



**CALIFORNIA
ENERGY COMMISSION**



**California Energy Commission
November 13, 2024 Business Meeting
Backup Materials for Berkeley Air Monitoring Group, Inc.**

The following backup materials for the above-referenced agenda item are available in this PDF packet as listed below:

1. Proposed Resolution
2. Grant Request Form
3. Scope of Work

[PROPOSED]

RESOLUTION NO: 24-1113-9b

STATE OF CALIFORNIA

**STATE ENERGY RESOURCES
CONSERVATION AND DEVELOPMENT COMMISSION**

RESOLUTION: Berkeley Air Monitoring Group, 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-24-002 with Berkeley Air Monitoring Group, Inc. for a \$1,999,984 grant. The agreement will fund a field study to quantify and characterize residents' exposure to indoor air pollutants generated from kitchen stoves (gas and induction) in multifamily homes. Specifically, the funded work will leverage the Ava Community Energy's gas-to-induction stove intervention taking place primarily in low-income and disadvantaged communities; and

FURTHER BE IT RESOLVED, that the Executive Director or their 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 November 13, 2024.

AYE:

NAY:

ABSENT:

ABSTAIN:

Dated:

Kristine Banaag
Secretariat



GRANT REQUEST FORM (GRF)

A. New Agreement Number

IMPORTANT: New Agreement # to be completed by Contracts, Grants, and Loans Office.

New Agreement Number: PIR-24-002

B. Division Information

1. Division Name: ERDD
2. Agreement Manager: Maninder Thind
3. MS-:None
4. Phone Number: 916-776-0819

C. Recipient's Information

1. Recipient's Legal Name: Berkeley Air Monitoring Group, Inc.
2. Federal ID Number: 26-3881064

D. Title of Project

Title of project: AERLIFT: Assessing Exposure to Residential Air Pollution for Low-Income Families with Gas and Electric Cooking Technologies

E. Term and Amount

1. Start Date: 12/02/2024
2. End Date: 3/31/2028
3. Amount: \$1,999,984.00

F. Business Meeting Information

1. Are the ARFVTP agreements \$75K and under delegated to Executive Director? No
2. The Proposed Business Meeting Date: 11/13/2024
3. Consent or Discussion? Discussion
4. Business Meeting Presenter Name: Maninder Thind
5. Time Needed for Business Meeting: 10 minutes.
6. The email subscription topic is: NaturalGas (NG Research Program).

Agenda Item Subject and Description:

Berkeley Air Monitoring Group, Inc. Proposed resolution approving agreement PIR-24-002 with Berkeley Air Monitoring Group, Inc. for a \$1,999,984 grant, and adopting staff's recommendation that this action is exempt from CEQA. The agreement will fund a field study to quantify and characterize residents' exposure to indoor air pollutants generated from kitchen stoves (gas and induction) in multifamily homes. Specifically, the funded work will leverage the Ava Community Energy's gas-to-induction stove intervention taking place primarily in low-income and disadvantaged communities.



G. California Environmental Quality Act (CEQA) Compliance

1. Is Agreement considered a “Project” under CEQA?

Yes

If yes, skip to question 2.

If no, complete the following (PRC 21065 and 14 CCR 15378) and explain why Agreement is not considered a “Project”:

2. If Agreement is considered a “Project” under CEQA answer the following questions.

a) Agreement **IS** exempt?

Yes

Statutory Exemption?

No

If yes, list PRC and/or CCR section number(s) and separate each with a comma. If no, enter “None” and go to the next question.

PRC section number: None

CCR section number: None

Categorical Exemption?

Yes

If yes, list CCR section number(s) and separate each with a comma. If no, enter “None” and go to the next question.

CCR section number: Cal. Code Regs., tit. 14, § 15306 ;

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

No

If yes, explain reason why Agreement is exempt under the above section. If no, enter “Not applicable” and go to the next section.

Cal. Code Regs., tit. 14; 15306 exempts basic data collection, research, experimental management, and resource evaluation activities which do not result in a serious or major disturbance to an environmental resource. These may be strictly for information gathering purposes, or as part of a study leading to an action which a public agency has not yet approved, adopted, or funded.

The proposed activities are to conduct applied research that will support a field study to quantify and characterize residents' exposure to indoor air pollutants generated from kitchen stoves (gas and induction) in multifamily homes, which falls within this categorical exemption. The activities consist of field data collection, paper studies, and laboratory work, including documenting, analyzing, and reporting results; conducting instrument cross-calibrations and analysis of pollutant samples and, collecting air quality and other data samples from various indoor residential locations in Alameda and San Joaquin counties. Data collection will take place at units in residential multifamily buildings. The project will use office and laboratory space in Alameda, Berkeley, and Richmond, CA for the storage and preparation of the planned air quality instrumentation and materials.



The project will not impact an environmental resource of hazardous or critical concern where designated, precisely mapped, and officially adopted pursuant to law by federal, state, or local agencies; does not involve any cumulative impacts of successive projects of the same type in the same place that might be considered significant; does not involve unusual circumstances that might have a significant effect on the environment; will not result in damage to scenic resources within a highway officially designated as a state scenic highway; the project site is not included on any list compiled pursuant to Government Code section 65962.5; and the project will not cause a substantial adverse change in the significance of a historical resource. Therefore, none of the exceptions to categorical exemptions listed in CEQA Guidelines section 15300.2 apply to this project and this project will not have a significant effect on the environment.

b) Agreement **IS NOT** exempt.

IMPORTANT: consult with the legal office to determine next steps.

No

If yes, answer yes or no to all that applies. If no, list all as “no” and “None” as “yes”.

Additional Documents	Applies
Initial Study	No
Negative Declaration	No
Mitigated Negative Declaration	No
Environmental Impact Report	No
Statement of Overriding Considerations	No
None	Yes

H. Is this project considered “Infrastructure”?

No

I. Subcontractors

List all Subcontractors listed in the Budget (s) (major and minor). Insert additional rows if needed. If no subcontractors to report, enter “No subcontractors to report” and “0” to funds.

Delete any unused rows from the table.

Subcontractor Legal Company Name	CEC Funds	Match Funds
The Regents of the University of California (Berkeley)	\$ 637,938	\$0
Stockholm Environment Institute	\$ 99,966	\$0
CSU, East Bay	\$ 96,682	\$0



J. Vendors and Sellers for Equipment and Materials/Miscellaneous

List all Vendors and Sellers listed in Budget(s) for Equipment and Materials/Miscellaneous. Insert additional rows if needed. If no vendors or sellers to report, enter "No vendors or sellers to report" and "0" to funds. **Delete** any unused rows from the table.

Vendor/Seller Legal Company Name	CEC Funds	Match Funds
No vendors to report	\$	\$

K. Key Partners

List all key partner(s). Insert additional rows if needed. If no key partners to report, enter "No key partners to report." **Delete** any unused rows from the table.

Key Partner Legal Company Name
No key partners to report

L. Budget Information

Include all budget information. Insert additional rows if needed. If no budget information to report, enter "N/A" for "Not Applicable" and "0" to Amount. **Delete** any unused rows from the table.

Funding Source	Funding Year of Appropriation	Budget List Number	Amount
NG Subaccount, PIERDD	21-22	501.001	\$ 1,999,984

TOTAL Amount: \$ 1,999,984

R&D Program Area: SRB: Sustainability and Health

Explanation for "Other" selection Not applicable

Reimbursement Contract #: Not applicable

Federal Agreement #:

M. Recipient's Contact Information

1. Recipient's Administrator/Officer

Name: Dana Charron

Address: 1935 Addison St. Suite A

City, State, Zip: Berkeley, CA 94704

Phone: Berkeley, CA 94704

E-Mail: dcharron@berkeleyair.com



2. Recipient's Project Manager

Name: Michael Johnson

Address: 116 N. College Ave. Unit #9

City, State, Zip: Fort Collins, CO 80524

Phone: (510) 649-9355

E-Mail: mjohnson@berkeleyair.com

N. Selection Process Used

There are three types of selection process. List the one used for this GRF.

Selection Process	Additional Information
Competitive Solicitation #	GFO-23-501
First Come First Served Solicitation #	Not applicable
Other	Not applicable

O. Attached Items

1. List all items that should be attached to this GRF by entering "Yes" or "No".

Item Number	Item Name	Attached
1	Exhibit A, Scope of Work/Schedule	Yes
2	Exhibit B, Budget Detail	Yes
3	CEC 105, Questionnaire for Identifying Conflicts	Yes
4	Recipient Resolution	No.
5	Awardee CEQA Documentation	No.

Approved By

Individuals who approve this form must enter their full name and approval date in the MS Word version.

Agreement Manager: Maninder Thind

Approval Date: 10/3/2024

Branch Manager: Alex Horangic

Approval Date: 10/4/2024

Director: Jonah Steinbuck (delegated to Manager)

Approval Date: N/A

Exhibit A
Scope of Work
Berkeley Air Monitoring Group, Inc.

I. TASK ACRONYM/TERM LISTS

A. Task List

Task #	CPR ¹	Task Name
1		General Project Tasks
2		Initial Project Planning
3	X	Training, Household Recruitment, and Piloting
4		Data Collection
5		Data Processing and Analysis
6		Data Visualization Dashboard Development
7		Evaluation of Project Benefits
8		Technology/Knowledge Transfer Activities

B. Acronym/Term List

Acronym/Term	Meaning
AERLIFT	The study name, short for “Assessing Exposure to Residential Air Pollution for Low-Income Families with Gas and Electric Cooking Technology”
Ava	Ava Community Energy, a Community Choice Aggregator
BTEX	Benzene, Toluene, Ethylbenzene, Xylenes
CAM	Commission Agreement Manager
CAO	Commission Agreement Officer
CEC	California Energy Commission
CO	Carbon Monoxide
CO ₂	Carbon Dioxide
CPR	Critical Project Review
GHG	Greenhouse Gases
NO ₂	Nitrogen Dioxide
SEI	Stockholm Environment Institute
TAC	Technical Advisory Committee

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

A. Purpose of Agreement

The purpose of this Agreement is to fund a field study to quantify and characterize residents' exposure to indoor air pollutants generated from kitchen stoves (gas and induction) in multifamily homes. Specifically, the funded work will leverage the Ava Community Energy's (Ava) gas-to-induction stove intervention taking place primarily in low-income and disadvantaged communities in California. Research resulting from this solicitation will provide an empirically grounded framework for quantifying air pollutant exposures from kitchen ranges in

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.

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varying multifamily housing conditions. This quantitative framework may, in turn, help guide future intervention policies such as building ventilation and electrification.

B. Problem/ Solution Statement

Problem

Natural gas stoves are the predominant residential stove type in California, with the state of California representing the second-highest natural gas saturation level at 88%. Current adoption rates of electric cooking in the state are insufficient to achieve stated energy and electrification goals. Globally, there are many cookstove intervention air quality and exposure studies; however, few domestic studies have characterized exposure to indoor pollutants associated with different cooking technologies, which is important for understanding the implications of energy transitions at the household level. In disadvantaged communities, the gas-to-electric energy transition has heightened importance, given that these populations typically suffer worse indoor air quality and associated health impacts. Moreover, historically, there has been a disproportionate emphasis on outdoor air pollution studies compared to indoor air pollution studies, with the latter only recently garnering increased emphasis and importance. This study will help to fill gaps that are needed to help California stakeholders make informed decisions about policies and pathways to maximize air quality benefits with investments in the energy transition.

Solution

This research will use Ava's Health-E Homes program as a foundation to characterize exposure across gas and induction stove users. The results will provide an empirical foundation for projecting how exposure to indoor air pollution may be impacted by California's energy transitions towards carbon-free electricity.

C. Goals and Objectives of the Agreement

Agreement Goals

The overall goal of this study is to provide an empirical basis on personal exposures to air pollutants associated with different cooking technologies to guide future intervention policies such as building ventilation and electrification in California.

Specific objectives include:

- Provide exposure estimates apportioned by location, time, and stove use events (measured directly), providing a more detailed understanding of how exposures are impacted specifically by cooking behaviors.
- Build a database of personal exposures to and corresponding kitchen concentrations of air pollutants of concern to adults and children in California, along with a suite of protocols for their measurement in future work.
- Provide a real-world exposure assessment on the exposure impacts of an intervention that targets health- and economically-vulnerable populations across a diverse setting (as it relates to housing stock, geographic, and demographic contexts). Ava's Health-E

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Communities program represents the types of interventions that address populations left behind by the Inflation Reduction Act and gas-ban/restriction policies.

- Apply a rigorous stepped-wedge study design with a large sample size of 300 homes with repeated measurements of adults, children, and kitchens (more than 1200 samples).
- An increased understanding of how ventilation patterns and practices influence exposure can be included as part of policy or programmatic implementation.
- Provide a more holistic exposure characterization of the household by including children, who are often the most vulnerable to health-damaging pollutants.
- Expand our understanding of environmental risks associated with stove type by quantifying exposure to a larger suite of health-damaging pollutants, including BTEX (benzene, toluene, ethylbenzene, and xylene), and PM_{2.5} elemental composition.
- Provide a user-friendly, interactive dashboard to visualize results tailored to the users' needs.
- Provide a framework for decision-making by projecting scenarios of the social, air quality, health, and economic benefits that would accrue given different policies/programmatic actions and associated investments.

Ratepayer Benefits:²

This project will analyze the economic and environmental benefits of transitioning to electric stoves, aiming to inform ratepayers about the potential impacts on their energy costs and exposure to air pollutants. By analyzing utility and induction stove power usage, the study will be able to estimate the monthly energy costs associated with electric stove usage. Additionally, it assesses air pollutant reductions resulting from the switch from gas to electric stoves, providing ratepayers with crucial information on the health and environmental advantages of electrification.

The Home Electrification Equity Tool (HEET) will further estimate the operating and capital costs of electric appliances. HEET enables contractors to quickly generate energy investment scenarios that account for available subsidies and financing options, offering ratepayers clear insights into the financial implications of transitioning to electric appliances. This tool will support residents and local governments in making informed decisions, tracking emission reductions, and understanding barriers to technology adoption. The outputs of this project will directly benefit ratepayers by providing detailed analyses that aid in financial decision-making and highlight the environmental benefits of electric stove use. The project aims to reduce barriers to clean energy adoption and stimulate interest in electric appliances, aligning with California's environmental goals and public health mandates.

² 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, http://docs.cpuc.ca.gov/PublishedDocs/WORD_PDF/FINAL_DECISION/167664.PDF).

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Technological Advancement and Breakthroughs:³ We do not anticipate specific technological breakthroughs, but will advance the science on how cooking energy transitions and ventilation impact low-income residents' exposure to household air pollution. This advancement will help inform pathways to overcoming barriers to achieving California's statutory energy goals. The potential exposure reductions would bolster the case for shifting from gas to electric cooking technologies, demonstrating the co-benefits of meeting the state's greenhouse gases (GHG) reduction targets as detailed in Assembly Bill and Senate Bill 32 (AB 32 and SB 32, respectively).

The cost-effectiveness analysis within the "Assessing Exposure to Residential Air Pollution for Low-Income Families with Gas and Electric Cooking Technology" (AERLIFT) study will help inform the California Energy Commission (CEC)'s Existing Buildings Energy Action Plan, contributing to the aims of AB 758, AB 3232, and SB 1477 by improving building efficiency. By assessing the economic benefits of electrification as well as those relating to air quality and pollutant exposures, the study will offer insights for optimizing resource use and formulating incentives for the adoption of electric appliances, ensuring policies align with the health and safety needs of all residents, especially those in disadvantaged communities.

Furthermore, the outcomes from AERLIFT will support the Electric Program Investment Charge (EPIC) program as outlined in AB 523, as well as the Clean Energy and Pollution Reduction Act of 2015 as outlined in SB 350, by pin-pointing cost-effective measures for reducing harmful pollutant exposure through electrification. This strategic approach aims to meet the objectives of promoting innovation and making energy transitions more accessible and advantageous across California's varied communities. Through a comprehensive assessment that includes both exposure impacts and the cost-effectiveness of transitioning from gas to electric cooking, AERLIFT will significantly contribute to practical solutions that address economic and technical barriers, thereby supporting California's ambitious energy and public health goals.

Agreement Objectives

The objectives of this Agreement are to:

Primary objectives

- Quantify longitudinal 48-hour personal exposures of primary cooks and children to PM_{2.5}, nitrogen dioxide (NO₂), Carbon Monoxide (CO), Carbon Dioxide (CO₂), black carbon, and elemental composition of PM_{2.5} of the primary cook and up to one child (3-10 years of age) in 300 low-income, multi-family homes before and after transitioning from gas to electric cooking, with the specific technologies used for cooking identified and documented.
- In a subset of 50 homes, repeat exposure measurements two more times (four total repeats) and complement with long-term kitchen monitoring, stove use, and venting hood measurements.
- Quantify the magnitude and frequency of short-term exposures associated with cooking events using real-time sensors.
- Characterize the relationships between ventilation mechanisms (including and with respect to compliance with *American Society of Heating, Refrigerating, and Air Conditioning Engineers* 62.2) and indoor pollutant concentrations and exposures.

³ 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.

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- Characterize and quantify the impacts of additional covariates on indoor pollutant concentrations and personal exposures, including housing geometry, cooking patterns, behaviors and activities, other indoor sources, and outdoor air pollution.
- Calculate changes in energy costs, greenhouse pollutant emissions, and the social cost of carbon resulting from the electric stove transition. To the extent possible, provide households with information about the potential health benefits of electrification based on exposure assessment results and provide estimates of the capital cost of solarization and essential efficient appliances, taking into account available subsidies and financing incentives.

Secondary objectives

- Characterize how wildfire smoke events impact exposures during the study period and which factors may be associated with differential exposures between participants during these events.
- Partition exposures experienced at home versus other environments.
- Characterize stove use and cooking patterns before and after transitioning to electric cooking technologies.
- Derive archetypical cooking cycles based on power regimes, timing, and foods, analogous to the Environmental Protection Agency drive cycles to test fuel efficiency, which can be recreated in the laboratory for detailed emissions measurements and other controlled testing.
- Support monitoring of household air quality interventions by developing more cost-effective and user-friendly methods.
- Quantify personal exposure in a subset of participants (N=50) to BTEX compounds.
- Evaluate methods for reducing kitchen-generated pollutants using behavioral triggers (i.e., signage to remind people to leave exhaust fans on and/or use venting hood).
- Evaluate avenues for exposure and health information dissemination in collaboration with Ava Community Energy.

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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**

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

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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. 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);
- Critical Project Review meetings (subtask 1.3);
- Match fund documentation (subtask 1.7);

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- 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 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.

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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(s)
- 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

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Berkeley Air Monitoring Group, Inc.

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 Technical Advisory Committee (TAC) for review and comment.
- Develop and submit a *Summary of TAC Comments on Draft Final Report* received on the Executive Summary. For each comment received, the recipient will identify in the summary the following:
 - Comments the recipient proposes to incorporate.

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- 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 on Draft Final Report
- 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

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address where 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.

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Products:

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

Subtask 1.9 Subcontracts

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

The Recipient shall:

- Manage and coordinate subcontractor activities in accordance with the requirements of this Agreement.
- Incorporate this Agreement by reference into each subcontract.
- Include any required Energy Commission flow-down provisions in each subcontract, in addition to a statement that the terms of this Agreement will prevail if they conflict with the subcontract terms.
- If required by the CAM, submit a draft of each *Subcontract* required to conduct the work under this Agreement.
- Submit a final copy of 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.

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- 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, 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.

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The Recipient shall:

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

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 section of 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.

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- 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

IV. TECHNICAL TASKS

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

TASK 2: INITIAL PROJECT PLANNING

The goals of this task are to collaborate with the CAM to refine the study design, develop training protocols, pilot the study, and begin household recruitment.

The Recipient shall:

- Initiate team discussions with the CAM to refine the study design to best address CEC goals and increase the utility of the study.
 - Submit the *Draft Study Plan* to the CAM following team discussions
 - Submit the *Final Study Plan* after addressing CAM’s comments.
- Apply for Institutional Review Board (IRB) approval as soon as possible to mitigate any risk of delays.
 - Submit *Documentation of IRB Approval* after approval is received from the IRB.
- Procure and prepare equipment and supplies, including the development of an inventory, checking functions and performance, and assigning instrument identifications.
- Prepare the quality assurance plan and data collection tools.
 - Prepare detailed written guidelines and instructions for all procedures.
 - Submit the *Quality Assurance Plan* and *Study Protocols Memo* to the CAM.

Products:

- Study Plan (draft and final)
- Documentation of IRB Approval
- Quality Assurance Plan
- Study Protocols Memo

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TASK 3: TRAINING, HOUSEHOLD RECRUITMENT, AND PILOTING

The goals of this task are to finalize training materials, begin training, pilot methodologies and the study, and begin household recruitment.

The Recipient shall:

- Recruit field staff and hire field technicians.
- Conduct site visits with Ava's staff to inform the development of study materials and recruitment approaches.
- Hold a TAC meeting to obtain feedback from TAC members before data collection.
- Develop training materials for participant recruitment, data collection, and data management (exposure, stove use, ventilation, and questionnaire) for an initial training workshop.
- Conduct a training workshop with technicians, and UCB and Ava staff as relevant.
- Pilot data collection procedures, protocols, and materials as detailed in the Study Protocols Memo.
- Refine and finalize data collection procedures, protocols, and materials.
- Recruit sample of 300 (or less, with approval of CAM) eligible participants (including the 50-participant (or less, with approval of CAM) subset that will receive two additional exposure measurements) in coordination with the Ava stove roll-out.
 - Prepare a *Training Protocols Report* following an on-site training.
- Prepare *CPR Report #1* in accordance with subtask 1.3 and participate in a CPR meeting.

Products:

- Training Protocols Report
- CPR Report #1

TASK 4: DATA COLLECTION

The goals of this task are to begin collecting data after training and piloting of data collection tools, and to maintain consistent communication between study partners and the local field teams.

The Recipient shall:

- Begin data collection following training and piloting of data collection tools.
- After informed consent is obtained during the recruitment process, technicians will:
 - Install exposure and kitchen equipment for pollutants, ventilation, and stove usage.
 - Collect basic demographic data on household area, volume, layout, and ventilation mechanisms.
 - Technicians will return at the end of the sampling period (48 hours) to collect instrumentation and conduct a follow-up survey on factors potentially impacting exposure and kitchen concentrations (including time activity and cooking diaries).
 - Technicians will repeat this process before and after the induction stove is installed, with two additional repeats in the subsample of long-term monitoring where stove use, ventilation, and kitchen concentrations will also be monitored continuously.

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- Utilize automated, cloud-based data uploads for air quality and surveys to facilitate rapid QA/QC and processing.
- Monitor (via trained data analysts) near real-time data uploads to watch for flags and instances where troubleshooting and/or swift communications with the field teams are needed.
- Facilitate laboratory analysis of gravimetric PM2.5 samples, black carbon, PM2.5 elemental composition, and passive badges for NO2 and BTEX compounds.
- Conduct at least one refresher training to check performance against procedures and protocols.
- Generate weekly data summaries for review by the study team
 - Prepare *Preliminary Data Summary* for the CAM prior to the next scheduled CPR meeting.

Products:

- Preliminary Data Summary

TASK 5: DATA PROCESSING, ANALYSIS, AND REPORTING

The goals of this task are to organize and prepare data collected from the field per standard protocols and to prepare the data for analysis.

The Recipient shall:

- Process and clean the data simultaneously with the data collection phase in Task 4.
- Organize and prepare data as per standard protocols and QA/QC processes, as outlined in the quality assurance plan, using databases for real-time data and annotated spreadsheets for the samples.
- Analyze data in accordance with the study plan and in alignment with the study objectives.
- Conduct cost-benefit analysis with forecasting scenarios. Specific scenarios and timeframes will be informed by discussions with the CAM.
- Prepare *Preliminary Results Report* to share with CAM.

Products:

- Preliminary Results Report

TASK 6: DATA VISUALIZATION DASHBOARD DEVELOPMENT

The goal of this task is to create a user-friendly, interactive dashboard to visualize results tailored to the users' needs. Users may be policy makers, community organizations, academics, or other parties interested in understanding the implications of energy transitions on exposure to air pollution.

The Recipient shall:

- Coordinate with the data visualization team, providing cleaned data sets and finalizing plans for the data visualization tool. SEI will host the tool, which will be open-access and available for at least five years following the conclusion of the contract.

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- Develop the first draft of Data Visualization Dashboard containing the data visualization tools for review by CAM and provide a *Data Visualization Dashboard Summary*, to include, but not be limited to; website link, website map, screen captures.
- Update and finalize visualization tools based on feedback, including CAM feedback regarding roll-out and application of the visualization tools through Task 8 (Knowledge Transfer).
- Conduct a TAC meeting to get feedback on data visualization approach and incorporate into the final Data Visualization Dashboard and provide a final *Data Visualization Dashboard Summary* to CAM.

Products:

- Data Visualization Dashboard Summary (draft and final)

TASK 7: EVALUATION OF PROJECT BENEFITS (*Mandatory task*)

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 January 31st 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.
- Complete and update the project profile on the CEC's public online project and recipient directory on the Energize Innovation website (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 on the Energize Innovation website (www.energizeinnovation.fund), and provide *Documentation of Organization Profile on EnergizeInnovation.fund*, including the profile link.

Products:

- Initial Project Benefits Questionnaire
- Annual Survey(s)
- Final Project Benefits Questionnaire
- Documentation of Project Profile on EnergizeInnovation.fund
- Documentation of Organization Profile on EnergizeInnovation.fund

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TASK 8: TECHNOLOGY/KNOWLEDGE TRANSFER ACTIVITIES (*Mandatory task*)

The goal of this task is to ensure the scientific and techno-economic analysis, and tools developed under this agreement are utilized in the energy policy, and/or planning decisions at the state and/or local levels, academic community and/or commercial sector.

The Recipient Shall:

- Develop and submit a *Knowledge Transfer Plan* that identifies the proposed activities the recipient will conduct to meet the goal of the task. The *Knowledge Transfer Plan* should include at a minimum:
 - Specific policy and planning efforts this project is expected to inform.
 - Specific stakeholder groups and energy policy and planning practitioners who will utilize the results of this project.
 - Proposed activities the recipient will conduct to ensure the tools and results from this project will be utilized and adopted by the groups identified above.
- Present the *Draft Knowledge Transfer Plan* to the TAC for feedback and comments.
- Develop and submit a *Summary of TAC Comments* that summarizes comments received from the TAC members on the *Draft Knowledge Transfer Plan*. This document will identify:
 - TAC comments the recipient proposes to incorporate into the *Final Knowledge Transfer Plan*.
 - TAC comments the recipient does not propose to incorporate, with an explanation why.
- Submit the *Final Knowledge Transfer Plan* to the CAM for approval.
- Implement the activities as described in the *Final Knowledge Transfer Plan*.
- Develop a *Knowledge Transfer Summary Report* that includes high level summaries of the activities, results, and lessons learned of tasks performed relating to implementing the Final Technology Transfer Plan. This report should not include any proprietary information.
- When directed by the CAM, develop presentation materials for an CEC- sponsored conference/workshop(s) on the project.
- When directed by the CAM, participate in annual EPIC symposium(s) sponsored by the California 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:

- Knowledge Transfer Plan (draft and final)
- Summary of TAC Comments
- Technology Transfer Summary Report (draft and final)
- High Quality Digital Photographs

V. PROJECT SCHEDULE

Please see the attached Excel spreadsheet.