

GRANTS/CONTINGENT AWARD REQUEST



To: Grants and Loans Office

Date: 3/14/2012

Project Manager: Rajesh Kapoor

Phone Number: 916-327-1388

Office: Energy Efficiency Research Office

Division: Energy Research and Development

MS- 43

Project Title: Municipal Digester Repowering Demonstration Project

Type of Request: (check one)

New Agreement: (include items A-F from below) Agreement Number: Assigned by G&L Office

Program: PIER NG / Industrial/ Ag/ Water

Solicitation Name and/or Number: PON-11-501-51 (2011 Emerging Technology Demonstration Grant Program (ETDG II))

Legal Name of Recipient: UTS Bioenergy LLC

Recipient's Full Mailing Address: 2211 ENCINITAS BLVD STE 216
ENCINITAS, CA 92024-4361

Recipient's Project Officer: Juan Josse Phone Number: (949) 753-2855

Agreement Start Date: 6/29/2012 Agreement End Date: 3/30/2015

Amendment: (Check all that apply) Agreement Number: PIR-11-026

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: NG Amount: \$ 1,933,551.00 Statute: 10- FY: 11-12 Budget List #: 501.001E

*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: Rajesh Kapoor 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-XXX for a grant of \$1,933,551 with UTS Bioenergy LLC to demonstrate the ability for wastewater treatment plants to be utilized as power generating facilities, reduce the draw of electricity from the grid and to provide an environmentally friendly option to disposal of high strength organic waste. This project will showcase a retrofit technology which will allow wastewater plants to utilize existing infrastructure to produce enough electricity to be self-sufficient. The length of this agreement is 33 months. Contact: Rajesh Kapoor (PIER Natural Gas funding)

Rajesh Kapoor 4/3/2012 Juan Josse 4/3/12 [Signature] 4/9/12

Project Manager Date Office Manager Date Deputy Director Date

WORK STATEMENT

TECHNICAL TASK LIST

Task #	CPR	Task Name
1	N/A	Administration
2.1	N/A	Verification of Demonstration Site
2.2	N/A	Confirmation of Measurement and Verification Vendor
3	N/A	Site Selection
4	X	Demonstration Site Design
5	N/A	Bill of Materials Finalization
6	N/A	Equipment Procurement
7	N/A	Equipment Skid Fabrication
8	N/A	Demonstration Site Construction and Installation
9	X	Test Plans and Demonstration Trials
10	N/A	Technology Transfer Activities
11	N/A	Production Readiness Plan

KEY NAME LIST

Task #	Key Personnel	Key Subcontractor(s)	Key Partner(s)
1	Juan Josse - UTS		
2.1	Juan Josse - UTS		
2.2	Juan Josse - UTS		
3	Juan Josse - UTS		
4	Juan Josse – UTS		
5	Juan Josse – UTS		
6	Juan Josse – UTS		
7	Juan Josse – UTS		
8	Juan Josse – UTS		
9	Juan Josse – UTS		
10	Juan Josse – UTS		
11	Juan Josse – UTS		

GLOSSARY

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

Term/ Acronym	Definition
CPR	Critical Project Review
MDRD	Municipal Digester Repowering Demonstration

Term/ Acronym	Definition
PAC	Project Advisory Committee
PFD	Process Flow Diagram
P&ID	Process and Instrumentation Diagram
PIER	Public Interest Energy Research
RD&D	Research, Development and Demonstration

Problem Statement:

Currently, Municipal wastewater treatment in North America is an energy intensive process, and in California, represents 0.5% of all electricity demands. The solids portion of Municipal wastewater, sludge, is high in energy value, and if processed utilizing anaerobic digestion, could produce biogas, which in turn can be converted to electricity. While Municipal Sludge represents significant biogas potential, typically the amount of biogas generated from sludge only represents 35-45% of the wastewater plant electricity requirements.

Anaerobic digesters are designed based on a target hydraulic retention time for the sludge, and since sludge fed to digesters is dilute, digesters are inefficiently utilized. Due to the fact that anaerobic digesters are operated at low solids content historically, digester mixing, heating and other equipment are designed for a low solids environment.

For these reasons, the economic feasibility for municipalities and plant owners to put in Combined Heat and Power facilities can be prohibitive, as the amount of electricity that could be produced compared to the requirement is less than 50%. In order to generate enough electricity to cover plant demand, bringing additional external wastes are feasible, but due to the current digester technologies, existing digesters cannot be loaded higher, thus requiring additional digester volume to be constructed.

Provided the right technological advances are made with respect to digester mixing equipment for high solids, as well as sustainable methodologies to thicken digester sludge are made, the potential of operating digesters at higher solids and loading rates is there. The barrier to seeing higher solids and loading rates lies in the fact that there are insufficient representative scale examples of successful long term operation, for conservative plant owners to rely on in order to adopt a shift in technology application.

Goals of the Agreement:

The goal of this agreement is to demonstrate the ability for wastewater treatment plants to be utilized as power generating facilities, reduce the draw of electricity from the grid and to provide an environmentally friendly option to disposal of high strength organic waste. This project will showcase a retrofit technology which will allow wastewater plants to utilize existing infrastructure to produce enough electricity to be self-sufficient. Additionally, this will show an option to divert waste from landfills, prolonging landfill life, and reducing greenhouse gas emissions.

Objectives of the Agreement:

The objectives of this agreement are to determine and show the additional biogas that can be generated within existing anaerobic digestion infrastructure and the retrofit and stable operation of high solids digester operations. This is also the objective of this project to show that External High Strength Waste can be co-digested with Municipal sludge, up to a 50% fraction, resulting in enough biogas production that could generate enough electricity for the plant to be self-sufficient.

Following a successful project, it is the objective of this project to serve as a pertinent case study and full scale reference to Municipalities and plant owners for high solids, high loading co-digestion, resulting in the widespread implementation.

Product Guidelines:**TASK 1 ADMINISTRATION****Task 1.1 Attend Kick-off Meeting**

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.

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.

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.
- Present the required information at each CPR meeting and participate in a discussion about the Agreement.

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)

Task 1.3 Final Meeting

The goal of this task is to closeout this Agreement.

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:

- 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

Products:

- Written documentation of meeting agreements (no draft)
- Schedule for completing closeout activities (no draft)

Task 1.4 Monthly 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.

The Recipient shall:

- Prepare a Monthly Progress Report which summarizes 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.

Product:

- Monthly Progress Reports (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 objectives of the Final Report are to clearly and completely describe the project's purpose, approach, activities performed, results, and advancements in science and technology; to present a public assessment of the success of the project as measured by the degree to which goals and objectives were achieved; to make insightful observations based on results obtained; to draw conclusions; and to make recommendations for further RD&D projects and improvements to the PIER project management processes.

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 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:

- Prepare an Outline of the Final Report.
- Prepare a Final Report following the approved outline and the latest version of the PIER Final Report guidelines published on the Energy Commission's website at <http://www.energy.ca.gov/contracts/pier/contractors/index.html> at the time the Recipient begins performing this task, unless otherwise instructed in writing by the Commission Project Manager. Instead of the timeframe listed in the Product Guidelines located in Section 5 of the Terms and Conditions, the Commission Project Manager shall provide written comments on the Draft Final Report within fifteen (15) working days of receipt. The Final Report must be completed on or before the end of the Agreement Term.
- Submit one bound copy of the Final Report with the final invoice.

Products:

- Draft Outline of the Final Report
- Final Outline of the Final Report
- Draft Final Report
- Final Report

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. If no match funds were part of the proposal that led to the Energy Commission awarding this Agreement and none have been identified at the time this Agreement starts, and then state such in the letter. If match funds were a part of the proposal that led to the Energy Commission awarding this Agreement, then provide in the letter a list of the match funds that identifies the:
 - 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
- 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 or stating that no match funds are provided (no draft)
- Copy(ies) of each match fund commitment letter(s) (if applicable) (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
- 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 10 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 2.1 VERIFICATION OF DEMONSTRATION SITE

The goal of this task is to verify that the proposed demonstration site can still host the project, or otherwise obtain a new demonstration site.

The Recipient shall:

- Visit the proposed demonstration site and assess installation methodology and complexity, locations for equipment, etc.
- With the site operations staff, review the plant operation philosophy and historic performance, assessing the ability to utilize a portion of the plant.
- Review proposed demonstration site compared to the pre-defined site selection criteria to ensure that the proposed demonstration site will meet approved criteria.
- Identify alternate demonstration sites which would meet the approved site criteria.
- Create and provide a Written Notification regarding the verification of the applicability of the proposed demonstration site for this project to the Commission Project Manager. The letter shall include but is not limited to written documentation that this project has a suitable demonstration site, and the date such a formal agreement with the host site will be finalized.

Products:

- Written Notification of proposed demonstration site.

TASK 2.2 CONFIRMATION OF MEASUREMENT & VERIFICATION VENDOR

The goal of this task is to confirm and name a third-party Measurement & Verification vendor for the project, or otherwise obtain a new vendor.

The Recipient shall:

- Create a scope of work for the Measurement & Verification vendor for the duration of the demonstration.
- Submit scope of work to the proposed third party Measurement &

- Verification vendor for quotation.
- Identify alternate Measurement & Verification vendors who could either provide the services in the scope of work, should the selected vendor be not capable, or be able to take over services at any point during the demonstration.
- Provide a Written Notification regarding the confirmation of the third-party Measurement & Verification vendor for this project to the Commission Project Manager. The letter shall include but is not limited to written documentation that this project has a suitable Measurement & Verification vendor, and the date such any work will commence.

Products:

- Written Notification of confirmed Measurement & Verification vendor.

TASK 3 SITE SELECTIONS

The goal of this task is to finalize a site selection to host the Municipal Digester Repowering Demonstration.

The Recipient shall:

- Prepare and submit pre-defined site selection details for the field test site, including but not limited to the following, and obtain Commission Project Manager approval:
 - Site Type
 - Number of Sites
 - Site Location
 - Timing of testing, length and frequency of testing
 - Agree with site owner, to address such issues as:
 - Details of test, including dates, length of test
 - Site owner input and feedback on test conditions
 - Access to site
 - Insurance and indemnity
 - Contingency if damages are caused by test
 - Equipment installation and removal
- Upon site selection, enter into an agreement with the site owner and make a copy of the agreement available to the Commission Project Manager.
- Prepare Written Notification of Site Selection

Products:

- Demonstration Site Selection Details (No draft)
- Written Notification of Site Selection

TASK 4 DEMONSTRATION SITE DESIGN

The goal of this task is to develop the demonstration design specific to the selected site.

The Recipient shall:

- Develop detailed site layout drawings specific to the demonstration site installation, locating all necessary equipment and skids.
- Prepare a detailed demonstration site Process Flow Design (PFD) to outline the demonstration site process.
- Prepare a set of final demonstration site's Process and Instrumentation Diagram (P&ID's), outlining all equipment, electrical requirements, plant control methodology.
- Design pre-engineered equipment skids which will be utilized in the project.
- Create a detailed project schedule through to the completion of construction and demonstration commissioning.
- Work with the demonstration plant owner for attaining necessary amendments to the plant Air Permit and Certificate of Approval
- Attain necessary insurances for demonstration installation and operation
- Develop a scope of work for the demonstration installation, including all design, construction and commissioning work to be executed by 3rd parties.
- Contract to a capable 3rd party the detailed design of:
 - Structural components utilized in the demonstration;
 - Field piping detail drawings and routings;
 - All required seismic design reviews and considerations;
 - Demonstration Electrical Design and control panel requirements;
 - Demonstration Plant Control Philosophy and operating program
- Provide a Written Notification regarding the completion of design of the project, to the Commission Project Manager. The letter shall include but is not limited to written documentation that this project is ready for the commencement of equipment purchase and construction kick off; and the date such equipment purchase and construction kick off shall begin, and shall include photographs and any relevant drawings.
- Prepare first CPR report.
- Participate in CPR meeting.

Products:

- Demonstration Site's Detailed Design and Drawing Package Report(No draft)
- 3rd Party Detailed Design report (No draft)
- Written Notification of design completion
- CPR Report (draft and final)

TASK 5 BILL OF MATERIALS

The goal of this task is to create a Bill of Materials which identifies all equipment and materials required for the MDRD project.

The Recipient shall:

- Prepare a Bill of Materials for the project. These documents shall include but is not limited to:
 - a description of each item
 - test protocols and codes applicable to each item
 - cost estimates or bids for each item
 - key materials of construction
 - required suppliers
 - supply scope for each component.

Products:

- Bill of Materials report for the Project(No draft)

TASK 6 EQUIPMENT PROCUREMENT

The goal of this task is to purchase all UTS supplied equipment and materials associated with the project.

The Recipient shall:

- Purchase all materials and equipment as defined in the Bill of Materials as UTS Bioenergy scope of supply
- Prepare and provide a Written Notification regarding the completion of equipment and materials purchase for this project to the Commission Project Manager. The letter shall include but is not limited to written documentation that the equipment and materials are ready for shipment and installation; and the date such installation shall begin, and shall include photographs.

Products:

- Written Notification regarding procurement completion

TASK 7 EQUIPMENT SKID FABRICATION

The goal of this task is to fabricate and assemble equipment skids necessary for this project.

The Recipient shall:

- Contract a 3rd Party, who is California based to fabricate and assemble necessary demonstration equipment skids
- Build through a 3rd party fabrication company, pre-engineered equipment skids associated with this Project
- Prepare and provide a Written Notification regarding the completion of equipment skid fabrication for this project to the Commission Project Manager. The letter shall include but is not limited to written documentation that the equipment skids are assembled and tested; and the date such installation shall begin, and shall include photographs of the skids.

Products:

- Written Notification regarding the completion of skid fabrication

TASK 8.0 DEMONSTRATION SITE CONSTRUCTION AND INSTALLATION

The goal of this task is to install and commission all necessary equipment associated with this project.

The Recipient shall:

- Build through a 3rd party fabrication company, pre-engineered equipment skids associated with the Project
- Contract a general contractor to perform all site work associated with construction, installation and commission of the project
- Manage, through the recipient Project Manager, all site work performed by the selected general contractor and their subcontractors. This includes, but is not limited to:
 - site mobilization;
 - site preparation for civil works and construction;
 - non-digester site installation;
 - demonstration digester shutdown, cooling, contents transfer, cleanout, and modifications;
 - installation of demonstration specific digester equipment;
 - Commissioning and startup of *Municipal Digester Repowering Demonstration* (MDRD) digester.
- Facilitate, through the recipient Project Manager, any construction change orders.
- Manage, through the recipient Project Manager, the project budget and inform the Commission Project Manager of any budget issues.
- Prepare and provide a Written Notification regarding the completion of the construction of this project, to the Commission Project Manager. The letter shall include but is not limited to written documentation that the MDRD project is ready for operation and test plan initiation; and the date such operation and test plan shall begin, and shall include photographs of

the completed installation.

Products:

- Written Notification regarding construction completion

TASK 9 TEST PLANS AND DEMONSTRATION TRIALS

The goal of this task is to develop and execute a test plan for this project.

The Recipient shall:

- Prepare the project Test Plan. The Test Plan shall include, but is not limited to:
 - A description of the process to be tested
 - Rationale for why each of the tests are required
 - Predicted performance based on calculation or analyses or previous work
 - Discrete test pass criteria
 - Test objectives and technical approach
 - Test matrix showing the number of test conditions and replicated runs
 - A description of the facilities, equipment, instrumentation required to conduct each of the tests
 - A description of test procedures, including parameters to be controlled and how they will be controlled; parameters to be measured and instrumentation to measure them; calibration procedures to be used; recommended calibration interval; and maintenance of the test log
 - A description of the data analysis procedures
 - A description of the quality assurance procedures
 - Contingency measures to be considered if the test objectives are not met
 - A baseline and active Test Plan schedule, identifying the sequencing of discrete tests.
 - Site activity log during each of the discrete tests, to identify potential causes of abnormal site operation
- Prepare the Test Progress Reports. The Progress Reports shall include, but is not limited to:
 - the Test Plan
 - test results
 - analysis
 - Contingency measures
 - conclusions
 - recommendations
 - photographs as appropriate
 - pertinent data trending and comparisons

Prepare second CPR Report.

Participate in CPR meeting.

Products:

- Draft Test Plan Report.
- Final Test Plan Report.
- Test Progress Report (no draft)
- CPR Report (draft and final).

TASK 10 TECHNOLOGY TRANSFER ACTIVITIES

The goal of this task is to develop a plan to make the knowledge gained, experimental results and lessons learned available to key decision-makers.

The Recipient shall:

- Prepare a Technology Transfer Plan. The plan shall explain how the knowledge gained in this project will be made available to the public. The level of detail expected is least for research-related projects and highest for demonstration projects. Key elements from this report shall be included in the Final Report for this project.
- Conduct technology transfer activities in accordance with the Technology Transfer Plan. These activities shall be reported in the Monthly Progress Reports.
- Report to the California Energy Commission on the status of the MDRD technology. This includes, but not limited to:
 - Number of ongoing or completed projects which are based on MDRD Technology;
 - Annual revenue associated with MDRD projects;
 - Cumulative electricity savings as a result of MDRD projects in the State of California;
 - Annual volume of diverted External High Strength Waste from Landfill in California;
 - Jobs created within UTS Bioenergy associated with MDRD projects;
 - Additional jobs created at MDRD facilities.

Products:

- Draft Technology Transfer Plan
- Final Technology Transfer Plan
- Report on status of MDRD technology.

TASK 11 PRODUCTION READINESS PLAN

The goal of the plan is to determine the steps that will lead to the manufacturing of the technologies developed in this project or to the commercialization of the project's

results.

The Recipient shall:

- Prepare a Production Readiness Plan. The degree of detail in the Production Readiness Plan discussion should be proportional to the complexity of producing or commercializing the proposed product and its state of development. The plan shall include, as appropriate, but not be limited to:
 - Identification of critical production processes, equipment, facilities, personnel resources, and support systems that will be needed to produce a commercially viable product
 - Internal manufacturing facilities, as well as supplier technologies, capacity constraints imposed by the design under consideration, identification of design critical elements and the use of hazardous or non-recyclable materials. The product manufacturing effort may include “proof of production processes”
 - A projected “should cost” for the product when in production
 - The expected investment threshold to launch the commercial product
 - An implementation plan to ramp up to full production

Products:

- Draft Production Readiness Plan
- Final Production Readiness Plan