



To: Grants and Loans Office

Date: 10/19/2011

Project Manager: Anish Gautam

Phone Number: 916-327-2382

Office: Energy Efficiency Research Office

Division: Energy Research and Development

MS- 51

Project Title: Green Guide for Sustainable Energy Efficient Refrigerated Warehouses

**Type of Request:** (check one)

**New Agreement:** (include items A-F from below) Agreement Number: \_\_\_\_\_

Program: PIER E / Buildings End-Use Energy Efficiency

Solicitation Name and/or Number: \_\_\_\_\_

Legal Name of Recipient: Becker Engineering Company

Recipient's Full Mailing Address: 22705 NW ASHFORD CT  
BLUE SPRINGS, MO 64015-7333

Recipient's Project Officer: Bryan Becker Phone Number: 816.235.1255

Agreement Start Date: 6/15/2009 Agreement End Date: 3/31/2012

**Amendment:** (Check all that apply) Agreement Number: PIR-08-011-01

Term Extension – New End Date: 3/31/2013

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: 2/8/2012  Consent  Discussion

Business Meeting Participant: Anish Gautam Time Needed: \_\_\_\_\_

**Agenda Notice Statement:** (state purpose in layperson terms)

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

Possible approval of Amendment 1 to Agreement PIR-08-011 with Becker Engineering Company for a 12 month no-cost time extension and a budget reallocation in the amount of \$27,960 due to loss of key project personnel.

# Exhibit A WORK STATEMENT

## TECHNICAL TASK LIST

Task #	CPR	Task Name
1	N/A	Administration
2		Literature Review and Industrial Survey
3		Prepare GreenGuide
4	N/A	Technology Transfer Activities

## KEY NAME LIST

Task #	Key Personnel	Key Subcontractor(s)	Key Partner(s)
1	Bryan R. Becker	Brian A. Fricke	
2	Bryan R. Becker	Brian A. Fricke, Gordon E. Follette	
3	Bryan R. Becker	Brian A. Fricke, Gordon E. Follette	
4	Bryan R. Becker	Brian A. Fricke	

## GLOSSARY

Acronym	Definition
CPR	Critical Project Review
PIER	Public Interest Energy Research
RD&D	Research, Development and Demonstration

### Problem Statement

A green, sustainable, energy efficient, cost-effective refrigerated storage facility is defined as a structure that maintains a safe and appropriate environment for the storage of perishable food items while limiting its impact on the Earth's natural resources including both energy and water. The design, construction, retrofit and operation of a green, sustainable, energy efficient, cost-effective refrigerated storage facility requires knowledge and understanding of a wide range of complex issues. Current information about sustainable refrigerated storage facilities is not readily accessible. Furthermore, this information is scattered throughout various publications by equipment manufacturers, engineering and design firms, and professional organizations.

Therefore, the objective of this proposed project is to develop a comprehensive best practices 'GreenGuide' to provide California's engineers, contractors, owners and operators with practical information that will facilitate the design, construction, retrofit and operation of green, sustainable, energy efficient, cost-effective refrigerated facilities for the storage of perishable food items. Furthermore, an outreach program will be developed to disseminate the information contained in the GreenGuide to engineers, owners and operators in California. Short courses and seminars will be developed for California's engineers, owners and operators that will facilitate the design, construction, retrofit and operation of green, sustainable, energy efficient, cost-effective refrigerated facilities in California. The development of such a best practices guide and outreach program are not adequately covered by the competitive market.

### Goals of the Agreement

The goal of this Agreement is to realize increased energy conservation and

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## **WORK STATEMENT**

environmental stewardship in California's refrigerated warehouse industry through the development of a best practices GreenGuide and an outreach program that will facilitate the design, construction, retrofit and operation of green, sustainable, energy efficient, cost-effective refrigerated storage facilities in California.

### **Objectives of the Agreement**

The quantitative and measureable objectives of this Agreement are the development of the GreenGuide and the outreach program. The achievement of these goals will be measured by the acceptance and use of the GreenGuide, as quantified by the number of downloads, and by participant evaluation of the outreach activities.

### **Product Guidelines**

For complete product guidelines, refer to Section 5 in the Terms and Conditions.

## **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

## **Exhibit A WORK STATEMENT**

- 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
- Updated List of Match Funds
- Updated List of Permits

### **Commission Project Manager Product:**

- Kick-Off Meeting Agenda

### **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

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~~—— Commission Project Manager concludes that satisfactory progress is not being made, this conclusion will be referred to the Energy Commission's Research, Development and Demonstration (RD&D) Policy Committee for its concurrence.~~

- 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
- Schedule for written determination
- Written determination

### **Recipient Product:**

- CPR Report(s)

### **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,

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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
- Schedule for completing closeout activities

### **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 the terms and conditions of this Agreement.

**Product:** Monthly Progress Reports

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## 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.

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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, 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
- Copy(ies) of each match fund commitment letter(s) (if applicable)
- Letter(s) for new match funds (if applicable)
- Letter that match funds were reduced (if applicable)

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### **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 5 working days. Either of these events may trigger an additional CPR.

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### **Products:**

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

### **TECHNICAL TASKS**

#### **TASK 2 LITERATURE REVIEW AND INDUSTRIAL SURVEY**

##### **Task 2.1 Literature Review**

The goal of this task is to collect, analyze and summarize current research, publications and case studies pertaining to the various aspects of the design, construction, retrofit and operation of green, sustainable, energy efficient, cost-effective refrigerated storage facilities. The information gathered will provide background for the GreenGuide.

##### **The Recipient shall:**

- Perform an extensive computerized literature search of databases available through the Linda Hall Library of Science and Technology, as well as databases available through the University of Missouri-Kansas City (UMKC) Miller Nichols Library.
- Obtain literature pertaining to refrigerated storage facilities from key organizations such as the International Association of Refrigerated Warehouses (IARW), the Refrigerating Engineers and Technicians Association (RETA), the International Institute of Ammonia Refrigeration (IIAR), the International Institute of Refrigeration (IIR), the Occupational Safety and Health Administration (OSHA), the United States Department of Agriculture (USDA), the United States Department of Energy (DOE), the Food and Drug Administration (FDA), the U.S. Green Building Council (USGBC), the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE), the World Food Logistics Organization (WFLO) and others.
- Prepare a Literature Review Report that summarizes the pertinent information.

**Product:** Literature Review Report (No draft)

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### **Task 2.2 Industrial Survey**

The goal of this task is to contact refrigeration engineers, contractors, equipment manufacturers, owners, operators, and trade and professional organizations, especially those individuals, companies and organizations located in California, to solicit their input to the GreenGuide.

#### **The Recipient shall:**

- Compile a list of refrigeration engineers, contractors, equipment manufacturers, owners, operators, and trade and professional organizations, especially those individuals, companies and organizations located in California.
- Contact individuals on the compiled list and request their participation.
- Form a Panel of Contributors.
- Form an Editorial Advisory Board.
- Obtain information from the participants concerning current, state-of-the-art green technologies and practices applicable to the design, construction, retrofit and operation of green, sustainable, energy efficient, cost-effective refrigerated facilities in California.
- Visit various refrigerated storage facilities in California, coincident with 'Kick-Off' and CPR Meetings.
- Prepare an Industrial Survey Report that summarizes the information gathered from the participants and from visits to refrigerated storage facilities in California.

#### **Products:**

- List of participants in the Panel of Contributors (No draft)
- List of participants in the Editorial Advisory Board (No draft)
- Industrial Survey Report (No draft)

### **TASK 3 PREPARE GREENGUIDE**

#### **Task 3.1 Prepare Draft GreenGuide Outline**

The goal of this task is to prepare a draft GreenGuide outline based on the results of Tasks 2 and 3.

**The Recipient shall:** Prepare a draft GreenGuide outline.

**Product:** Draft GreenGuide outline

#### **Task 3.2 Prepare Final GreenGuide Outline**

The goal of this task is to prepare the final GreenGuide outline by reviewing and revising the draft outline.

## **Exhibit A WORK STATEMENT**

### **The Recipient shall:**

- Distribute the draft GreenGuide outline to the Panel of Contributors and the Editorial Advisory Board for review and comment.
- Revise the GreenGuide outline according to the comments and suggestions received from the Panel of Contributors and the Editorial Advisory Board.
- Prepare final GreenGuide outline.

**Product:** Final GreenGuide outline

### **Task 3.3 Prepare Draft GreenGuide**

The goal of this task is to prepare the draft GreenGuide based upon the results of Tasks 2 through 3.2.

**The Recipient shall:** Prepare a draft GreenGuide.

**Product:** Draft GreenGuide

### **Task 3.4 Prepare Final GreenGuide**

The goal of this task is to prepare the final GreenGuide by reviewing and revising the draft GreenGuide.

### **The Recipient shall:**

- Distribute the draft GreenGuide to the Panel of Contributors and the Editorial Advisory Board for review and comment.
- Revise the GreenGuide according to the comments and suggestions received from the Panel of Contributors and the Editorial Advisory Board.
- Prepare final GreenGuide.

**Product:** Final GreenGuide

## **TASK 4 TECHNOLOGY TRANSFER ACTIVITIES**

The goal of this task is to develop an outreach program to disseminate the information contained in the GreenGuide to engineers, owners and operators in California. Short courses and seminars will be developed for California's engineers, owners and operators that will facilitate the design, construction, retrofit and operation of green, sustainable, energy efficient, cost-effective refrigerated facilities in California.

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### The Recipient shall:

- Prepare GreenGuide Workshop outline.
- Prepare draft GreenGuide Workshop PowerPoint presentation.
- Distribute the draft GreenGuide Workshop PowerPoint presentation to the Panel of Contributors and the Editorial Advisory Board for review and comment.
- Revise the GreenGuide Workshop PowerPoint presentation according to the comments and suggestions received from the Panel of Contributors and the Editorial Advisory Board.
- Prepare final GreenGuide Workshop PowerPoint presentation.
- Arrange venues for GreenGuide outreach:
  - ~~Marrs Gist, Manager, Projects and Product, Southern California Edison, AgTAC.~~
  - ~~Charles Segerstrom, Supervisor of PG&E Energy Training Center (ETC) – Stockton.~~
  - ~~Cecilia Mushinskie, Manager of Events Planning, Southern California Edison, CTAC.~~
  - **Energy Education Center – Irwindale, Southern California Edison, (formerly: CTAC)**
  - **Energy Education Center – Tulare, Southern California Edison, (formerly: AgTAC)**
  - **Energy Training Center (ETC) – Stockton, Pacific Gas and Electric**
- Conduct GreenGuide Workshops.

### Products:

- GreenGuide Workshops Draft Outline
- GreenGuide Workshops Final Outline
- GreenGuide Workshop