



GRANT REQUEST FORM (GRF)

A) New Agreement # PIR-20-004 (to be completed by CGL office)

B) Division	Agreement Manager:	MS-	Phone
ERDD	Kaycee Chang	51	916-327-1509

C) Recipient's Legal Name	Federal ID Number
Winston Cone Optics, Inc.	49-0976756

D) Title of Project
Low-Cost Nontracking Asymmetric Shadeless Solar Thermal Collector for Industrial Process Heating

E) Term and Amount

Start Date	End Date	Amount
5/17/2021	3/31/2025	\$ 1,415,091

F) Business Meeting Information

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

Proposed Business Meeting Date 4/14/2021 Consent Discussion

Business Meeting Presenter Baldomero Lasam Time Needed: 5 minutes

Please select one list serve. NaturalGas (NG Research Program

Agenda Item Subject and Description:

WINSTON CONE OPTICS, INC. Proposed resolution approving agreement PIR-20-004 with Winston Cone Optics, Inc. for a \$1,415,091 grant to develop a low-cost, high-efficiency solar thermal collector for industrial process heating and adopting staff's determination that this action is exempt from CEQA. The project will support decarbonization of California's commercial and industrial sectors and reduce dependence on natural gas by using a unique asymmetric nonimaging optical design and scaling up the technology through iterative demonstrations. (PIER NG funding) Contact: Baldomero Lasam. (Staff Presentation: 5 minutes)

G) 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":

2. If Agreement is considered a "Project" under CEQA:

a) Agreement **IS** exempt.

Statutory Exemption. List PRC and/or CCR section number: PRC § 21080.35

Categorical Exemption. List CCR section number: Cal. Code Regs., tit. 14, § 15301

Common Sense Exemption. 14 CCR 15061 (b) (3)

Explain reason why Agreement is exempt under the above section: This project will involve solar thermal research conducted at an existing solar energy research



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laboratory, the University of California, Merced Castle Research Facility. Therefore, there will be negligible to no expansion of the existing use of the facility. For these reasons, the project will not have a significant effect on the environment. Therefore, the project is categorically exempt under California Code of Regulations, title 14 section 15301.

This project will involve the installation of a solar energy system on the roof of an existing building and pursuant to Public Resources Code section 21080.35 is exempt from CEQA. The installation of the solar thermal collectors will enable the generation of energy for onsite use at a food production facility in the city of San Lorenzo. Associated equipment will not occupy more than 500 square feet of ground surface and will be located on the same parcel as the solar collectors. The project does not involve a federal Clean Water Act permit; streambed alteration permit; or removal of specific required or native trees. For the reasons, this project is statutorily exempt from CEQA under Pub. Res. Code § 21080.35.

The project will involve the installation of solar thermal collectors to provide renewable heat to an on-site boiler at an existing food production facility. The solar thermal system will be a minor alteration to existing facilities/paved areas within the interior of the property, with no expansion beyond the existing dairy processing operation and will not have a significant adverse effect on the environment. The installation and operation of the system will not result in a significant cumulative impact, damage resources within a scenic highway, cause substantial adverse change to the significance of a historical resource, or be located on a listed hazardous waste site. Therefore, the project is categorically exempt under California Code of Regulations, title 14 section 15301.

Each exemption is an independent basis for finding the project exempt.

- b) Agreement **IS NOT** exempt. (consult with the legal office to determine next steps)

Check all that apply

- Initial Study
- Negative Declaration
- Mitigated Negative Declaration
- Environmental Impact Report
- Statement of Overriding Considerations

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

Legal Company Name:	Budget
	\$



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

Legal Company Name:

J) Budget Information

Funding Source	Funding Year of Appropriation	Budget List Number	Amount
NG Subaccount, PIERDD	19-20	501.001N	\$1,415,091
			\$

R&D Program Area: EGRO: Renewables

TOTAL: \$ 1,415,091

Explanation for "Other" selection

Reimbursement Contract #: Federal Agreement #:

K) Recipient's Contact Information

1. Recipient's Administrator/Officer

Name: Robyn Lukens

Address: 3384 Locksley Ct

City, State, Zip: Merced, CA 95340-0751

Phone: 209-600-9803

E-Mail: Robynklukens@gmail.com

Address: 3384 Locksley Ct

City, State, Zip: Merced, CA 95340-0751

Phone: 209-201-1887

E-Mail:

ljiang@winstonconeoptics.com

2. Recipient's Project Manager

Name: Lun Jiang

L) Selection Process Used

Competitive Solicitation Solicitation #: GFO-20-502

First Come First Served Solicitation Solicitation #:

M) 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 |

Kaycee Chang
Agreement Manager

3/5/2021
Date

Jonah Steinbuck
Office Manager

3/5/2021
Date



STATE OF CALIFORNIA

GRANT REQUEST FORM (GRF)

CEC-270 (Revised 12/2019)

Linda Spiegel

Deputy Director

3/5/2021

Date

CALIFORNIA ENERGY COMMISSION

**Exhibit A
Scope of Work
Winston Cone Optics, Inc.**

I. TASK ACRONYM/TERM LISTS

A. Task List

Task #	CPR ¹	Task Name
1		General Project Tasks
2		Design, Simulation, and Cost-Performance Analysis
3	X	Prototype Fabrication and Demonstration
4	X	Pilot Scale Fabrication and Demonstration
5		Industrial Demonstration – Fabrication and Commissioning
6		Industrial Demonstration – Measurement and Verification
7		Evaluation of Project Benefits
8		Technology/Knowledge Transfer Activities

B. Acronym/Term List

Acronym/Term	Meaning
CAM	Commission Agreement Manager
CAO	Commission Agreement Officer
CEC	California Energy Commission
CPR	Critical Project Review
CSP	Concentrating Solar Power
GHG	Greenhouse Gas
HTF	Heat Transfer Fluid
kWh	Kilowatt-Hour
LCOH	Levelized Cost of Heat
NASH	Nontracking Asymmetric SHadeless
TAC	Technical Advisory Committee
TRL	Technology Readiness Level
UCM	University of California, Merced
WCO	Winston Cone Optics
XCPC	External Compound Parabolic Concentrator

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

A. Purpose of Agreement

The purpose of this Agreement is to fund the development of a novel, low-cost, and high efficiency solar thermal collector for the 100-200°C temperature range using a unique asymmetric nonimaging optical design by rapidly scaling up the technology through iterative demonstrations to improve technology while reducing costs and performance risks to increase market readiness.

¹ 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

Winston Cone Optics, Inc.

This innovation will support decarbonization of California's commercial and industrial sectors and reduce dependence on natural gas.

B. Problem/ Solution Statement

Problem

California is faced with the challenge of reducing natural gas consumption to reduce greenhouse gas (GHG) emissions. The industrial sector accounts for approximately 1/3 of total natural gas consumption in the state, the majority of which is used for process and/or indirect boiler heating at temperatures between 100-200 °C. While low temperature (hot water) and high temperature (concentrating solar power, CSP) technologies exist, the medium temperature range (100-200 °C) has been historically underdeveloped. Low temperature technologies (flat plate, evacuated tube collectors) which are extended into this higher operating range have poor efficiencies, and CSP technologies (parabolic trough, linear Fresnel) brought down into this temperature range are over engineered and overly expensive. What is needed is a technology which combines the *simplicity* and *low cost* of *non-tracking* systems with the *high efficiency* of concentrating systems.

Solution

The recipient will develop a low-cost and high-efficiency solar thermal collector using nonimaging optics and metal-glass vacuum tube technology to provide cost competitive thermal energy from a stationary *collector* for the 100-200 °C temperature range. The collector will utilize *advanced* nonimaging optics to collapse the traditional tilted collector into a flat collector with a horizontal aperture, thus allowing modules to be installed adjacent to one another and eliminating the need for tilted frames and row-to-row spacing. This maximizes energy production from a given footprint, simplifies installation, and allows the collector to be easily flat-roof-mounted to make use of existing roof space, like commercial PV. The nonimaging reflector provides passive sun-tracking, eliminating the need for mechanical tracking (and associated capital, maintenance, and operations cost). It also allows the collection of diffuse light and enables the use of low-cost reflective films. The metal-glass evacuated receiver provides high thermal efficiency regardless of the environmental temperature.

This novel solar thermal collector is simple, low-cost, non-tracking, high efficiency, and maximizes land-use efficiency by eliminating the need for collector tilting. We have dubbed it the Non-tracking Asymmetric SHadeless (NASH) collector, and it generates heat up to 200°C where it can be used for nearly 2/3 of process heat applications. All together these features provide cost savings and performance enhancements over existing technologies, making the NASH collector especially attractive for industrial process heating applications. It enables distributed and renewable industrial decarbonization using existing roof space and allows end-users to take advantage of California's excellent natural solar resource to reduce dependence on fossil fuels.

Exhibit A
Scope of Work
Winston Cone Optics, Inc.

C. Goals and Objectives of the Agreement

Agreement Goals

The goals of this Agreement are to:

- Develop a low-cost, high efficiency, non-tracking solar thermal technology which provides a renewable alternative to industrial natural gas ≥ 150 °C.
- Rapidly scale up the technology through iterative demonstrations to retire technology, cost, and performance risks to increase market readiness.
- Evaluate and quantify the cost and environmental benefits of the technology to California natural gas ratepayers.
- Provide a renewable solution for industrial decarbonization to enable California industries to cost-effectively reduce greenhouse gas emissions.

Ratepayer Benefits:

This Agreement will result in the ratepayer benefits of lower costs, increased safety, and reduced GHG emissions.

- Lower costs: At a target *installed* cost of \$150/m², system affordability is a key ratepayer benefit. Combined with a low O&M cost and high annual production, the NASH technology provides a disruptively low levelized cost of heat of 1.43 cents per kWh.
- Increased safety: Each square meter of installed collector will generate 24 therms, thereby reducing natural gas consumption by 28 therms per square meter annually (when replacing natural gas burned in an 85% efficient boiler). This reduces dependence on natural gas infrastructure and the need for large-scale transmission and storage.
- Reduced GHG emissions: Each square meter of installed collector area will avoid approximately 300 pounds of equivalent carbon dioxide (CO₂) emissions, annually.

Technological Advancement and Breakthroughs:

This Agreement will lead to technological advancement and breakthroughs to overcome barriers to the achievement of the State of California's statutory energy goals by making solar thermal systems for industrial process heating both affordable and practical. Technology advancements and breakthroughs achieved include:

- A novel optical design based on nonimaging optics which makes a new generation of low-cost, high-efficiency solar thermal technologies possible.
- Achievement of \$150/m² installed cost for a solar field.
- Achievement of disruptively low 1.43 cents per kWh levelized cost of heat.

Agreement Objectives

The objectives of this Agreement are to:

- Demonstrate an installed cost \leq \$150/m² and O&M cost \leq \$2.5/m²-year.
- Generate ≥ 700 kWh/m²-year at 150 °C from the developed solar thermal collector.
- Retire all R&D risks associated with medium-scale production.

Exhibit A
Scope of Work
Winston Cone Optics, Inc.

- 1
 - Create an easy-to-use modelling tool to aid in technology deployment.

Exhibit A
Scope of Work
Winston Cone Optics, Inc.

1 **III. TASK 1 GENERAL PROJECT TASKS**
2

3 **PRODUCTS**

4 **Subtask 1.1 Products**

5 The goal of this subtask is to establish the requirements for submitting project products (e.g.,
6 reports, summaries, plans, and presentation materials). Unless otherwise specified by the
7 Commission Agreement Manager (CAM), the Recipient must deliver products as required below
8 by the dates listed in the **Project Schedule (Part V)**. All products submitted which will be viewed
9 by the public, must comply with the accessibility requirements of Section 508 of the federal
10 Rehabilitation Act of 1973, as amended (29 U.S.C. Sec. 794d), and regulations implementing that
11 act as set forth in Part 1194 of Title 36 of the Federal Code of Regulations. All technical tasks
12 should include product(s). Products that require a draft version are indicated by marking “**(draft**
13 **and final)**” after the product name in the “Products” section of the task/subtask. If “(draft and
14 final)” does not appear after the product name, only a final version of the product is required. With
15 respect to due dates within this Scope of Work, “**days**” means working days.
16

17 **The Recipient shall:**

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

- 19
- 20 • Submit all draft products to the CAM for review and comment in accordance with the
21 Project Schedule (Part V). The CAM will provide written comments to the Recipient on the
22 draft product within 15 days of receipt, unless otherwise specified in the task/subtask for
23 which the product is required.
 - 24 • Consider incorporating all CAM comments into the final product. If the Recipient disagrees
25 with any comment, provide a written response explaining why the comment was not
26 incorporated into the final product.
 - 27 • Submit the revised product and responses to comments within 10 days of notice by the
28 CAM, unless the CAM specifies a longer time period, or approves a request for additional
29 time.

30 For products that require a final version only

- 31
- 32 • Submit the product to the CAM for acceptance. The CAM may request minor revisions or
33 explanations prior to acceptance.

34 For all products

- 35
- 36 • Submit all data and documents required as products in accordance with the following
37 Instructions for Submitting Electronic Files and Developing Software:

- 38
- **Electronic File Format**

Exhibit A
Scope of Work
Winston Cone Optics, Inc.

- Submit all data and documents required as products under this Agreement in an electronic file format that is fully editable and compatible with the California Energy Commission's (CEC) 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.

The following describes the accepted formats for electronic data and documents provided to the CEC 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.
- 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.
- 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 CEC'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 CEC 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.

Exhibit A
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Winston Cone Optics, Inc.

1 Prior to the meeting, the CAM will provide an agenda to all potential meeting participants.
2 The meeting may take place in person or by electronic conferencing (e.g., WebEx), with
3 approval of the CAM.
4

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

- 6 ○ Terms and conditions of the Agreement;
- 7 ○ Invoicing and auditing procedures;
- 8 ○ Administrative products (subtask 1.1);
- 9 ○ CPR meetings (subtask 1.3);
- 10 ○ Match fund documentation (subtask 1.7);
- 11 ○ Permit documentation (subtask 1.8);
- 12 ○ Subcontracts (subtask 1.9); and
- 13 ○ Any other relevant topics.

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

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

- 22 ● Provide *Kick-off Meeting Presentation* to include but not limited to:
 - 23 ○ Project overview (i.e. project description, goals and objectives, technical tasks,
 - 24 expected benefits, etc.)
 - 25 ○ Project schedule that identifies milestones
 - 26 ○ List of potential risk factors and hurdles, and mitigation strategy
 - 27
- 28 ● Provide an *Updated Project Schedule, Match Funds Status Letter, and Permit Status*
29 *Letter*, as needed to reflect any changes in the documents.
30

31 **The CAM shall:**

- 32 ● Designate the date and location of the meeting.
- 33 ● Send the Recipient a *Kick-off Meeting Agenda*.
- 34

35 **Recipient Products:**

- 36 ● Kick-off Meeting Presentation
- 37 ● Updated Project Schedule (*if applicable*)
- 38 ● Match Funds Status Letter (subtask 1.7) (*if applicable*)
- 39 ● Permit Status Letter (subtask 1.8) (*if applicable*)
- 40

41 **CAM Product:**

- 42 ● Kick-off Meeting Agenda
- 43

44 **Subtask 1.3 Critical Project Review (CPR) Meetings**

Exhibit A
Scope of Work
Winston Cone Optics, Inc.

1 The goal of this subtask is to determine if the project should continue to receive CEC funding, and
2 if so whether any modifications must be made to the tasks, products, schedule, or budget. CPR
3 meetings provide the opportunity for frank discussions between the CEC and the Recipient. As
4 determined by the CAM, discussions may include project status, challenges, successes, advisory
5 group findings and recommendations, final report preparation, and progress on technical transfer
6 and production readiness activities (if applicable). Participants will include the CAM and the
7 Recipient and may include the CAO and any other individuals selected by the CAM to provide
8 support to the CEC.
9

10 CPR meetings generally take place at key, predetermined points in the Agreement, as determined
11 by the CAM and as shown in the Task List on page 1 of this Exhibit. However, the CAM may
12 schedule additional CPR meetings as necessary. The budget will be reallocated to cover the
13 additional costs borne by the Recipient, but the overall Agreement amount will not increase. CPR
14 meetings generally take place at the CEC, but they may take place at another location, or may be
15 conducted via electronic conferencing (e.g., WebEx) as determined by the CAM.
16

17 **The Recipient shall:**

- 18 • Prepare and submit a *CPR Report* for each CPR meeting that: (1) discusses the progress
19 of the Agreement toward achieving its goals and objectives; and (2) includes
20 recommendations and conclusions regarding continued work on the project.
- 21 • Attend the CPR meeting.
- 22 • Present the CPR Report and any other required information at each CPR meeting.
23

24 **The CAM shall:**

- 25 • Determine the location, date, and time of each CPR meeting with the Recipient's input.
- 26 • Send the Recipient a *CPR Agenda* with a list of expected CPR participants in advance of
27 the CPR meeting. If applicable, the agenda will include a discussion of match funding and
28 permits.
- 29 • Conduct and make a record of each CPR meeting. Provide the Recipient with a schedule
30 for providing a Progress Determination on continuation of the project.
- 31 • Determine whether to continue the project, and if so whether modifications are needed to
32 the tasks, schedule, products, or budget for the remainder of the Agreement. If the CAM
33 concludes that satisfactory progress is not being made, this conclusion will be referred to
34 the Deputy Director of the Energy Research and Development Division.
- 35 • Provide the Recipient with a *Progress Determination* on continuation of the project, in
36 accordance with the schedule. The Progress Determination may include a requirement
37 that the Recipient revise one or more products.
38

39 **Recipient Products:**

- 40 • CPR Report(s)
41

42 **CAM Products:**

- 43 • CPR Agenda
- 44 • Progress Determination
45

46 **Subtask 1.4 Final Meeting**

Exhibit A
Scope of Work
Winston Cone Optics, Inc.

1 The goal of this subtask is to complete the closeout of this Agreement.
2

3 **The Recipient shall:**

- 4 • Meet with CEC staff to present project findings, conclusions, and recommendations. The
5 final meeting must be completed during the closeout of this Agreement. This meeting will
6 be attended by the Recipient and CAM, at a minimum. The meeting may occur in person
7 or by electronic conferencing (e.g., WebEx), with approval of the CAM.
8

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

- 11 ○ The technical portion of the meeting will involve the presentation of findings,
12 conclusions, and recommended next steps (if any) for the Agreement. The CAM will
13 determine the appropriate meeting participants.
14 ○ The administrative portion of the meeting will involve a discussion with the CAM and
15 the CAO of the following Agreement closeout items:
16 ▪ Disposition of any procured equipment.
17 ▪ The CEC's request for specific "generated" data (not already provided in
18 Agreement products).
19 ▪ Need to document the Recipient's disclosure of "subject inventions" developed
20 under the Agreement.
21 ▪ "Surviving" Agreement provisions such as repayment provisions and
22 confidential products.
23 ▪ Final invoicing and release of retention.
24 • Prepare a *Final Meeting Agreement Summary* that documents any agreement made
25 between the Recipient and Commission staff during the meeting.
26 • Prepare a *Schedule for Completing Agreement Closeout Activities*.
27 • Provide copies of *All Final Products* on a USB memory stick, organized by the tasks in the
28 Agreement.
29

30 **Products:**

- 31 • Final Meeting Agreement Summary (*if applicable*)
32 • Schedule for Completing Agreement Closeout Activities
33 • All Final Products
34

35 **REPORTS AND INVOICES**

36 **Subtask 1.5 Progress Reports and Invoices**

37 The goals of this subtask are to: (1) periodically verify that satisfactory and continued progress is
38 made towards achieving the project objectives of this Agreement; and (2) ensure that invoices
39 contain all required information and are submitted in the appropriate format.
40

41 **The Recipient shall:**

- 42 • Submit a monthly *Progress Report* to the CAM. Each progress report must:
43 ○ Summarize progress made on all Agreement activities as specified in the scope of
44 work for the preceding month, including accomplishments, problems, milestones,
45 products, schedule, fiscal status, and an assessment of the ability to complete the
46 Agreement within the current budget and any anticipated cost overruns. See the
47 Progress Report Format Attachment for the recommended specifications.

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- 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 Funds 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. When creating the Final Report Outline and the Final Report, the Recipient must use the CEC 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 *Energy Commission Style Manual* provided by the CAM.

Recipient Products:

- Final Report Outline (draft and final)

CAM Product:

- Energy Commission 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, Energy Commission 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)

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- 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)
- Submit a draft of the Executive Summary to the TAC for review and comment.
- Develop and submit a *Summary of TAC Comments* received on the Executive Summary. For each comment received, the recipient will identify in the summary the following:
 - Comments the recipient proposes to incorporate.
 - Comments the recipient does propose to incorporate and an explanation for why.
- 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.
- Incorporate all CAM comments into the Final Report. If the Recipient disagrees with any comment, provide a *Written Responses to Comments* explaining why the comments were not incorporated into the final product.
- Submit the revised Final Report electronically with any Written Responses to Comments within 10 days of receipt of CAM's Written Comments on the Draft Final Report, unless the CAM specifies a longer time period or approves a request for additional time.

Products:

- Summary of TAC Comments
- Draft Final Report
- Written Responses to Comments (*if applicable*)
- 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 CEC 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 CEC awarding this Agreement and none have been identified at the time this Agreement starts, then state this in the letter.

Exhibit A
Scope of Work
Winston Cone Optics, Inc.

1 If match funds were a part of the proposal that led to the CEC awarding this Agreement,
2 then provide in the letter:

- 3 ○ A list of the match funds that identifies:
- 4 ■ The amount of cash match funds, their source(s) (including a contact name,
5 address, and telephone number), and the task(s) to which the match funds will
6 be applied.
 - 7 ■ The amount of each in-kind contribution, a description of the contribution type
8 (e.g., property, services), the documented market or book value, the source
9 (including a contact name, address, and telephone number), and the task(s) to
10 which the match funds will be applied. If the in-kind contribution is equipment
11 or other tangible or real property, the Recipient must identify its owner and
12 provide a contact name, address, telephone number, and the address where
13 the property is located.
 - 14 ■ If different from the solicitation application, provide a letter of commitment from
15 an authorized representative of each source of match funding that the funds or
16 contributions have been secured.
- 17 ● At the Kick-off meeting, discuss match funds and the impact on the project if they are
18 significantly reduced or not obtained as committed. If applicable, match funds will be
19 included as a line item in the progress reports and will be a topic at CPR meetings.
 - 20 ● Provide a *Supplemental Match Funds Notification Letter* to the CAM of receipt of additional
21 match funds.
 - 22 ● Provide a *Match Funds Reduction Notification Letter* to the CAM if existing match funds
23 are reduced during the course of the Agreement. Reduction of match funds may trigger a
24 CPR meeting.

25
26 **Products:**

- 27 ● Match Funds Status Letter
- 28 ● Supplemental Match Funds Notification Letter (*if applicable*)
- 29 ● Match Funds Reduction Notification Letter (*if applicable*)

30
31 **Subtask 1.8 Permits**

32 The goal of this subtask is to obtain all permits required for work completed under this Agreement
33 in advance of the date they are needed to keep the Agreement schedule on track. Permit costs
34 and the expenses associated with obtaining permits are not reimbursable under this Agreement,
35 with the exception of costs incurred by University of California recipients. Permits must be
36 identified and obtained before the Recipient may incur any costs related to the use of the permit(s)
37 for which the Recipient will request reimbursement.

38
39 **The Recipient shall:**

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

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

- 6 • If during the course of the Agreement additional permits become necessary, then provide
7 the CAM with an *Updated List of Permits* (including the appropriate information on each
8 permit) and an *Updated Schedule for Acquiring Permits*.
- 9 • Send the CAM a *Copy of Each Approved Permit*.
- 10 • If during the course of the Agreement permits are not obtained on time or are denied,
11 notify the CAM within 5 days. Either of these events may trigger a CPR meeting.

12
13 **Products:**

- 14 • Permit Status Letter
- 15 • Updated List of Permits (*if applicable*)
- 16 • Updated Schedule for Acquiring Permits (*if applicable*)
- 17 • Copy of Each Approved Permit (*if applicable*)

18
19 **Subtask 1.9 Subcontracts**

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

23
24 **The Recipient shall:**

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

36
37 **Products:**

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

39
40 **TECHNICAL ADVISORY COMMITTEE**

41 **Subtask 1.10 Technical Advisory Committee (TAC)**

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

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- 1 • Provide guidance in project direction. The guidance may include scope and
2 methodologies, timing, and coordination with other projects. The guidance may be based
3 on:
 - 4 ○ Technical area expertise;
 - 5 ○ Knowledge of market applications; or
 - 6 ○ Linkages between the agreement work and other past, present, or future projects (both
7 public and private sectors) that TAC members are aware of in a particular area.
- 8 • Review products and provide recommendations for needed product adjustments,
9 refinements, or enhancements.
- 10 • Evaluate the tangible benefits of the project to the state of California, and provide
11 recommendations as needed to enhance the benefits.
- 12 • Provide recommendations regarding information dissemination, market pathways, or
13 commercialization strategies relevant to the project products.
- 14 • Help set the project team's goals and contribute to the development and evaluation of its
15 statement of proposed objectives as the project evolves.
- 16 • Provide a credible and objective sounding board on the wide range of technical and
17 financial barriers and opportunities.
- 18 • Help identify key areas where the project has a competitive advantage, value proposition,
19 or strength upon which to build.
- 20 • Advocate, to the extent the TAC members feel is appropriate, on behalf of the project in
21 its effort to build partnerships, governmental support and relationships with a national
22 spectrum of influential leaders.
- 23 • Ask probing questions that insure a long-term perspective on decision-making and
24 progress toward the project's strategic goals.

25
26 The TAC may be composed of qualified professionals spanning the following types of disciplines:

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

38
39 **The Recipient shall:**

- 40 • Prepare a *List of Potential TAC Members* that includes the names, companies, physical
41 and electronic addresses, and phone numbers of potential members. The list will be
42 discussed at the Kick-off meeting, and a schedule for recruiting members and holding the
43 first TAC meeting will be developed.
- 44 • Recruit TAC members. Ensure that each individual understands member obligations and
45 the TAC meeting schedule developed in subtask 1.11.

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- 1 • Prepare a *List of TAC Members* once all TAC members have committed to serving on the
- 2 TAC.
- 3 • Submit *Documentation of TAC Member Commitment* (such as Letters of Acceptance) from
- 4 each TAC member.

5
6 **Products:**

- 7 • List of Potential TAC Members
- 8 • List of TAC Members
- 9 • Documentation of TAC Member Commitment

10
11 **Subtask 1.11 TAC Meetings**

12 The goal of this subtask is for the TAC to provide strategic guidance for the project by participating

13 in regular meetings, which may be held via teleconference.

14
15 **The Recipient shall:**

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

28
29 **The TAC shall:**

- 30 • Help set the project team's goals and contribute to the development and evaluation of its
- 31 statement of proposed objectives as the project evolves.
- 32 • Provide a credible and objective sounding board on the wide range of technical and
- 33 financial barriers and opportunities.
- 34 • Help identify key areas where the project has a competitive advantage, value proposition,
- 35 or strength upon which to build.
- 36 • Advocate on behalf of the project in its effort to build partnerships, governmental support
- 37 and relationships with a national spectrum of influential leaders.
- 38 • Ask probing questions that insure a long-term perspective on decision-making and
- 39 progress toward the project's strategic goals.
- 40 • Review and provide comments to proposed project performance metrics.
- 41 • Review and provide comments to proposed project Draft Technology Transfer Plan.

42
43 **Products:**

- 44 • TAC Meeting Schedule (draft and final)
- 45 • TAC Meeting Agendas (draft and final)

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- 1
 - TAC Meeting Back-up Materials

Exhibit A
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- 1 • TAC Meeting Summaries
2

3 **Subtask 1.12 Project Performance Metrics**

4 The goal of this subtask is to identify key performance targets for the project. The performance
5 targets should be a combination of scientific, engineering, techno-economic, and/or programmatic
6 metrics that provide the most significant indicator of the research or technology's potential
7 success.
8

9 **The Recipient shall:**

- 10 • Complete and submit the draft *Project Performance Metrics Questionnaire* to the CAM
11 prior to the Kick-off Meeting.
12 • Present the draft *Project Performance Metrics Questionnaire* at the first TAC meeting to
13 solicit input and comments from the TAC members.
14 • Develop and submit a *TAC Performance Metrics Summary* that summarizes comments
15 received from the TAC members on the proposed project performance metrics. The *TAC*
16 *Performance Metrics Summary* will identify:
17 ○ TAC comments the recipient proposes to incorporate into the final *Project*
18 *Performance Metrics Questionnaire*.
19 ○ TAC comments the recipient does not propose to incorporate with and explanation
20 why.
21 • Submit a final *Project Performance Metrics Questionnaire* with incorporated TAC
22 feedback.
23 • Develop and submit a *Project Performance Metrics Results* document describing the
24 extent to which the recipient met each of the performance metrics in the final *Project*
25 *Performance Metrics Questionnaire*.
26 • Discuss the final *Project Performance Metrics Questionnaire* and *Project Performance*
27 *Metrics Results* at the Final Meeting.
28

29 **Products:**

- 30 • Project Performance Metrics Questionnaire (draft and final)
31 • TAC Performance Metrics Summary
32 • Project Performance Metrics Results

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1 **IV. TECHNICAL TASKS**

2
3 **TASK 2: DESIGN, SIMULATION, AND COST-PERFORMANCE ANALYSIS**

4 The goals of this task are to develop multiple NASH optical designs, complete optical and thermal
5 modelling of each design, develop annual performance models, and perform a cost-performance
6 analysis to down-select components, materials, and select the final design.

7
8 **The Recipient shall:**

- 9
- 10 • Model and simulate the optical and thermal performance of several potential designs
11 based on the material and construction constraints that can potentially affect the overall
12 performance.
 - 13 • Develop an annual performance model which can incorporate the different designs to
14 predict annual heat production per unit collector area and provide preliminary estimations
15 of LCOH at the collector level.
 - 16 • Perform a cost-performance analysis using potential material costs and optical/thermal
17 performance.
 - 18 • Select a final design for the NASH solar collector.
 - 19 • Prepare and provide a *Performance Modeling and Simulation Report* which includes, but
20 is not limited to, the following:
 - 21 ○ A description of the different designs.
 - 22 ○ A description of the different optical, thermal, and annual performance models.
 - 23 ○ A discussion of the results of the modelling and the cost-performance analyses.
 - 24 ○ The down-selected design.
 - 25 • Prepare and provide *Prototype - Design, Drawings, and Test Plan* which includes, but is
26 not limited to, the following:
 - 27 ○ The number of prototype(s) to be built in the first stage. Note: the target combined
28 aperture for prototype(s) testing is $\geq 5 \text{ m}^2$.
 - 29 ○ All necessary prototype drawings.
 - 30 ○ A description of the test objectives, procedures, conditions, facilities, and
31 equipment.

32 **Products:**

- 33
- 34 • Performance Modeling and Simulation Report
 - 35 • Prototype - Design, Drawings, and Test Plan

36 **TASK 3: PROTOTYPE FABRICATION AND DEMONSTRATION**

37 The goals of this task are to produce the first collector prototype, experimentally characterize its
38 performance at 150 °C, update the annual performance and system cost models, and use these
39 learnings to develop the pilot-scale system design.

40
41 **The Recipient shall:**

- 42
- Fabricate the first prototype(s) for experimental testing.

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- 1 • Install and experimentally characterize performance of the first prototype(s).
- 2 • Update the annual performance and system cost models.
- 3 • Prepare and provide a *Prototype Fabrication and Testing Report* which includes, but is not
- 4 limited to, the following:
 - 5 ○ A description of the fabricated prototype.
 - 6 ○ A discussion of the experimental test results.
- 7 • Prepare and provide *Pilot Array - Design, Drawings, and Test Plan* which includes, but is
- 8 not limited to, the following:
 - 9 ○ The size of the pilot array (aperture area, number of modules). Note: the target
 - 10 size of the array for pilot demonstration is $\geq 50 \text{ m}^2$.
 - 11 ○ A description of the mounting method, and the estimated cost and installation time.
 - 12 ○ A description of the module / pipe interconnections and pilot array pipe layout.
 - 13 ○ A description of the test objectives, procedures, conditions, facilities, and
 - 14 equipment.
- 15 • Prepare a CPR Report in accordance with subtask 1.3 (CPR Meetings).
- 16 • Participate in a CPR meeting.

Products:

- 19 • Prototype Fabrication and Testing Report
- 20 • Pilot Array - Design, Drawings, and Test Plan
- 21 • CPR Report #1

TASK 4: PILOT SCALE FABRICATION AND DEMONSTRATION

24 The goals of this task are to scale up production and fabricate enough modules to be used in the
25 pilot array, install the pilot array and experimentally characterize performance at the array-level at
26 or near 150 °C using a reasonable thermal load, update the annual performance and system cost
27 models, and use these learnings to develop the system design for the industrial host site
28 demonstration.

The Recipient shall:

- 31 • Fabricate all modules for the pilot array demonstration.
- 32 • Install and commission the pilot array and data acquisition system.
- 33 • Experimentally characterize performance of the pilot array.
- 34 • Update the annual performance and system cost models.
- 35 • Prepare and provide a *Pilot Array - Fabrication and Testing Report* which includes, but is
- 36 not limited to, the following:
 - 37 ○ A description of the pilot array modules and their fabrication.
 - 38 ○ A discussion of the experimental test results.
 - 39 ○ An update to the projected annual performance and system costs, including
 - 40 mounting and installation.
- 41 • Send a collector module for industry standardized certification (SRCC or IAPMO).
- 42 • Prepare and provide *Industrial Demonstration - Design, Drawings, and Test Plan* which
- 43 includes, but is not limited to, the following:
 - 44 ○ The size of the Industrial Demonstration (aperture area, number of modules). Note:
 - 45 the target size of the industrial host site demonstration is $\geq 500 \text{ m}^2$ aperture.
 - 46 ○ A description of the mounting method.

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- A description and drawings of the module and pipe interconnections and demonstration layout.
- A description of the interfacing of the solar field with existing equipment.
- A description of the test objectives, procedures, conditions, facilities, and equipment.
- Prepare a *CPR Report* in accordance with subtask 1.3 (CPR Meetings).
- Participate in a CPR meeting.

Products:

- Pilot Array - Fabrication and Testing Report
- Industrial Demonstration – Design, Drawings, and Test Plan
- CPR Report #2

TASK 5: INDUSTRIAL DEMONSTRATION – FABRICATION AND COMMISSIONING

The goals of this task are to scale up production to fabricate enough modules to complete the industrial demonstration, install the demonstration system at the host site, and commission the system for standalone operation.

The Recipient shall:

- Manufacture all collector modules for the industrial demonstration.
- Source all balance of system (BOS) components.
- Install and commission the industrial demonstration and data acquisition system.
- Update the *Industrial Demonstration Report - Design, Drawings, and Test Plan* which includes, but is not limited to, the following:
 - The size of the Industrial Demonstration (aperture area, number of modules).
 - A description of the industrial demonstration modules and their fabrication.
 - An updated description of the mounting method.
 - An updated description of the pipe interconnections and demonstration layout.
 - An updated description of the interfacing of the solar field with existing equipment.
 - An updated description of the test objectives, procedures, conditions, facilities, and equipment.
 - Include an estimate one year of baseline energy consumption of host site facilities prior to operation of the demonstration array.

Products:

- Industrial Demonstration Report – Design, Drawings, and Test Plan

TASK 6: INDUSTRIAL DEMONSTRATION – MEASUREMENT AND VERIFICATION

The goal of this task is to demonstrate the technology at the host site for over 6 months.

The Recipient shall:

- Measure and verify performance of the demonstration array at the host site for at least 6 months.
- Compare the energy generation from the array with the energy savings of the plant.
- Update the annual performance and cost models.
- Prepare the *Industrial Demonstration Results Report* which includes, but is not limited to,

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1 the following:

- 2 ○ The size of the Industrial Demonstration (aperture area, number of modules).
- 3 ○ An updated description of the mounting method.
- 4 ○ An updated description of the pipe interconnections and demonstration layout.
- 5 ○ An updated description of the interfacing of the solar field with existing equipment
- 6 ○ An updated description of the test objectives, procedures, conditions, facilities, and
- 7 equipment.
- 8 ○ An estimate of baseline energy consumption of host site facilities prior to operation of
- 9 the demonstration array.
- 10 ○ The measured energy generation from the array over about a minimum of six
- 11 months.
- 12 ○ The energy savings measured by the plant.
- 13 ○ The updated annual performance and cost estimations.

14
15 **Products:**

- 16 ● Industrial Demonstration Results Report

17
18 **TASK 7 EVALUATION OF PROJECT BENEFITS**

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

20
21 **The Recipient shall:**

- 22 ● Complete three Project Benefits Questionnaires that correspond to three main intervals in
- 23 the Agreement: (1) *Kick-off Meeting Benefits Questionnaire*; (2) *Mid-term Benefits*
- 24 *Questionnaire*; and (3) *Final Meeting Benefits Questionnaire*.
- 25 ● Provide all key assumptions used to estimate projected benefits, including targeted market
- 26 sector (e.g., population and geographic location), projected market penetration, baseline
- 27 and projected energy use and cost, operating conditions, and emission reduction
- 28 calculations. Examples of information that may be requested in the questionnaires include:
- 29
- 30 ○ For Product Development Projects and Project Demonstrations:
 - 31 ■ Published documents, including date, title, and periodical name.
 - 32 ■ Estimated or actual energy and cost savings and estimated statewide energy
 - 33 savings once market potential has been realized. Identify all assumptions used in
 - 34 the estimates.
 - 35 ■ Greenhouse gas and criteria emissions reductions.
 - 36 ■ Other non-energy benefits such as reliability, public safety, lower operational cost,
 - 37 environmental improvement, indoor environmental quality, and societal benefits.
 - 38 ■ Data on potential job creation, market potential, economic development, and
 - 39 increased state revenue as a result of the project.
 - 40 ■ A discussion of project product downloads from websites, and publications in
 - 41 technical journals.
 - 42 ■ A comparison of project expectations and performance. Discuss whether the goals
 - 43 and objectives of the Agreement have been met and what improvements are
 - 44 needed, if any.
 - 45 ■ Additional Information for Product Development Projects:
 - 46 ● Outcome of product development efforts, such copyrights and license

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1 agreements.

- 2 • Units sold or projected to be sold in California and outside of California.
- 3 • Total annual sales or projected annual sales (in dollars) of products
- 4 developed under the Agreement.
- 5 • Investment dollars/follow-on private funding as a result of Energy
- 6 Commission funding.
- 7 • Patent numbers and applications, along with dates and brief descriptions.

8 **▪ Additional Information for Product Demonstrations:**

- 9 • Outcome of demonstrations and status of technology.
- 10 • Number of similar installations.
- 11 • Jobs created/retained as a result of the Agreement.

12

13 **○ For Information/Tools and Other Research Studies:**

- 14 **▪ Outcome of project.**
- 15 **▪ Published documents, including date, title, and periodical name.**
- 16 **▪ A discussion of policy development. State if the project has been cited in**
- 17 **government policy publications or technical journals or has been used to**
- 18 **inform regulatory bodies.**
- 19 **▪ The number of website downloads.**
- 20 **▪ An estimate of how the project information has affected energy use and**
- 21 **cost or have resulted in other non-energy benefits.**
- 22 **▪ An estimate of energy and non-energy benefits.**
- 23 **▪ Data on potential job creation, market potential, economic development,**
- 24 **and increased state revenue as a result of project.**
- 25 **▪ A discussion of project product downloads from websites, and publications**
- 26 **in technical journals.**
- 27 **▪ A comparison of project expectations and performance. Discuss whether**
- 28 **the goals and objectives of the Agreement have been met and what**
- 29 **improvements are needed, if any.**

- 30 • Respond to CAM questions regarding responses to the questionnaires.

31

32 The CEC may send the Recipient similar questionnaires after the Agreement term ends.

33 Responses to these questionnaires will be voluntary.

34

35 **Products:**

- 36 • Kick-off Meeting Benefits Questionnaire
- 37 • Mid-term Benefits Questionnaire
- 38 • Final Meeting Benefits Questionnaire

39

40

41 **TASK 8 TECHNOLOGY/KNOWLEDGE TRANSFER ACTIVITIES**

42 The goal of this task is to conduct activities that will accelerate the commercial adoption of the

43 technology being supported under this agreement. Eligible activities include, but are not limited

44 to, the following:

- 45 • Scale-up analysis including manufacturing analysis, independent design verification, and
- 46 process improvement efforts.

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- 1 • Technology verification testing, or application to a test bed program located in California.
- 2 • Legal services or licensing to secure necessary intellectual property to further develop the
- 3 technology.
- 4 • Market research, business plan development, and cost-performance modeling.
- 5 • Entry into an incubator or accelerator program located in California.

6
7 **The Recipient Shall:**

- 8 • Develop and submit a *Technology Transfer Plan (Draft/Final)* that identifies the proposed
- 9 activities the recipient will conduct to accelerate the successful commercial adoption of
- 10 the technology.
- 11 • Present the *Draft Technology Transfer Plan* to the TAC for feedback and comments.
- 12 • Develop and submit a *Summary of TAC Comments* that summarizes comments received
- 13 from the TAC members on the *Draft Technology Transfer Plan*. This document will identify:
- 14 ○ TAC comments the recipient proposes to incorporate into the *Final Technology*
- 15 *Transfer Plan*.
- 16 ○ TAC comments the recipient does not propose to incorporate with and
- 17 explanation why.
- 18 • Submit the *Final Technology Transfer Plan* to the CAM for approval.
- 19 • Implement activities identified in *Final Technology Transfer Plan*.
- 20 • Develop and submit a *Technology Transfer Summary Report (Draft/Final)* that includes
- 21 high level summaries of the activities, results, and lessons learned of tasks performed
- 22 relating to implementing the *Final Technology Transfer Plan*. This report should not include
- 23 any proprietary information.
- 24 • When directed by the CAM, develop presentation materials for an CEC- sponsored
- 25 conference/workshop(s) on the project.
- 26 • Provide at least (6) six *High Quality Digital Photographs* (minimum resolution of 1300x500
- 27 pixels in landscape ratio) of pre and post technology installation at the project sites or
- 28 related project photographs.

29
30 **Products:**

- 31 • Technology Transfer Plan (Draft/Final)
- 32 • Summary of TAC Comments
- 33 • Technology Transfer Summary Report (Draft/Final)
- 34 • High Quality Digital Photographs

35
36
37 **V. PROJECT SCHEDULE**

38 Please see the attached Excel spreadsheet.

STATE OF CALIFORNIA

STATE ENERGY RESOURCES
CONSERVATION AND DEVELOPMENT COMMISSION

RESOLUTION - RE: WINSTON CONE OPTICS, INC.

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

RESOLVED, that the CEC approves Agreement PIR-20-004 with Winston Cone Optics, Inc. for a \$1,415,091 grant to develop a low-cost, high-efficiency solar thermal collector for industrial process heating. The project will support decarbonization of California's commercial and industrial sectors and reduce dependence on natural gas by using a unique asymmetric non-imaging optical design and by scaling up the technology through iterative demonstrations; and

FURTHER BE IT RESOLVED, that the Executive Director or his/her designee shall execute the same on behalf of the CEC.

CERTIFICATION

The undersigned Secretariat to the CEC 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 CEC held on April 14, 2021.

AYE:

NAY:

ABSENT:

ABSTAIN:

Patricia Carlos
Secretariat