



Original Agreement #	PIR-15-010		1
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ERDD	David Weightman	51	916-327-1631
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ergSol, Inc.	27-0955755
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<input checked="" type="checkbox"/> Term Extension	New End Date: 12/31/2019	Include revised schedule and complete items A, B, C, & F below.
<input type="checkbox"/> Budget Augmentation	Amendment Amount: \$ 0	Include revised budget and complete items A, B, C, D & F below.
<input checked="" type="checkbox"/> Budget Reallocation		Include revised budget and complete items A, B, C, & F below.
<input checked="" type="checkbox"/> Scope of Work Revision		Include revised scope of work and complete items A, B, C, E & F below.
<input checked="" type="checkbox"/> Change in Project Location or Demonstration Site		Include revised scope of work and complete items A, B, C, E & F below.
<input type="checkbox"/> Novation/Name Change of Prime Contractor/Recipient		Include novation documentation and complete items A, B, C, & F below.
<input type="checkbox"/> Terms and Conditions Modification		Include applicable exhibits with bold/underline/strikeout and complete items A, B, C, & F below.

**Business Meeting approval is not required for the following types of Agreements:**

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

Proposed Business Meeting Date	12/14/2016	<input checked="" type="checkbox"/> Consent	<input type="checkbox"/> Discussion
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Business Meeting Presenter		Time Needed:	0 minutes
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Please select one list serve. NaturalGas (NG Research Program)

**Agenda Item Subject and Description**

Proposed resolution approving Amendment 1 to grant Agreement PIR-15-010 with ergSol, Inc. to change demonstration site location, reallocate the budget and extend the grant term by one year. The total Energy Commission funding amount remains unchanged.

Legal Company Name:	Budget
see attached	
	\$
	\$
	\$
	\$
	\$
	\$
	\$

Legal Company Name:	Roche Molecular Systems, Inc.



Subcontracts:

- EnerNOC, Inc. \$6,332
- Kinetics Mechanical Service \$816,421
- Pieter Stroeve \$15,562
- Dr. Masoud Rahman \$24,900
- Empowered Solutions, LLC \$46,746
- Zenith Engineers \$28,000
- Alpha Air Balancing Agency, Inc. \$10,000
- Peninsula Crane and Rigging \$20,000
- EcoBay Services, Inc. \$52,000
- Sprig Electric \$24,000
- Tap Master, Inc. \$12,000

# EXHIBIT A

## Scope of Work

### I. TASK AND ACRONYM/TERM LISTS

#### A. Task List

Task #	CPR <sup>1</sup>	Task Name
1		General Project Tasks
2		Contract Execution
3	X	System Integration Plan
4	X	Design, Build, and Operate Integrated Solar Thermal System
5		Data Collection and Analysis
6		Evaluation of Project Benefits
7		Technology/Knowledge Transfer Activities
8		Product Readiness Plan

#### B. Acronym/Term List

Acronym/Term	Meaning
CAM	Commission Agreement Manager
CAO	Commission Agreement Officer
CPR	Critical Project Review
ETC	Evacuated Tube Collectors
M&V	Measurement and Verification
ST	Solar Thermal
TAC	Technical Advisory Committee

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

#### A. Purpose of Agreement

The purpose of this Agreement is to fund the demonstration of an integrated high-efficient solar thermal (ST) system with high-performance evacuated tube collectors (ETCs) for industrial processes.

#### B. Problem/Solution Statement

##### **Problem**

The industrial sector in California consumes approximately 5,254 million therms per year. The vast majority of industrial processes occur in a temperature range of 100° F – 300° F. The usage of industrial waste heat is in its infancy and is constrained because of the limited temperature and variable need for hot water. ST systems are able to meet a significant portion of heating

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<sup>1</sup> Please see subtask 1.3 in Part III of the Scope of Work (General Project Tasks) for a description of Critical Project Review (CPR) Meetings.

## **EXHIBIT A**

### **Scope of Work**

requirements in many industrial and commercial settings. However, all of the demonstration projects, to date, have demonstrated lower temperature applications using unglazed and glazed collectors or high-temperature applications of concentrating ST collectors. There are only a few ST industrial installations in California and the market place lacks data on the economic performance, reliability, and flexibility of high-performance ETC technology.

Many large industrial customers face serious challenges to reduce CO<sub>2</sub> emissions. For a low-margin industry such as industrial processors, opportunities to reduce emissions cost-effectively are extremely important. Unfortunately, the high capital costs of installation and the lack of successful demonstrations and proven versatility are major barriers for ST technology adoption. These economic and institutional barriers have not been addressed by the competitive or regulated markets. The market potential for industrial/commercial ST applications is substantial and could significantly contribute to the State's reduction in greenhouse gas emissions.

#### **Solution**

The Recipient has designed an innovative high-efficient ST system with high-performing ETCs. ETCs are a collection of tubes that absorb ST energy to heat up the fluid passing through them. The ST system will be integrated into the energy system of a fully operating processing plant to maximize the utilization of waste heat and ST heat for the heat needed in the manufacturing process. With documented energy cost savings and emission reductions, commercialization of ST systems in the processing industry could increase. The project team will develop a technology transfer plan and distribution strategy to communicate with the processing industry about the potential use of this technology.

With high-performance ETCs capable of producing temperatures of 300°F with efficiencies of 50% or higher, ETCs could increase energy efficiency in industrial heat processes, because the vast majority of industrial processes occur in this temperature range, and ETCs have flexibility in siting and application. The wide acceptance of the ST technology by industrial customers and project financing institutions should follow after the success of the demonstration.

### **C. Goals and Objectives of the Agreement**

#### **Agreement Goals**

The goal of this Agreement is to demonstrate the technical and economic feasibility and viability of a commercial-scale integrated ST system with energy storage in the processing industry. The ST system will provide the necessary heat for heating applications at the processing facility, thus significantly reducing natural gas consumption and maximizing energy efficiency.

#### **Ratepayer Benefits:**

High efficient ST systems may contribute multiple benefits to California's natural gas ratepayers. Economic benefits can also apply to the surrounding communities in the form of lower energy costs, job creation and economic development. Environmental benefits could include reduced impacts in global climate change, reduced public health risks, and reduced impacts on the state's natural resources from energy generation and consumption. High-performance ST systems are particularly suited to support the integration of energy efficiency in industrial processes as well as in buildings to supplement on-site demand for thermal loads. This will help meet California's aggressive energy efficiency goals.

## EXHIBIT A Scope of Work

Technological Advancement and Breakthroughs: This project could lead to technological advancement and breakthroughs to overcome barriers to the achievement of the State of California's statutory energy goals by integrating high-efficient ST systems into the initial design of an industrial processing plant and obtaining real-world data on the technical and economic performance. The high thermal energy demand of the processing industry makes them one of the targeted markets for ST technologies and successful demonstration could make them the standard for the future designs in similar industries.

### Agreement Objectives

The objectives of this Agreement are to:

- Develop the design, simulation, and layout of the ST system to maximize heat utilization, increase energy efficiency, reduce emissions, and minimize the production costs.
- Develop the integration scenarios for reliable, stable, and cost efficient integration of the state-of-the-art ST technologies into the industrial thermal processes.
- Fabricate a heating system that is capable of low cost mass production, scalable and adaptable to diverse market needs.
- Install/integrate the system into the building's operation/processes for full on-site utilization.
- Operate the system and demonstrate the feasibility and safety of implementing advanced ST ETCs to meet a variety of industrial needs.
- Generate quantifiable, objective performance data under real-world operational conditions over a one year period.
- Document and evaluate energy savings, emission reductions, and assess cost reductions.
- Document key system characteristics and best-practices for installation and operation to enable rapid commercialization.
- Develop a technology transfer plan and dissemination strategy.
- Develop a production readiness plan for technology manufacturing.
- Provide a scalable technology suitable for high process heat load industries.

## I. TASK 1 GENERAL PROJECT TASKS

### 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 (Part V)**. 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.

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### **Scope of Work**

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

##### For products that require a draft version, including the Final Report Outline and Final Report

- Submit all draft products to the CAM for review and comment in accordance with the Project Schedule (Part V). 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.
- Consider incorporating all CAM comments into the final product. If the Recipient disagrees with any comment, provide a written response explaining why the comment was not incorporated into the final product.
- Submit the revised product and responses to comments within 10 days of notice by the CAM, unless the CAM specifies a longer time period, or approves a request for additional time.

##### For products that require a final version only

- Submit the product to the CAM for acceptance. The CAM may request minor revisions or explanations prior to acceptance.

##### 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:

## EXHIBIT A Scope of Work

- 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.
- 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

## **EXHIBIT A**

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- Any other relevant topics.
- 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 (*if applicable*)
- Updated List of Match Funds (*if applicable*)
- Updated List of Permits (*if applicable*)

#### **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 (if applicable). 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.

#### **The CAM shall:**

- Determine the location, date, and time of each CPR meeting with the Recipient's input.

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- Send the Recipient a *CPR Agenda* and a *List of Expected CPR Participants* in advance of the CPR meeting. If applicable, 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.
- 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.

## EXHIBIT A Scope of Work

- “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 (*if applicable*)
- 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 project 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 progress made on all Agreement activities as specified in the scope of work for the preceding month, including accomplishments, problems, milestones, products, schedule, fiscal status, and 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.
- Submit a monthly or quarterly *Invoice* that follows the instructions in the “Payment of Funds” section of the terms and conditions, including a financial report on Match Fund and in-state 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 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 the Style Manual provided by the CAM.

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#### **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. (See Task 1.1 for requirements for draft and final products.)

**Recipient Products:**

- Final Report Outline (draft and final)

**CAM Product:**

- Style Manual
- Comments on Draft Final Report Outline
- Acceptance of Final Report Outline

#### **Subtask 1.6.2 Final Report**

**The Recipient shall:**

- Prepare a *Final Report* for this Agreement in accordance with the approved Final Report Outline, Style Manual, and Final Report Template provided by the CAM with the following considerations:
  - Ensure that the report includes the following items, in the following order:
    - Cover page (**required**)
    - Credits page on the reverse side of cover with legal disclaimer (**required**)
    - Acknowledgements page (optional)
    - Preface (**required**)
    - Abstract, keywords, and citation page (**required**)
    - Table of Contents (**required**, followed by List of Figures and List of Tables, if needed)
    - Executive summary (**required**)
    - Body of the report (**required**)
    - References (if applicable)
    - Glossary/Acronyms (If more than 10 acronyms or abbreviations are used, it is required.)
    - Bibliography (if applicable)
    - Appendices (if applicable) (Create a separate volume if very large.)
    - Attachments (if applicable)
  - Ensure that the document is written in the third person.
  - Ensure that the Executive Summary is understandable to the lay public.
    - Briefly summarize the completed work. Succinctly describe the project results and whether or not the project goals were accomplished.
    - Identify which specific ratepayers can benefit from the project results and how they can achieve the benefits.

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- If it's necessary to use a technical term in the Executive Summary, provide a brief definition or explanation when the technical term is first used.
- Follow the Style Guide format requirements for headings, figures/tables, citations, and acronyms/abbreviations.
- Ensure that the document omits subjective comments and opinions. However, recommendations in the conclusion of the report are allowed.
- Include a brief description of the project results in the Abstract.
- Submit a draft of the report to the CAM for review and comment. The CAM will provide written comments to the Recipient on the draft product within 15 days of receipt
- Consider incorporating all CAM comments into the Final Report. If the Recipient disagrees with any comment, provide a written response explaining why the comment was not incorporated into the final product
- Submit the revised Final Report and responses to comments within 10 days of notice by the CAM, unless the CAM specifies a longer time period or approves a request for additional time.
- Submit one bound copy of the *Final Report* to the CAM along with *Written Responses to Comments on the Draft Final Report*.

#### **Products:**

- Final Report (draft and final)
- Written Responses to Comments on the Draft Final Report

#### **CAM Product:**

- Written Comments on the Draft Final Report

### ***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:

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- 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.
- At the Kick-off meeting, discuss match funds and the impact on the project if they are significantly reduced or not obtained as committed. If applicable, 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 (*if applicable*)
- Match Funds Reduction Notification Letter (*if applicable*)

### 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 not reimbursable under this Agreement, with the exception of costs incurred by University of California recipients. 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. If applicable, permits will be included as a line item in progress reports and will be a topic at CPR meetings.

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- 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*.
- 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 (*if applicable*)
- Updated Schedule for Acquiring Permits (*if applicable*)
- Copy of Each Approved Permit (*if applicable*)

#### **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 project direction. The guidance may include scope and methodologies, timing, and coordination with other projects. The guidance may be based on:
  - Technical area expertise;
  - Knowledge of market applications; or
  - Linkages between the agreement work and other past, present, or future projects (both public and private sectors) that TAC members are aware of in a particular area.

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- Review products and provide recommendations for needed product adjustments, refinements, or enhancements.
- Evaluate the tangible benefits of the project 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 project 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

#### **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.

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#### **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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### III. TECHNICAL TASKS

#### TASK 2 CONTRACT EXECUTION

The goals of this task are to: (1) confirm the availability of the project demonstration site at the ~~J.G. Boswell Company, 710 Bainum Ave, Corcoran, CA 93212;~~ Roche Molecular Systems, Inc. 4300 Hacienda Dr., Pleasanton, CA 94588 (2) confirm the availability of a measurement and verification (M&V) contractor; and (3) execute any agreements necessary to secure the demonstration site and M&V contractor.

For any changes in site location, the Recipients must check with their Commission Agreement Manager or Commission Agreement Officer who will provide guidance regarding the level of Commission approval required.

#### Subtask 2.1 Execution of a Contract with the Demonstration Site(s)

##### The Recipient shall:

- Reach agreement with the manager(s) of the selected demonstration site(s) regarding the project timeline, space reserved for the project, equipment installation, permit and insurance requirements, indemnity, and the Recipient's use of or removal of any support staff.
- If a selected demonstration site becomes unavailable during the project term, work with the CAM to select a new site.
- Execute a *Contract with each Demonstration Site* that confirms the agreement reached above on the Recipient's use of the site, including applicable permits and insurance requirements.

##### Products:

- Copy of Contract with each Demonstration Site

#### Subtask 2.2 Execution of a Contract with the Selected M&V Contractor

##### The Recipient shall:

- Confirm the selected M&V contractor's ability to provide required hardware, software, and staff to conduct the required measurements during the project term.
- Confirm that the selected M&V contractor will follow utility M&V protocols, and will prepare a detailed analytical report that verifies energy consumption and engineering calculations for energy and cost savings.
- If the selected M&V contractor becomes unavailable during the project term, work with the CAM to select a new M&V contractor.
- Execute a *Contract with the M&V Contractor* that secures the contractor's services during the project term and confirms that the contractor will follow M&V protocol and prepare the detailed analytical report.

##### Products:

- Copy of Contract with the M&V Contractor

## EXHIBIT A

### Scope of Work

#### TASK 3 SYSTEM INTEGRATION PLAN AND DESIGN

The goal of this task is to refine the proposed system layout per host site specification to maximize heat utilization and develop a draft control scheme and develop the plan for estimating energy, economic, and environmental benefits.

##### The Recipient shall:

- Develop the integration scenarios for reliable, stable, and cost efficient integration of the ST system into the industrial thermal processes.
- Engage host-site engineers for finalizing the system integration design.
- Develop the control scheme.
- Perform system analysis and preliminary benefits estimate and provide a *System Analysis and Benefits Memo* that describes the plan for analyzing system benefits (e.g. economic, energy, and environmental).
- Define the demonstration system layout and prepare a *Schematic of the System* showing layout per host site specifications
- Provide and prepare a *ST Test Plan*. The test plan shall include, but not be limited to:
  - A description of the processes and equipment to be tested
  - Specifications for machine performance
  - Test objectives and technical approach
  - A description of the facilities, equipment and instrumentation that will be used
  - A description of testing procedures
- Make sure the system performance has remote monitoring capability for all project stakeholders substantiated by *Proof of Remote Monitoring Installation Memo*. This memo should indicate the log-in instructions for all remote participants.
- Develop *Maintenance Procedure Manual* to include the following:
  - System-level O&M information
  - Physical Descriptions
  - Functional Descriptions
  - Troubleshooting
  - Preventive Maintenance (Procedures and Schedules)
  - Corrective Maintenance (Repair Requirements)
  - Parts Lists
  - Operation-/Maintenance-Significant Drawings
- **Prepare CPR Report and participate in CPR meeting per in Subtask 1.3.**

##### Products:

- System Analysis and Benefits Memo (draft and final)
- Schematic of the System
- ST Test Plan
- Proof of Remote Monitoring Installation Memo
- Maintenance Procedure Manual (draft and final)
- **CPR Report**

## EXHIBIT A Scope of Work

### TASK 4 DESIGN, BUILD, AND OPERATE INTEGRATED SOLAR THERMAL SYSTEM

The goal of this task is to design and build the integrated ST system specific to the refined layout from Task 3.

#### The Recipient shall:

- Design the critical components of the ST system per system layout in Task 3 for manufacturing review.
- Perform detailed engineering of the ST system critical components for host site review and approval.
- Complete design drawings and Bill of Materials of the ST system.
- Develop control and measurement diagram of the demonstration and data collection.
- Perform field engineering and assess demonstration system installation requirements.
- Prepare and provide a *Design and Engineering Report* that provides a summary of the installation requirements and this includes all items completed for this task.
- Create and provide site-specific *Building Permit Package* that includes permit drawings and submission correspondence., and verification of permit approval.
- Prepare and provide a *Project Construction Timeline* including but not limited to the following:
  - Site and equipment preparation
  - Shake down
  - Closing
- Construct the ST system per applicable building codes/permits and prepare a final *Installation Report* to include the following:
  - Description of ST installation
  - Detailed sketches or images of the item being installed
  - List all safeguards and potential dangers that emerge during the installation process
  - Checklist that gives the user the ability to inspect the item for installation to ensure everything is intact prior to the installation process
  - Indicate improper actions by demonstration site personnel, such as placing heavy items on top of the device, that may cause the equipment to break or function inadequately if it is not maintained properly
- Commission the project, controls, & monitoring system and prepare the *ST Commissioning Protocol* including the following:
  - Site components, data transfer and sharing pathways
  - Site readiness and equipment documentation, monitoring of performance and site maintenance
  - Commissioning protocol for all major equipment
- Conduct CPR and prepare *CPR Report* per described in Subtask 1.3.

#### Product:

- Design and Engineering Report
- Building Permit Package
- Project Construction Timeline
- Installation Report

## **EXHIBIT A**

### **Scope of Work**

- ST Commissioning Protocol
- CPR Report

#### **TASK 5 DATA COLLECTION AND ANALYSIS**

The goal of this task is to collect and analyze the data from the ST system.

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

- Develop and provide *Data Collection and Analysis Plan* with input from the CAM and M&V Contractor, including energy & cost savings, greenhouse gas reductions, and other benefits of the ST system.
- Collect ST system performance data for the analysis and benefits evaluation.
- Prepare and provide an *M&V Report* that provides the analytical details of the M&V activity and verifies energy consumption and engineering calculations for energy and cost savings and follows utility M&V protocols.
- Create and provide an estimate of the project's energy savings and other benefits and potential statewide energy savings once market potential has been realized in a *Commercialization Potential Report*.

##### **Products:**

- Data Collection and Analysis Plan (draft and final)
- M&V Report (draft and final)
- Commercialization Potential Report (draft and final)

#### **TASK 6 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.

## **EXHIBIT A**

### **Scope of Work**

- 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 as a result of the project.
- A discussion of project 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.
  - Jobs created/retained as a result of the Agreement.
- For Information/Tools and Other Research Studies:
  - Outcome of project.
  - Published documents, including date, title, and periodical name.
  - A discussion of policy development. State if the project 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 project information has affected energy use and cost, or has resulted in other non-energy benefits.
  - An estimate of energy and non-energy benefits.
  - Provide data on potential job creation, market potential, economic development, and increased state revenue as a result of expected future expansion.
  - A discussion of project 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:**

## EXHIBIT A Scope of Work

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

### TASK 7 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. Use the format provided by the CAM.
- Prepare a *Final Project Fact Sheet* at the project's conclusion that discusses 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.
  - 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 project 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 project 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.
- When directed by the CAM, develop *Presentation Materials* for an Energy Commission-sponsored conference/workshop(s) on the project.
- When directed by the CAM, participate in annual symposium(s) sponsored by the California Energy Commission.
- Provide at least (6) six *High Quality Digital Photographs* (minimum resolution of 1300x500 pixels in landscape ratio) of pre and post technology installation at the project sites or related project photographs.
- 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)
- Presentation Materials (draft and final)
- High Quality Digital Photographs
- Technology/Knowledge Transfer Plan (draft and final)
- Technology/Knowledge Transfer Report (draft and final)

## **EXHIBIT A**

### **Scope of Work**

#### **TASK 8 PRODUCTION READINESS PLAN**

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

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

- Prepare a *Production Readiness Plan*. The degree of detail in the plan should be proportional to the complexity of producing or commercializing the proposed product, and to its state of development. As appropriate, the plan will discuss the following:
  - Critical production processes, equipment, facilities, personnel resources, and support systems needed to produce a commercially viable product.
  - Internal manufacturing facilities, supplier technologies, capacity constraints imposed by the design under consideration, design-critical elements, and the use of hazardous or non-recyclable materials. The product manufacturing effort may include "proof of production processes."
  - The estimated cost of production.
  - The expected investment threshold needed to launch the commercial product.
  - An implementation plan to ramp up to full production.
  - The outcome of product development efforts, such as copyrights and license agreements.
  - Patent numbers and applications, along with dates and brief descriptions.
  - Other areas as determined by the CAM.

##### **Products:**

- Production Readiness Plan (draft and final)

### **III. PROJECT SCHEDULE**

Please see the attached Excel spreadsheet.

STATE OF CALIFORNIA

STATE ENERGY RESOURCES  
CONSERVATION AND DEVELOPMENT COMMISSION

RESOLUTION - RE: ERGSOL, INC.

**RESOLVED**, that the State Energy Resources Conservation and Development Commission (Energy Commission) adopts the staff CEQA findings contained in the Agreement or Amendment Request Form (as applicable); and

**RESOLVED**, that the Energy Commission approves Amendment 1 to Grant Agreement PIR-15-010 with ergSol, Inc. to change the demonstration site location, reallocate the budget and extend the grant term by one year. The total Energy Commission funding amount remains unchanged; and

**FURTHER BE IT RESOLVED**, that the Executive Director or his/her designee 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 June 14, 2017.

AYE: [List of Commissioners]

NAY: [List of Commissioners]

ABSENT: [List of Commissioners]

ABSTAIN: [List of Commissioners]

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Cody Goldthrite,  
Secretariat