



# GRANT REQUEST FORM (GRF)

## A) New Agreement # EPC-20-032 (to be completed by CGL office)

B) Division	Agreement Manager:	MS-	Phone
ERDD	Rachel Salazar	51	916-776-0806

C) Recipient's Legal Name	Federal ID Number
Ubiquitous Energy, Inc.	45-3624852

D) Title of Project
Productizing Transparent Solar Windows: Enabling Production of Transparent Renewable Energy Generating Windows

## E) Term and Amount

Start Date	End Date	Amount
5/14/2021	3/31/2025	\$ 2,997,343

## 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 Benson Gilbert Time Needed: 5 minutes

Please select one list serve. EPIC (Electric Program Investment Charge)

### Agenda Item Subject and Description:

#### Ubiquitous Energy, Inc.

Ubiquitous Energy, Inc. Proposed resolution approving Agreement EPC-20-032 with Ubiquitous Energy, Inc. for a \$2,997,343 grant to accelerate commercialization of their innovative window coating technology prototype by advancing the pilot-scale manufacturing line to meet market entry production requirements, and adopting staff's determination that this action is exempt from CEQA. The transparent coating technology is applied directly to glass windowpanes to generate electricity and simultaneously provide high-energy efficiency by insulating the building from solar heat. Under this agreement, the recipient will develop and demonstrate manufacturing capabilities that achieve low-rate initial production levels. (EPIC funding) Contact: Benson Gilbert.

## 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:

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

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



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Explain reason why Agreement is exempt under the above section: Cal. Code Regs., tit. 14, Section 15301 Existing Facilities provides an exemption for the operation, repair, maintenance, permitting, leasing, licensing, or minor alteration of existing structures, facilities, mechanical equipment or topographical features involving negligible or no expansion of use beyond that existing. This project will conduct research, development, and manufacturing within already existing facilities. There will be negligible or no expansion of existing use. Therefore, the project falls within Section 15301 and will not have a significant effect on the environment.

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)

<b>Legal Company Name:</b>	<b>Budget</b>
TBD - Window Installation Contractor (Match Share \$50,000)	\$ 0
	\$
	\$
	\$
	\$
	\$
	\$
	\$
	\$
	\$

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

<b>Legal Company Name:</b>



# GRANT REQUEST FORM (GRF)

## J) Budget Information

Funding Source	Funding Year of Appropriation	Budget List Number	Amount
EPIC	19-20	301.001G	\$2,997,343
			\$
			\$
			\$
			\$
			\$

R&D Program Area: EDMFO: EDMF

TOTAL: \$ 2,997,343

Explanation for "Other" selection

Reimbursement Contract #: Federal Agreement #:

## K) Recipient's Contact Information

### 1. Recipient's Administrator/Officer

Name: Veeral Hardev

Address: 3696 Haven Ave Ste B

City, State, Zip: Redwood City, CA 94063-4604

Phone: 650-294-4333

E-Mail: veeral@ubiquitous.energy

### 2. Recipient's Project Manager

Name: Veeral Hardev

Address: 3696 Haven Ave Ste B

City, State, Zip: Redwood City, CA 94063-4604

Phone: 650-294-4333

E-Mail: veeral@ubiquitous.energy

## L) Selection Process Used

Competitive Solicitation Solicitation #: GFO-20-302

First Come First Served Solicitation Solicitation #:

## M) The following items should be attached to this GRF

- |  |                          |          |
|--|--------------------------|----------|
| 1. Exhibit A, Scope of Work                          | <input type="checkbox"/> | Attached |
| 2. Exhibit B, Budget Detail                          | <input type="checkbox"/> | Attached |
| 3. CEC 105, Questionnaire for Identifying Conflicts  | <input type="checkbox"/> | Attached |
| 4. Recipient Resolution <input type="checkbox"/> N/A | <input type="checkbox"/> | Attached |
| 5. CEQA Documentation <input type="checkbox"/> N/A   | <input type="checkbox"/> | Attached |

\_\_\_\_\_  
Agreement Manager

\_\_\_\_\_  
Date

\_\_\_\_\_  
Office Manager

\_\_\_\_\_  
Date

\_\_\_\_\_  
Deputy Director

\_\_\_\_\_  
Date

## Exhibit A Scope of Work Ubiquitous Energy

### I. TASK ACRONYM/TERM LISTS

#### Task List

Task #	CPR <sup>1</sup>	Task Name
1		General Project Tasks
2		Equipment Purchase and Installation
3		Modify Production Line
4	X	Low Scale Production Qualification
5		Product Installation
6		Evaluation of Project Benefits
7		Technology/Knowledge Transfer Activities

#### A. Acronym/Term List

Acronym/Term	Meaning
ASTM	American Society for Testing and Materials
CAM	Commission Agreement Manager
CAO	Commission Agreement Officer
CEC	California Energy Commission
CPR	Critical Project Review
DFMEA	Design Failure Mode Effects Analysis
HVAC	Heating, Ventilation, and Air Conditioning
IEC	International Electrotechnical Commission
IGU	Insulated Glass Unit
FRP	Full Rate Production
LRIP	Low-Rate Initial Production
PFMEA	Process Failure Mode Effects Analysis
RAMP	Realizing Accelerated Manufacturing and Production for Clean Energy Technologies
RPS	Renewable Portfolio Standard
SOP	Standard Operating Procedure
SPC	Statistical Process Control
TAC	Technical Advisory Committee
UE	Ubiquitous Energy, Inc.
WIP	Work-In-Progress

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

#### A. Purpose of Agreement

The purpose of this Agreement is to fund the transition of the Recipient's Window technology from the current prototype stage to a low-rate production by purchasing and installing necessary

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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 Ubiquitous Energy**

equipment, modifying and optimizing the current production line to add manufacturing capabilities and providing opportunities to low-income and disadvantaged communities.

### **B. Problem/ Solution Statement**

#### **Problem**

Currently, there are energy efficient window technologies; however, there are no such technologies that combine certain main attributes and are: (1) able to reduce energy usage, (2) generate clean, renewable energy, and (3) are aesthetically pleasing at the same time. The Recipient's Window Technology accomplishes all three but has yet to prove so commercially as it has not yet been productized nor been able to penetrate the windows market. While some buildings are now incorporating energy efficient solutions into their design, building developers and architects will often choose not to incorporate certain solutions if the technology does not provide sufficient energy related benefits to justify the incremental costs, if the technology is difficult to incorporate into the building structure, or if the technology will devastate the original design and aesthetics.

#### **Solution**

The Recipient has designed an energy efficient transparent solar window that can be installed into buildings. With the support of the RAMP grant, the Recipient will begin low-rate initial production. The Window Technology will generate renewable energy and achieve high levels of energy efficiency by reducing energy usage of heating, ventilation, and air conditioning (HVAC); in addition, developers will have flexibility in incorporating renewable energy products into the building window structure without compromising the aesthetics of the building design.

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

#### **Agreement Goals**

The goals of this Agreement are to:

- Substantially reduce California's reliance on HVAC heating and cooling systems;
- Increase solar energy's contribution to California's Renewable Portfolio Standard (RPS);
- Decrease utility ratepayer costs while simultaneously reducing the state's greenhouse gas (GHG) reduction;
- Develop manufacturing standards for the Recipient's Window Technology; and
- Challenge the status quo of the building and construction industry by providing a disruption to traditional window technologies that will allow new renewable energy solutions in building design.

## **Exhibit A Scope of Work Ubiquitous Energy**

Ratepayer Benefits:<sup>2</sup> This Agreement will result in the ratepayer benefits of greater electricity reliability and lower costs by:

- Enabling the expanded deployment of solar PV resulting in less dependence on California's aging electricity grid infrastructure, particularly in day-time peak hours; and
- Lowering ratepayer costs by providing energy efficient insulation that lessens a building's reliance on HVAC systems, and renewable energy generation through solar PV technology.

Technological Advancement and Breakthroughs:<sup>3</sup> 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 productizing and commercializing the Recipient's Window Technology. By enabling manufacturing capabilities, the Recipient will have the potential to penetrate the windows market and further accelerate the use of energy efficient and energy generating windows in building projects.

### **Agreement Objectives**

The objectives of this Agreement are to:

- Identify, purchase and complete buy-off and install of all necessary equipment and materials for Recipient's Windows Technology to reach Manufacturing Readiness Level 8.
- Modify existing capability, qualify process and product and validate the line to operate at and fulfill the low-rate initial production (LRIP) volume capabilities of up to 2,000 units per year; and
- Provide opportunities to disadvantaged and low-income communities during the installation and pre-installation phases of the product.

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<sup>2</sup> California Public Resources Code, Section 25711.5(a) requires projects funded by the Electric Program Investment Charge (EPIC) to result in ratepayer benefits. The California Public Utilities Commission, which established the EPIC in 2011, defines ratepayer benefits as greater reliability, lower costs, and increased safety (See CPUC "Phase 2" Decision 12-05-037 at page 19, May 24, 2012, [Phase 2 Decision](#)).

<sup>3</sup> California Public Resources Code, Section 25711.5(a) also requires EPIC-funded projects to lead to technological advancement and breakthroughs to overcome barriers that prevent the achievement of the state's statutory and energy goals.

# Exhibit A

## Scope of Work

### Ubiquitous Energy

#### III. 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)**. All products submitted which will be viewed by the public, must comply with the accessibility requirements of Section 508 of the federal Rehabilitation Act of 1973, as amended (29 U.S.C. Sec. 794d), and regulations implementing that act as set forth in Part 1194 of Title 36 of the Federal Code of Regulations. All technical tasks should include product(s). Products that require a draft version are indicated by marking “**(draft and final)**” after the product name in the “Products” section of the task/subtask. If “(draft and final)” does not appear after the product name, only a final version of the product is required. With respect to due dates within this Scope of Work, “**days**” means working days.

###### The Recipient shall:

###### For products that require a draft version, 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**

## **Exhibit A**

### **Scope of Work**

### **Ubiquitous Energy**

- 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. Prior to the meeting, the CAM will provide an agenda to all potential meeting participants.



## **Exhibit A Scope of Work Ubiquitous Energy**

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;
- Invoicing and auditing procedures;
- 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 (subtask 1.5);
  - Final Report (subtask 1.6);
  - Technical Advisory Committee meetings (subtasks 1.10 and 1.11); and
  - Any other relevant topics.
- Provide *Kick-off Meeting Presentation* to include but not limited to:
    - Project overview (i.e. project description, goals and objectives, technical tasks, expected benefits, etc.)
    - Project schedule that identifies milestones
    - List of potential risk factors and hurdles, and mitigation strategy
  - Provide an *Updated Project Schedule, Match Funds Status Letter, and Permit Status Letter*, 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:**

- Kick-off Meeting Presentation
- Updated Project Schedule *(if applicable)*
- Match Funds Status Letter (subtask 1.7) *(if applicable)*
- Permit Status Letter (subtask 1.8) *(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 CEC 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 CEC and the Recipient. As determined by the CAM, discussions may include project status, challenges, successes, advisory

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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 CEC.

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 CEC, 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 and submit 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.
- 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.
- Send the Recipient a *CPR Agenda* with 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)

#### **CAM Products:**

- CPR Agenda
- 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 CEC 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.

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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 procured equipment.
  - The CEC's request for specific "generated" data (not already provided in Agreement products).
  - Need to document the Recipient's disclosure of "subject inventions" developed under the Agreement.
  - "Surviving" Agreement provisions such as repayment provisions and confidential products.
  - Final invoicing and release of retention.
- Prepare a *Final Meeting Agreement Summary* that documents any agreement made between the Recipient and Commission staff during the meeting.
- Prepare a *Schedule for Completing Agreement Closeout Activities*.
- Provide copies of *All Final Products* on a USB memory stick, organized by the tasks in the Agreement.

#### **Products:**

- Final Meeting Agreement Summary (*if applicable*)
- Schedule for Completing Agreement Closeout Activities
- All Final 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 Funds and in-state expenditures.

#### **Products:**

- Progress Reports
- Invoices

# Exhibit A

## Scope of Work

### Ubiquitous Energy

#### 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)
    - 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.

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- 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.

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

- A list of the match funds that identifies:
  - The amount of cash match funds, their source(s) (including a contact name, address, and telephone number), and the task(s) to which the match funds will be applied.
  - The amount of each in-kind contribution, a description of the contribution type (e.g., property, services), the documented market or book value, the source (including a contact name, address, and telephone number), and the task(s) to which the match funds will be applied. If the in-kind contribution is equipment or other tangible or real property, the Recipient must identify its owner and provide a contact name, address, telephone number, and the address where

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### **Ubiquitous Energy**

the property is located.

- If different from the solicitation application, provide 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.

- 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*)

## **Exhibit A Scope of Work Ubiquitous Energy**

- 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 each 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.
- 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.
- Help set the project team's goals and contribute to the development and evaluation of its statement of proposed objectives as the project evolves.
- Provide a credible and objective sounding board on the wide range of technical and financial barriers and opportunities.

## **Exhibit A**

### **Scope of Work**

### **Ubiquitous Energy**

- Help identify key areas where the project has a competitive advantage, value proposition, or strength upon which to build.
- Advocate, to the extent the TAC members feel is appropriate, on behalf of the project in its effort to build partnerships, governmental support and relationships with a national spectrum of influential leaders.
- Ask probing questions that insure a long-term perspective on decision-making and progress toward the project's strategic goals.

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.



## **Exhibit A**

### **Scope of Work**

### **Ubiquitous Energy**

#### **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.

#### **The TAC shall:**

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

#### **Products:**

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

#### **Subtask 1.12 Project Performance Metrics**

The goal of this subtask is to finalize key performance targets for the project based on feedback from the TAC and report on final results in achieving those targets. The performance targets should be a combination of scientific, engineering, techno-economic, and/or programmatic metrics that provide the most significant indicator of the research or technology's potential success.

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

- Complete and submit the project performance metrics from the Initial Project Benefits Questionnaire, developed in the Evaluation of Project Benefits task, to the CAM.
- Present the draft project performance metrics at the first TAC meeting to solicit input and comments from the TAC members.

## **Exhibit A Scope of Work Ubiquitous Energy**

- Develop and submit a *TAC Performance Metrics Summary* that summarizes comments received from the TAC members on the proposed project performance metrics. The *TAC Performance Metrics Summary* will identify:
  - TAC comments the Recipient proposes to incorporate into the Initial Project Benefits Questionnaire, developed in the Evaluation of Project Benefits task.
  - TAC comments the Recipient does not propose to incorporate with and explanation why.
- Develop and submit a *Project Performance Metrics Results* document describing the extent to which the Recipient met each of the performance metrics in the Final Project Benefits Questionnaire, developed in the Evaluation of Project Benefits task.
- Discuss the *Project Performance Metrics Results* at the Final Meeting.

### **Products:**

- TAC Performance Metrics Summary
- Project Performance Metrics Results

## **TECHNICAL TASKS**

### **TASK 2 EQUIPMENT PURCHASE AND INSTALLATION**

The goals of this task are to identify, purchase, and install all necessary equipment for LRIP production and support transition to Full-Rate Production (FRP) while ensuring best-value for the Recipient's Window Technology.

#### **Subtask 2.1 Develop Production and Sourcing Plan**

The goal of this subtask is to develop a production and sourcing plan to guide the prototype production line of Recipient's Window Technology.

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

- Establish raw material volume and schedule requirements.
- Finalize purchasing lead times of materials.
- Place materials orders for product builds.
- Create a *Production and Sourcing Plan* that includes but is not limited to:
  - Materials volume and parts.
  - Materials delivery timeline.
  - Costs.
  - Any identified risks/issues and resolutions.

#### **Products:**

- Production and Sourcing Plan (draft and final)

#### **Subtask 2.2 Identify Modification Requirements for the Production Line**

The goals of this subtask are to (1) define throughput limitations and define expansion requirements of equipment, (2) document and finalize equipment requirements and specifications for LRIP prior to initiating purchase.

## **Exhibit A**

### **Scope of Work**

### **Ubiquitous Energy**

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

- Conduct a throughput analysis of the Window Technology prototype line establishing limitations of current capability and identifying the key equipment areas for modification.
- Evaluate identified limitations in line Process Failure Mode Effects Analysis (PFMEA) and Design Failure Mode Effects Analysis (DFMEA) for LRIP requirements.
- Identify any equipment requirements or incremental material requirements for LRIP to FRP transition.
- Work with equipment manufacturers to specify the processes and equipment in the identified key limiting areas of the prototype manufacturing line.
- Identify any labor requirements for process and equipment operation and implement staffing plan with priority on training existing staff in operations.
- Prepare a *Consolidated LRIP/FRP List of Requirements* that includes but is not limited to:
  - Areas of critical equipment list;
  - Expected requirements for each identified equipment;
  - Estimated Costs;
  - Any identified risks/issues and resolutions;
  - Estimated Equipment Useful Life.
- Prepare a *Consolidated List of Equipment Schedules*. The list will identify all equipment purchases necessary to construct the Windows Technology prototype. It is expected that the list information may include the name of the equipment, the vendor name, the equipment lead time and expected delivery dates, and a brief description of the equipment. The consolidated list will provide CEC with a brief, yet informative overview of the equipment being used in the manufacturing process.

#### **Products:**

- Consolidated LRIP/FRP List of Requirements
- Consolidated List of Equipment Schedules

#### **Subtask 2.3 Purchase and Equipment Acceptance Tests at Vendor Sites**

The goals of this subtask are to (1) purchase identified equipment, (2) define necessary facility requirements for installation of equipment and (3) perform equipment inspection and sign-off at vendor sites prior to equipment shipment and delivery.

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

- Prepare a *Consolidated List of Equipment Invoices*. The list will accumulate all invoices received for equipment purchases necessary to construct the Window Technology prototype. It is expected that the invoice information may include the name of the equipment, the vendor name, and the equipment cost. The

## **Exhibit A Scope of Work Ubiquitous Energy**

consolidated list will provide CEC with a brief, yet informative overview of the equipment purchased for the manufacturing process.

- Assemble necessary drawings, facilities requirements for individual equipment and define installation space within existing line workflows.
- Prepare and execute on an *Installation Plan for New Equipment* which shall include floor space, location, build out and facilities requirements for incoming equipment.
- Prepare a *Test Plan for Acceptance Tests of New Equipment*. The Test Plan will define evaluation of the equipment expectations at the vendor site prior to shipping, and evaluations of the equipment once shipped and received.
- Define pre-delivery process qualification testing and provide materials to conduct evaluations.
- Visit supplier sites for training on proper usage of equipment, and pre-delivery equipment Acceptance Tests.
- Prepare a *Test Plan for Qualification of New Equipment*. The Test Plan will evaluate the control throughput expectations.

### **Products:**

- Consolidated List of Equipment Invoices
- Installation Plan for New Equipment
- Test Plan for Acceptance Tests of New Equipment
- Test Plan for Qualification of New Equipment

### **Subtask 2.4 Install and Final Acceptance Tests on New Equipment**

The goal of this subtask is to install new equipment into the Window Technology prototype line with minimal disruption of existing facility operations.

### **The Recipient shall:**

- Schedule and plan shipping and receiving of equipment according to line schedules.
- Receive and install new equipment in accordance with planned scheduling and Installation Plan for New Equipment deliverable per the previous task to minimize disruption for development activities and best effort to reduce non-operational time of the line.
- Create a *New Equipment Installation Report* that includes the equipment qualification sign-off procedures according to the Test Plan for Acceptance Tests of New Equipment deliverable per the previous task to verify equipment performance per tool specifications and complete purchasing.

### **Products:**

- New Equipment Installation Report

### **TASK 3 MODIFY PRODUCTION LINE**

The goals of this task are to (1) optimize production line performance through process and equipment modifications, (2) verify modified production line performance, and (3)

## **Exhibit A Scope of Work Ubiquitous Energy**

establish and implement controls for quality assurance during the Window Technology production process.

### **Subtask 3.1 Process Equipment Optimizations**

The goal of this subtask is to ensure that in the production line (1) the production line equipment will be able to operate at the specified throughput and, (2) the product performance is not degraded by line modifications.

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

- Conduct throughput studies to verify capability of line modifications.
- Run reference glass samples to validate that the entire production line with new equipment is operating as intended.
- Draft additional metrology and quality controls associated with line modifications.
- Modify equipment and process according to evaluation results until performance of verification plates meets specifications.
- Integrate individual processes into a functional and optimized process flow.
- Optimize the process associated with each piece of equipment and all materials required by the modified manufacturing process, including:
  - Handling and motion of Work-in-Progress (WIP) through line;
  - Product identification and tracking;
  - Product performance with storage and process timing/delays
  - Reliability performance of product packaging.
- Create an *Engineering Process Report* that includes but is not limited to:
  - A step-by-step analysis of the Windows Technology manufacturing workflow;
  - The equipment utilized during each step of the manufacturing process;
  - Success criteria and results for process evaluations; and
  - Any identified risks/issues and resolutions.

#### **Products:**

- Engineering Process Report (draft and final)

### **Subtask 3.2 Quality Monitoring Optimizations**

The goals of this subtask are to (1) establish capability of quality systems update to meet [Windows Technology production](#) line performance; (2) write the equipment Standard Operating Procedures (SOP); and (3) implement the process controls in line operations.

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

- Conduct throughput studies to verify capability of line modifications.
- Run verification plates through full process to evaluate product performance.

## **Exhibit A Scope of Work Ubiquitous Energy**

- Create a Standard Operating Procedure (SOP) that ensure the modified production line meets materials deposition and handling requirements.
- Establish metrologies for stabilizing operations using Statistical Process Control (SPC) data collection and analysis.
- Establish process control data collection and tracking for the various manufacturing processes.
- Create a *Quality Monitoring Engineering Report* that includes but is not limited to:
  - SOP documented for tool operation;
  - Defined metrics and tracking of key parameters to maintain tool operations;
  - Corrective and preventative actions for manufactured Window Technology prototypes that fall below established metrics; and
  - Any other tools and information to assist the technical personnel in successfully maintaining process quality.

### **Products:**

- Quality Monitoring Engineering Report (draft and final)

### **TASK 4 LOW SCALE PRODUCTION QUALIFICATION**

The goals of this task are to (1) Establish performance and quality standards for the Window Technology prototype and (2) Establish low rate production operations to run production of up to 2000 units per year.

#### **Subtask 4.1 Process Qualification of the Production Line**

The goal of this subtask is to ensure that the Window Technology production line will be able to operate at a level of yield and product performance in a repeatable and reproducible manner.

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

- Evaluate the Window Technology product with statistical verification of line performance metrics (yield, throughput) and product performance metrics (efficiency, color, reliability).
- Create a *Process Qualification Report* that includes but is not limited to:
  - Process control metrics and limits
  - Throughput analysis summary of the workflow
  - Verification results summary for product performance
  - Any identified risks/issues and resolutions.

### **Products:**

- Process Qualification Report (draft and final)

#### **Subtask 4.2 Product Qualification of the Production Line**

The goal of this subtask is to ensure that the final Insulated Glass Unit (IGU) product fabricated from the Window Technology production line will be able to operate at the

## **Exhibit A Scope of Work Ubiquitous Energy**

expected level of American Society for Testing and Materials (ASTM) and International Electrotechnical Commission (IEC) product performance in a repeatable and reproducible manner.

### **The Recipient shall:**

- Evaluate the Window Technology product with statistical verification of quality per windows product standards.
- Create a *Product Qualification Report* that includes but is not limited to:
  - Product Qualification test detail
  - Product Performance results and analysis summary
  - Verification results summary for product performance
  - Any identified risks/issues and resolutions.

### **Products:**

- Product Qualification Report (draft and final)

### **Subtask 4.3 Line Throughput Validation**

The goal of this subtask is to ensure and validate that the line can operate at and fulfil LRIP volumes of up to 2000 Window Technology units per year.

### **The Recipient shall:**

- Plan and execute a *Throughput Validation Build Schedule* that shall include manpower, operations, process schedules for a suitably representative time period.
- Create a *Throughput Validation Report* that includes but is not limited to:
  - Throughput analysis summary of the final workflow
  - Comparison of throughput to prior analysis
  - Any identified risks/issues and resolutions.

### **Products:**

- Throughput Validation Build Schedule
- Throughput Validation Report

### **Subtask 4.4 Line Monitoring**

The goal of this subtask is to develop low scale production monitoring for the Window Technology, root cause analysis, and continual improvement guidelines.

### **The Recipient shall:**

- Perform PFMEA through Window Technology line process steps and evaluate failure mechanisms and their underlying causes in resultant throughput validation product.
- Perform root cause analysis on yield loss of the Window Technology product.

## **Exhibit A Scope of Work Ubiquitous Energy**

- Run verification product through the line monitoring process as needed to evaluate failure mechanisms.
- Define any additional analysis and quality requirements for tracking failure mechanisms.
- Create a *Yield Improvement Proposal Report* that includes but is not limited to:
  - Summary of FMEA study
  - Final Product Failure Analysis
  - Failure Root Cause mechanisms and associated tracking implementations
  - Any identified risks/issues and resolutions.
- Prepare *CPR Report*

### **Products:**

- Yield Improvement Proposal Report
- CPR Report

### **TASK 5 PRODUCT INSTALLATION**

The goal of this task is to (1) develop pre-installation and installation policies and procedures for the Window Technology; (2) provide economic opportunities to small business, especially in low-income and disadvantaged communities; and (3) monitor quality and provide technical support during Window Technology product installation.

#### **Subtask 5.1 Develop Pre-Installation and Installation Process and Procedures**

The goal of this subtask is to establish a set of processes and standards for the Recipient's Window Product installation.

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

- Draft general requirements for the Window Product installation.
- Draft and describe installation options, including in-house assembly and on-site assembly.
- Draft and describe *Pre-Installation Requirements and Activities List* including but not limited to:
  - Obtaining building permits;
  - Modifying building infrastructure to fit the Recipient's Window Technology; and
  - Ensuring building modifications are up to code.
- Develop plan for storage and inventory.
- Create *Installation Guide* that includes but is not limited to:



## **Exhibit A Scope of Work Ubiquitous Energy**

- Transport and storage;
- Site handling and safety;
- Installation procedure;
- Electrical connection procedure;
- Installed test and buyoff procedure;
- Any identified risks/issues and resolutions.
- Review and revise Installation Guide as necessary.
- Finalize Installation Guide.

### **Products:**

- Installation Guide (draft and final)
- Pre-Installation Requirements and Activities List

### **Subtask 5.2 Identify Small Businesses to Perform Installation Activities**

The goal of this subtask is to (1) identify qualification requirements for small businesses to complete Window Technology pre-installation activities, (2) conduct market research of qualified small businesses, and (3) prioritize the use of small businesses in low-income and disadvantaged areas.

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

- Prepare a *Consolidated List of Qualifications*; The list will identify all educational and technical experience requirements for pre-installation activities of the Recipient's Windows.
- Verify technical and educational requirements through market research including:
  - Identifying similar work and the necessary qualifications.
  - Obtaining quotes from vendors who complete similar work; and
  - Adjusting the Recipient's qualifications based on market qualifications for like work.
- Identify qualified small businesses based on technical and educational experience.
- Identify and prioritize vendors in low-income and disadvantaged areas near large customer populations.
- Choose the most qualified vendors and create a *List of Chosen Vendors*

### **Products:**

- Consolidated List of Qualifications
- List of Chosen Vendors

### **Subtask 5.3 Train Vendors on Installation Process and Procedures**

The goal of this subtask is to develop and provide resources to support vendors completing pre-installation of Recipient's Windows.

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

- Use the Installation Guide and List of Pre-Installation Requirements and Activities List from subtask 5.1 to develop trainings.
- Conduct trainings on an as needed basis.

## **Exhibit A Scope of Work Ubiquitous Energy**

- Create *List of Technical Support Contacts* that includes the list of technical resources vendors can contact for support during and after installation of windows.

### **Products:**

- List of Technical Support Contacts

### **Subtask 5.4 Monitor Performance**

The goal of this subtask is to monitor the performance of (1) installation activities; and (2) solicit window installation customer feedback.

### **The Recipient shall:**

- Develop *Window Installation Schedule* that includes the timeline and major tasks required for successful installation of the windows by vendors at the customer site;
- Develop *Customer Satisfaction Survey* that solicits feedback from the installed windows customer and contains questions related to customer's overall assessment of installation of windows and their performance;
- Develop *Customer Satisfaction Report* that summarizes the feedback received from the installed windows customer.
- Analyze customer satisfaction survey and create *Installation Monitoring Report* to monitor installation performance.

### **Products:**

- Window Installation Schedule
- Customer Satisfaction Survey
- Customer Satisfaction Report
- Installation Monitoring Report

## **TASK 6 EVALUATION OF PROJECT BENEFITS**

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

### **The Recipient shall:**

- Complete the *Initial Project Benefits Questionnaire*. The Initial Project Benefits Questionnaire shall be initially completed by the Recipient with 'Kick-off' selected for the 'Relevant data collection period' and submitted to the CAM for review and approval.
- Complete the *Annual Survey* by December 15th of each year. The Annual Survey includes but is not limited to the following information:
  - Technology commercialization progress
  - New media and publications
  - Company growth
  - Follow-on funding and awards received
- Complete the *Final Project Benefits Questionnaire*. The Final Project Benefits Questionnaire shall be completed by the Recipient with 'Final' selected for the 'Relevant data collection period' and submitted to the CAM for review and approval.
- Respond to CAM questions regarding the questionnaire drafts.

## **Exhibit A**

### **Scope of Work**

### **Ubiquitous Energy**

- Complete and update the project profile on the CEC's public online project and recipient directory at [www.energizeinnovation.fund](http://www.energizeinnovation.fund), and provide *Documentation of Project Profile on EnergizeInnovation.fund*, including the profile link.
- If the Prime Recipient is an Innovation Partner on the project, complete and update the organizational profile on the CEC's public online project and recipient directory at [www.energizeinnovation.fund](http://www.energizeinnovation.fund), and provide *Documentation of Organization Profile on EnergizeInnovation.fund*, including the profile link.

#### **Products:**

- Initial Project Benefits Questionnaire
- Annual Surveys
- Final Project Benefits Questionnaire
- Documentation of Project Profile on [EnergizeInnovation.fund](http://EnergizeInnovation.fund)
- Documentation of Organization Profile on [EnergizeInnovation.fund](http://EnergizeInnovation.fund)

#### **TASK 7 TECHNOLOGY/KNOWLEDGE TRANSFER ACTIVITIES**

The goal of this task is to ensure the learning that resulted from this project is captured and disseminated so that similar efforts build on the lessons learned.

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

- Develop and submit a *Project Case Study Plan (Draft/Final)* that outlines how the Recipient will document the planning, construction, commissioning, and operation of the technology or system being demonstrated. The *Project Case Study Plan* should include:
  - An outline of the objectives, goals, and activities of the case study.
  - The expected impact if that learning is applied to future deployments.
  - The organization that will be conducting the case study and the plan for conducting it.
  - A list of professions and practitioners involved in the technology's deployment.
  - Specific activities the recipient will take to ensure the learning that results from the project is disseminated to those professions and practitioners.
  - Presentations/webinars/training events to disseminate the results of the case study.
- Present the *Draft Project Case Study Plan* to the TAC for review and comment.
- Develop and submit a *Summary of TAC Comments* that summarizes comments received from the TAC members on the *Draft Project Case Study Plan*. This document will identify:
  - TAC comments the recipient proposes to incorporate into the *Final Technology Transfer Plan*.
  - TAC comments the recipient does not propose to incorporate with and explanation why.
- Submit the *Final Project Case Study Plan* to the CAM for approval.
- Execute the *Final Project Case Study Plan* and develop and submit a *Project Case Study (Draft/Final)*
- When directed by the CAM, develop presentation materials for an CEC- sponsored conference/workshop(s) on the project.

**Exhibit A**  
**Scope of Work**  
**Ubiquitous Energy**

- When directed by the CAM, participate in annual EPIC symposium(s) sponsored by the CEC.
- 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.

**Products:**

- Project Case Study Plan (Draft/Final)
- Summary of TAC Comments
- Project Case Study (Draft/Final)
- High Quality Digital Photographs

**IV. PROJECT SCHEDULE**

Please see the attached Excel spreadsheet.

STATE OF CALIFORNIA

STATE ENERGY RESOURCES  
CONSERVATION AND DEVELOPMENT COMMISSION

RESOLUTION - RE: UBIQUITOUS ENERGY, 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 EPC-20-032 with Ubiquitous Energy, Inc. for a \$2,997,343 grant to accelerate commercialization of their innovative window coating technology prototype by advancing the pilot-scale manufacturing line to meet market entry production requirements. The transparent coating technology is applied directly to glass windowpanes to generate electricity and simultaneously provide high-energy efficiency by insulating the building from solar heat. Under this agreement, the recipient will develop and demonstrate manufacturing capabilities that achieve low-rate initial production levels; 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:

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Patricia Carlos  
Secretariat