engineering Inc., Environmental Fabrics Inc., Martin Machinery LLC, Van Warmerdam Dairy

GLOSSARY

Specific terms and acronyms used throughout this scope of work are defined as follows:

Term/ Acronym	Definition
AD	Anaerobic Digester
CHP	Combined Heat and Power
CEQA	California Environmental Quality Act
CPM	Commission Project Manager
CPR	Critical Project Review
Energy Commission	California Energy Commission
kW	kilowatt
MW	Megawatt

Exhibit A WORK STATEMENT

Term/ Acronym	Definition
NOx	Nitrogen Oxides
PAC	Project Advisory Committee
PIER	Public Interest Energy Research
PV	Photovoltaic
RD&D	Research, Development and Demonstration
SMUD	Sacramento Municipal Utility District
SRCS	Sacramento Regional County Sanitation District

Problem Statement:

The demand for renewable energy is high due to state renewable portfolio standards and climate change initiatives. The Recipient (the Sacramento Municipal Utility District) must develop renewable generation locally in order to reach its goal of obtaining a renewable energy supply of 30% by 2020. However, there are several barriers to developing renewable generation, including local opposition to transmission routes, lengthy and complicated permitting processes, and high capital costs.

Renewable technologies such as solar photovoltaic (PV) systems and anaerobic digestion systems using local biomass can supply local load and do not need costly transmission lines, if deployed as distributed generation in sizes that can be integrated on the distribution grid. However, there is a need for research, development, and demonstration (RD&D) to quickly develop and deploy renewable energy technologies at the community level.

Goal(s) of the Agreement:

The goal of this Agreement is to demonstrate and deploy renewable energy technologies that will generate a total capacity of up to 5.2 megawatts (MW), bringing clean, reliable, and affordable energy technologies to the marketplace and enhancing electricity customers' energy choices. Agreement activities will involve demonstration of a solar PV system, a co-digestion facility, and two anaerobic digesters through collaborative partnerships. The projects will use existing infrastructure, otherwise unusable land, and locally available waste biomass resources with minimal impact to the existing distribution system and minimal grid interconnection costs. Because of the size of the projects, distribution system upgrades will not be necessary.

This Agreement will help accelerate widespread commercialization of renewable energy technologies across the United States, diversifying the nation's electricity supply options while improving the environment. The projects have the potential to generate a short-term economic benefit in California of roughly 200 jobs and \$9 million of output in the

Exhibit A WORK STATEMENT

form of wages, salaries and other gross state products through indirect and induced activities.¹

Objectives of the Agreement:

The objectives of this Agreement are to:

- Install up to 5.2 MW of renewable energy technologies and generate up to 37 gigawatt-hours per year of electricity;
- Reduce carbon dioxide emissions of up to 24,000 tons/year;
- Meet or exceed the California Air Resources Board's 2007 air emission standards, particularly for nitrogen oxides;
- Use excess heat by employing combined heat and power (CHP) applications;
- Lower levelized costs of electricity for solar PV and anaerobic digesters; and
- Create over 200 jobs and an additional \$9 million in wages, salaries and other gross state products.

Two-Phased Agreement

This Agreement will be conducted in two phases. **Phase I** involves Tasks 1 through 5 (please note that Task 2 activities in Phase I will involve only the selection of a solar PV system project developer, execution of a subcontract with the project developer, and CEQA compliance activities). **Phase II** involves the design, construction, grid interconnection, start-up, commissioning, performance testing, and monitoring activities for the Simply Solar PV system (Task 2).

The Contractor will act as the lead agency under CEQA with respect to the PV system and will prepare all documents necessary to comply with CEQA for Phase II. The Energy Commission will consider approval of Phase II funding at a Commission Business Meeting. Neither the Contractor nor any of its subcontractors are authorized to spend funds or perform any work on Phase II activities until the Energy Commission finds that the project complies with CEQA and approves Phase II at a Commission Business Meeting.

Neither party is bound under this Agreement regarding Phase II work until the Contractor completes the CEQA process and the Energy Commission authorizes the Contractor to perform Phase II work. The Recipient will bear the cost of all CEQA compliance, though the cost may be considered match funding under this Agreement.

TASK 1 ADMINISTRATION

Task 1.1 Attend Kick-off Meeting

¹<http://www.strategiceconomicresearch.org/AboutUs/StimCalcTool.pdf>

Exhibit A WORK STATEMENT

The goal of this task is to establish the lines of communication and procedures for implementing this Agreement.

The Recipient shall:

- Attend a “Kick-Off” meeting with the Commission Project Manager, the Grants Officer, and a representative of the Accounting Office. The Recipient shall bring its Project Manager, Agreement Administrator, Accounting Officer, and others designated by the Commission Project Manager to this meeting. The administrative and technical aspects of this Agreement will be discussed at the meeting. Prior to the kick-off meeting, the Commission Project Manager will provide an agenda to all potential meeting participants.

The administrative portion of the meeting shall include, but not be limited to, the following:

- Discussion of the terms and conditions of the Agreement
- Discussion of Critical Project Review (Task 1.2)
- Match fund documentation (Task 1.6)
- Permit documentation (Task 1.7)

The technical portion of the meeting shall include, but not be limited to, the following:

- The Commission Project Manager’s expectations for accomplishing tasks described in the Scope of Work
- An updated Schedule of Products
- Discussion of Progress Reports (Task 1.4)
- Discussion of Technical Products (Product Guidelines located in Section 5 of the Terms and Conditions)
- Discussion of the Final Report (Task 1.5)

The Commission Project Manager shall designate the date and location of this meeting.

Recipient Products:

- Updated Schedule of Products (no draft)
- Updated List of Match Funds (no draft)
- Updated List of Permits (no draft)

Commission Project Manager Product:

- Kick-Off Meeting Agenda (no draft)

Task 1.2 Critical Project Review (CPR) Meetings

The goal of this task is to determine if the project should continue to receive Energy Commission funding to complete this Agreement and to identify any needed modifications to the tasks, products, schedule or budget.

Exhibit A WORK STATEMENT

CPRs provide the opportunity for frank discussions between the Energy Commission and the Recipient. CPRs generally take place at key, predetermined points in the Agreement, as determined by the Commission Project Manager and as shown in the Technical Task List above. However, the Commission Project Manager may schedule additional CPRs as necessary, and any additional costs will be borne by the Recipient.

Participants include the Commission Project Manager and the Recipient and may include the Commission Grants Officer, the Public Interest Energy Research (PIER) Program Team Lead, other Energy Commission staff and Management as well as other individuals selected by the Commission Project Manager to provide support to the Energy Commission.

If DOE is conducting similar meetings, the Recipient shall notify and invite the Commission project manager to participate, either by teleconference or by actual meeting attendance. The DOE required meetings can be used in place of the Commission's CPR meetings, at the discretion of the Commission project manager.

The Commission Project Manager shall:

- Determine the location, date, and time of each CPR meeting with the Recipient. These meetings generally take place at the Energy Commission, but they may take place at another location.
- Send the Recipient the agenda and a list of expected participants in advance of each CPR. If applicable, the agenda shall include a discussion on both match funding and permits.
- Conduct and make a record of each CPR meeting. One of the outcomes of this meeting will be a schedule for providing the written determination described below.
- Determine whether to continue the project, and if continuing, whether or not modifications are needed to the tasks, schedule, products, and/or budget for the remainder of the Agreement. Modifications to the Agreement may require a formal amendment (please see the Terms and Conditions).
- Provide the Recipient with a written determination in accordance with the schedule. The written response may include a requirement for the Recipient to revise one or more product(s) that were included in the CPR.

The Recipient shall:

- Prepare a CPR Report for each CPR that discusses the progress of the Agreement toward achieving its goals and objectives. This report shall include recommendations and conclusions regarding continued work of the projects. This report shall be submitted along with any other products identified in this scope of work. The Recipient shall submit these documents to the Commission Project Manager and any other designated reviewers at least 15 working days in advance of each CPR meeting.

Exhibit A WORK STATEMENT

- Present the required information at each CPR meeting and participate in a discussion about the Agreement.
- Recipient will provide copies of any DOE correspondence (emails, reports, letters, etc.) that relate to the project status. This includes copies of project performance reviews on Recipient work and summaries and results of project review meetings with DOE.

Commission Project Manager Products:

- Agenda and a list of expected participants (no draft)
- Schedule for written determination (no draft)
- Written determination(no draft)

Recipient Product:

- CPR Report(s) (no draft)
- DOE correspondence and reporting (no draft)

Task 1.3 Final Meeting

The goal of this task is to closeout this Agreement. If DOE is conducting a similar final meeting, the Recipient shall notify and invite the Commission project manager to participate, either by teleconference or by actual meeting attendance. The DOE required meeting can be used in place of the Commission's final meeting, at the discretion of the Commission Project Manager. However, all items listed in this task will need to be covered in the meeting.

The Recipient shall:

- Meet with Energy Commission staff to present the findings, conclusions, and recommendations. The final meeting must be completed during the closeout of this Agreement.

This meeting will be attended by, at a minimum, the Recipient, the Commission Grants Office Officer, and the Commission Project Manager. The technical and administrative aspects of Agreement closeout will be discussed at the meeting, which may be two separate meetings at the discretion of the Commission Project Manager.

The technical portion of the meeting shall present an assessment of the degree to which project and task goals and objectives were achieved, findings, conclusions, recommended next steps (if any) for the Agreement, and recommendations for improvements. The Commission Project Manager will determine the appropriate meeting participants.

The administrative portion of the meeting shall be a discussion with the Commission Project Manager and the Grants Officer about the following Agreement closeout items:

Exhibit A WORK STATEMENT

- What to do with any equipment purchased with Energy Commission funds (Options)
- Energy Commission's request for specific "generated" data (not already provided in Agreement products)
- Need to document Recipient's disclosure of "subject inventions" developed under the Agreement
- "Surviving" Agreement provisions, such as repayment provisions and confidential Products
- Final invoicing and release of retention
- Prepare a schedule for completing the closeout activities for this Agreement.
- Copies of all correspondence and reports discussing DOE's findings on the project, and future disposition of the project, if applicable. When directed by the Commission Project Manager, recipient will provide copies of any DOE correspondence (emails, reports, letters, etc.) that relate to project performance.

Products:

- Written documentation of meeting agreements
- Schedule for completing closeout activities
- DOE correspondence on project findings and results

Task 1.4 Quarterly Progress Reports

The goal of this task is to periodically verify that satisfactory and continued progress is made towards achieving the research objectives of this Agreement on time and within budget.

The objectives of this task are to summarize activities performed during the reporting period, to identify activities planned for the next reporting period, to identify issues that may affect performance and expenditures, and to form the basis for determining whether invoices are consistent with work performed.

With Commission Project Manager approval, the Recipient can submit a DOE Progress Report in lieu of the required Commission report if contains the information listed in Attachment 1 of the Terms and Conditions.

Exhibit A WORK STATEMENT

The Recipient shall:

- Prepare Quarterly Progress Reports which summarize all Agreement activities conducted by the Recipient for the reporting period, including an assessment of the ability to complete the Agreement within the current budget and any anticipated cost overruns. Each progress report is due to the Commission Project Manager within 10 days of the end of the reporting period. The recommended specifications for each progress report are contained in Exhibit A, Attachment A-2.
- Unless otherwise directed by the Commission project manager, each Progress Report must contain any reports made to DOE, including summaries of meetings with DOE, as it that relates to the project outcome and performance. Include names and contacts of DOE representatives.

Product:

- Quarterly Progress Reports
- Copies of DOE reporting and meeting summaries (no draft)

Task 1.5 Final Report

The goal of the Final Report is to assess the project's success in achieving its goals and objectives, advancing science and technology, and providing energy-related and other benefits to California.

The final report shall describe the following at a minimum: a) original purpose, approach, activities performed, results and conclusions of the work done under this Agreement; b) how the project advanced science and technology to the benefit of California's ratepayers and the barriers overcome; c) assessment of the success of the project as measured by the degree to which goals and objectives were achieved; d) how the project supported California's economic recovery in the near term and number of jobs created or sustained; e) how the project results will be used by California industry, markets and others; f) projected cost reduction impact and other benefits resulting from the project; g) discuss the project budget, including the total project cost and all the funding partners and their cost share; h) discuss how the Energy Commission funding was spent on the project, including any unique products and benefits; i) observations, conclusions and recommendations for further RD&D projects and improvements to the PIER project management process.

If a final report is required by DOE, the Recipient will include a copy of it along with the Energy Commission's final report requirements. In addition, the Recipient shall submit the draft final DOE report to the Energy Commission for review at the same time it submits it to DOE.

The Final Report shall be a public document. If the Recipient has obtained confidential status from the Energy Commission and will be preparing a confidential version of the

Exhibit A WORK STATEMENT

Final Report as well, the Recipient shall perform the following activities for both the public and confidential versions of the Final Report.

The Recipient shall:

- Provide a draft copy of the Final Report including a copy of the draft submitted to the U.S. DOE in response to the American Recovery and Reinvestment Act Funding Opportunity Notice for which an award was received. The Final Report must be completed on or before the end of the Agreement Term.
- Submit written correspondence from DOE regarding acceptance of the final report.

Products:

- Draft Final Report, including a copy of the draft report submitted to DOE
- Final Report, including a copy of the final report submitted to DOE
- Written correspondence from DOE regarding acceptance of final report (no draft)

Task 1.6 Identify and Obtain Matching Funds

The goal of this task is to ensure that the match funds planned for this Agreement are obtained for and applied to this Agreement during the term of this Agreement.

The costs to obtain and document match fund commitments are not reimbursable through this Agreement. Although the PIER budget for this task will be zero dollars, the Recipient may utilize match funds for this task. Match funds shall be spent concurrently or in advance of PIER funds for each task during the term of this Agreement. Match funds must be identified in writing and the associated commitments obtained before the Recipient can incur any costs for which the Recipient will request reimbursement.

The Recipient shall:

- Prepare a letter documenting the match funding committed to this Agreement and submit it to the Commission Project Manager at least 2 working days prior to the kick-off meeting. The letter needs to identify the following at a minimum:
 - Amount of each cash match fund, its source, including a contact name, address and telephone number and the task(s) to which the match funds will be applied.
 - Amount of each in-kind contribution, a description, documented market or book value, and its source, including a contact name, address and telephone number and the task(s) to which the match funds will be applied. If the in-kind contribution is equipment or other tangible or real property, the Recipient shall identify its owner and provide a contact name, address and telephone number, and the address where the property is located.

Exhibit A WORK STATEMENT

- Provide a copy of the letter of commitment from an authorized representative of each source of cash match funding or in-kind contributions that these funds or contributions have been secured.
- Discuss match funds and the implications to the Agreement if they are reduced or not obtained as committed, at the kick-off meeting. If applicable, match funds will be included as a line item in the progress reports and will be a topic at CPR meetings.
- Provide the appropriate information to the Commission Project Manager if during the course of the Agreement additional match funds are received.
- Notify the Commission Project Manager within 10 days if during the course of the Agreement existing match funds are reduced. Reduction in match funds must be approved through a formal amendment to the Agreement and may trigger an additional CPR.

Products:

- A letter regarding match funds (no draft)
- Copy(ies) of each match fund commitment letter(s) (no draft)
- Letter(s) for new match funds (if applicable) (no draft)
- Letter that match funds were reduced (if applicable) (no draft)

Task 1.7 Identify and Obtain Required Permits

The goal of this task is to obtain all permits required for work completed under this Agreement in advance of the date they are needed to keep the Agreement schedule on track.

Permit costs and the expenses associated with obtaining permits are not reimbursable under this Agreement. Although the PIER budget for this task will be zero dollars, the Recipient shall budget match funds for any expected expenditures associated with obtaining permits. Permits must be identified in writing and obtained before the Recipient can make any expenditures for which a permit is required.

The Recipient shall:

- Prepare a letter documenting the permits required to conduct this Agreement and submit it to the Commission Project Manager at least 2 working days prior to the kick-off meeting. If there are no permits required at the start of this Agreement, then state such in the letter. If it is known at the beginning of the Agreement that permits will be required during the course of the Agreement, provide in the letter:
 - A list of the permits that identifies the:
 - Type of permit
 - Name, address and telephone number of the permitting jurisdictions
 - or lead agencies

Exhibit A WORK STATEMENT

- The schedule the Recipient will follow in applying for and obtaining these permits.
- Discuss the list of permits and the schedule for obtaining them at the kick-off meeting and develop a timetable for submitting the updated list, schedule and the copies of the permits. The implications to the Agreement if the permits are not obtained in a timely fashion or are denied will also be discussed. If applicable, permits will be included as a line item in the Progress Reports and will be a topic at CPR meetings.
- If during the course of the Agreement additional permits become necessary, provide the appropriate information on each permit and an updated schedule to the Commission Project Manager.
- As permits are obtained, send a copy of each approved permit to the Commission Project Manager.
- If during the course of the Agreement permits are not obtained on time or are denied, notify the Commission Project Manager within 5 working days. Either of these events may trigger an additional CPR.

Products:

- Letter documenting the permits or stating that no permits are required (no draft)
- A copy of each approved permit (if applicable) (no draft)
- Updated list of permits as they change during the term of the Agreement (if applicable) (no draft)
- Updated schedule for acquiring permits as changes occur during the term of the Agreement (if applicable) (no draft)

TECHNICAL TASKS

TASK 2 Simply Solar PV Generation Facility

The goal of this task is to install an approximately 1.5 MW PV or concentrating PV system that will meet many of the goals of the Recipient's former Sacramento Solar Highways Project, which was cancelled due to economic infeasibility and insufficient market response to the project's Request for Offers. The new community-scale solar facility will be installed on disturbed and marginal publicly-owned land near the load center of the region serviced by SMUD. The facility will have a high degree of public visibility and educational/ aesthetic value. The Recipient will solicit a private partner to site, design, construct, own, operate, and purchase power from the facility. The Recipient will offer its 2011 or 2010 Feed-in Tariff rates for the power, depending on the characteristics of the project. The Recipient will also supply two Satcon Equinox 500kW inverters to help offset project costs.

The Recipient shall:

- Prepare a detailed *Project Plan and Timeline*.
- Conduct a solicitation for the project developer and enter into a subcontract for the design, construction, ownership, and operation of the PV generation facility.

Exhibit A WORK STATEMENT

- Send the Commission Project Manager a *Subcontract Completion Notification Letter* within five days of entering into the subcontract. The letter will summarize the subcontract's provisions.
- Conduct a review of the project under CEQA and prepare any documents required by CEQA.
- Send the Project Manager one or more *CEQA Review Notification Letters* within five days of completion of the CEQA review and/or any environmental documents required by CEQA. The letter must be accompanied by any environmental documents prepared in compliance with CEQA.
- Obtain permits required for the project.
- Prepare a detailed design of the PV system, including all installation and grid interconnection requirements.
- Construct the PV system.
- Perform grid interconnection activities.
- Send the Project Manager a *PV System Construction and Interconnection Notification Letter* within five days of completion of the PV system construction and grid interconnection.
- Prepare a *Task 2 Test Plan* that includes but not be limited to:
 - A description of the PV system to be tested
 - A rationale for why the tests are needed
 - Test objectives and technical approach
 - A candidate test matrix showing the operating conditions and PV system to be tested
 - A description of the equipment and instrumentation required to conduct the tests
 - A description of test procedures, including parameters to be varied, variation ranges to be tested, parameters to be measured and the instrumentation used to measure them, calibration procedures to be used including calibration intervals, and data sheets to be completed
 - A description of the data analysis procedures
 - A description of the quality assurance procedures
 - Contingency measures to be considered if test objectives are not met
- Perform testing and monitoring activities based on the Test Plan.
- Perform start-up and commissioning activities.
- Prepare a *Technology Transfer and Commercialization Plan Report*.
- Perform technology transfer activities.
- Prepare a *Task 2 Report* that includes but is not limited to: system design and equipment specifications; project test results; solar resource and output monitoring results; and a summary of economic performance, jobs created for installation and maintenance activities, and greenhouse gas reductions.
- Participate in a CPR and prepare a *CPR Report* per Task 1.2.

Products:

- Detailed Project Plan and Timeline (no draft)
- Subcontract Completion Notification Letter

Exhibit A WORK STATEMENT

- CEQA Review Notification Letter(s) and environmental documents (no draft)
- PV System Construction and Interconnection Notification Letter (no draft)
- Task 2 Test Plan
- Technology Transfer and Commercialization Plan Report (no draft)
- Task 2 Report
- CPR Report

TASK 3 Co-Digestion Facility

The goal of this task is to implement a permanent co-digestion facility for fats, oil, grease, and liquid food processing waste with sewage at the Sacramento Regional Wastewater Treatment facility. These materials will be injected directly into an existing digester at the treatment plant and co-digested with sewage sludge. The biogas generated by this activity will be treated and fed to the SMUD-owned Cosumnes combined cycle power plant, which has an estimated power recovery of up to 3 MW.

Exhibit A WORK STATEMENT

The Recipient shall:

- Prepare a detailed *Project Plan and Timeline*.
- Complete a subcontract with the Sacramento Regional County Sanitation District (SRCSD) that will require the SRCSD to perform the following activities:
 - Prepare and issue a solicitation for the design and construction of the co-digestion facility.
 - Award one or more contracts for the design and construction of the facility.
 - Obtain required permits.
 - Design and construct the facility.
 - Develop and document operating guidelines.
 - Prepare a draft and final *Test Plan* that includes.
 - Conduct plant start-up and commissioning activities.
 - Enter into contracts with feedstock suppliers.
 - Conduct an open house and press event.
 - Monitor plant operation.
 - Prepare a test report to be included in the Recipient's Task 3 Report.
- Send the Project Manager a *Construction Completion Notification Letter* and a *Commencement of Start-Up and Commissioning Notification Letter* within five days of the construction completion and commencement of start-up and commissioning activities.
- Document the jobs created for installation and maintenance of the co-digestion facility.
- Notify the Energy Commission in writing when a planned co-digestion facility press events has taken place; the notification must include a summary of the press event.
- Prepare a *Technology Transfer and Commercialization Plan*.
- Prepare a *Task 3 Report* that includes a discussion of: system design and construction, operating guidelines, test results, economic performance, jobs created, and greenhouse gas reductions.
- Participate in a CPR and prepare a *CPR Report* per Task 1.2.

Products:

- Project Plan and Timeline (no draft)
- Test Plan developed under the SRCSD subcontract
- Construction Completion Notification Letter (no draft)
- Start-Up and Commissioning Notification Letter (no draft)
- Notification letter documenting the co-digestion facility press event (no draft)
- Technology Transfer and Commercialization Plan (no draft)
- Task 3 Report
- CPR Report

TASK 4 Anaerobic Digestion System for the New Hope Dairy Farm

The goal of this task is to install an anaerobic digestion system at the New Hope Dairy Farm in Galt, California, which has over 1200 dairy cows. The biogas produced from

Exhibit A WORK STATEMENT

the farm will be fed to a 450-kilowatt engine genset for a CHP application that will comply with the California Air Resources Board's 2007 distributed generation emissions standards.

The Recipient shall:

- Enter into an agreement with the subcontractor (ABEC New Hope LLC) to implement activities (including but not limited to design, installation and commissioning) that will lead to the successful installation, interconnection, and operation of an anaerobic digestion system at New Hope Dairy.
- Negotiate and execute an agreement with the New Hope Dairy owners that addresses feedstock, site control, and leasing of the farm.
- Obtain permits required for the project.
- Prepare a preliminary design of an anaerobic digester and solids separation system.
- Prepare a preliminary project design report on the biogas collection system and engine genset for the CHP application.
- Prepare a final project design of the New Hope Dairy digester and engine-generator energy recovery system.
- Prepare construction documents for the CHP application.
- Procure all equipment and materials necessary to construct the integrated anaerobic digester (AD) and engine genset for the CHP application.
- Construct the digester system at the farm.
- Complete the electrical interconnection of the engine-generator to the Recipient's power lines.
- Enter into a power purchase agreement with New Hope Dairy.
- Ensure that the Recipient's interconnection equipment is delivered and installed when required for interconnection and supply.
- Install a voltage regulator per interconnect agreement between SMUD and New Hope Dairy.
- Prepare a *Test Plan for the Start-up of the Digester System* that includes but is not limited to:
 - A description of the digester system to be tested
 - A rationale for why the tests are needed
 - Test objectives and technical approach
 - A candidate test matrix showing the operating conditions and digester system to be tested
 - A description of the equipment and instrumentation required to conduct the tests
 - A description of test procedures, including parameters to be varied, variation ranges to be tested, parameters to be measured and the instrumentation used to measure them, calibration procedures to be used including calibration intervals, and data sheets to be completed
 - A description of the data analysis procedures
 - A description of the quality assurance procedures
 - Contingency measures to be considered if test objectives are not met

Exhibit A WORK STATEMENT

- Perform the start-up of the digester and commission the operation of the engine-generator.
- Prepare a *Start-Up Test and Commissioning Report* that summarizes the start-up and commissioning activities.
- Prepare a *Test Plan for Field Demonstration, Operation, and Monitoring of the Digester and Engine-Generator System* that includes but is not limited to:
 - A description of the digester and engine-generator system to be tested
 - A rationale for why the tests are needed
 - Test objectives and technical approach
 - A candidate test matrix showing the operating conditions and digester and engine-generator system to be tested
 - A description of the equipment and instrumentation required to conduct the tests
 - A description of test procedures, including parameters to be varied, variation ranges to be tested, parameters to be measured and the instrumentation used to measure them, calibration procedures to be used including calibration intervals, and data sheets to be completed
 - A description of the data analysis procedures
 - A description of the quality assurance procedures
 - Contingency measures to be considered if test objectives are not met
- Demonstrate the operation of the digester and engine-genset for the CHP application. Monitor the performance of the integrated system.
- Perform technology transfer activities by communicating the technological aspects of the dairy digester and energy production system to interested parties.
- Prepare a *Project Design and Construction Summary Report* that includes but is not limited to a discussion of: the basis of design for the digester system, mass and energy balances for the AD, solid separator, biogas collection system and engine genset for CHP application, design of the biogas collection system and engine genset, and construction.
- Prepare a *Task 4 Field Demonstration, Operation, and Monitoring Report* that includes results of field demonstration/ operation activities, and a discussion of economic performance, job creation and greenhouse gas benefits.
- Prepare a *Technology Transfer Plan*.
- Participate in a CPR and prepare a *CPR Report* per Task 1.2.

Products:

- Test Plan for the Start-Up of the Digester System
- Start-Up Test and Commissioning Report (no draft)
- Test Plan for Field Demonstration, Operation, and Monitoring of the Digester and Engine-Generator System
- Project Design and Construction Summary Report (no draft)
- Task 4 Field Demonstration, Operation, and Monitoring Report
- Technology Transfer Plan (no draft)
- CPR Report

Exhibit A WORK STATEMENT

Task 5 Anaerobic Digestion System for the Van Warmerdam Dairy Farm

The goal of this task is to install an anaerobic digester system at the Van Warmerdam Dairy Farm in Elk Grove, California, which has 1200 lactating dairy cows. The biogas produced will be fed to a Guascor engine that will generate an electrical output of 250 kW for a CHP application.

The Recipient shall:

- Complete an agreement with the subcontractor (Maas Energy Works) to implement activities (including but not limited to design, construction and commissioning) that will lead to the successful installation, interconnection, and operation of an anaerobic digestion system at Van Warmerdam Dairy Farm.
- Enter into an agreement with Van Warmerdam Dairy owners that addresses feedstock, site control, and leasing of the farm.
- Perform a preliminary design of an anaerobic digester and solids separation system.
- Obtain permits required for the projects.
- Perform a preliminary *Project Design Report* of the biogas collection system and engine genset for the CHP application.
- Perform a project design of the Warmerdam digester and engine-generator energy recovery system, including construction documents for the CHP application.
- Procure all supplied equipment and materials necessary to construct the integrated AD and engine genset for CHP application.
- Construct the digester system at the farm.
- Complete the electrical interconnection of the engine-generator to the Recipient's power lines.
- Enter into a power purchase agreement with Van Warmerdam Dairy Farm.
- Ensure that the Recipient's interconnection equipment is delivered and installed when required for interconnection.
- Supply and install the voltage regulator per interconnect agreement between SMUD and Van Warmerdam Dairy Farm.
- Prepare a *Test Plan for the Start-up of the Digester System* that will include but not be limited to:
 - A description of the digester system to be tested
 - A rationale for why the tests are needed
 - Test objectives and technical approach
 - A candidate test matrix showing the operating conditions and digester system to be tested
 - A description of the equipment and instrumentation required to conduct the tests
 - A description of test procedures, including parameters to be varied, variation ranges to be tested, parameters to be measured and the instrumentation used to measure them, calibration procedures to be used including calibration intervals, and data sheets to be completed
 - A description of the data analysis procedures

Exhibit A WORK STATEMENT

- A description of the quality assurance procedures
 - Contingency measures to be considered if test objectives are not met
- Perform the start up the digester and commission the operation of the engine-generator.
- Prepare a *Start-Up and Commissioning Report* that summarizes the start-up and commissioning activities.
- Prepare a *Test Plan for Field Demonstration, Operation, and Monitoring of the Digester and Engine-Generator System*. The plan will include but not be limited to:
 - A description of the digester and engine-generator system to be tested
 - A rationale for why the tests are needed
 - Test objectives and technical approach
 - A candidate test matrix showing the operating conditions and digester and engine-generator system to be tested
 - A description of the equipment and instrumentation required to conduct the tests
 - A description of test procedures, including parameters to be varied, variation ranges to be tested, parameters to be measured and the instrumentation used to measure them, calibration procedures to be used including calibration intervals, and data sheets to be completed
 - A description of the data analysis procedures
 - A description of the quality assurance procedures
 - Contingency measures to be considered if test objectives are not met
- Demonstrate the operation of the digester and engine-genset for the CHP application. Monitor the performance of the integrated system.
- Perform technology transfer activities by communicating the technological aspects of the dairy digester and energy production system to interested parties.
- Prepare a *Project Design and Construction Summary Report* that includes but is not limited to a discussion of: the basis of design for the digester system, mass and energy balances for the AD, solid separator, biogas collection system, and engine genset for CHP application, design of the biogas collection system and engine genset, and construction.
- Prepare a *Task 5 Field Demonstration, Operation and Monitoring Report* that includes results of field demonstration/ operation and a discussion of economic performance, job creation and greenhouse gas benefits.
- Prepare a *Technology Transfer Plan*.
- Participate in a CPR and prepare a *CPR Report* per Task 1.2.

Products:

- Test Plan for the Start-Up of the Digester System
- Start-Up and Commissioning Report (no draft)
- Test Plan for Field Demonstration, Operation, and Monitoring of the Digester and Engine-Generator System
- Project Design and Construction Summary Report (no draft)
- Task 5 Field Demonstration, Operation and Monitoring Report

Exhibit A WORK STATEMENT

- Technology Transfer Plan (no draft)
- CPR Report