

GRANT REQUEST FORM (GRF)

CEC-270 (Revised 02/13)

CALIFORNIA ENERGY COMMISSION

New Agreement PIR-13-005 (To be completed by CGL Office)

Division	Agreement Manager:	MS-	Phone
ERDD	Hassan Mohammed	43	916-327-1442

Recipient's Legal Name	Federal ID Number
Desert Power, Inc.	87-0728882

Title of Project
Combined Heat and Power System with Multi Function Absorption Cycle

Term and Amount	Start Date	End Date	Amount
	6/30/2014	3/31/2017	\$ 800,000

Business Meeting Information
 ARFVTP agreements under \$75K delegated to Executive Director.

Proposed Business Meeting Date	5/14/2014	<input type="checkbox"/> Consent	<input checked="" type="checkbox"/> Discussion
Business Meeting Presenter	Hassan Mohammed	Time Needed:	5 minutes

Please select one list serve. Select

Agenda Item Subject and Description

DESERT POWER, INC. Proposed resolution approving agreement PIR-13-005 with Desert Power, Inc., for a \$800,000 grant to demonstrate a highly efficient combined heat and power (CHP) system at a poultry processing plant in Sanger, California. The CHP system will provide for the heating and chilling needs of the plant by incorporating a waste heat powered thermal heat pump resulting in improved efficiency and significant natural gas savings. This agreement also has \$860,000 in match funding. (PIER natural gas funding) Contact: Hassan Mohammed. (5 minutes)

California Environmental Quality Act (CEQA) Compliance

1. Is Agreement considered a "Project" under CEQA?
 Yes (skip to question 2) No (complete the following (PRC 21065 and 14 CCR 15378)):
 Explain why Agreement is not considered a "Project":
 Agreement will not cause direct physical change in the environment or a reasonably foreseeable indirect physical change in the environment because
2. If Agreement is considered a "Project" under CEQA:
 a) Agreement **IS** exempt. (Attach draft NOE)
 Statutory Exemption. List PRC and/or CCR section number: _____
 Categorical Exemption. List CCR section number: 14 CCR 15303
 Common Sense Exemption. 14 CCR 15061 (b) (3)
 Explain reason why Agreement is exempt under the above section:
 Class 3 - New construction of limited small new facilities; installation of small, new equipment and facilities in small structures; and conversion of the use of small existing structures (e.g., construction of three or fewer single-family homes in urban areas)
- b) Agreement **IS NOT** exempt. (Consult with the legal office to determine next steps.)
 Check all that apply
 Initial Study Environmental Impact Report
 Negative Declaration Statement of Overriding Considerations
 Mitigated Negative Declaration

List all subcontractors (major and minor) and equipment vendors: (attach additional sheets as necessary)

Legal Company Name: Budget

List all key partners: (attach additional sheets as necessary)

Legal Company Name:

Pitman Farms Inc.

Budget Information

Funding Source	Funding Year of Appropriation	Budget List No.	Amount
NG Subaccount, PIERDD	12-13	501.001G	\$800,000
R&D Program Area: EGRO: Renewables		TOTAL:	\$800,000
Explanation for "Other" selection			
Reimbursement Contract #:	Federal Agreement #:		

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Recipient's Administrator/ Officer				Recipient's Project Manager			
Name:	Earl Schmid			Name:	Earl Schmid		
Address:	77380 MICHIGAN DR			Address:	77380 MICHIGAN DR		
City, State, Zip:	PALM DESERT, CA 92211-7928			City, State, Zip:	PALM DESERT, CA 92211-7928		
Phone:	760)360-3845 /	Fax:	- -	Phone:	760)360-3845 /	Fax:	- -
E-Mail:	earlschmid@desertpowerinc.com			E-Mail:	earlschmid@desertpowerinc.com		

Selection Process Used	
<input checked="" type="checkbox"/> Competitive Solicitation	Solicitation #: PON-13-502
<input type="checkbox"/> First Come First Served Solicitation	

The following items should be attached to this GRF	
1. Exhibit A, Scope of Work	<input checked="" type="checkbox"/> Attached
2. Exhibit B, Budget Detail	<input checked="" type="checkbox"/> Attached
3. CEC 105, Questionnaire for Identifying Conflicts	<input checked="" type="checkbox"/> Attached
4. Recipient Resolution	<input checked="" type="checkbox"/> N/A <input type="checkbox"/> Attached
5. CEQA Documentation	<input type="checkbox"/> N/A <input checked="" type="checkbox"/> Attached

_____ Agreement Manager _____ Date _____ Office Manager _____ Date _____ Deputy Director _____ Date

ENERGY RESEARCH, DEVELOPMENT, AND DEMONSTRATION GRANTS

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SCOPE OF WORK

[PIR-13-005, Desert Power, Inc.]

I. TASK AND ACRONYM/TERM LISTS

A. Task List

Task #	CPR ¹	Task Name
1		Project Administration
2		Detailed System Design
3	X	Detailed Design and Fabrication of ThermoSorber and HRVG
4		Engine Components Specifications and Procurements
5		Engine Components Installation
6		ThermoSorber and HRVG Installation
7		Balance of System Installation
8		Test Running and Commissioning of Engines, Switchgear, Emissions Equipment
9		Charging, Test Running and Commissioning of ThermoSorber, HRVG, and Balance of System
10		The 3,000 Hours Operation and Monitoring of the CHP System
11		Evaluation of Project Benefits
12		Technology/Knowledge Transfer Activities

B. Acronym/Term List

Acronym/Term	Meaning
AQMD	Air Quality Management District
CAM	Commission Agreement Manager
ARB	California Air Resources Board
CAO	Commission Agreement Officer
CHP	Combined Heat and Power
COP	Coefficient of Performance
CPR	Critical Project Review
DPI	Desert Power Incorporated
ECC	Energy Concepts Company
HRVG	Heat Recovery Vapor Generator
M&V	Measurement and Verification
PFD	Process Flow Diagram
PID	Piping & Instrumentation Diagram
RT	Refrigeration Tons (one RT = 12,000 Btu/hr)
TAC	Technical Advisory Committee
ThermoSorber	Converts waste heat to hot water and chilling

¹ Please see subtask 1.3 in Part III of the Scope of Work (Project Administration) for a description of Critical Project Review (CPR) Meetings.

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II. PURPOSE OF AGREEMENT, PROBLEM/SOLUTION STATEMENT, AND GOALS AND OBJECTIVES

A. Purpose of Agreement

The purpose of this Agreement is to fund an installation of an innovative, very high efficiency Combined Heat and Power (CHP) system at a poultry processing plant in Sanger, California.

B. Problem/ Solution Statement

Problem

Current CHP systems use the engine exhaust heat to meet either heating or chilling needs. The exhaust heat is only used once, and that severely limits the utility savings to the customer. If the exhaust heat could effectively be used twice, i.e. to simultaneously produce both chilling and heat pumping, the customer would receive almost twice as much value from the waste heat, and the CHP economics would be improved.

Solution

This demonstration will increase the overall efficiency and economics of CHP systems through more efficient utilization of the waste heat. The recipient will install a multifunction absorption cycle ("ThermoSorber") with two natural gas fired, high efficiency engines, which will magnify the useful product obtained from the engine waste heat. The demonstration will be at the Pitman Farms poultry processing plant. The unique feature of this CHP installation is how the engine waste heat is utilized. By incorporating the ThermoSorber, the exhaust heat is used twice. The ThermoSorber uses 214 kW of exhaust heat and 630 kW of jacket heat to provide 506 kW of chilling (144 tons of refrigeration) plus up to 1046 kW of water heating. Additional heat recovered from the oil cooler, intercooler, and exhaust results in a net heat recuperation of up to 1,488 kW. Hot water storage tanks are provided to accommodate load variations. The net result is that all of the water heating needs and part of the chilling needs of the plant are met from CHP system waste heat, and the combined efficiency of the CHP system is over 95%.

C. Goals and Objectives of the Agreement

Agreement Goals

The goal of this agreement is to design and install a very high efficiency CHP system at a poultry processing plant that can fully utilize all the energy products delivered by the CHP system. Another goal is to demonstrate the savings available from high efficiency CHP to the Food Processing Industry, and other large energy users, such as dairies, hotels, college campuses, hospitals, and refineries.

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Agreement Objectives

The objectives of this Agreement are to

- Install 2 natural gas engines; waste heat recovery exchangers; and a dual-product absorption heat pump at a poultry processor;
- Achieve 95% overall system efficiency with the newly designed CHP system;
- Decrease cost of electricity to host site by providing electricity from natural gas fired engines;
- Save measurable amounts of electricity from chiller load reduction;
- Save measurable amounts of natural gas from heat pumped hot water;
- Establish 3000 hours of performance data that shows savings in all operating modes / seasons; and
- Demonstrate system reliability over 8 month monitoring period

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III. TASK 1 PROJECT ADMINISTRATION

PRODUCTS

Subtask 1.1 Products

The goal of this subtask is to establish the requirements for submitting project products (e.g., reports, summaries, plans, and presentation materials). Unless otherwise specified by the Commission Agreement Manager (CAM), the Recipient must deliver products as required below by the dates listed in the **Project Schedule**. Products that require a draft version are indicated by marking “**(draft and final)**” after the product name in the “Products” section of the task/subtask. If “(draft and final)” does not appear after the product name, only a final version of the product is required. With respect to due dates within this Scope of Work, “**days**” means working days.

The Recipient shall:

For products that require a draft version

- Submit all draft products to the CAM for review and comment in accordance with the Project Schedule. The CAM will provide written comments to the Recipient on the draft product within 15 days of receipt, unless otherwise specified in the task/subtask for which the product is required.
- Submit the final product to the CAM once agreement has been reached on the draft. The CAM will provide written approval of the final product within 15 days of receipt, unless otherwise specified in the task/subtask for which the product is required.
- If the CAM determines that the final product does not sufficiently incorporate his/her comments, submit the revised product to the CAM within 10 days of notice by the CAM, unless the CAM specifies a longer time period.

For products that require a final version only

- Submit the product to the CAM for approval.
- If the CAM determines that the product requires revision, submit the revised product to the CAM within 10 days of notice by the CAM, unless the CAM specifies a longer time period.

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For all products

- Submit all data and documents required as products in accordance with the following Instructions for Submitting Electronic Files and Developing Software:

- **Electronic File Format**

Submit all data and documents required as products under this Agreement in an electronic file format that is fully editable and compatible with the Energy Commission's software and Microsoft (MS)-operating computing platforms, or with any other format approved by the CAM. Deliver an electronic copy of the full text of any Agreement data and documents in a format specified by the CAM, such as memory stick or CD-ROM.

The following describes the accepted formats for electronic data and documents provided to the Energy Commission as products under this Agreement, and establishes the software versions that will be required to review and approve all software products:

- Data sets will be in MS Access or MS Excel file format (Version 2007 or later), or any other format approved by the CAM.
 - Text documents will be in MS Word file format, version 2007 or later.
 - Documents intended for public distribution will be in PDF file format. The Recipient must also provide the native Microsoft file format.
 - Project management documents will be in Microsoft Project file format, version 2007 or later.
- **Software Application Development**
Use the following standard Application Architecture components in compatible versions for any software application development required by this Agreement (e.g., databases, models, modeling tools), unless the CAM approves other software applications such as open source programs:
 - Microsoft ASP.NET framework (version 3.5 and up). Recommend 4.0.
 - Microsoft Internet Information Services (IIS), (version 6 and up) Recommend 7.5.
 - Visual Studio.NET (version 2008 and up). Recommend 2010.
 - C# Programming Language with Presentation (UI), Business Object and Data Layers.
 - SQL (Structured Query Language).
 - Microsoft SQL Server 2008, Stored Procedures. Recommend 2008 R2.
 - Microsoft SQL Reporting Services. Recommend 2008 R2.

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- XML (external interfaces).

Any exceptions to the Electronic File Format requirements above must be approved in writing by the CAM. The CAM will consult with the Energy Commission's Information Technology Services Branch to determine whether the exceptions are allowable.

MEETINGS

Subtask 1.2 Kick-off Meeting

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

The Recipient shall:

- Attend a "Kick-off" meeting with the CAM, the Commission Agreement Officer (CAO), and any other Energy Commission staff relevant to the Agreement. The Recipient will bring its Project Manager and any other individuals designated by the CAM to this meeting. The administrative and technical aspects of the Agreement will be discussed at the meeting. Prior to the meeting, the CAM will provide an agenda to all potential meeting participants. The meeting may take place in person or by electronic conferencing (e.g., WebEx), with approval of the CAM.

The administrative portion of the meeting will include discussion of the following:

- Terms and conditions of the Agreement;
- Administrative products (subtask 1.1);
- CPR meetings (subtask 1.3);
- Match fund documentation (subtask 1.7);
- Permit documentation (subtask 1.8);
- Subcontracts (subtask 1.9); and
- Any other relevant topics.

The technical portion of the meeting will include discussion of the following:

- The CAM's expectations for accomplishing tasks described in the Scope of Work;
- An updated Project Schedule;
- Technical products (subtask 1.1);
- Progress reports and invoices (subtask 1.5);
- Final Report (subtask 1.6);
- Technical Advisory Committee meetings (subtasks 1.10 and 1.11); and
- Any other relevant topics.

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- Provide an *Updated Project Schedule*, *List of Match Funds*, and *List of Permits*, as needed to reflect any changes in the documents.

The CAM shall:

- Designate the date and location of the meeting.
- Send the Recipient a *Kick-off Meeting Agenda*.

Recipient Products:

- Updated Project Schedule Updated List of Match Funds
- Updated *List of Permits*

CAM Product:

- Kick-off Meeting Agenda

Subtask 1.3 Critical Project Review (CPR) Meetings

The goal of this subtask is to determine if the project should continue to receive Energy Commission funding, and if so whether any modifications must be made to the tasks, products, schedule, or budget. CPR meetings provide the opportunity for frank discussions between the Energy Commission and the Recipient. As determined by the CAM, discussions may include project status, challenges, successes, advisory group findings and recommendations, final report preparation, and progress on technical transfer and production readiness activities. Participants will include the CAM and the Recipient, and may include the CAO and any other individuals selected by the CAM to provide support to the Energy Commission.

CPR meetings generally take place at key, predetermined points in the Agreement, as determined by the CAM and as shown in the Task List on page 1 of this Exhibit. However, the CAM may schedule additional CPR meetings as necessary. The budget will be reallocated to cover the additional costs borne by the Recipient, but the overall Agreement amount will not increase. CPR meetings generally take place at the Energy Commission, but they may take place at another location, or may be conducted via electronic conferencing (e.g., WebEx) as determined by the CAM.

The Recipient shall:

- Prepare a *CPR Report* for each CPR meeting that: (1) discusses the progress of the Agreement toward achieving its goals and objectives; and (2) includes recommendations and conclusions regarding continued work on the project.
- Submit the CPR Report along with any other *Task Products* that correspond to the technical task for which the CPR meeting is required (i.e., if a CPR meeting is required for Task 2, submit the Task 2 products along with the CPR Report).
- Attend the CPR meeting.
- Present the CPR Report and any other required information at each CPR meeting.

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The CAM shall:

- Determine the location, date, and time of each CPR meeting with the Recipient's input.
- Send the Recipient a *CPR Agenda* and a *List of Expected CPR Participants* in advance of the CPR meeting. The agenda will include a discussion of match funding and permits.
- Conduct and make a record of each CPR meeting. Provide the Recipient with a *Schedule for Providing a Progress Determination* on continuation of the project.
- Determine whether to continue the project, and if so whether modifications are needed to the tasks, schedule, products, or budget for the remainder of the Agreement. If the CAM concludes that satisfactory progress is not being made, this conclusion will be referred to the Deputy Director of the Energy Research and Development Division.
- Provide the Recipient with a *Progress Determination* on continuation of the project, in accordance with the schedule. The Progress Determination may include a requirement that the Recipient revise one or more products.

Recipient Products:

- CPR Report(s)
- Task Products (draft and/or final as specified in the task)

CAM Products:

- CPR Agenda
- List of Expected CPR Participants
- Schedule for Providing a Progress Determination
- Progress Determination

Subtask 1.4 Final Meeting

The goal of this subtask is to complete the closeout of this Agreement.

The Recipient shall:

- Meet with Energy Commission staff to present project findings, conclusions, and recommendations. The final meeting must be completed during the closeout of this Agreement. This meeting will be attended by the Recipient and CAM, at a minimum. The meeting may occur in person or by electronic conferencing (e.g., WebEx), with approval of the CAM.

The technical and administrative aspects of Agreement closeout will be discussed at the meeting, which may be divided into two separate meetings at the CAM's discretion.

- The technical portion of the meeting will involve the presentation of findings, conclusions, and recommended next steps (if any) for the Agreement. The CAM will determine the appropriate meeting participants.

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- The administrative portion of the meeting will involve a discussion with the CAM and the CAO of the following Agreement closeout items:
 - Disposition of any state-owned equipment.
 - Need to file a Uniform Commercial Code Financing Statement (Form UCC-1) regarding the Energy Commission's interest in patented technology.
 - The Energy Commission's request for specific "generated" data (not already provided in Agreement products).
 - Need to document the 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 *Final Meeting Agreement Summary* that documents any agreement made between the Recipient and Commission staff during the meeting.
- Prepare a *Schedule for Completing Agreement Closeout Activities*.
- Provide *All Draft and Final Written Products* on a CD-ROM or USB memory stick, organized by the tasks in the Agreement.

Products:

- Final Meeting Agreement Summary
- Schedule for Completing Agreement Closeout Activities
- All Draft and Final Written Products

REPORTS AND INVOICES

Subtask 1.5 Progress Reports and Invoices

The goals of this subtask are to: (1) periodically verify that satisfactory and continued progress is made towards achieving the research objectives of this Agreement; and (2) ensure that invoices contain all required information and are submitted in the appropriate format.

The Recipient shall:

- Submit a monthly *Progress Report* to the CAM. Each progress report must:
 - Summarize all Agreement activities conducted by the Recipient for the preceding month, including an assessment of the ability to complete the Agreement within the current budget and any anticipated cost overruns. See the Progress Report Format Attachment for the recommended specifications.
 - Provide a synopsis of the project progress, including accomplishments, problems, milestones, products, schedule, fiscal status, and any evidence of progress such as photographs.

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- Submit a monthly or quarterly *Invoice* that follows the instructions in the terms and conditions. In addition, each invoice must document and verify:
 - Energy Commission funds received by California-based entities;
 - Energy Commission funds spent in California; and
 - Match fund expenditures.

Products:

- Progress Reports
- Invoices

Subtask 1.6 Final Report

The goal of this subtask is to prepare a comprehensive Final Report that describes the original purpose, approach, results, and conclusions of the work performed under this Agreement. The CAM will review and approve the Final Report, which will be due at least **two months** before the Agreement end date. When creating the Final Report Outline and the Final Report, the Recipient must use a Style Manual provided by the CAM.

Subtask 1.6.1 Final Report Outline

The Recipient shall:

- Prepare a *Final Report Outline* in accordance with the *Style Manual* provided by the CAM.
- Submit a draft of the outline to the CAM for review and comment.
- Once agreement has been reached on the draft, submit the final outline to the CAM. The CAM will provide written approval of the final outline within 10 days of receipt.

Recipient Products:

- Final Report Outline (draft and final)

CAM Product:

- Style Manual

Subtask 1.6.2 Final Report

The Recipient shall:

- Prepare a *Final Report* for this Agreement in accordance with the approved Final Report Outline and the Style Manual provided by the CAM.
- Submit a draft of the report to the CAM for review and comment. Once agreement on the draft report has been reached, the CAM will forward the electronic version for Energy Commission internal approval. Once the CAM receives approval, he/she will provide written approval to the Recipient.

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- Submit one bound copy of the Final Report to the CAM.

Products:

- Final Report (draft and final)

MATCH FUNDS, PERMITS, AND SUBCONTRACTS

Subtask 1.7 Match Funds

The goal of this subtask is to ensure that the Recipient obtains any match funds planned for this Agreement and applies them to the Agreement during the Agreement term.

While the costs to obtain and document match funds are not reimbursable under this Agreement, the Recipient may spend match funds for this task. The Recipient may only spend match funds during the Agreement term, either concurrently or prior to the use of Energy Commission funds. Match funds must be identified in writing, and the Recipient must obtain any associated commitments before incurring any costs for which the Recipient will request reimbursement.

The Recipient shall:

- Prepare a *Match Funds Status Letter* that documents the match funds committed to this Agreement. 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 this 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 cash match funds, their source(s) (including a contact name, address, and telephone number), and the task(s) to which the match funds will be applied.
 - The amount of each in-kind contribution, a description of the contribution type (e.g., property, services), the documented market or book value, the 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 must identify its owner and provide a contact name, address, telephone number, and the address where the property is located.
- A copy of a letter of commitment from an authorized representative of each source of match funding that the funds or contributions have been secured.

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- At the Kick-off meeting, discuss match funds and the impact on the project if they are significantly reduced or not obtained as committed. Match funds will be included as a line item in the progress reports and will be a topic at CPR meetings.
- Provide a *Supplemental Match Funds Notification Letter* to the CAM of receipt of additional match funds.
- Provide a *Match Funds Reduction Notification Letter* to the CAM if existing match funds are reduced during the course of the Agreement. Reduction of match funds may trigger a CPR meeting.

Products:

- Match Funds Status Letter
- Supplemental Match Funds Notification Letter
- Match Funds Reduction Notification Letter

Subtask 1.8 Permits

The goal of this subtask 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 reimbursable under this Agreement. Permits must be identified and obtained before the Recipient may incur any costs related to the use of the permit(s) for which the Recipient will request reimbursement.

The Recipient shall:

- Prepare a *Permit Status Letter* that documents the permits required to conduct this Agreement. If no permits are required at the start of this Agreement, then state this in the letter. If permits will be required during the course of the Agreement, provide in the letter:
 - A list of the permits that identifies: (1) the type of permit; and (2) the name, address, and telephone number of the permitting jurisdictions or lead agencies.
 - The schedule the Recipient will follow in applying for and obtaining the permits.

The list of permits and the schedule for obtaining them will be discussed at the Kick-off meeting (subtask 1.2), and a timetable for submitting the updated list, schedule, and copies of the permits will be developed. The impact on the project if the permits are not obtained in a timely fashion or are denied will also be discussed, permits will be included as a line item in progress reports and will be a topic at CPR meetings.

- If during the course of the Agreement additional permits become necessary, then provide the CAM with an *Updated List of Permits* (including the appropriate information on each permit) and an *Updated Schedule for Acquiring Permits*.

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- Send the CAM a *Copy of Each Approved Permit*.
- If during the course of the Agreement permits are not obtained on time or are denied, notify the CAM within 5 days. Either of these events may trigger a CPR meeting.

Products:

- Permit Status Letter
- Updated List of Permits
- Updated Schedule for Acquiring Permits
- Copy of each Approved Permit

Subtask 1.9 Subcontracts

The goals of this subtask are to: (1) procure subcontracts required to carry out the tasks under this Agreement; and (2) ensure that the subcontracts are consistent with the terms and conditions of this Agreement.

The Recipient shall:

- Manage and coordinate subcontractor activities in accordance with the requirements of this Agreement.
- Incorporate this Agreement by reference into each subcontract.
- Include any required Energy Commission flow-down provisions in each subcontract, in addition to a statement that the terms of this Agreement will prevail if they conflict with the subcontract terms.
- If required by the CAM, submit a draft of each *Subcontract* required to conduct the work under this Agreement.
- Submit a final copy of the executed subcontract.
- Notify and receive written approval from the CAM prior to adding any new subcontractors (see the discussion of subcontractor additions in the terms and conditions).

Products:

- Subcontracts (*draft if required by the CAM*)

TECHNICAL ADVISORY COMMITTEE

Subtask 1.10 Technical Advisory Committee (TAC)

The goal of this subtask is to create an advisory committee for this Agreement. The TAC should be composed of diverse professionals. The composition will vary depending on interest, availability, and need. TAC members will serve at the CAM's discretion. The purpose of the TAC is to:

- Provide guidance in research direction. The guidance may include research scope and methodologies, timing, and coordination with other research. The guidance may be based on:

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- Technical area expertise;
- Knowledge of market applications; or
- Linkages between the agreement work and other past, present, or future research (both public and private sectors) that TAC members are aware of in a particular area.
- Review products and provide recommendations for needed product adjustments, refinements, or enhancements.
- Evaluate the tangible benefits of project research to the state of California, and provide recommendations as needed to enhance the benefits.
- Provide recommendations regarding information dissemination, market pathways, or commercialization strategies relevant to the research products.

The TAC may be composed of qualified professionals spanning the following types of disciplines:

- Researchers knowledgeable about the project subject matter;
- Members of trades that will apply the results of the project (e.g., designers, engineers, architects, contractors, and trade representatives);
- Public interest market transformation implementers;
- Product developers relevant to the project;
- U.S. Department of Energy research managers, or experts from other federal or state agencies relevant to the project;
- Public interest environmental groups;
- Utility representatives;
- Air district staff; and
- Members of relevant technical society committees.

The Recipient shall:

- Prepare a *List of Potential TAC Members* that includes the names, companies, physical and electronic addresses, and phone numbers of potential members. The list will be discussed at the Kick-off meeting, and a schedule for recruiting members and holding the first TAC meeting will be developed.
- Recruit TAC members. Ensure that each individual understands member obligations and the TAC meeting schedule developed in subtask 1.11.
- Prepare a *List of TAC Members* once all TAC members have committed to serving on the TAC.
- Submit *Documentation of TAC Member Commitment* (such as Letters of Acceptance) from each TAC member.

Products:

- List of Potential TAC Members
- List of TAC Members
- Documentation of TAC Member Commitment

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Subtask 1.11 TAC Meetings

The goal of this subtask is for the TAC to provide strategic guidance for the project by participating in regular meetings, which may be held via teleconference.

The Recipient shall:

- Discuss the TAC meeting schedule with the CAM at the Kick-off meeting. Determine the number and location of meetings (in-person and via teleconference) in consultation with the CAM.
- Prepare a *TAC Meeting Schedule* that will be presented to the TAC members during recruiting. Revise the schedule after the first TAC meeting to incorporate meeting comments.
- Prepare a *TAC Meeting Agenda* and *TAC Meeting Back-up Materials* for each TAC meeting.
- Organize and lead TAC meetings in accordance with the TAC Meeting Schedule. Changes to the schedule must be pre-approved in writing by the CAM.
- Prepare *TAC Meeting Summaries* that include any recommended resolutions of major TAC issues.

Products:

- TAC Meeting Schedule (draft and final)
- TAC Meeting Agendas (draft and final)
- TAC Meeting Back-up Materials
- TAC Meeting Summaries

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IV. TECHNICAL TASKS

*Products that require a draft version are indicated by marking “(draft and final)” after the product name in the “Products” section of the task/subtask. If “(draft and final)” does not appear after the product name, only a final version of the product is required. **Subtask 1.1 (Products)** describes the procedure for submitting products to the CAM.*

TASK 2 Detailed System Design

The goal of this task is to design all elements of the CHP system, including engine selection; ThermoSorber; HRVG; storage tanks, pumps, piping; cooling tower, and data collection that will deliver the optimal energy savings to the poultry processing plant.

The Recipient shall:

- Design overall system, including a CHP Process Flow Diagram, which gives sizes of all system components and thermodynamic state points. Off-the-shelf components will be specified when available.
- Prepare a system design report that shall include but is not limited to:
 - a technical specification for the complete system.
 - the overall system level performance model, method of calculating energy savings, using collected data (temperatures, pressures, flows, time in operation)
 - Prepare *TAC Meeting Summaries* that include any recommended resolutions of major TAC issues as per subtask 1.11.
 - Attend a TAC meeting with the CAM as per subtask 1.11.

Products:

- CHP Process Flow Diagram
- System Design Report
- TAC Meeting Back-up Materials

TASK 3 Detailed Design and Fabrication of ThermoSorber and HRVG

The goal of this task is to design, procure, and fabricate all parts necessary to build a nominal 135 RT ThermoSorber and the associated HRVG to run it.

The Recipient shall:

- Perform detailed design of ThermoSorber and HRVG to match waste heat availability with delivered energy products capacities, including a piping and instrumentation diagram
- Design a Controls System which will allow for unattended operation; safety shutdowns; long term performance monitoring; and remote control and diagnostics
- Procure all necessary materials and parts for the ThermoSorber and HRVG
- Fabricate all proprietary heat and mass exchangers for ThermoSorber and HRVG

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- Assemble all components onto ThermoSorber skid
- Weld, pressure test, paint, insulate ThermoSorber skid; take Photo of ThermoSorber
- Weld, pressure test HRVG; take Photo of HRVG
- Mount, wire controls hardware and instrumentation
- Write program for PLC control of ThermoSorber; program Operator Interface device for data collection, diagnostics, and remote monitoring
- Prepare a detailed design report that shall include, but is not limited to, the following:
 - detailed design of the ThermoSorber and HRVG including a detailed piping & instrumentation diagram
 - The controls system description with the associated I/O lists, electrical drawings, logic diagrams, and hardware selection.
- Prepare report of completion with photos of the assembled systems
- Prepare ThermoSorber O&M Manual to be delivered to the customer
- Package and ship ThermoSorber and HRVG to site
- Prepare CPR Report, submit to the CAM as per subtask 1.3
- Attend a CPR meeting with the CAM as per subtask 1.3

Products:

- ThermoSorber Piping & Instrumentation Diagram
- Detailed Design Report
- Report of completion with Photo of the completed ThermoSorber skid
- Report of completion with Photo of the completed HRVG
- ThermoSorber O&M Manual
- CPR

TASK 4 Engine Components Specifications and Procurements

The goal of this task is to specify and procure the natural gas engines, the associated switchgear, and transformers, any required emissions control equipment, and any other required engine system components. The required hot water storage tanks, circulating pumps, and auxiliary engine cooling tower will be procured.

The Recipient shall:

- Hire a local Professional Engineer to ensure compliance with all applicable local codes, standards, air quality requirements, and environmental issues.
- Confirm engine selection, and specify emissions control equipment to meet current ARB / local AQMD requirements.
- Procure engines and all necessary engine components. California based distributors will be used whenever possible (Valley Power Systems of Ontario, CA). Ship all engine components to site.
- Procure hot water storage tanks; circulating pumps, and auxiliary cooling tower.

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- Compile report of engine components including the component manuals; and expected performance. This will be delivered to the customer.

Products:

- Report of Engine Components

TASK 5 Engine Components Installation

The goal of this task is to install the engines, emissions control equipment, transformers, and switchgear.

The Recipient shall:

- Hire local contractors to help complete this task, under the supervision of DPI personnel.
- Install two natural gas engines, associated emissions control equipment, switchgear, transformers, and any other necessary engine component; take photo.
- Oversee the work of hired subcontractors
- Prepare Report of Completion with photo of installed engines.

Products:

- Report of Completion

TASK 6 ThermoSorber and HRVG Installation

The goal of this task is to install the ThermoSorber, HRVGs and economizers at Pitman Farms.

The Recipient shall:

- Install the ThermoSorber skid at Pitman Farms, take photo
- Install the HRVG in the engine exhaust heat path, take photo
- Connect the coil-side of the HRVG to the ThermoSorber and the hot water circuits
- Complete the jacket heat supply loop to the ThermoSorber
- Prepare report of completion with photos of the installed systems

Products:

- Report of completion with photo of ThermoSorber installed at Pitman Farms.
- Report of completion with photo of HRVG installed on engines at Pitman Farms

TASK 7 Balance of System Installation

The goal of this task is to install the remaining components necessary to deliver the energy products to Pitman Farms from the CHP System. The components were designed in Task 2; and procured in Task 4.

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The Recipient shall:

- Install hot water storage tanks
- Run piping to deliver hot water to and from the appropriate site at Pitman
- Run chilled fluid to and from the associated site at Pitman
- Install an auxiliary cooling tower
- Install a circulating pump, with piping, expansion tank if necessary, electrical circuits, and controls for unattended operation.
- Install instrumentation to measure delivered energy products
- Mark up design documents to reflect “**As Built**” status

Products:

- As-Built drawings of overall system

TASK 8 Test Running and Commissioning of Engines, Switchgear, Emissions Equipment

The goal of this task is to test run and commission the engine and associated components.

The Recipient shall:

- Test run and commission each engine per manufacturers instructions.
- Verify all electric generation equipment is performing to specifications.
- Verify all emissions control equipment is performing to specifications
- Supervise any manufacturer’s representatives during initial testing
- Prepare report indicating performance to specification of all installed engine, emissions equipment (“Engine Commissioning Report”)

Products:

- Engine Commissioning Report

TASK 9 Charging, Test Running and Commissioning of ThermoSorber, HRVG, and Balance of System

The goal of this task is to establish the normal operation of the overall system and commence delivering energy savings to Pitman Farms.

The Recipient shall:

- Install final connections to ThermoSorber (hot water supply and return; HRVG supply and return; chilled fluid supply and return; electric; Ethernet)
- Fill all fluids into the system and test run the circulating pump, auxiliary cooling tower and hot water storage tanks.
- Test run engines and ThermoSorber, verify performance of all components
- Verify all controls and safety systems
- Verify data acquisition and the remote connection

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- Train Pitman Farms operators on normal operation, trouble shooting and maintenance procedures of the CHP system
- Prepare CHP System Commissioning Report detailing design performance, measurements taken, and the calculation method of energy savings and emissions benefits. ECC will perform this task, under the supervision of DPI.

Products:

- CHP System Commissioning Report

TASK 10 The 3,000 Hours Operation and Monitoring of the CHP System

The goal of this task is to operate the CHP system under all encountered load and weather scenarios, to demonstrate energy savings, and long-term reliability.

The Recipient Shall:

- Monitor daily the performance of the CHP System to record the performance, and watch for any opportunities to change settings to deliver highest possible efficiencies.
- Collect data relating to the performance and energy savings of the CHP System including hours of operation, power generated, temperatures, flows, pressures. Calculations will be performed, as designed in Task 2, to tally the energy savings and emissions benefits provided by the CHP system.
- Provide all data collected to both the Commission and the customer in the Monthly Reports.
- Respond to any faults or trouble signals of the CHP System
- Implement any changes to controls or hardware as necessary to keep the CHP System equipment running smoothly, unattended, at high efficiency, in all turn down and weather situations
- Perform routine maintenance as required.
- Prepare Monthly Performance Reports for the Energy Commission with all performance data collected, any changes made, and energy savings calculations.

Products:

- Monthly Performance Reports

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TASK 11 Evaluation of Project Benefits

The goal of this task is to report the benefits resulting from this project.

The Recipient shall:

- Complete three Project Benefits Questionnaires that correspond to three main intervals in the Agreement: (1) *Kick-off Meeting Benefits Questionnaire*; (2) *Mid-term Benefits Questionnaire*; and (3) *Final Meeting Benefits Questionnaire*.
- Provide all key assumptions used to estimate projected benefits, including targeted market sector (e.g., population and geographic location), projected market penetration, baseline and projected energy use and cost, operating conditions, and emission reduction calculations. Examples of information that may be requested in the questionnaires include:
 - For Product Development Projects and Project Demonstrations:
 - Published documents, including date, title, and periodical name.
 - Estimated or actual energy and cost savings, and estimated statewide energy savings once market potential has been realized. Identify all assumptions used in the estimates.
 - Greenhouse gas and criteria emissions reductions.
 - Other non-energy benefits such as reliability, public safety, lower operational cost, environmental improvement, indoor environmental quality, and societal benefits.
 - Data on potential job creation, market potential, economic development, and increased state revenue because of the project.
 - A discussion of research product downloads from websites, and publications in technical journals.
 - A comparison of project expectations and performance. Discuss whether the goals and objectives of the Agreement have been met and what improvements are needed, if any.
 - Additional Information for Product Development Projects:
 - Outcome of product development efforts, such copyrights, and license agreements.
 - Units sold or projected to be sold in California and outside of California.
 - Total annual sales or projected annual sales (in dollars) of products developed under the Agreement.
 - Investment dollars/follow-on private funding as a result of Energy Commission funding.
 - Patent numbers and applications, along with dates and brief descriptions.
 - Additional Information for Product Demonstrations:
 - Outcome of demonstrations and status of technology.
 - Number of similar installations.

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- Jobs created/retained as a result of the Agreement.
- For Information/Tools and Other Research Studies:
 - Outcome of research.
 - Published documents, including date, title, and periodical name.
 - A discussion of policy development. State if the research has been cited in government policy publications or technical journals, or has been used to inform regulatory bodies.
 - The number of website downloads.
 - An estimate of how the information and research have affected energy use and cost, or have resulted in other non-energy benefits.
 - An estimate of energy and non-energy benefits.
 - Data on potential job creation, market potential, economic development, and increased state revenue as a result of research.
 - A discussion of research product downloads from websites, and publications in technical journals.
 - A comparison of project expectations and performance. Discuss whether the goals and objectives of the Agreement have been met and what improvements are needed, if any.
- Respond to CAM questions regarding responses to the questionnaires.

The Energy Commission may send the Recipient similar questionnaires after the Agreement term ends. Responses to these questionnaires will be voluntary.

Products:

- Kick-off Meeting Benefits Questionnaire
- Mid-term Benefits Questionnaire
- Final Meeting Benefits Questionnaire

TASK 12 Technology/Knowledge Transfer Activities

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

The Recipient shall:

- Prepare an *Initial Fact Sheet* at start of the project that describes the project research. Use the format provided by the CAM.
- Prepare a *Final Project Fact Sheet* at the project's conclusion that discusses research results. Use the format provided by the CAM.
- Prepare a *Technology/Knowledge Transfer Plan* that includes:
 - An explanation of how the knowledge gained from the project will be made available to the public, including the targeted market sector and potential outreach to end users, utilities, regulatory agencies, and others.
 - A description of the intended use(s) for and users of the project results.

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- Published documents, including date, title, and periodical name.
- Copies of documents, fact sheets, journal articles, press releases, and other documents prepared for public dissemination. These documents must include the Legal Notice required in the terms and conditions. Indicate where and when the documents were disseminated.
- A discussion of policy development. State if research has been or will be cited in government policy publications, or used to inform regulatory bodies.
- The number of website downloads or public requests for research results.
- Additional areas as determined by the CAM.
- Conduct technology transfer activities in accordance with the Technology/Knowledge Transfer Plan. These activities will be reported in the Progress Reports.
- Prepare a *Technology/Knowledge Transfer Report* on technology transfer activities conducted during the project.

Products:

- Initial Fact Sheet (draft and final)
- Final Project Fact Sheet (draft and final)
- Technology/Knowledge Transfer Plan (draft and final)
- Technology/Knowledge Transfer Report (draft and final)

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V. PROJECT SCHEDULE

Please see the attached Excel spreadsheet. (Attachment 2A)

Notice of Exemption

Form D

To: Office of Planning and Research
PO Box 3044, 1400 Tenth Street, Room 222
Sacramento, CA 95812-3044

From: California Energy Commission
1516 Ninth Street, MS-48
Sacramento, CA 95814

Project Title: Combined Heat and Power System with Multi Function Absorption Cycle

Project Location – Specific: Pitman Farms Poultry Processing Plant 1489 K Street, Sanger, CA 93657

Project Location – City: Sanger **Project Location – County:** Fresno

Description of Project:

This project will demonstrate a high efficiency Combined Heat and Power (CHP) System at Pitman Farms poultry processing plant in Sanger, California. The unique feature of this CHP installation is how the engine waste heat is utilized to increase the overall efficiency and economics of the CHP system. To achieve that, the waste heat is used twice in an innovative absorption heat pump "Thermosorber", which simultaneously provides chilling and hot water, thus doubling the benefit to deliver an overall system efficiency of 95%.
To install this system, a new concrete pad may need to be poured to hold the engine and / or Thermosorber. Piping will be run above ground (4" diameter and smaller). A natural gas line will be run to the site for the engine. Emissions control and monitoring equipment will be installed on the engine. Electric service will be run between the engine and the site main breaker panel. The engine will be installed in an indoor location, which may be an existing building, or may require erection of a new engine room. The Thermosorber will be installed outdoors. A control system will be installed, with wiring run between engine, Thermosorber, and existing site control room. Equipment will be installed with forklifts and/or cranes. Water storage tanks will be moved / installed.

Name of Public Agency Approving Project: California Energy Commission

Name of Person or Agency Carrying Out Project: Desert Power, Inc.

Exempt Status: (check one)

- Ministerial (Sec. 21080(b)(1); 15268);
- Declared Emergency (Sec. 21080(b)(3); 15269(a));
- Emergency Project (Sec. 21080(b)(4); 15269(b)(c));
- Categorical Exemption. State type and section number 14 CCR 15301
- Statutory Exemptions. State code number. _____
- Common Sense Exemption. 15061(b)(3)

Reasons why project is exempt:

Class 1 - Operation, repair, maintenance, or minor alteration of existing structures or facilities not expanding existing uses.

Lead Agency

Contact Person: Hassan Mohammed **Area code/Telephone/Ext:** 916-327-1442

If filed by applicant:

1. Attach certified document of exemption finding.
2. Has a Notice of Exemption been filed by the public agency approving the project? Yes No

Signature: _____ **Date:** _____ **Title:** _____

Signed by Lead Agency

Signed by Applicant

Date received for filing at OPR: _____

STATE OF CALIFORNIA

STATE ENERGY RESOURCES
CONSERVATION AND DEVELOPMENT COMMISSION

RESOLUTION - RE: DESERT POWER, INC.

WHEREAS DESERT POWER, INC. seeks to enter into Agreement PIR-13-005 with the State Energy Resources Conservation and Development Commission (Energy Commission) in the amount of **\$800,000**;

WHEREAS the purpose of the Agreement is to demonstrate a highly efficient combined heat and power system at a poultry processing plant;

WHEREAS the CEC 270 Grant Request Form contains Energy Commission staff's findings under the California Environmental Quality Act (CEQA);

RESOLVED, that the Energy Commission adopts the CEQA findings contained in the CEC 270 Grant Request Form.

RESOLVED, that the Energy Commission approves Agreement PIR-13-005 with DESERT POWER, INC. in the amount of **\$800,000**.

FURTHER BE IT RESOLVED, that the Executive Director shall execute the same on behalf of the Energy Commission.

CERTIFICATION

The undersigned Secretariat to the Commission does hereby certify that the foregoing is a full, true, and correct copy of a Resolution duly and regularly adopted at a meeting of the California Energy Commission held on May 22, 2014.

AYE: [List of Commissioners]

NAY: [List of Commissioners]

ABSENT: [List of Commissioners]

ABSTAIN: [List of Commissioners]

Harriet Kallemeyn,
Secretariat