



STATE OF CALIFORNIA

GRANT REQUEST FORM (GRF)

CEC-270 (Revised 12/2019)

CALIFORNIA ENERGY COMMISSION

A) New Agreement # EPC-19-005 (to be completed by CGL office)

| B) Division | Agreement Manager: | MS- | Phone |
|--------------------|---------------------------|------------|--------------|
| ERDD | Rachel Salazar | 51 | 916-445-5316 |

| C) Recipient's Legal Name | Federal ID Number |
|----------------------------------|--------------------------|
| Zero Net Energy Alliance, Inc. | 47-5562137 |

| D) Title of Project |
|---|
| Richmond Advanced Energy Community (AEC) Phase II Project |

E) Term and Amount

| Start Date | End Date | Amount |
|-------------------|-----------------|---------------|
| 3/2/2020 | 3/31/2025 | \$ 4,998,555 |

F) Business Meeting Information

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

Proposed Business Meeting Date 3/11/2020 ☐ Consent ☒ Discussion

Business Meeting Presenter Rachel Salazar Time Needed: 5 minutes

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

Agenda Item Subject and Description:

ZERO NET ENERGY ALLIANCE. Proposed resolution approving Agreement EPC-19-005 with Zero Net Energy Alliance, Inc. for a \$4,998,555 grant to fund the implementation of the Richmond Advanced Energy Community Phase 2 project, and adopting staff's determination that this action is exempt from CEQA. This project will demonstrate: (1) how community-based Distributed Energy Resource (DER) aggregations can effectively manage energy demand, local generation, storage, grid-integrated electric vehicles, and create multiple value streams for low-income customers; (2) how special financing can be used to rehabilitate abandoned and blighted properties to be Zero Net Carbon Ready Homes (all-electric); and (3) how a local benchmarking policy and data tools can be used to advance the project and also measure effectiveness. Physical construction will include adding advanced energy technologies to new and existing buildings in Richmond and optimally managing these solutions through a state-of-the-art DER platform. (EPIC funding)

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 and 15303.

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

Explain reason why Agreement is exempt under the above section: The grant project activities affecting the physical environment will include adding advanced Distributed Energy Resources (DER) technologies to existing and new buildings in Richmond, California. The buildings include single-family residential, multi-family residential, commercial, industrial, and public buildings. These DER technologies include energy efficiency retrofits, solar photovoltaic panels, storage batteries, and possibly water efficiency retrofits, along with a state-of-the-art, electronic DER management platform (hardware and software). CEQA exemptions under California Code of Regulations, title 14, sections 15301 and 15303 apply. Section 15301, "Existing buildings," covers the operation, maintenance, permitting, licensing, or minor alteration of existing public or private structures, facilities, mechanical equipment, or topographical features, involving negligible or no expansion of existing or former use. Section 15303, "New Construction or Conversion of Small Structures," covers construction and location of limited numbers of new, small facilities or structures; and installation of small new equipment and facilities in small structures. The additions and retrofits under the grant project fall within these parameters; therefore, the grant project is exempt under sections 15301 and 15303. Also, the Lead Agency under CEQA is the City of Richmond. The City approved the project and found it to be exempt under CEQA (CEQA Notice of Exemption dated 9/11/2018).

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

Check all that apply

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

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

| Legal Company Name: | Budget |
|--|---------------|
| Olivine, Inc. | \$ 1,846,000 |
| Cohen Ventures, Inc. dba Energy Solutions | \$ 1,377,344 |
| City of Richmond | \$ 345,715 |
| TRC Solutions, Inc. | \$ 199,906 |
| The Local Government Commission | \$ 99,000 |
| Richmond Community Foundation | \$ 95,750 |
| Blue Strike Environmental, Inc. | \$ 95,000 |
| Chaumette Consulting | \$ 41,250 |
| Asian Pacific Environmental Network (APEN) | \$ 30,000 |
| NHA Advisors, LLC | \$ 25,000 |
| Orrick, Herrington & Sutcliffe LLP | \$ 35,000 |



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| Legal Company Name: | Budget |
|---|---------------|
| KILOWATT ENGINEERING, INC. dba kW Engineering, Inc. | \$ 20,000 |
| GRID Alternatives Bay Area, Inc. (Match Only) | \$ 0 |

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

| Legal Company Name: |
|----------------------------|
| |
| |
| |
| |

J) Budget Information

| Funding Source | Funding Year of Appropriation | Budget List Number | Amount |
|-----------------------|--------------------------------------|---------------------------|---------------|
| EPIC | 19-20 | 301.001G | \$4,998,555 |
| | | | \$ |
| | | | \$ |
| | | | \$ |

R&D Program Area: EDMFO: EDMF

TOTAL: \$ 4,998,555

Explanation for "Other" selection

Reimbursement Contract #: Federal Agreement #:

K) Recipient's Contact Information**1. Recipient's Administrator/Officer**

Name: Sharon Tobar

Address: 744 Eureka Ave

City, State, Zip: Davis, CA 95616-3647

Phone: 916-869-7211

E-Mail: SharonT@znealliance.net

2. Recipient's Project Manager

Name: Richard Schorske

Address: 744 Eureka Ave

City, State, Zip: Davis, CA 95616-3647

Phone: 415-310-2407

E-Mail: richards@znealliance.net

L) Selection Process Used☒ Competitive Solicitation Solicitation #: GFO-15-312, Phase II☐ First Come First Served Solicitation Solicitation #:**M) The following items should be attached to this GRF**

- | | |
|--|--|
| 1. Exhibit A, Scope of Work | <input checked="" type="checkbox"/> Attached |
| 2. Exhibit B, Budget Detail | <input 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 |



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CALIFORNIA ENERGY COMMISSION

Agreement Manager

Date

Office Manager

Date

Deputy Director

Date

EXHIBIT A

Scope of Work

Zero Net Energy Alliance, Inc.

I. TASK ACRONYM/TERM LISTS

A. Task List

| Task # | CPR ¹ | Task Name |
|--------|------------------|--|
| 1 | | General Project Tasks |
| 2 | X | DER Community Program |
| 3 | | Zero Net Carbon Ready Homes Program |
| 4 | | Independent Measurement & Verification |
| 5 | | Evaluation of Project Benefits |
| 6 | | Technology/Knowledge Transfer Activities |

B. Acronym/Term List

| Acronym/Term | Meaning |
|----------------|--|
| AEC | Advanced Energy Community. In summary, these are communities that: minimize the need for new energy infrastructure costs; provide energy savings and local greenhouse gas emission reductions; support grid reliability and resiliency; provide easier grid integration; are replicable; financially attractive to multiple stakeholders; provide affordable access to clean energy technologies to reduce electricity consumption; use smart-grid technologies; and align with state energy and environmental policy goals at the community level. ² |
| API | Application Programming Interface |
| C&I | Commercial & Industrial |
| CAM | Commission Agreement Manager |
| CAO | Commission Agreement Officer |
| CPR | Critical Project Review |
| DAC | Disadvantaged Community |
| DER | Distributed Energy Resources |
| kW | Kilowatt |
| LMI | Low and Middle Income |
| M&V | Measurement & Verification |
| PII | Personally Identifiable Information |
| PV | Photovoltaic |
| RFQ | Request for Quote |
| SMB | Small and Medium Business |
| TAC | Technical Advisory Committee |
| ZNC | Zero Net Carbon |
| ZNCR | Zero Net Carbon Ready |

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.

² For purposes of this agreement, please refer to the full definition of Advanced Energy Communities in the solicitation manual for GFO-15-312, titled: *The EPIC Challenge: Accelerating the Deployment of Advanced Energy Communities Phase II*.

EXHIBIT A
Scope of Work
Zero Net Energy Alliance, Inc.

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

A. Purpose of Agreement

The purpose of this Agreement is to fund the implementation of the City of Richmond's Advanced Energy Community – Phase II. Phase I took place from 2016 to 2018, and established an integrated policy, planning and program framework to transform a portion of the City of Richmond into a grid-integrated ZNE community using forward-looking policies that integrate energy, land-use and transportation planning, and progressive municipal financing mechanisms. The Final Report on Phase I can be found on the California Energy Commission's publications webpage, located at: <https://www.energy.ca.gov/2018publications/CEC-500-2018-031/CEC-500-2018-031.pdf>.

The increasing amount of intermittent renewable generation coming on the grid is creating significant challenges for utilities and grid operators to reliably manage supply and demand. To balance the grid and achieve California's climate and clean energy goals, more DERs must be deployed (especially storage), and more load must be enabled for flexible management. Additionally, the state must reduce greenhouse gas emissions in existing buildings to achieve its energy efficiency and decarbonization goals, while also providing more affordable housing for lower income households and Disadvantaged Communities. Despite high demand for affordable housing, a decade after the 2008 housing market crash, the City of Richmond still has hundreds of abandoned, blighted and/or distressed properties in urgent need of renovation

B. Problem/ Solution Statement

Problem

To achieve robust zero emissions targets, cities and load-serving entities require advanced energy solutions that enable the cost-effective deployment and integration of distributed and renewable energy resources, and the cost-efficient rehabilitation of homes to a near Zero Net Carbon standard.³ Achieving these outcomes in disadvantaged communities requires a combination of innovative technology, scaled finance, and the inclusive engagement of cities, NGOs, and community residents.

Solution

The recipient will address this challenge by: (1) Implementing a DER Community program that optimizes economic and resilience value at the community and grid level, while directing new revenues and societal benefits to low-income residents in Richmond; and (2) As part of the DER community, implementing a grid-integrated Zero Net Carbon Ready (ZNCR)⁴ Homes Program which rehabilitates blighted homes to ZNCR status and enables their re-sale as affordable infill properties to low-to-middle income residents using capital provided by Social Impact Bonds. The scale-up of these strategies to other California communities will be supported by development of an AEC Resource Center and preparation of an AEC Solutions Toolkit.

³ The World Green Building Council definition of a net zero carbon building is a building that is highly energy efficient and fully powered from on-site and/or off-site renewable energy sources.

⁴ Homes with all electric features that will be considered truly "Zero Net Carbon" once the grid/power source is considered to be zero carbon.

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Zero Net Energy Alliance, Inc.

C. Goals and Objectives of the Agreement

Agreement Goals

The goals of this Agreement are to:

- Implement and operate a DER Community to lower cost and increase community resilience⁵
- Demonstrate the technical and economic feasibility of all-electric home technology packages in the retrofit and construction of affordable homes
- Scale deployment of best-in-class AEC technical & finance strategies in DACs and throughout California

Ratepayer Benefits:⁶ This Agreement will result in the ratepayer benefits greater reliability, lower costs and increased safety. Reliability will be improved by (1) enabling a DER aggregation to balance local generation, storage, building loads, and grid-integrated EVs mitigate the evening ramp period; (2) deploying grid-tied devices into residences and businesses to expand the DER aggregation, and (3) through ZNCR whole-house retrofit strategies⁷ and building electrification, reducing peak demand permanently. Lower costs will be achieved through (1) energy efficiency savings; (2) properly constructed, commissioned and maintained energy systems, (3) grid services and price arbitrage (to be conducted by the project team); (4) avoiding costly transmission and distribution upgrades. Increased safety is achieved by means of: (1) reducing the dangers of gas leak and explosions by endeavoring to replace natural gas appliances in residences; (2) decreasing the likelihood that contractors install devices in an unsafe manner (both to themselves and others).

Technological Advancement and Breakthroughs:⁸ This Agreement will support the development and commercialization of technological advancements and breakthroughs that overcome barriers to the achievement of the State of California's statutory energy goals by (1) demonstrating how DER Aggregations can effectively balance local generation, storage, building loads, and grid-integrated EVs to simultaneously reduce transmission and distribution costs – which are a rapidly increasing portion of customer bills – provide value to local residents and communities; (2) demonstrating how a Social Impact Bond⁹ can be used to rehabilitate abandoned, blighted and distressed properties to be ZNCR and sell them at market rates to low-

⁵ For this project, community resilience is defined as the ability of a community-based DER portfolio to minimize the probability of grid outages and disruptions, minimize the impacts of grid outages to the community, and increase the ability of the grid to quickly recover from grid outages and disruptions.

⁶ 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).

⁷ Whole house retrofit strategies refers to a package of comprehensive technology solutions that maximizes the efficiency of the different components and systems within a home.

⁸ 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.

⁹ Social Impact Bonds are contracts with the public sector or governing authority, whereby it pays for better social outcomes in certain areas and passes on part of the savings to investors.

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to-middle income first-time homebuyers; and (3) demonstrating how a local benchmarking policy can initiate the customer's energy savings journey when coupled with tools to streamline retrofit project identification, connections to project financiers and qualified contractors, DER program enrollment, and a revolutionary energy efficiency financing model that overcomes the tenant/landlord split incentive.

Agreement Objectives

The objectives of this Agreement are to:

- Grow the DER Community Program in Phase II to commercial & industrial customers, small-to-medium businesses, and residential homes.
- Deploy 962 kW of solar Photovoltaic (PV), 2056 kWh of energy storage, and 1.5MW of flexible load resources utilizing leveraged public and private financing to capture new DER value streams.
- Validate community program software tools to streamline customer enrollment and participation in the highest value distributed energy resources and demand response programs and markets.
- Demonstrate the value of managing and optimizing diverse aggregations of distributed energy resources to maximize customer value (especially for low income residents) and firm local renewables, creating value through carbon reduction, resiliency, lower costs, and economic development.
- Demonstrate a minimum of six diverse ZNCR building packages, optimized for cost-efficiency and tailored to home owner and community need.
- Engage, educate, and train end-users about advanced all-electric building design, installation and commissioning, end-users may include but is not limited to the following:
 - prospective, new and existing homeowners;
 - City staff;
 - Developers; and
 - Contractors and trade professionals
- Support the adoption of Social Impact Bonds through technology transfer in communities throughout the state – with an emphasis on DACs in the Bay Area, Sacramento, and San Joaquin Valley regions, as described in the Technology/Knowledge Transfer Plan prepared under Task 6.
- Create case studies, toolkits, and guidebooks to assist other local governments with AEC planning, design, buildout, and operations.
- Develop an AEC Finance Task Force to package and scale-up proven public-private funding models to other cities in California, with an emphasis on disadvantaged communities.

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)**. Products that require a draft version are

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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

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

For products that require a final version only

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

For all products

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

- **Electronic File Format**

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

The following describes the accepted formats for electronic data and documents provided to the Energy Commission as products under this Agreement, and establishes the software versions that will be required to review and approve all software products:

- Data sets will be in MS Access or MS Excel file format (version 2007 or later), or any other format approved by the CAM.
- Text documents will be in MS Word file format, version 2007 or later.
- Documents intended for public distribution will be in PDF file format.
- The Recipient must also provide the native Microsoft file format.
- Project management documents will be in Microsoft Project file format, version 2007 or later.

- **Software Application Development**

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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 Energy Commission's Information Technology Services Branch to determine whether the exceptions are allowable.

MEETINGS

Subtask 1.2 Kick-off Meeting

The goal of this subtask is to establish the lines of communication and procedures for implementing this Agreement.

The Recipient shall:

- Attend a "Kick-off" meeting with the CAM, the Commission Agreement Officer (CAO), and any other Energy Commission staff relevant to the Agreement. The Recipient will bring its Project Manager and any other individuals designated by the CAM to this meeting. The administrative and technical aspects of the Agreement will be discussed at the meeting. Prior to the meeting, the CAM will provide an agenda to all potential meeting participants. The meeting may take place in person or by electronic conferencing (e.g., WebEx), with approval of the CAM.

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

- Terms and conditions of the Agreement;
- Administrative products (subtask 1.1);
- CPR meetings (subtask 1.3);
- Match fund documentation (subtask 1.7);
- Permit documentation (subtask 1.8);
- Subcontracts (subtask 1.9); and
- Any other relevant topics.

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

- The CAM's expectations for accomplishing tasks described in the Scope of Work;
- An updated Project Schedule;

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- Technical products (subtask 1.1);
 - Progress reports and invoices (subtask 1.5);
 - Final Report (subtask 1.6);
 - Technical Advisory Committee meetings (subtasks 1.10 and 1.11); and
 - Any other relevant topics.
- Provide an *Updated Project Schedule*, *List of Match Funds*, and *List of Permits*, as needed to reflect any changes in the documents.

The CAM shall:

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

Recipient Products:

- Updated Project Schedule (*if applicable*)
- Updated List of Match Funds (*if applicable*)
- Updated List of Permits (*if applicable*)

CAM Product:

- Kick-off Meeting Agenda

Subtask 1.3 Critical Project Review (CPR) Meetings

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

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

The Recipient shall:

- Prepare a *CPR Report* for each CPR meeting that: (1) discusses the progress of the Agreement toward achieving its goals and objectives; and (2) includes recommendations and conclusions regarding continued work on the project.
- Submit the CPR Report along with any other *Task Products* that correspond to the technical task for which the CPR meeting is required (i.e., if a CPR meeting is required for Task 2, submit the Task 2 products along with the CPR Report).
- Attend the CPR meeting.

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- 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* and a *List of Expected CPR Participants* in advance of the CPR meeting. If applicable, the agenda will include a discussion of match funding and permits.
- Conduct and make a record of each CPR meeting. Provide the Recipient with a *Schedule for Providing a Progress Determination* on continuation of the project.
- Determine whether to continue the project, and if so whether modifications are needed to the tasks, schedule, products, or budget for the remainder of the Agreement. If the CAM concludes that satisfactory progress is not being made, this conclusion will be referred to the Deputy Director of the Energy Research and Development Division.
- Provide the Recipient with a *Progress Determination* on continuation of the project, in accordance with the schedule. The Progress Determination may include a requirement that the Recipient revise one or more products.

Recipient Products:

- CPR Report(s)
- Task Products (draft and/or final as specified in the task)

CAM Products:

- CPR Agenda
- List of Expected CPR Participants
- Schedule for Providing a Progress Determination
- Progress Determination

Subtask 1.4 Final Meeting

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

The Recipient shall:

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

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

- The technical portion of the meeting will involve the presentation of findings, conclusions, and recommended next steps (if any) for the Agreement. The CAM will determine the appropriate meeting participants.
- The administrative portion of the meeting will involve a discussion with the CAM and the CAO of the following Agreement closeout items:
 - Disposition of any state-owned equipment.
 - Need to file a Uniform Commercial Code Financing Statement (Form UCC-1) regarding the Energy Commission's interest in patented technology.

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

Products:

- Final Meeting Agreement Summary (*if applicable*)
- Schedule for Completing Agreement Closeout Activities
- All Draft and Final Written Products

REPORTS AND INVOICES

Subtask 1.5 Progress Reports and Invoices

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

The Recipient shall:

Submit a monthly *Progress Report* to the CAM. Each progress report must:

- Summarize progress made on all Agreement activities as specified in the scope of work for the preceding month, including accomplishments, problems, milestones, products, schedule, fiscal status, and an assessment of the ability to complete the Agreement within the current budget and any anticipated cost overruns. See the Progress Report Format Attachment for the recommended specifications.
- Submit a monthly or quarterly *Invoice* that follows the instructions in the "Payment of Funds" section of the terms and conditions. In addition, each invoice must document and verify:
 - Energy Commission funds received by California-based entities;
 - Energy Commission funds spent in California (*if applicable*); and
 - Match fund expenditures.

Products:

- Progress Reports
- Invoices

Subtask 1.6 Final Report

The goal of this subtask is to prepare a comprehensive Final Report that describes the original purpose, approach, results, and conclusions of the work performed under this Agreement. The CAM will review the Final Report, which will be due at least **two months** before the Agreement

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end date. When creating the Final Report Outline and the Final Report, the Recipient must use a 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 *Style Manual* provided by the CAM.
- Submit a draft of the outline to the CAM for review and comment.
- Once agreement has been reached on the draft, submit the final outline to the CAM. The CAM will provide written approval of the final outline within 10 days of receipt.

Recipient Products:

- Final Report Outline (draft and final)

CAM Product:

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

Subtask 1.6.2 Final Report

The Recipient shall:

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

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Scope of Work

Zero Net Energy Alliance, Inc.

- If it's necessary to use a technical term in the Executive Summary, provide a brief definition or explanation when the technical term is first used.
- Follow the Style Guide format requirements for headings, figures/tables, citations, and acronyms/abbreviations.
- Ensure that the document omits subjective comments and opinions. However, recommendations in the conclusion of the report are allowed.
- Include a brief description of the project results in the Abstract.
- Submit a draft of the report to the CAM for review and comment. The CAM will provide written comments to the Recipient on the draft product within 15 days of receipt.
- Submit one bound copy of the *Final Report* to the CAM along with *Written Responses to Comments on the Draft Final Report*.

Products:

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

CAM Product:

- Written Comments on the Draft Final Report

MATCH FUNDS, PERMITS, AND SUBCONTRACTS

Subtask 1.7 Match Funds

The goal of this subtask is to ensure that the Recipient obtains any match funds planned for this Agreement and applies them to the Agreement during the Agreement term.

While the costs to obtain and document match funds are not reimbursable under this Agreement, the Recipient may spend match funds for this task. The Recipient may only spend match funds during the Agreement term, either concurrently or prior to the use of Energy Commission funds. Match funds must be identified in writing, and the Recipient must obtain any associated commitments before incurring any costs for which the Recipient will request reimbursement.

The Recipient shall:

- Prepare a *Match Funds Status Letter* that documents the match funds committed to this Agreement. If no match funds were part of the proposal that led to the Energy Commission awarding this Agreement and none have been identified at the time this Agreement starts, then state this in the letter.

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

- 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

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or other tangible or real property, the Recipient must identify its owner and provide a contact name, address, telephone number, and the address where the property is located.

- If different from the solicitation application, a copy of a letter of commitment from an authorized representative of each source of match funding that the funds or contributions have been secured.
- At the Kick-off meeting, discuss match funds and the impact on the project if they are significantly reduced or not obtained as committed. If applicable, match funds will be included as a line item in the progress reports and will be a topic at CPR meetings.
- Provide a *Supplemental Match Funds Notification Letter* to the CAM of receipt of additional match funds.
- Provide a *Match Funds Reduction Notification Letter* to the CAM if existing match funds are reduced during the course of the Agreement. Reduction of match funds may trigger a CPR meeting.

Products:

- Match Funds Status Letter
- Supplemental Match Funds Notification Letter (*if applicable*)
- Match Funds Reduction Notification Letter (*if applicable*)

Subtask 1.8 Permits

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

The Recipient shall:

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

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

- 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 the executed subcontract.
- Notify and receive written approval from the CAM prior to adding any new subcontractors (see the discussion of subcontractor additions in the terms and conditions).

Products:

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

TECHNICAL ADVISORY COMMITTEE

Subtask 1.10 Technical Advisory Committee (TAC)

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

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

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.

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- Prepare *TAC Meeting Summaries* that include any recommended resolutions of major TAC issues.

Products:

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

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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 DER COMMUNITY PROGRAM

The goals of this task are to: (1) Manage and expand upon DER aggregations that encompass solar PV, energy storage, demand response, and electric vehicle supply equipment (EVSE) located at large commercial & industrial (C&I), municipal, business, and residential sites; and (2) Provide incentives and direct support to households to enable participation in the DER Community, support energy education, and spur local economic development.

Subtask 2.1 Phase II Relaunch of DER Community Program

The goal of this task is to relaunch the DER Community subprograms customized for individual customer segments building upon lessons learned from Phase I and from the Olivine Community Energy Initiative (which was further developed by Olivine during the period between the EPIC-supported Phase I and Phase II AEC projects).

The Recipient shall:

- Ensure that all regulatory requirements are met to enable full use of Olivine’s existing DER Platform,¹⁰ for local and overall grid reliability. This includes review and analysis of participant’s historical energy use data, regulatory reviews, regulatory agreements and appropriate authorizations.
- Assist DER Community grant partners who receive equipment funding through the grant to shepherd them through the equipment installation and configuration processes as they relate to provision of grid services. Requirements will be documented in the *DAC Community Program Participation Guide*.
- Document the projects during construction of *pre- and post-technology installation with high-quality digital photographs*.
- Assist DER Community participants to integrate resources into the DER Platform and provide troubleshooting for the following DAC customer sectors: Residential, SMB, Municipal and County, and C&I.
- Define the capabilities of community participants in different utility retail programs and grid services markets and determining energy savings and revenue generation potential.
- Document all applicable elements of the DER Community subprograms in DAC Community Program Participation Guide.
- Utilize the DER Platform to signal events and control energy usage based on technology capabilities at each participating site.
- Execute test events to assess capabilities before transitioning participants into ongoing operations.
- Document results of integration efforts, and prepare a *Test Events Report* that includes the outcomes of the test events.
- Prepare a *CPR Report #1* in accordance with subtask 1.3 (CPR Meetings).
- Participate in a CPR meeting.

¹⁰ Olivine DER Platform is described in the Project Narrative of the proposal (see pages 21 and 25).

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Products:

- DAC Community Program Participation Guide (draft and final)
- Pre and Post Technology Installation High-Quality Digital Photographs #1
- Test Events Report
- CPR Report #1

Subtask 2.2 Modify Existing DER Community Technology Suite

The goal of this task is to customize, enhance, and scale the suite of technologies associated with the Richmond DER Community Program¹¹ (managed by Olivine) based on customer needs.

The Recipient shall:

- Gather and document requirements for integrating participants' resources with the DER Platform, including technical specifications for APIs, communications protocols, software, metering, telemetry, cost curve development, interaction sequences, and dispatch notifications.
- Integrate advanced forecasting functionality based on analysis of ongoing data streams to determine future capacity availability within the clean energy portfolio that is managed by Olivine, as well as value stream opportunities and market potential.
- Implement strategies in the DER Platform, utilizing customer delivery costs, developed forecasts, and real-time data to optimize for energy cost savings, demand charge savings, grid services revenues, and other benefits of the Community.
- Gather requirements, design, develop, test, and deploy customized options for the suite of technologies associated with the Richmond DER Community program: DER Platform, DER Community App, and DER Community Website and Webstore. Assets will be integrated into the customized DER Community program for the Richmond AEC. The results of any Richmond AEC enhanced features or upgrades will be included in a *DER Community Use Case and Technical Requirements Report*, which will include several use case scenarios as determined by the CAM and Recipient.

Products:

- DER Community Use Case and Technical Requirements Report (draft and final)

Subtask 2.3 DER Community Marketing, Education & Outreach

The goal of this task is to expand the DER Community subprograms to additional customers in the Richmond DAC census tracts and, in particular, to traditionally hard-to-reach residential and SMB customer segments.

The Recipient shall:

- Develop *DAC Community Program Marketing Plan*, incentives, and *DAC Community Outreach Materials* that identify customer needs and support recruitment efforts of additional community participants.

¹¹ The Richmond DER Community Program, managed by Olivine, is a novel and innovative approach that provides hard-to-reach and underserved customer segments with greater access to DERs and the benefits of DERs, including carbon reduction, grid resilience, lower energy costs, and economic development. The DER Community Program is designed to enable rapid growth in participation among all utility and Direct Access customers, including PG&E and MCE, and provides the flexible program options required to meet local needs as they arise.

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- Adopt approved methodology developed by Olivine for customer targeting and identification based on a data-driven process for identifying low-income and other vulnerable customers in disadvantaged communities for engagement in the DER Community program.
- Work with project partners, to coordinate customer targeting, identification, and engagement strategies to ensure maximum participation and benefits for vulnerable/disadvantaged customers within DAC census tracts.
- Conduct integrated data analysis identifying opportunities for low-to-no-cost energy and services for low-income customers in DAC census tracts.
- Execute on recruiting activities as described in the marketing plan to recruit and enroll participants in the DER Community, including registering participants, as needed, in utility retail programs and California Independent System Operator wholesale markets. Examples of recruiting activities could include hosting and tabling at community events in the City of Richmond (e.g., at churches, farmer's markets, community meetings, etc.), social media campaigns, direct mail campaigns, etc.
- Conduct community outreach events with project partners to encourage the enrollment of additional participants into the DER Community. Results from outreach activities will be documented in the *Richmond DER Community Program Case Study*.
- Provide facility audits for interested SMB customers in order to educate facility owners and operators, and make recommendations on facility operational changes and energy equipment upgrades that could enhance the value from participating in DER and Demand Response programs. The audit reports will be included as Appendices to the *Richmond DER Community Program Case Study*.

Products:

- DAC Community Program Marketing Plan (draft and final)
- DAC Community Outreach Materials
- Richmond DER Community Program Case Study

Subtask 2.4 Operate, Enhance, and Scale DER Community

The goal of this task is to operate and maintain the DER Community program, enhance the program offerings for each customer segment over time, and scale the Community with new capabilities and service offerings.

The Recipient shall:

- Provide ongoing operations support to the Community via the DER Platform including: a) bid management services to optimize the value of the managed energy portfolio in providing grid services, b) ongoing coordination with Community participants to achieve a high level of satisfaction relative to revenue generation, minimal disruption to operations, and financial risk tolerance.
- Provide *Quarterly Progress Reports* of key performance indicators on the DER Community Program.
- Monitor utility programs and grid services markets to ensure that resource bidding strategies are capturing the highest value based on current and forecasted market prices.
- Support the large commercial, industrial, and municipal facility participants by providing timely and accurate information to support their behind-the-meter optimization strategies

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to maximize the value of energy cost savings, demand charge savings, grid services market revenues, and other stacked value streams, and to minimize the risk of underperformance in response to dispatch notifications.

- Provide notifications to participants of upcoming market dispatches, that includes but is not limited to the following:
 - text messaging
 - phone calls
 - an existing smart phone app
 - or through connected APIs
- Provide settlement calculations within the DER Platform, which will be used to verify resource performance within grid services markets as well as to facilitate processing of payments for performance in grid services markets.
- Upgrades and functionality enhancements will be provided over time to adapt to changing grid services market regulations and new grid services market opportunities, as well as to continually improve the platform's functionality, changing resource management requirements, and advancements in technical capabilities. Include listings of pertinent new features, or upgrades to the Olivine DER Platform, Community App, and Webstore¹² in *Quarterly Progress Reports*.
- Provide ongoing customer service support to Community participants. Program partners will maintain a customer support center to answer customers' technical, market, or program questions, troubleshoot customers' technical issues, or to support adjustments in resource availability levels due to changes in operations or upgrades to equipment within customers' facilities.
- Facilitate the deployment of new electrical equipment, such as energy storage systems, grid-enabled devices, energy management controls, microgrid controls, and/or advanced telemetry equipment. Olivine will work closely with Community participants deploying new or upgraded equipment, whether funded by this grant or from other sources, to ensure a seamless technical integration of resources and systems into the DER Platform.
- Conduct ongoing outreach and onboarding for new Community participants.
- Enhance the DER Community App for residential and SMB customers. The App will be upgraded periodically to provide increased functionality, ease of use, user interface improvements, and information on energy usage to Community Participants.
- Enhance the Webstore offerings over time to provide new technology and service offerings to participants. (Residential and SMB participants may use this Webstore to obtain any free or discounted equipment that may be offered through the Community.)
- Manage the Community participants' energy journey to increase their use of DERs, and increase the value of existing DERs through integration into grid service market opportunities over time.
- As the Community's resources grow, and market regulations and requirements change, the program may provide access to new grid services market opportunities as available and determined by the CAM and Recipient, to enable community members to capture increased revenues from new market opportunities, while balancing their financial and operational risk tolerance.

¹² Olivine's webstore is an internet-based marketplace where consumers and community members can purchase grid-enabled devices such as smart thermostats, EV chargers, heat pump water heaters, residential batteries, and other energy savings products.

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- Provide results of program offerings and customer impacts in *Quarterly Progress Reports*.
- Integrate and/or simulate new market offerings, such as transactive energy initiatives, and participation of distributed energy resource aggregations in wholesale markets. Olivine assesses technical and financial viability of new business approaches and/or products as part of Olivine's ongoing Community business model. Under this task, the development of business models for these new product offerings or specific simulations will be included to test viability as progress is made and/or requested by the CAM. If new products are determined to be technically and financially viable by Olivine based on its analyses and simulations, the product may be added to the Community. Quarterly Progress Reports will describe new product/market business models, simulation results, and final assessments of new market opportunities as pertinent to the project.

Products:

- Quarterly Progress Reports

TASK 3 ZERO NET CARBON READY HOMES PROGRAM

The goals of this task are to: (1) retrofit or reconstruct and monitor Zero Net Carbon Ready (ZNCR) homes, (2) Engage and educate homeowners about ZNCR home operations and maintenance, and (3) position the ZNCR program's acquisition models, educational resources, and technical designs for scaled deployment throughout the State of California that takes into account locally differentiated contexts, challenges, and opportunities.

Subtask 3.1 Design Project and Select Technologies

The goal of this task is to assist the architects, developers, contractors and customers in the implementation of the Phase I designs for the construction or renovation of multiple properties to be ZNC-Ready homes.

The Recipient Shall

- Finalize *ZNCR Home Procurement Brochure* detailing qualifying products, service provider requirements, eligible suppliers and facilities, permitting requirements, and other information about the ZNCR program.
- Distribute the ZNCR Home Procurement Brochure to developers, suppliers, service providers, and city staff to create a common understanding of the ZNCR program.
- Educate manufacturers, distributors and contractors about the ZNCR products, design practices, and program.
- Conduct an onsite energy assessment for each building requiring remodel.
- Create a building compliance model using the CBECC-RES compliance software.
- Solidify a *ZNC Building Specification Plan* for each candidate home that identifies the building technologies, design and integration practice implementations. Measures will include, but are not limited to:
 - Heat pump water heaters
 - Heat pump space heating and cooling
 - Induction stoves
 - Heat pump dryers
 - Insulation
 - Wall paneling

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- Energy and water efficient appliances (toilets, aerators, refrigerators, etc.)
 - Battery storage
 - High capacity panels
 - Home energy monitoring and management devices
- Develop and issue a *Request for Quote* (RFQ) to manufacturers/distributors for targeted technologies. Among other things, the RFQ will seek to identify products that can integrate seamlessly with the DER Community.
- Evaluate responses, select technologies, and purchase products.
- Provide *Copies of Permit Applications and Construction Documents*, including Title 24 Part 6 calculations.

Products

- ZNCR Home Procurement Brochure (draft and final)
- ZNC Building Specification Plan
- Request for Quote(s)
- Copies of Permit Applications and Construction Documents

Subtask 3.2 Assist in Construction of ZNCR Homes

The goal of this task is to assist project architects, developers and contractors in construction/rehabilitation of properties to be ZNCR.

The Recipient shall:

- Provide engineering and technical support in sourcing contractors, prioritizing those who are willing to invest in training their staff on the new technologies and design practices.
- Facilitate workforce training, as needed, to ensure all service providers have the requisite skills to perform the necessary work.
- Prioritize enlisting contractors, as applicable, that are willing to participate on TradePro Connect (a trade professional procurement platform developed under a separate EPIC program project) as a resource for other customers.
- Submit *Training Memoranda* on a quarterly basis to the CAM documenting the scope and achievements of training provided.
- Maintain and document communications with the general contractor(s), especially on topics such as knowledge and skill gaps of subcontractors, challenges in working with the city, and other pervasive project barriers.
- Support the installation of an EV Charger and submission of applicable incentive applications.
- Integration of building assets into the DER Community platform. Deploy and test various control and optimization strategies and communications between building assets and the DER Community platform to ensure proper response.
- Troubleshoot issues, as needed, ensuring proper overall commissioning.
- Log any installation and /or performance challenges reported, submit as part of monthly reports (Task 1).
- Document the projects during construction of *pre and post technology installation with high quality digital photographs*.
- Document project costs, percent of labor sourced locally, and other economic and workforce metrics and submit in *Project Metric Document*.

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Products

- Training Memoranda
- Pre and Post Technology Installation Digital Photographs #2
- Project Metrics Document

Subtask 3.3 Educate and Support ZNCR Homeowners

The goals of this task are to: (1) engage and educate homeowners pre- and post-construction on the benefits and operational differences of all-electric homes, (2) promote transportation electrification to homeowners, and (3) ensure the building operates sufficiently post occupancy.

The Recipient Shall:

- Conduct focus groups with low-income and English as a Second Language (ESL) residents to understand existing perceptions about ZNCR homes and inform effective messages that will resonate with these demographics.
- Develop *ZNCR Home Educational Materials*, including but not limited to:
 - Open house and homeowner walk-through checklists addressing benefits and operational information about the ZNCR home
 - Pre-occupancy survey that captures data about the level of understanding and perceptions about their ZNCR home
 - EV program brochure that consolidates information about available EV and EVSE incentive programs
 - DER Community program policies and procedures.
 - Presenting differentiated content where appropriate for each audience (using language that presents complex technical information in lay language)
- Translate applicable program materials as appropriate to ensure greatest understanding for potential program participants.
- Disseminate materials and technical expertise during open houses with potential homeowners and realtors.
- Meet with new homeowners and provide walk-through of the home. Discuss the following topics: “things to know” about their ZNCR home; the M&V process, requirements on them, and scope and purpose of data collection; and DER Community program opportunities. Document key highlights and other feedback about the walk through in a *Home Walk-Through Memorandum*.
- Educate homeowners about the benefits of buying an EV and the programs available for low income residents through CARB, and other agencies, as applicable.
- Answer and document homeowner correspondence regarding their home’s performance for the duration of the contract period.
- Troubleshoot building systems, including connectivity, control settings, level of service, and other issues that arise with the unit.
- Conduct outreach to and meet with homeowners to share results of the M&V process.
- Facilitate a post-occupancy survey that captures data about the level of understanding and experience with their ZNCR home.
- Develop and submit a *Personally Identifiable Information (PII) Strategy Memo*, which describes how the information will be handled for this project, in accordance with Exhibit D of the EPC-19-005 grant agreement, and if not in conflict with Exhibit D, to the standard information management protocols that are approved from the City of Richmond and relevant utility or direct access companies. The memo will also list or provide links to these approved protocols for reference. In the event there is a conflict

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between Exhibit D of the EPC-19-005 grant agreement and policies of the City of Richmond, utility companies, and/or direct access companies, Recipient shall assume Exhibit D supersedes the other policy, and Recipient will notify the CAM regarding of each such conflict.

- Ensure that the program participants' PII will be kept confidential, following with Exhibit D of the EPC-19-005 grant agreement and the protocols described in the Personally Identifiable Information (PII) Strategy Memo.

Products

- New ZNCR Home Educational Materials (draft and final)
- Home Walk-Through Memorandum
- Personally Identifiable Information (PII) Strategy Memo

Subtask 3.4. Conduct Marketing, Education & Outreach

The goals of this task are to: (1) engage, educate and support cities with selecting and implementing a Low and Middle Income (LMI) ZNCR redevelopment financing model, and (2) recruiting and educating developers, contractors, trade professionals, apprentices, and technology providers to adopt ZNCR design and construction practices and career paths.

The Recipient shall:

- Develop *Contractor ZNCR Education Materials* focusing on the technical, sales and business model implications of ZNCR home retrofits to different contractor types. Materials will include but are not limited to: fact sheet, presentation, and whitepaper.
- Develop *Public Agency ZNCR Education Materials* focusing on the common mistakes cities make in the treatment of all-electric homes, benefits of all-electric homes, and best practices for processing ZNCR home projects. Materials will include but are not limited to: fact sheet, presentation, and whitepaper.
- Create a *ZNCR Career Roadmap* detailing the scope of the employment opportunity in residential electrification to achieve the State's climate and energy goals, as well as the skills, education and experience a person needs to pursue a career in the field. The document should target apprentices and prospective professionals (e.g., high school and community college students), be translated into Spanish, and ultimately serve to attract professionals into the field.
- Create *Model ZNCR Webpages* that can be adopted by cities, counties, CCAs, distributors, contractors, and other business and public institutions. The webpage content and templates will be easily adopted by different audiences to appeal to their different website visitors.
- Identify and engage key channels to support promotion of ZNCR Education Materials, including MCE, Pacific Gas & Electric Company, East Bay Clean Energy, trade unions, community colleges, vocational training schools, high schools, Building Decarbonization Coalition, and others.
- Provide dedicated education and advocacy support to local governments with disadvantaged communities to assist with selecting and implementing a ZNCR program design similar to the City of Richmond's. This may include, but is not limited to:
 - Providing webinars to DACs to review the alternative models being implemented by Richmond and other communities
 - Reviewing draft staff reports and city council presentations.

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- Document the processes and challenges other DACs face in launching ZNCR programs; summarize in a *ZNCR Program Development Case Study*.
- Coordinate with the Title 24 development teams (Energy Commission and Investor Owned Utilities) regarding results of technology demonstrations for implications for 2022 and 2025 Building Code Cycles.

Products:

- Contractor ZNCR Education Materials (draft and final)
- Public Agency ZNCR Education Materials (draft and final)
- ZNCR Career Roadmap (draft and final)
- Model ZNCR Webpages (draft and final)
- ZNCR Program Development Case Study (draft and final)

TASK 4 INDEPENDENT MEASUREMENT AND VERIFICATION

The purpose of this task is to verify the performance of Tasks 2, and 3 relative to the predicted versus actual energy use, non-energy benefits, and GHG emissions.

Subtask 4.1 Measurement and Verification Plan

The goal of this subtask is to establish and validate a measurement and verification plan for DER Community and ZNCR Homes.

The Recipient shall:

- Establish a detailed *Measurement and Verification Plan* identifying data sources and analytical methodology used in the evaluation of the DER Community and ZNCR Homes.
- Methodology will evaluate energy use, demand and GHG emissions compared to baseline scenarios described in the subtasks below. Costs and benefits evaluated from the perspective of ratepayers as well as AEC.

Products:

- Measurement and Verification Plan (draft and final)

Subtask 4.2 M&V of DER Community

The goal of this subtask is to verify the energy, cost, demand and GHG emissions performance of Task 2: Richmond DER Community Program. Data used in the verification will be collected for at least 1 year following the completion of each project.

The Recipient Shall:

- Establish a baseline predicted energy performance across the DER Community boundary from Task 2 with the associated utility costs and GHG emissions utilizing data provided by the Task 2 implementation team.
- Verify actual energy performance across the DER Community boundary utilizing data provided by the Task 2 implementation team with the associated utility costs and GHG emissions. Measurements will include:
 - Facility electricity (all) – Facility load data
 - Demand response signal – magnitude of load shed

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- DER Community status – direction and magnitude of flow across the DER Community boundary
 - DER Community controller – desired status of the DER Community
- Obtain status and performance of the community DER system to validate the disposition of the individual DER systems and compare them against the demand response signal, desired DER Community condition, and predicted performance.
- Compare baseline scenarios to actual performance and discuss reasons in differences in a *DER Community M&V Performance Report*.

Products:

- DER Community M&V Performance Report

Subtask 4.3 M&V of ZNCR Homes

The goal of this task is to implement the M&V plan outlined in the narrative to validate energy and water savings, as well as indoor air quality and health benefits of all-electric, low-carbon homes.

The Recipient Shall:

- Develop a baseline for energy performance, utilizing Title 24 compliance EnergyPlus (or equivalent) models created by the housing developer and Energy Solutions. Baseline homes will assume natural gas is used for space heating, water heating, and cooking. The associated greenhouse gas emissions will be calculated from on-site combustion and the average GHG composition for the local utility grid. Water profiles will be based on a typical usage profile for a residential unit with code compliant fixtures. Indoor air quality will be assessed through air leakage and ventilation measurements.
- Install sub metering and sensors to monitor building operations for at least one year.
- Collect actual home performance measurements from utility smart electric meters, air quality measurements, and water meters. The associated greenhouse gas emissions will be calculated based on average GHG composition for the local utility grid.
- Verify the energy savings projections by calibrating the proposed home design to metered data, followed by resetting the model to baseline compliance conditions and comparing the two to estimate savings. Actual PV generation and battery storage capacity as well as performance profile and charging conditions, respectively, will be compared to the individual component design specifications. Water consumption, thermal comfort, indoor air quality and other co-benefit improvements will be assessed by comparing the site-specific measurements to relevant standards and/or the best available research.
- Compare baseline scenarios to actual performance and discuss reasons in differences in a *ZNCR Measurement & Verification Report*.
- Develop a *ZNCR Home Cost-Effectiveness Report* with the inputs and outputs of the cost effectiveness calculation based on installed configurations and operating parameters.
- Survey the residents to evaluate non-energy and co-benefits and complete *Survey Results*.
- Ensure that the program participants' personally identifiable information (PII) will be handled and kept confidential in accordance with Exhibit D of the EPC-19-005 grant agreement and as described in the Personally Identifiable Information (PII) Strategy Memo submitted under Task 3 above.

EXHIBIT A

Scope of Work

Zero Net Energy Alliance, Inc.

Products

- ZNCR Measurement & Verification Report
- ZNCR Home Cost-Effectiveness Report
- Survey Results

TASK 5 EVALUATION OF PROJECT BENEFITS

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

The Recipient shall:

- Complete three Project Benefits Questionnaires that correspond to three main intervals in the Agreement: (1) *Kick-off Meeting Benefits Questionnaire*; (2) *Mid-term Benefits Questionnaire*; and (3) *Final Meeting Benefits Questionnaire*.
- Provide all key assumptions used to estimate projected benefits, including targeted market sector (e.g., population and geographic location), projected market penetration, baseline and projected energy use and cost, operating conditions, and emission reduction calculations. Examples of information that may be requested in the questionnaires include:
 - For Product Development Projects and Project Demonstrations:
 - Published documents, including date, title, and periodical name.
 - Estimated or actual energy and cost savings, and estimated statewide energy savings once market potential has been realized. Identify all assumptions used in the estimates.
 - Greenhouse gas and criteria emissions reductions.
 - Other non-energy benefits such as reliability, public safety, lower operational cost, environmental improvement, indoor environmental quality, and societal benefits.
 - Data on potential job creation, market potential, economic development, and increased state revenue as a result of the project.
 - A discussion of project product downloads from websites, and publications in technical journals.
 - A comparison of project expectations and performance. Discuss whether the goals and objectives of the Agreement have been met and what improvements are needed, if any.
 - Additional Information for Product Development Projects:
 - Outcome of product development efforts, such copyrights and license agreements.
 - Units sold or projected to be sold in California and outside of California.
 - Total annual sales or projected annual sales (in dollars) of products developed under the Agreement.
 - Investment dollars/follow-on private funding as a result of Energy Commission funding.
 - Patent numbers and applications, along with dates and brief descriptions.
 - Additional Information for Product Demonstrations:
 - Outcome of demonstrations and status of technology.
 - Number of similar installations.
 - Jobs created/retained as a result of the Agreement.

EXHIBIT A

Scope of Work

Zero Net Energy Alliance, Inc.

○ For Information/Tools and Other Research Studies:

- Outcome of project.
 - Published documents, including date, title, and periodical name.
 - A discussion of policy development. State if the project has been cited in government policy publications or technical journals, or has been used to inform regulatory bodies.
 - The number of website downloads.
 - An estimate of how the project information has affected energy use and cost, or have resulted in other non-energy benefits.
 - An estimate of energy and non-energy benefits.
 - Data on potential job creation, market potential, economic development, and increased state revenue as a result of project.
 - A discussion of project product downloads from websites, and publications in technical journals.
 - A comparison of project expectations and performance. Discuss whether the goals and objectives of the Agreement have been met and what improvements are needed, if any.
- Respond to CAM questions regarding responses to the questionnaires.

The Energy Commission may send the Recipient similar questionnaires after the Agreement term ends. Responses to these questionnaires will be voluntary.

Products:

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

TASK 6 TECHNOLOGY/KNOWLEDGE TRANSFER ACTIVITIES

The goal of this task is to develop a plan to make the knowledge gained, experimental results, and lessons learned available to the public and key decision makers.

The Recipient shall:

- Prepare an *Initial Fact Sheet* at start of the project that describes the project. Use the format provided by the CAM.
- Prepare a *Final Project Fact Sheet* at the project's conclusion that discusses results. Use the format provided by the CAM.
- Prepare a *Technology/Knowledge Transfer Plan* that includes:
 - An explanation of how the knowledge gained from the project will be made available to the public, including the targeted market sector and potential outreach to end users, utilities, regulatory agencies, and others.
 - A description of the intended use(s) for and users of the project results.
 - Published documents, including date, title, and periodical name.
 - Copies of documents, fact sheets, journal articles, press releases, and other documents prepared for public dissemination. These documents must include the Legal Notice required in the terms and conditions. Indicate where and when the documents were disseminated.

EXHIBIT A

Scope of Work

Zero Net Energy Alliance, Inc.

- A discussion of policy development. State if project has been or will be cited in government policy publications, or used to inform regulatory bodies.
- The number of website downloads or public requests for project results.
- Additional areas as determined by the CAM.
- Conduct technology transfer activities in accordance with the Technology/Knowledge Transfer Plan. These activities will be reported in the Progress Reports.
- When directed by the CAM, develop *Presentation Materials* for an Energy Commission-sponsored conference/workshop on the results of the project.
- Prepare a *Technology/Knowledge Transfer Report* on technology transfer activities conducted during the project.
- 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:

- Initial Fact Sheet (draft and final)
- Final Project Fact Sheet (draft and final)
- Presentation Materials (draft and final)
- Technology/Knowledge Transfer Plan (draft and final)
- Technology/Knowledge Transfer Report (draft and final)
- High Quality Digital Photographs

Subtask 6.1 AEC Environmental Dashboard and AEC Open Data Guidebook

The goals of this task are: 1) to develop and deploy an AEC Project Environmental Dashboard as a publicly accessible platform for tracking AEC project Key Performance Indicators, and; 2) to develop the AEC Open Data Guidebook as a best practice guide to AEC indicators and reporting that can be leveraged by other municipalities to enable data sharing with a broad network of local government and community stakeholders, building on the widely used Socrata data management platform.

The Recipient Shall

- Utilize open data platform software tools to develop the *Richmond AEC Environmental Dashboard*, highlighting key performance indicators, including (but not limited to): ratepayer benefits of thermal savings, energy savings, peak load reduction and shifting capabilities, energy cost reductions, GHG reductions, air emission reductions (oxides, nitrogen etc.), water savings, and other key metrics specific to Richmond's Climate Action Plan.
- Identify and develop key data sharing and upload capabilities for AEC-related data and Key Performance Indicators in the form of APIs and/or CSV file transfer and create the *Richmond AEC Data Exchange Procedures Manual*.
- Develop key logins for project partners and city of Richmond staff to conduct cloud-based analysis.
- Develop an *AEC Open Data Guidebook* to guide other municipalities in data management best practices, exchange protocols, and analysis methodologies that can be leveraged to create their own AEC Environmental Dashboards.
-
- Ensure that any personally identifiable information (PII) will be handled and kept

EXHIBIT A

Scope of Work

Zero Net Energy Alliance, Inc.

confidential, using standard utility approved and city-approved protocols, as described in the Personally Identifiable Information (PII) Strategy Memo submitted under Task 3 above.

Products

- Richmond AEC Environmental Dashboard
- Richmond AEC Data Exchange Procedures Manual
- AEC Open Data Guidebook

Subtask 6.2 Develop the AEC Solutions Center and AEC Solutions Toolkit

The goal of this task is to launch and maintain the *AEC Resource Center*.

The Recipient Shall:

- Develop and administer a survey to understand city awareness, needs, interests and priorities.
- Convene AEC project leaders such as the Local Government Commission, the Alliance of Regional Climate Collaboratives and other representatives from the major climate collaborative across the state to identify technical information needs and priorities
- Collect and organize already available information.
- Develop an *Annotated Bibliography of AEC Resources* being assembled.
- Based on the needs assessment above, develop the *AEC Solutions Toolkit*.
- Provide feedback to the Energy Commission via a report *AEC Deployment Needs and Opportunities in California's Cities Whitepaper*. This report should be updated periodically as progress is made and/or determined by the CAM and Recipient.

Products

- Annotated Bibliography of AEC Resources (draft and final)
- AEC Solutions Toolkit (draft and final)
- AEC Deployment Needs and Opportunities in California's Cities Whitepaper (draft and final)

V. PROJECT SCHEDULE

Please see the attached Excel spreadsheet.

STATE OF CALIFORNIA

STATE ENERGY RESOURCES
CONSERVATION AND DEVELOPMENT COMMISSION

RESOLUTION - RE: ZERO NET ENERGY ALLIANCE, 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-19-005 with Zero Net Energy Alliance, Inc. for a \$4,998,555 grant to fund the implementation of the Richmond Advanced Energy Community Phase 2 project. This project will demonstrate: (1) how community-based Distributed Energy Resource (DER) aggregations can effectively manage energy demand, local generation, storage, grid-integrated electric vehicles, and create multiple value streams for low-income customers; (2) how special financing can be used to rehabilitate abandoned and blighted properties to be Zero Net Carbon Ready Homes (all-electric); and (3) how a local benchmarking policy and data tools can be used to advance the project and also measure effectiveness. Physical construction will include adding advanced energy technologies to new and existing buildings in Richmond and optimally managing these solutions through a state-of-the-art DER platform; 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 Commission does hereby certify that the foregoing is a full, true, and correct copy of a Resolution duly and regularly adopted at a meeting of the CEC held on March 11, 2020.

AYE:

NAY:

ABSENT:

ABSTAIN:

Cody Goldthrite
Secretariat