



To: Grants and Loans Office

Date: 4/18/2013

Project Manager: Felix Villanueva

Phone Number: 916-327-2206

Office: Energy Efficiency Research Office

Division: Energy Research and Development

MS- 51

Project Title: Demonstrate Integrated Renewable Energy Technologies for Biorefineries

Type of Request: (check one)

New Agreement: (include items A-F from below) Agreement Number: _____

Program: PIER NG / Industrial/ Ag/ Water

Solicitation Name and/or Number: _____

Legal Name of Recipient: Biodiesel Industries of Ventura, LLC

Recipient's Full Mailing Address: 426 DONZE AVE
SANTA BARBARA, CA 93101-1312

Recipient's Project Officer: Russell Teall Phone Number: 805-689-9008

Agreement Start Date: 6/29/2012 Agreement End Date: 3/31/2015

Amendment: (Check all that apply) Agreement Number: PIR-11-030-01

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: _____ Amount: \$ _____ Statute: _____ FY: _____ Budget List #: _____

*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: 6/12/2013 Consent Discussion

Business Meeting Participant: Felix Villanueva Time Needed: minutes

Agenda Notice Statement: (state purpose in layperson terms)

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

Possible approval of this amendment to agreement PIR-11-030 with Biodiesel Industries of Ventura, LLC to delete references to the former biodiesel demonstration project site at Navy Base in Port Hueneme, CA.

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

Exhibit A WORK STATEMENT

TECHNICAL TASK LIST

Task #	CPR	Task Name
1	N/A	Administration
2		Planning & Coordination with Subcontractors
3		Cultivation, Harvesting & Processing of Feedstocks (Match Funds)
4	X	Fabrication & Installation of Renewable Energy Production Equipment
5	X	Integration, Interconnection & Start-up Operation of Equipment
6	X	Operation, Data Collection & Analysis
7		Independent Measurement & Verification
8		Technology Transfer Activities
9		Commercialization Readiness Plan

GLOSSARY

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

Term/ Acronym	Definition
AB 32	CA Assembly Bill 32 on global climate change
AD	Anaerobic Digestion
APL	All Power Labs
BIV	Biodiesel Industries of Ventura, LLC
CI	Carbon Intensity
CO ₂	Carbon Dioxide
CPR	Critical Project Review
Energy Commission	California Energy Commission
ILUC	Indirect Land Use Change
LCFS	Low Carbon Fuel Standard
Navy	Naval Facilities Engineering Service Center
NBVC	Naval Base Ventura County
PAC	Project Advisory Committee
PIER	Public Interest Energy Research
RD&D	Research, Development and Demonstration
RRR	Red Rock Ranch
CEQA	California Environmental Quality Act
NEPA	National Environmental Policy Act
TEC	CardnoTEC

Problem Statement:

This project will integrate several emerging technologies to produce reliable on-demand primary renewable power for a biodiesel production facility. These technologies include: (1) combined solar power and heat, (2) modular gasification to convert oil seed

extraction solids (inedible) into heat and power, and (3) anaerobic digestion (AD) to convert the liquid by-products of biodiesel production (raw glycerin and wash water) to produce heat and power. Carbon dioxide (CO₂) generated by the integrated system will be ported to expanded algae ponds on site for conversion into biodiesel feedstock oils and biomass. Together these technologies will form an integrated system for providing 24/7 on-demand primary power and heat for a biodiesel production facility owned and operated by Biodiesel Industries of Ventura, LLC (BIV). ~~at the National Environmental Technology Test Site at Naval Base Ventura County (NBVC) in Port Hueneme, CA the proposed project site.~~

The integrated suite of emerging renewable energy technologies into a biofuel production facility has never previously been demonstrated, nor have the use of novel inedible feedstocks been utilized for gasification and AD. This project is not duplicative of previous projects.

The project will address three primary barriers: (1) systems integration and interconnection of the component technologies with the biodiesel production facility and the existing utility infrastructure, (2) the use of low environmental impact feedstocks for gasification and AD, and (3) energy, economic and environmental performance of the system, including mass and energy balances. These issues have not been previously addressed by the market because this is the first time that these technologies have been (1) integrated to provide on-demand primary power, (2) operated on novel feedstocks, and (3) been used to support a biodiesel production facility. Addressing these barriers will enable the transformation of the biodiesel industry into a commercial scale enterprise that meets the objectives of AB32, while simultaneously generating substantial additional renewable heat and power for the use by other consumers in a distributed network. The proposed project brings together a unique consortium of California based technologies and expertise to overcome these barriers.

Goals of the Agreement:

The goal of this Agreement is to integrate several emerging technologies to produce reliable on-demand primary renewable power for a biodiesel production facility. These technologies include: (a) combined solar power and heat, (b) modular gasification to convert oil seed extraction solids (inedible) into heat and power, and (c) AD to convert liquid by-products from biodiesel production (raw glycerin and wash water) to produce heat and power.

Objectives of the Agreement:

The objectives of this Agreement are to:

- Demonstrate and validate the ability of the integrated and interconnected technologies to meet the combined heat and power needs of a biodiesel production facility¹,
- Quantify the displacement of natural gas and grid electricity for this system and the potential for similarly situated industries in California,

¹ This project will produce about 300,000 kWh/yr and approximately 1, 100 million Btu/yr. The amount of energy produced is sufficient to run the biodiesel production facility at ~~NBVC~~ the proposed project site.

- Provide an economic, and environmental assessment including compliance with CEQA and NEPA and local air district requirements, and
- Based upon data gathered from the demonstration and validation of the integrated technologies, document a pathway for producing biodiesel that increases use of renewables and waste products and also reduces energy cost.

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 Agreement 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 Agreement 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 Agreement 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 Agreement 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 Agreement 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 Agreement 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 Agreement Manager and as shown in the Technical Task List above. However, the Commission Agreement Manager may schedule additional CPRs as necessary, and any additional costs will be borne by the Recipient.

Participants include the Commission Agreement 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 Agreement Manager to provide support to the Energy Commission.

The Commission Agreement 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 Agreement 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 Agreement 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 Agreement 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 Agreement 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 Agreement Manager will determine the appropriate meeting participants.

The administrative portion of the meeting shall be a discussion with the Commission Agreement 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 Agreement 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 Agreement Manager. Instead of the timeframe listed in the Product Guidelines located in Section 5 of the Terms and Conditions, the Commission Agreement 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 Agreement 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, 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 Agreement Manager if during the course of the Agreement additional match funds are received.
- Notify the Commission Agreement 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 Agreement 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 Agreement Manager.
- As permits are obtained, send a copy of each approved permit to the Commission Agreement Manager.
- If during the course of the Agreement permits are not obtained on time or are denied, notify the Commission Agreement 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 ~~PLANNING & COORDINATION WITH SUBCONTRACTORS~~

SUBCONTRACTORS AND SITE FINALIZATION

TASK 2.1 PLANNING & COORDINATION WITH SUBCONTRACTORS

The goal of this task is to meet with each of the subcontractors to ensure that they fully understand the specifications and requirements of the grant awarded, develop detailed statements of work and data gathering protocols, and ensure that they are prepared to fulfill those requirements in a competent and timely manner.

The Recipient shall:

- Meet with each subcontractor to discuss the specifications, specific statements of work and protocols, and the requirements of the grant award
- Prepare draft subcontracts for each subcontractor and submit them to the Commission Agreement Manager for approval
- Obtain and submit executed copies of the subcontract for each subcontractor

Products:

- Draft subcontracts
- Executed subcontracts for each subcontractor

TASK 2.2 Confirm and Contract with Demonstration Site

The goal of this task is to ensure that the demonstration site is available prior to and during the demonstration period.

The Recipient shall:

- **Confirm with the demonstration site manager(s) that the site and support staff (including staff that will perform equipment installation and removal) are available for the project. If the site and/or staff are not available, the Recipient will obtain a new suitable demonstration site subject to the Commission Project Manager's approval.**
- **Determine liability insurance requirements at the demonstration site.**
- **Enter into a contract with the demonstration site representative to secure use of the site and support staff for the project. The contract will also address issues such as permits, insurance, and indemnification.**
- **Ensure that permitting requirements are met.**

Products:

- **Contract with the demonstration site representative (hardcopy and softcopy)**

TASK 3 CULTIVATION, HARVESTING & PROCESSING OF FEEDSTOCKS (Match funds)

The goal of this task is to cultivate, harvest and process castor and algae/Artemia for use in the project. This task will be fully funded with match funds.

The Recipient shall:

- Cultivate, harvest and process (oil extraction) castor at ~~Red Rock Ranch and UC-Davis Ag Field Stations at Davis, Five Points, the Imperial Valley and Salinas~~ **various locations.**
- Cultivate, harvest and process (oil extraction) algae/Artemia, at NBVC
- Transport seeds, oil, and oil extraction solids to NBVC **the proposed project site identified in Task 2.2.**
- Prepare Quarterly Reports **discussing the cultivation, harvesting, processing, and transportation of all feedstocks for use at the proposed project site.**

Products:

- Quarterly Reports

TASK 4 FABRICATION AND INSTALLATION OF RENEWABLE ENERGY PRODUCTION EQUIPMENT

The goal of this task is to fabricate and install algaculture (match funding), solar cogen, gasification and anaerobic digestion equipment at NBVC **the proposed project site** in accordance with the subcontracts established in Task 2.

The Recipient shall:

- Ensure all CEQA/NEPA requirements are obtained **ed** (if necessary),
- Ensure all permits identified in Task 1.7 have been obtained prior to installation and fabrication of the equipment, ~~and include decisions made by the NBVC Planning Review Board~~
- Develop and submit **an** equipment fabrication and installation plan and schedule,
- Create and submit a detailed Bill of Materials/Equipments for the project,
- Ensure that subcontractors fabricate and install solar cogeneration, gasification, and anaerobic digestion equipment at NBVC **the proposed project site.**
- Work with project stakeholders (NBVC, **including** subcontractors, utilities staff, **and the** Energy Commission Agreement Manager, etc) to develop equipment test protocols and minimum acceptance requirements,
- Prepare **a** CPR Report and attend 1st CPR meeting (as per Task 1.2),
- Provide validation reports ~~from the Navy~~ that the solar cogeneration, gasification, and anaerobic digestion equipment has been fabricated and properly installed at NBVC **the proposed project site.**

Products:

- Letter stating CEQA/NEPA requirements met

- Copies of Permits
- Equipment fabrication and installation plan
- Bill of Materials/Equipment
- Equipment test protocols and minimum acceptance requirements
- Validation Reports
- 1st CPR Report

TASK 5 INTEGRATION, INTERCONNECTION & START-UP OPERATION OF EQUIPMENT

The goal of this task is to integrate, interconnect, and start-up operation of the equipment installed as part of Task 4.

The Recipient shall:

- Integrate Task 4 equipment with the biodiesel production facility at NBVC the proposed project site.
- Interconnect the Task 4 equipment with the utility providers at NBVC the proposed project site.
- Start-up operation of the integrated and interconnected Task 4 equipment at NBVC the proposed project site.
- Provide a validation report from the Navy that confirms that the integration, interconnection, and start-up operation of the Task 4 equipment has been completed. and include a copy of the interconnection agreement with the utility.
- Prepare CPR Report and attend 2nd CPR meeting (as per Task 1.2)

Products:

- Validation Report
- 2nd CPR Report

TASK 6 OPERATION, DATA COLLECTION & ANALYSIS

The goal of this task is to operate the integrated and interconnected Task 4 equipment, collect data, and analyze the data.

The Recipient shall:

- Operate the Task 4 equipment utilizing feedstocks produced during Task 3 for gasification and anaerobic digestion.
- Collect and analyze data for economic and environmental sustainability analysis, mass and energy balances, at a minimum.
- Prepare report on the economic and environmental sustainability and mass and energy balances using the Task 4 equipment, including energy costs and benefits associated with each component of the Task 4

- equipment.
- Perform life cycle analysis for the integrated system using Task 4 equipment.
- Prepare a Life Cycle Analysis Report for the integrated energy systems (Task 4) based on data collected in this task.
- Prepare CPR Report and attend 3rd CPR meeting (as per Task 1.2).

Products:

- Report on economic and environmental sustainability, and mass and energy balances
- Life Cycle Analysis Report
- 3rd CPR Report

TASK 7 INDEPENDENT MEASUREMENT & VERIFICATION

The goal of this task is to independently measure and verify Task 6.

The Recipient shall:

- Provide an independent measurement and verification report from the Navy regarding Task 6 activities following California investor-owned utility requirements.
- Provide an independent measurement and verification report from the TEC that includes, but is not limited to, energy (kWh) and the therm (equivalent) production from the Task 4 equipment, CEQA, NEPA emission compliance of the integrated system operated in Task 6, air emission permitting and any other data.
- Utilize project match funds to provide an independent measurement and verification report from UC Davis regarding cultivation, harvesting and processing of castor

Products:

- M & V Reports from the Navy, TEC and UC Davis

TASK 8 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. Key elements from this report shall be included in the Final Report for this project.
- Conduct technology transfer activities in accordance with the Technology

Products:

- Draft Technology Transfer Plan
- Final Technology Transfer Plan

TASK 9 COMMERCIALIZATION READINESS PLAN

The goal of the plan is to determine and implement the steps that will lead to the commercialization of the project's results.

The Recipient shall:

- Prepare a Commercialization Readiness Plan. The plan shall include, as appropriate, but not be limited to:
 - Identification of critical supply and support systems that will be needed to introduce a commercially viable product
 - A projected "installed cost" and "payback period" for the integrated and interconnected system
 - The expected investment threshold to launch the commercial product
 - An implementation plan to ramp up to full commercialization

Products:

- Draft Commercialization Readiness Plan
- Final Commercialization Readiness Plan