

**GRANT AMENDMENT REQUEST FORM (GARF)**

Original Agreement #	EPC-15-094		2
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ERDD	Heather Bird		916-327-3094
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Electric Power Research Institute, Inc.	23-7175375
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<input checked="" type="checkbox"/> Term Extension	New End Date: 3/30/2021	Include revised schedule and complete items A, B, C, & F below.
<input type="checkbox"/> Budget Augmentation	Amendment Amount: \$ 0	Include revised budget and complete items A, B, C, D & F below.
<input checked="" type="checkbox"/> Budget Reallocation		Include revised budget and complete items A, B, C, & F below.
<input checked="" type="checkbox"/> Scope of Work Revision		Include revised scope of work and complete items A, B, C, E & F below.
<input checked="" type="checkbox"/> Change in Project Location or Demonstration Site		Include revised scope of work and complete items A, B, C, E & F below.
<input type="checkbox"/> Novation/Name Change of Prime Contractor/Recipient		Include novation documentation and complete items A, B, C, & F below.
<input type="checkbox"/> Terms and Conditions Modification		Include applicable exhibits with bold/underline/strikeout and complete items A, B, C, & F below.

<b>Business Meeting approval is not required for the following types of Agreements:</b>
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<input type="checkbox"/> ARFVTP agreements under \$75K delegated to Executive Director.			
Proposed Business Meeting Date	4/11/2018	<input type="checkbox"/> Consent	<input checked="" type="checkbox"/> Discussion
Business Meeting Presenter	Heather Bird	Time Needed:	5 minutes

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

**Agenda Item Subject and Description**

ELECTRIC POWER RESEARCH INSTITUTE, INC. Proposed resolution adopting CEQA Findings for Electric Power Research Institute (EPRI) to change the project demonstration sites, and approving Amendment 2 to agreement EPC-15-094 with EPRI. (EPIC funding) Contact: Heather Bird. (Staff presentation: 5 minutes)

- i. CEQA FINDINGS.
  - (a) City of Belmont: Findings that, based on the lead agency City of Belmont's Final Initial Study, Mitigated Negative Declaration and Mitigation, Monitoring, and Reporting Program, the work under the proposed project presents no new significant or substantially more severe environmental impacts beyond those already considered.
  - (b) County of Los Angeles: Findings that, based on the lead agency County of Los Angeles's Final Initial Study, Negative Declaration and Administrative Housing Permit authorizing the development, the work under the proposed project presents no new significant or substantially more severe environmental impacts beyond those already considered.
- ii. EPRI Amendment: Amendment 2 for Agreement EPC-15-094 with Electric Power Research Institute (EPRI) to change the project demonstration sites, make minor scope changes, add subcontractors, reallocate funding across budget categories, and extend the term of the agreement by 12 months. As part of the technology transfer efforts for this project, EPRI will conduct workshops to share preliminary lessons learned with the building community prior to implementation of the 2019 Building Energy Efficiency Standards.

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Legal Company Name:	Budget
Itron, Inc.	\$ 302,237
UC Davis Energy Efficiency Center	\$ 405,000
BIRAenergy	\$ 415,000
Fresno Housing Authority	\$ 596,000
LINC Housing Corporation	\$ 452,260
TRC Engineers, Inc.	\$ 215,000
Resource Refocus LLC	\$ 99,980
Kliwer and Associates	\$ 61,750
TBD - Construction Contractor	\$ 50,000
Occidental Analytics	\$64,335
Aron Developers	\$40,000
TBD – Tech Writing Consultant	\$70,000
Beyond Fire LLC	\$80,486
CEG Inc.	\$55,561
by Vava	\$7,057
TBD – Design Build Contractor	\$50,000
TBD – Architectural Plans	\$30,000
TBD – MEP Contractor	\$30,000
Walton Construction	\$30,000
TBD – Building Commissioning	\$20,000
D33 Design	\$15,000
TBD – HVAC Installer	\$15,000
TBD – Building Commissioning	\$10,000

Legal Company Name:

Funding Source	Funding Year of Appropriation	Budget List No.	Amount
			\$
			\$
R&D Program Area:	EERO: Buildings		\$
Explanation for "Other" selection			
Reimbursement Contract #:	Federal Agreement #:		



## Exhibit A Scope of Work

### I. TASK ACRONYM/TERM LISTS

#### A. Task List

Task #	CPR <sup>1</sup>	Task Name
1		General Project Tasks
2	X	Design of Zero Net Energy Communities
3	X	Construction of Communities
4	X	Customer Education, Occupant Acceptance, and M&V
5		Evaluation of Project Benefits
6		Technology/Knowledge Transfer Activities

#### B. Acronym/Term List

Acronym/Term	Meaning
CAHP	California Advanced Homes Program
CAM	Commission Agreement Manager
CBECC	California Building Energy Code Compliance
DER	Distributed Energy Resources
CAO	Commission Agreement Officer
CPR	Critical Project Review
EE	Energy Efficiency
GHG	Greenhouse Gas
HVAC	Heating, Ventilating and Air Conditioning
IAQ	Indoor Air Quality
NEM	Net Energy Metering
TAC	Technical Advisory Committee
TDV	Time Dependent Valuation
ZNE	Zero Net Energy

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

#### A. Purpose of Agreement

The purpose of this Agreement is to demonstrate that California can reach its goal of all new homes being Zero Net Energy (ZNE) by 2020 through large scale demonstration of Zero Net Energy Communities with multiple builders and developers of new homes and rental communities. This agreement will:

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

## Exhibit A Scope of Work

- Demonstrate cost effective homes to be available at near market prices for sales and rentals, respectively.
- Utilize the demonstrations to study community scale design of both homes and utility infrastructure.
- Demonstrate how customers and occupants perceive, engage, decide and adopt ZNE homes.
- Enable builders and developers to overcome any hesitance with new technology and warranty issues. Real estate developers develop the building project by preparing the land and builders build upon the land so prepared.

This project will develop a large scale, detailed database on operation of ZNE homes to understand load shapes and customer preferences. The work will obtain independent 3rd party verification of ZNE homes performance. This agreement will also illustrate how the range of distributed energy resources (DERs,) present in ZNE communities, can be used to provide grid services and balance variability at the distribution grid, in addition to providing pathways for ZNE adoption in both single family and multifamily building types, in changing net energy metering (NEM) scenarios.

### B. Problem/Solution Statement

#### **Problem**

California's ZNE and global climate change goals will require a huge increase in building and end-use system efficiency, including integration with renewable power. The immediate goal of all new single family homes and low-rise multi-family homes being ZNE by 2020 as recommended by the California Public Utilities Commission's Action Plan<sup>2</sup> has little time to overcome significant market barriers including better understanding of cost effectiveness, technical feasibility and operational performance. There have been many efforts at one-off showcases of ZNE to show technology pathways, but not many field demonstrations that show a pathway to achieving acceptance at a large scale.

In one of the few efforts, the recipient, working with subcontractors, demonstrated technical and market feasibility of building ZNE homes, through California's first ZNE neighborhood in Fontana, California. In this effort, 20 homes were built on two distribution transformers, sold and will be occupied: the entire process taking 10 months from design to occupancy. The additional cost for these homes was minimal (around \$18,000 per home), but was absorbed through the project to accomplish project timelines for measuring grid impacts. These homes were built for an incremental cost of only around \$20,000 including the whole home monitoring package (about 40 data points per home) and purchased Solar PV (PV), to reach ZNE. This still leaves the question unanswered about how to attain ZNE at the community scale. As a result, the questions that still need to be answered include the scalability of customer acceptance, builder acceptance of advanced construction techniques for better envelopes, and the question of community design and long term monitoring. In addition, it is important to understand multifamily homes, which may include both rentals and sold homes, as the proportion of multifamily homes in California in new construction is reaching near 50%. This segment has rarely been addressed with regards to ZNE pathways and viability.

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<sup>2</sup> [New Residential Zero net Energy Action Plan 2015-2020](#)

## Exhibit A Scope of Work

Long term monitoring is critical to understanding persistence and performance of advanced construction techniques as well as new technologies. Another constraint is that the state pathway to reach ZNE will be through the California Code of Regulations Title 24 Buildings Standards Code. Given the process timelines, it is imperative that the data from this effort be collected on the community scale ZNE by end of 2019 for possible incorporation in future code cycles.

There is also the unanswered question of how ZNE will impact the electric grid. This demonstration of ZNE can also be seen as the integration of various end-use device technologies, but with cost effectiveness trade-offs built into the evaluation. This requires integration of end use devices and distributed PV, with controls to manage operation and load shapes, and possibly use energy storage systems to provide some grid support.

### Solution

This project will demonstrate cost-competitive ZNE design strategies combining occupant needs with technology solutions to create new pathways at three residential communities. The demonstrations will be leveraged to achieve the goals of cost effectiveness and affordability for the occupant, overcome buyer/renter apprehension, establish a track record of new technology for builders, enable distribution grid integration, create a planning process for ZNE communities, evaluate community PV, and look at the impact of future potential changes to NEM on ZNE cost effectiveness. In addition, ZNE is based on California Code of Regulations Title 24 Buildings Standards Code for heating, ventilating and air conditioning (HVAC), water heating and lighting loads. This leaves plug loads and appliances (behavioral loads) free floating. This project will also aim to understand the operation and energy use of these unregulated loads.

As part of this research, the recipient will partner with its subcontractors to demonstrate the feasibility of large scale ZNE communities, as well as to answer additional research questions on buyer or renter impressions, decisions and overall acceptance as well as and builders and/or developer acceptance.

## C. Goals and Objectives of the Agreement

### Agreement Goals

The goals of this Agreement are to:

- Construct and demonstrate the operation of multiple ZNE communities to illustrate technical feasibility, economic viability using multiple technology pathways.
- Better understand how to implement community design of ZNE communities, perceptions of customers and builders, and the integration of ZNE communities into the electric grid.
- Obtain and analyze detailed long term data on ZNE communities that provides a better understanding of their operation as well as customer preferences.
- Demonstrate that ZNE can be accomplished with multiple builders and/or developers in multiple communities.
- Demonstrate that ZNE can be accomplished at near market costs, and in a manner that may identify pathways with potential to become more economically favorable to builders, occupants, owners and developers than other alternatives.
- Standardize ZNE packages that can be delivered across multiple climate zones and can be built to scale.

## Exhibit A Scope of Work

- Obtain substantial monitored data to understand the actual performance of ZNE communities and homes.
- Identify the ZNE community impacts to the distribution grid.
- Recommend new elements in California Code of Regulations Title 24 Buildings Standards Code that enable the pathway to ZNE in a manner that works for customers, utilities, builders **and developers**.
- Understand impacts related to electrification of heating loads, water heating loads and other residential end-use loads to meet California's long term carbon goals.
- Provide possible design of utility programs that enable attaining ZNE (for example, designing or adopting changes to the California Advanced Homes Program (CAHP)).

To achieve these goals, the project will pursue the following pathways:

1. Demonstrate that ZNE homes, owned and rented, can be cost effective and affordable. In an expensive California market, where affordability is already on the edge for many homebuyers and renters, it needs to be understood if the impact of ZNE will have an effect on affordability and financial qualification.
2. Address perceived technology risks of ZNE homes by customers. A home should still be comfortable, affordable and live-able, without adding additional concerns.
3. Address homebuilders' and developers' concerns over additional warranty and liability claims due to new technologies and installation techniques.
4. Demonstrate how ZNE homes can help with utility grid management and accentuate two-way power flows as they may reduce load availability to absorb PV variation due to lower energy use for HVAC, water heating, etc., which may lead to greater grid export of PV. Elements such as controllable loads and energy storage will be studied to understand if they may need to be integrated and controlled at the aggregate level to mitigate electric system variability.
5. Demonstrate community design to show builders, developers, architects and utilities the layout of streets, lot orientation, with elevations, and appropriate sized distribution systems.
6. Demonstrate operational cost savings to financial agents, such as mortgage brokers, landlords and rental agencies and educate them on how these savings pay for energy efficiency (EE) and renewables. Support the inclusion of these factors when financial agents are considering financial eligibility for mortgages.

### **Ratepayer Benefits:**<sup>3</sup>

This Agreement will result in the following ratepayer benefits:

- Greater Electricity Reliability. This project will provide new data, analysis, and designs for cost effective ZNE residential communities, which will improve reliability with the integration of energy efficiency, demand control, and renewable power with buildings and the smart grid.

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<sup>3</sup> California Public Resources Code, Section 25711.5(a), requires projects funded by the Electric Program Investment Charge (EPIC) to result in ratepayer benefits. The California Public Utilities Commission, which established EPIC in 2011, defines ratepayer benefits as "greater reliability, lower costs, increased safety, and/or enhanced environmental sustainability" (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](http://docs.cpuc.ca.gov/PublishedDocs/WORD_PDF/FINAL_DECISION/167664.PDF)).

## Exhibit A Scope of Work

- Lower Costs. Significant savings in money, resources, operation and maintenance, energy, and greenhouse gases are available. Both ratepayers and customers benefit from implementing ZNE residential communities.

### **Technological Advancement and Breakthroughs:**<sup>4</sup>

This Agreement will lead to technological advancement and breakthroughs to overcome barriers to the achievement of the State of California's statutory energy goals by providing new methodologies for integrating occupant and technology needs into cost-effective and scalable ZNE strategies, ZNE demonstration data, and ZNE residential guidelines. This project will analyze and define the savings and market barriers needed for ZNE to be built for residential communities and provide new, valuable performance data and models from the demonstrations. The products from this research will likely be essential to better understand what is needed to meet the ZNE goals for residential communities.

### **Agreement Objectives**

This Agreement's objectives are to:

- Evaluate the technical and economic feasibility of attaining ZNE in multiple climate zones. This gives us an opportunity to evaluate multiple ZNE packages and solutions that are both cost effective and scalable;
- Research and analyze new methodologies for integrating occupant (first) and technology needs into cost effective, sustainable ZNE designs for new residential communities;

Demonstrate ZNE solutions for at least

- 75 single family and multifamily units to cover a range of technology pathways, climate zones, demographics and business models;
- Create a new resource for ZNE residential designs and pathways for cost effectively meeting the ZNE goals;
- Evaluate how different demographic segment customers perceive, decide and adopt ZNE and the market barriers for each segment;
- Evaluate harmonization and adoption of ZNE between larger and smaller builders and developers. This will help drive adoption across the building community regardless of builder size;
- Compare pathways to ZNE such as rooftop vs. community scale PV. Using a smaller community reduces the cost of evaluating community scale PV;
- Model, and if possible, implement community PV as a way to meet ZNE at one community. Integrating community scale PV is of high interest on the distribution side, but the question of cost effectiveness necessary for the customer remains;
- Evaluate long term greenhouse gas reductions with different technology pathways for attaining ZNE such as all-electric vs. mixed fuel homes;
- Understanding different constraints with regards to distribution planning by location and utility;
- Explain the difference in city planning and permitting process for ZNE communities and how to standardize answers to some of the reoccurring questions;

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<sup>4</sup> California Public Resources Code, Section 25711.5(a), also requires EPIC-funded projects to lead to technological advancement and breakthroughs to overcome barriers that prevent the achievement of the state's statutory and energy goals.

## Exhibit A Scope of Work

- Train multiple sets of trades in each location to enable spreading or “seeding” of best practices for ZNE building within the local area that will address scalability and identifying and overcoming potential market barriers from craft trades;
- Publish ZNE guidelines for residential communities covering technology pathways, community design and real world data.

### 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 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:

## **Exhibit A Scope of Work**

- **Electronic File Format**

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

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

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

- **Software Application Development**

Use the following standard Application Architecture components in compatible versions for any software application development required by this Agreement (e.g., databases, models, modeling tools), unless the CAM approves other software applications such as open source programs:

- 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.

## Exhibit A Scope of Work

### MEETINGS

#### Subtask 1.2 Kick-off Meeting

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

#### The Recipient shall:

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

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

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

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

- The CAM's expectations for accomplishing tasks described in the Scope of Work;
  - An updated Project Schedule;
  - Technical products (subtask 1.1);
  - Progress reports and invoices (subtask 1.5);
  - Final Report (subtask 1.6);
  - Technical Advisory Committee meetings (subtasks 1.10 and 1.11); and
  - 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

## Exhibit A Scope of Work

### Subtask 1.3 Critical Project Review (CPR) Meetings

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

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

#### The Recipient shall:

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

#### The CAM shall:

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

## Exhibit A Scope of Work

### CAM Products:

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

### Subtask 1.4 Final Meeting

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

### The Recipient shall:

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

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

- The technical portion of the meeting will involve the presentation of findings, conclusions, and recommended next steps (if any) for the Agreement. The CAM will determine the appropriate meeting participants.
- The administrative portion of the meeting will involve a discussion with the CAM and the CAO of the following Agreement closeout items:
  - Disposition of any state-owned equipment.
  - Need to file a Uniform Commercial Code Financing Statement (Form UCC-1) regarding the Energy Commission's interest in patented technology.
  - The Energy Commission's request for specific "generated" data (not already provided in Agreement products).
  - Need to document the Recipient's disclosure of "subject inventions" developed under the Agreement.
  - "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

## Exhibit A Scope of Work

### **REPORTS AND INVOICES**

#### **Subtask 1.5 Progress Reports and Invoices**

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

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

- Submit a monthly *Progress Report* to the CAM. Each progress report must:
  - Summarize progress made on all Agreement activities as specified in the scope of work for the preceding month, including accomplishments, problems, milestones, products, schedule, fiscal status, and an assessment of the ability to complete the Agreement within the current budget and any anticipated cost overruns. See the Progress Report Format Attachment for the recommended specifications.
- Submit a monthly or quarterly *Invoice* that follows the instructions in the “Payment of Funds” section of the terms and conditions, including a financial report on Match Fund and in-state expenditures.

#### **Products:**

- Progress Reports
- Invoices

#### **Subtask 1.6 Final Report**

The goal of this subtask is to prepare a comprehensive Final Report that describes the original purpose, approach, results, and conclusions of the work performed under this Agreement. The CAM will review the Final Report, which will be due at least **two months** before the Agreement end date. When creating the Final Report Outline and the Final Report, the Recipient must use the Style Manual provided by the CAM.

##### **Subtask 1.6.1 Final Report Outline**

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

- Prepare a *Final Report Outline* in accordance with the *Style Manual* provided by the CAM. (See Task 1.1 for requirements for draft and final products.)

#### **Recipient Products:**

- Final Report Outline (draft and final)

#### **CAM Product:**

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

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

## Exhibit A Scope of Work

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

## Exhibit A Scope of Work

### 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, and 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 or other tangible or real property, the Recipient must identify its owner and provide a contact name, address, telephone number, and the address where the property is located.
  - A copy of a letter of commitment from an authorized representative of each source of match funding that the funds or contributions have been secured.
- At the Kick-off meeting, discuss match funds and the impact on the project if they are significantly reduced or not obtained as committed. If applicable, match funds will be included as a line item in the progress reports and will be a topic at CPR meetings.
- Provide a *Supplemental Match Funds Notification Letter* to the CAM of receipt of additional match funds.
- Provide a *Match Funds Reduction Notification Letter* to the CAM if existing match funds are reduced during the course of the Agreement. Reduction of match funds may trigger a CPR meeting.

## Exhibit A Scope of Work

### Products:

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

### Subtask 1.8 Permits

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

### The Recipient shall:

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

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

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

### Products:

- Permit Status Letter
- Updated List of Permits *(if applicable)*
- 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.

## **Exhibit A Scope of Work**

### **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.

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

## **Exhibit A Scope of Work**

- 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.
- 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

## Exhibit A Scope of Work

### IV. TECHNICAL TASKS

#### **TASK 2: DESIGN OF ZERO NET ENERGY COMMUNITIES**

The goals of this task are to begin the initial design phase of the communities and carry them all the way through technology selection, and permitting. The communities shall be as approved by the CAM. Technology packages for the homes will be selected based on current builder and developer practices and the team's experience with developing technology packages customized to the communities' climate zones. The technology packages for the homes will be optimized based on cost effectiveness. Once the community design, electrical infrastructure, and home elevations and features are complete, recipient's subcontractors and suppliers will seek building and other permits, as appropriate.

#### **Subtask 2.1: Development of Technology Packages**

The recipient shall:

- Develop EnergyPlus building energy models aligned with California Building Energy Code Compliance (CBECC) software for the planned home designs for each community and provide an *EnergyPlus Building Energy Model Report* that describes changes to the model and how it is aligned with CBECC software.
- Evaluate performance of the current home designs in the 3 demonstration communities that are at or exceed 2016 California Code of Regulations Title 24 Buildings Standards Code and provide a *Report on Title 24 Compliance*. These homes will provide the reference from which control/baseline data will be derived.
- Evaluate technologies for all planned end uses and develop cost optimal technology packages that will enable attainment of ZNE in different climates which shall exceed applicable 2016 California Code of Regulations Title 24 and Title 20 Standards. Develop cost estimates for the various technology packages using past experience with ZNE communities including expected cost of all installation labor. Develop a *Report on Technology Packages and Cost Estimates* with summary sheet description of various ZNE packages and results of EnergyPlus modeling, compared to both California Code of Regulations Title 24 Buildings Standards Code for built construction, and builder standard practice as determined in this subtask for various technology packages.
- Compare size of PV systems for each package, and incorporate cost of PV into the *Report on Technology Packages and Cost Estimates*.
- Evaluate both electric and gas options for heating as well as other end uses, looking at overall cost effectiveness, and expected greenhouse gas emissions. Develop *Report on Electric vs. Natural Gas Homes*, comparing them based on Time Dependent Valuation (TDV) energy use, greenhouse gas emissions, and PV sizing for each set of options.
- Evaluate expected cost of operation for different existing and future (experimental) tariffs with ZNE homes. Publish *Worksheets on Expected Cost of Operation of Various ZNE Packages* with various possible tariff structures Time of Use, inverted tier, demand based, etc.

#### **Products:**

- EnergyPlus Building Energy Models Report
- Report on Title 24 Compliance
- Report on Technology Packages and Cost Estimates
- Report on Electric vs. Natural Gas Homes
- Worksheets on Expected Cost of Operation of Various ZNE Packages

## Exhibit A Scope of Work

### Subtask 2.2: Design of ZNE Community

The recipient shall:

- Identify community parameters, laying out the process for developing a community and the choices made at various stages of development. Develop a *Report on Process for ZNE Community Development* from land acquisition to home operation, including choices to be made at each stage of design.
- Work with builders and other stakeholders such as architects and city planners to develop optimized layouts for PV design of the three communities. Develop a *Report on Community Design* that discusses optimization of PV orientation and its impact on ZNE cost effectiveness. Recipient's design, to the extent not implemented will be reported based on design for community, expense, stage of community and other factors relevant to the development.
- Work with electric utility for each community to develop distribution system layout, utilizing the technology packages and the expected load shapes. Run multiple scenarios with and without smart inverters, storage and controllable loads, and using standard as well as active distribution system design. Develop a *Report on Distribution Planning*, including process, evaluation tools used and comparison of beginning and end distribution design for ZNE community.
- Work with electric, gas and water utilities for each community to estimate infrastructure cost for various scenarios as mentioned above. Develop a *Report on Electric vs. Gas Infrastructure Costs and Tradeoffs for ZNE Communities*.
- Evaluate cost effectiveness and design of community scale PV working with PV partners at each community, including the differences between single and multifamily housing. Develop a *Report on Community Solar Feasibility and Business Models* that includes possible designs and barriers to adoption including customer impressions, decisions, acceptance and benefits and potential for incorporation in each of the demonstration sites

### Products:

- Report on Process for ZNE Community Development
- Report on Community Design
- Report on Distribution Planning
- Report on Electric vs. Gas Infrastructure Costs and Tradeoffs for ZNE Communities
- Report on Community Solar Feasibility and Business Models

### Subtask 2.3: Interconnections

For each community, the recipient shall:

- Allocate responsibilities for processing of permits and interconnections between subcontractors and suppliers including builders, developers and product providers. Develop a *Report on Required Permits and Responsibilities*.
- Develop and/or update drawing packages for ZNE *homes* which includes drawings of the energy efficiency packages inside of the homes and report results in a *Drawing Packages for ZNE Report*
- Provide a *Copy of Final Permits* to the CAM and ensure that the information is consistent with Subtask 1.8.
- Work with subcontractors and suppliers, including builders, developers and/or other contractors, to apply for utility interconnection for PV, storage (if applicable) and any other items as required. Provide *Confirmation of Utility Interconnection for PV and Storage*.

## **Exhibit A Scope of Work**

- Track and provide quarterly *Construction Schedule Updates* and include with Subtask 1.5 starting November 2017.
- Prepare *CPR Report #1* and participate in a CPR meeting per Subtask 1.3.

### **Products:**

- Report on Required Permits and Responsibilities
- Drawing Packages for ZNE Report
- Copy of Final Permits
- Confirmation of Utility Interconnection for PV and Storage
- Quarterly Construction Schedule Updates
- CPR Report #1

### **Subtask 2.4: Monitoring and Evaluation Plans**

For each community, the recipient shall:

- Develop monitoring packages that includes a minimum of 12 months measurement and verification, data from the meters, data from individual load circuits, and data from devices to understand customer operation of ZNE homes, along with monitoring for indoor air quality and customer behavior (using device data). Develop *Monitoring Package Report* that includes hardware, data management and indoor air quality and methodology for data analysis.
- Develop legal frameworks for obtaining customer data including data on preferences and behavior, including how they differ from single family and multifamily homes and between owned and rented properties. Include results in a *Legal Framework and Legal Agreements Report*.
- Draft *Independent 3<sup>rd</sup> Party M&V Plans* incorporating plans from independent third-party M&V partner with control groups and include a monitoring plan for each community demonstration site.

### **Products:**

- Monitoring Package Report
- Legal Framework and Legal Agreements Report
- Independent 3rd Party M&V Plans

## Exhibit A Scope of Work

### **TASK 3: CONSTRUCTION OF ZNE COMMUNITIES**

The goal of this task is to collaborate with licensed building contractors, builders and developers to encompass the development of the design of ZNE model homes. This includes upgrading or providing applicable energy efficiency and ZNE components for installation in connection with the construction of the ZNE homes<sup>5</sup>, installation of monitoring packages and commissioning of the ZNE homes. This will also include understanding buyer or renter impressions and decisions regarding ZNE communities. Recipient shall design the ZNE package needed for developers or building contractors to construct and/or develop a minimum of 75 homes incorporating the upgrades or providing the applicable ZNE components needed to meet the design developed by the Recipient.

#### **Subtask 3.1: Construct Homes and Provide Customer Education**

The recipient shall:

- Monitor uptake (purchase or occupancy, depending on sold vs. rented properties) of ZNE homes and provide *Quarterly ZNE Community Uptake Report starting Q3 2018 and include* within Subtask 1.5.
- Monitor construction practices to ensure compliance with energy models and selected technology packages for ZNE communities based on designs and upgrades in connection with the builder's or developer's construction of new single and multi-family communities. Provide updates to Energy Commission in regular monthly Progress Reports.
- Test completed homes for performance such as air leakage, duct leakage, and other measurable functions and discuss results in a *Final Commissioning Report*.
- Create a curriculum on the features and operations of ZNE homes. Conduct homeowner and renter education classes with power point presentations on the features and operation and understand any of their concerns through feedback from surveys.
  - Develop a *Report on ZNE Community Education*
  - Develop a *PowerPoint Presentation on Curriculum*
  - Develop a *Collected Customer Education Feedback Report*
- Work with mortgage, landlord and rental companies as part of the sales process and understand how ZNE pathways and PV procurement strategies impact a homeowner's or renter's ability to purchase or afford his/her house respectively. Develop a *Report on Financial Affordability of ZNE Communities.*

#### **Products:**

- Quarterly ZNE Community Uptake Report
- Final Commissioning Report
- Report on ZNE Community Education
- PowerPoint Presentation on Curriculum
- Collected Customer Education Feedback Report
- Report on Financial Affordability of ZNE Communities

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<sup>5</sup> Recipient and the licensed builders or developers will perform this demonstration engineering project only on single and multifamily home construction projects that are otherwise subject to the prevailing wage law.

## Exhibit A Scope of Work

### Subtask 3.2: Customer Engagement – Model Homes and Customer Feedback

The recipient shall:

- Develop model home or model unit design working with non-craft subcontractors and suppliers including building contractors, developers and other builders to educate both prospective homeowners and the general public and develop a *Report on the Model Home/Model Unit Technology Package* for sales staff and customer education on ZNE.
- Work with non-craft subcontractors and suppliers including building contractors, developers and other builders to utilize model homes or model units as learning centers for builder or community staff to understand the definition of ZNE (TDV-ZNE), how ZNE status is determined, and different approaches to labeling and marketing ZNE communities to potential buyers/renters.
- Conduct surveys and obtain feedback from model home/model community visitors. Develop a *Report on Customer Perception of ZNE* covering prospective homeowners’/home renters’ initial perception of ZNE, as well as staff approaches to manage potential buyers’/occupants’ impressions, decisions, expectations and/or concerns regarding purchase or rental within a ZNE community.
- Interview builder or developer staff involved in setting up and or selling solar financing and/or selling of rooftop solar systems. Develop a *Report on ZNE Community Preference for Solar Lease vs. Purchase*.
- Train sales staff and/or rental agents on ZNE and work closely with them to message customers based on results of customer surveys. Develop a *Report on Sales Training*. The report will describe the structures of the training sessions and the educational material used to train sales staff/rental agents. It will also collate questions and other information requested by staff as well as their feedback based on prospective home occupant interaction.
- Develop enrollment agreements for buyers and renters (both ZNE and non-ZNE/control homes for each community **and type of home**) to allow use of data from surveys, discussions, utility bills and home energy monitoring. Solicit enrollments for agreement of occupants to participate in this study.
- In the case of rental properties, work with leasing agents or others, as appropriate, to track potential changes as needed for both tenant identities and engagement activities as well as energy measurement and verification.
- Conduct surveys of occupants at different stages of the construction and occupancy process. Develop a *Summary of ZNE Community Occupant Survey Results*.
- Prepare *CPR Report #2* and participate in a CPR meeting per Subtask 1.3.

#### Products:

- Report on the Model Home/Model Unit Technology Package
- Report on Customer Perception of ZNE
- Report on ZNE Community Preference for Solar Lease vs. Purchase
- Report on Sales Training
- Summary of ZNE Community Occupant Survey Results
- CPR Report # 2

## Exhibit A Scope of Work

### Subtask 3.3: Install Monitoring and Controls Infrastructure

The recipient, shall:

- Develop controls schema and algorithms for grid integration using end use systems and the impacts from ZNE features being installed in these ZNE communities. Develop a *Report for the Control Schema* for integration of end use systems with grid needs and impacts from ZNE.
- Develop and prepare a *Report on Monitoring and Data Analytics Infrastructure* to include, but not be limited to, the development of data analytics infrastructure including monitored data points for ZNE communities.
- Install and integrate controls and monitoring systems hardware after construction. Develop a *Report on Controls Operation, Troubleshooting and Customer Integration* that describes system control integration issues and resolutions.
- Commission controls and monitoring equipment for ZNE communities. Develop a *Report on Systems Controls and Management of DER* that explains how systems controls manage any impacts at the distribution grid. Report to include systems controls management of Distributed Energy Resources (DER), management of any impacts at the distribution grid and their response to bulk system requirements such as utility demand response programs and California ISO (Independent System Operator) programs.

#### Products:

- Report for the Control Schema
- Report on Monitoring and Data Analytics Infrastructure.
- Report on Controls Operation, Troubleshooting and Customer Integration
- Report on Systems Controls and Management of DER.

### TASK 4: CUSTOMER EDUCATION, OCCUPANT ACCEPTANCE, AND M&V

The goal of this task is to wrap up the analysis and reporting portion of the project. After the homes are occupied and the monitoring systems are installed, the monitoring systems shall be commissioned and the data infrastructure built to receive very large quantities of data. This data will be used to conduct cost effectiveness evaluations of individual measures, technology packages and whole home operation. This task will also measure greenhouse gas impacts from the communities. It will also measure occupant preferences and provide guidance for how to scale ZNE communities.

#### Subtask 4.1. Measurement and Verification (M&V) Operation

The Recipient shall:

- Test monitoring systems and ensure that data is being received and stored appropriately for ZNE communities. Develop a *Report on Commissioning of Monitoring Systems and Data Analysis and Storage Infrastructure* to discuss results of testing and commissioning.
- Develop a *Report on Data Analysis Techniques to Manage Large Data Sets* that discusses data analysis techniques that are specific to this type of project.
- Collect data on home energy use from both utility bills and monitored whole home data (and possibly circuit level data), based on the terms of the enrollment agreement from occupants and for a minimum of 12 months per Subtask 4.3.

## Exhibit A Scope of Work

- Develop a *Report on the Techniques to Analyze Customer Preferences for Indoor Comfort and Occupant Engagement* that discusses how to assess a user's indoor comfort preference level.
- Evaluate operation of plug loads and if possible, use techniques such as Non-Intrusive load monitoring to pinpoint plug load usage. Develop a *Report on Detailed Plug Load Data and Appliance Usage that discusses results of plug load energy usage of appliances isolating impacts from occupant operation and appliance efficiency.*
- Conduct detailed resident surveys of plug load usage and correlate to observed data from Report on Detailed Plug Load Data and Appliance Usage, described above. Develop a *Report on the Detailed Resident Surveys of Plug Load Usage* to discuss monitoring results and evaluation of observed data.
- Measure Indoor Air Quality (IAQ) in homes with and without Smart Ventilation. Develop a *Report on the Tradeoff of Indoor Air Quality and Energy Use in ZNE Homes*, to include but not be limited to, a discussion of how smart ventilation systems impact both in comparison to base ventilation.

### Products:

- Report on Commissioning of Monitoring Systems and Data Analysis and Storage Infrastructure
- Report on Data Analysis Techniques to Manage Large Data Sets
- Report on the Techniques to Analyze Customer Preferences for Indoor Comfort and Occupant Engagement
- Report on Detailed Plug Load Data and Appliance Usage
- Report on the Detailed Resident Surveys of Plug Load Usage
- Report on the Tradeoff of IAQ and Energy Use in ZNE Homes

### Subtask 4.2 Analysis of Cost Effectiveness of ZNE

The recipient shall:

- Evaluate and develop a *Report on the Cost Effectiveness of Selected Technology Packages and Individual Energy Efficiency Measures* using measured data on the installed technologies (i.e., Subtask 2.1) for the ZNE communities.
- Develop methodology for greenhouse gas (GHG) emissions calculation using tools such as ones using marginal emissions rates or the E3 calculator, and in the form as approved by the CAM in writing. Evaluate and enumerate GHG emissions and report results in a *Report on the Reduction in GHG Emissions with ZNE Homes and Communities.*
- Evaluate control homes using methods such as comparison with EnergyPlus building energy model data from Subtask 2.1 and monitored data from Subtasks 2.1 and 4.1 for both energy use and GHG emissions. Develop a *Report on Measured Savings* using control-treatment evaluation and/or in comparison to predictions from energy models, in the form as approved by the CAM in writing.

### Products:

- Report on the Cost Effectiveness of Selected Technology Packages and Individual Energy Efficiency Measures
- Report on the Reduction in GHG Emissions with ZNE Homes and Communities
- Report on Measured Savings

## **Exhibit A Scope of Work**

### **Subtask 4.3 Independent Third Party Measurement and Verification**

The recipient shall:

- Provide a minimum of 12 months of M&V data to the third party M&V partner and assist as required. M&V partner shall submit an *M&V Plan*. The Evaluation Report will discuss the detailed independent M&V per the CAM approved Independent 3rd Party M&V Plans. The Independent 3rd Party M&V Plans and Report should explain how they relate to subtask 2.4.
- Reconcile the difference in energy savings findings between the detailed monitoring and the third party M&V results. Develop a *Report on Impact Analysis and Data Reconciliation*.
- Prepare CPR Report #3 and participate in a CPR meeting per Subtask 1.3.

#### **Products:**

- M&V Plan
- Evaluation Report
- Report on Impact Analysis and Data Reconciliation
- CPR Report # 3

### **Subtask 4.4 Customer Engagement and Feedback**

The recipient shall:

- Conduct customer surveys that provide insight into customer satisfaction and any behavioral modification with ZNE homes. Conduct surveys of customers on their expectations with regard to energy bills, comfort and convenience from these homes. Prepare a *Report on Customer Satisfaction with Included Survey Instruments* to discuss survey results.
- Prepare *Customer Education Presentation Materials* and use them to conduct educational presentations that describe how customer behavior might impact energy use. Include high quality photographs as described in Task 6.

#### **Products:**

- Report on Customer Satisfaction with Included Survey Instruments
- Customer Education Presentation Materials

## **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:

## **Exhibit A Scope of Work**

- 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.
- For Information/Tools and Other Research Studies:
  - Outcome of project.
  - Published documents, including date, title, and periodical name.
  - A discussion of policy development. State if the project has been cited in government policy publications or technical journals, or has been used to inform regulatory bodies.
  - The number of website downloads.
  - An estimate of how the project information has affected energy use and cost, or has resulted in other non-energy benefits.
  - An estimate of energy and non-energy benefits.
  - Data on potential job creation, market potential, economic development, and increased state revenue as a result of project.

## **Exhibit A Scope of Work**

- 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.
  - 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.
- Provide at least six High-Quality Digital Photographs (minimum resolution of 1300x500 pixels in landscape ratio) of pre- and post-technology installation at the project sites or related project photographs.
- Prepare a Technology/Knowledge Transfer Report on technology transfer activities conducted during the project.

## **Exhibit A Scope of Work**

### **Products:**

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

### **V. Project schedule**

Please see the attached Excel spreadsheet.

Memorandum

To: EPC-15-094-2, Demonstration of Affordable, Comfortable, Grid Integrated Zero Net Energy Communities

Date: March 5, 2018

From: Heather Bird

Telephone: 916-327-1473

Subject: California Environmental Quality Act Analysis for EPC-15-094-2

I am a Professional Scientist in the Research and Development Division, California Energy Commission, and am the Commission's Agreement Manager for proposed Amendment 2 of Agreement EPIC -15-094-2 (Agreement), Demonstration of Affordable, Comfortable, Grid Integrated Zero Net Energy Communities.

Pursuant to my work in developing the Agreement, including the amended Scope of Work for the Agreement, I have reviewed the Lead Agency City of Belmont's, California Environmental Quality Act (CEQA) documents prepared by the Planning Commission for a project involving the subdivision of an existing property located at 1320 Talbryn Drive in Belmont, California. The project will subdivide the existing property into four new lots for the construction of one single-family residence on each lot. The City of Belmont's CEQA documents for the project include an Initial Study, Mitigated Negative Declaration, Mitigation Monitoring and Reporting Program and resolution approving the Mitigated Negative Declaration on April 22, 2014. Additionally, the Energy Commission reviewed the City's single-family design review approval for each of the four lots.

The project site is located in the hillside neighborhood located above and south of Twin Pines Park and the Belmont Civic Center. The site is approximately 1.34 acres, and has an average slope of approximately 37%. The eastern and central parts of the property are relatively level allowing access from Talbryn Drive via a driveway on a public right-of-way. Landscaping lines the perimeter of the site and woodlands cover the western slopes of the property. Adjacent and nearby land uses include residential, park, and institutional uses. Land uses immediately adjoining the project site include Talbryn Drive to the south, residential development on the north and east, and parkland and to the west and northwest.

The project site is currently developed with a single-family residence, garage, and storage structure. The property is accessed via a 12-foot wide paved driveway, which extends along the public right-of-way from Talbryn Drive to the site property line. The proposed project will subdivide the existing property into four lots for the construction of four single-family residences. The request conforms to the City General Plan Designation RL – Low Density Residential. The project requires Parcel Map and associated Grading Plan, and Tree Removal Permit approvals to subdivide the property and requests vacation of a 2,478 square foot portion of the public right-of-way adjacent to the project site.

Although the Initial Study identified potentially significant impacts in the areas of Biological Resources, Cultural Resources, Geology and Soils, Hazards and Hazardous Materials, Hydrology/Water Quality, Noise, Public Services, Recreation, and Transportation/Traffic, there will not be a significant effect in this instance because mitigation measures required for the project and agreed to by the applicant will reduce the effects to less-than-significant levels. The Initial Study indicated that there were no potential impacts associated with the environmental categories for Agriculture Resources and Mineral Resources. Less than significant impacts were associated with the environmental categories for Aesthetics, Air Quality, Land Use and Planning, Population and Housing, and Utilities and Service System. Based on the findings of the Initial Survey, the City of Belmont staff prepared a draft Mitigated Negative Declaration and noticed the availability of the Initial Study/Mitigated Negative Declaration for a 30-day public review period. The evaluation resulted in finding that nine environmental categories, Biological Resources, Cultural Resources, Geology and Soils, Hazards and Hazardous Materials, Hydrology/Water Quality, Noise, Public Services, Recreation, and Transportation/Traffic, could potentially be impacted by the proposed project. The Initial Study identified mitigation measures that would reduce project related impacts to less than significant levels.

The City of Belmont City Council adopted resolutions approving a Mitigated Negative Declaration, Vesting Tentative Parcel Map, a Grading Plan, and Tree Removal Permit for the four-lot subdivision. These approvals were made in accordance with the CEQA, State Subdivision Map Act, the Belmont Zoning Ordinance, and the Belmont Municipal Code.

Based on my review and consideration of the above CEQA documents, it is my independent and professional opinion that, since the above CEQA documents have been finalized, there have been no new project changes, and no new, additional, or increased significant environmental impacts have occurred. Furthermore, I have not identified any new information which would change the conclusions of the City of Belmont's CEQA documents, or render those conclusions inadequate.

It is also my independent and professional opinion that the work to be performed under Agreement EPC-15-094-2 falls within the scope of the City of Belmont's CEQA documents, and that the Agreement will not result in any new significant environmental impacts. Finally, I have not identified any new mitigation measures, within the Energy Commission's authority as a responsible agency, that would lessen or further mitigate the impacts of the 1320 Talbyrn Drive project.

The reasons for my conclusions are as follows:

The Agreement includes two main construction components: (1) Upgrading equipment efficiencies from the baseline energy code requirements; and (2) Altering construction materials and techniques used to build the new residential structures. The proposed Agreement would fund Zero Net Energy upgrades for four single family residences. All of the construction and operation for the Agreement will be within the activities evaluated by the CEQA documents identified above. The scope of work of the Agreement has no omissions from, or conflicts of information with, the activities evaluated by the City of Belmont's CEQA documents.

#### Biological Resources

The proposed Agreement will not have any impact on biological resources, and will not change the impacts identified in the City's CEQA documents.

#### Cultural Resources

The proposed Agreement will not have any impact on cultural resources, and will not change the impacts identified in the City's CEQA documents.

#### Geology and Soils

The proposed Agreement will not have any impact on geology and soils, and will not change the impacts identified in the City's CEQA documents.

#### Hazards and Hazardous Materials

The proposed Agreement will not have any impact on hazards and hazardous materials, and will not change the impacts identified in the City's CEQA documents.

#### Hydrology/Water Quality

The proposed Agreement will not have any impact on hydrology/water quality, and will not change the impacts identified in the City's CEQA documents.

#### Noise

The proposed Agreement will not have any impact on noise, and will not change the impacts identified in the City's CEQA documents.

#### Public Services

The proposed Agreement will not have any impact on public services, and will not change the impacts identified in the City's CEQA documents.

#### Recreation

The proposed Agreement will not have any impact on recreation, and will not change the impacts identified in the City's CEQA documents.

Transportation/Traffic

The proposed Agreement will not have any impact on transportation/traffic, and will not change the impacts identified in the City's CEQA documents.

## **California Energy Commission**

**April 11, 2018 Business Meeting – Agenda Item #10**

**Electric Power Research Institute, Inc.:**

**“Demonstration of Affordable, Comfortable, Grid Integrated Zero Net Energy Communities” (EPC-15-094-2)**

The full California Environmental Quality Act (CEQA) supporting documentation for EPC-15-094 including EPC-15-094-02 can be obtained at:

[http://www.energy.ca.gov/research/epic/environmental\\_review\\_documents.html#epri](http://www.energy.ca.gov/research/epic/environmental_review_documents.html#epri)

Memorandum

To: EPC-15-094-2, Demonstration of Affordable, Comfortable, Grid Integrated Zero Net Energy Communities

Date: March 5, 2018

From: Heather Bird

Telephone: 916-327-1473

Subject: California Environmental Quality Act Analysis for EPC-15-094-2

I am a Professional Scientist in the Research and Development Division, California Energy Commission, and am the Commission's Agreement Manager for proposed Amendment 2 of Agreement EPIC -15-094-2 ("Agreement"), Demonstration of Affordable, Comfortable, Grid Integrated Zero Net Energy Communities.

Pursuant to my work in developing the Agreement, including the amended Scope of Work for the Agreement, I have reviewed the Lead Agency's, Los Angeles County ("County"), California Environmental Quality Act ("CEQA") documents prepared by the Los Angeles County Department of Regional Planning for various locations throughout the Community of Florence-Firestone. The proposed development is located at the existing physical address of 6218 Compton Avenue, Los Angeles ("Compton Avenue"), in the unincorporated Florence-Firestone, within the Compton-Florence Zoned District. The subject property is a flat parcel totaling approximately 19,586 square feet or 0.45 acres in net lot area. The property is currently vacant but the Compton Avenue project will involve the construction, demonstration, and operation of an affordable zero net energy housing development with 30 units for special needs individuals. Twenty-nine units will contain one bedroom while the unrestricted manager's unit will contain two bedrooms. The development also includes amenities and support services such as an indoor community area, private case management offices, a communal kitchen, a laundry facility, and open air community areas.

The County's CEQA documents for the project include an Initial Study, Negative Declaration, the resolution adopting the Negative Declaration and the Administrative Housing Permit authorizing a 30-unit affordable apartment development for special needs individuals, along with appurtenant amenities and parking.

An Initial Study was prepared on this project in compliance with the State CEQA Guidelines and the environmental reporting procedures of the County of Los Angeles. It was determined that this project will not exceed the established threshold criteria for any environmental/service factor and, as a result, will not have a significant effect on the physical environment. Based on the Initial Study, the Board of Supervisors of the County of Los Angeles found that the project will have no a significant effect on the environment and approved a Negative Declaration.

In the Negative Declaration, the County identified and analyzed 21 environmental factors for potential impacts, and concluded all 21 environmental factors were "less than significant impact/no impact." The Florence-Firestone is located just north of the Inglewood Fault Zone and within the Hansen Dam debris basin. As individual projects are proposed, appropriate reviews will be performed to address potential geotechnical concerns. The project site is also located within the remnants of a halocene stream channel, flood plain, dune, and alluvial fan. As individual projects are proposed, appropriate reviews will be performed to address potential flood related concerns. The proposed Agreement will not have any impact on the flood concerns. And the project is located near industrial uses, some of which use flammable materials in their operations. As individual projects are proposed, appropriate reviews will be performed to address potential fire hazard concerns. The proposed Agreement will not have any impact on the fire hazard concerns.

The County's General Plan designates the project site as CG – General Commercial. The General Plan category is consistent with the Zoning category of C-3 (General Commercial). Pursuant to the General Plan, the purpose of the CG category is to allow for multifamily residences. A development strategy of the General Plan is to emphasis infill development to encourage the supply of low and moderate income housing throughout the urban areas.

Generally, CEQA does not require an agency to consider the effects of existing environmental conditions on a proposed project's future users or residents but evaluate how a project might exacerbate existing environmental hazards. (*California Building Industry Association v. Bay Area Air Quality Management District* (2015) 62 Cal.4th 369, 392.) The Other Considerations identified in the Initial Study were focused on existing environmental conditions such as location near the Hansen Dam or near industrial uses. Pursuant to Section 22.44.138 of Title 22 of the Los Angeles County Code, premises in Zone C-3 may be permitted for an apartment use subject to approval

by the Director of the Los Angeles County Department of Regional Planning. The Director found that the proposed affordable housing development is consistent with the land use designation and zoning which allows for apartment use and parking. Additionally, the Director found that the development when considered on the basis of the suitability of the site is so arranged to provide for the safety and convenience of bicyclists and pedestrians, insure the protection of public health, safety and general welfare, prevent adverse effects on neighboring property and is in conformity with good zoning practice. An Administrative Housing Permit was approved by the County as lead agency on February 22, 2017.

Based on my review and consideration of the above CEQA documents and housing permit documents, it is my independent and professional opinion that, since the above CEQA documents and housing permit have been finalized, there have been no new project changes, and no new, additional, or increased significant environmental impacts have occurred. Furthermore, I have not identified any new information which would change the conclusions of the County's CEQA documents and housing permit, or render those conclusions inadequate.

It is also my independent and professional opinion that the work to be performed under the proposed Agreement EPC-15-094-2 falls within the scope of the County's CEQA documents and housing permit, and that the Agreement will not result in any new significant environmental impacts. Finally, I have not identified any mitigation measures, within the Energy Commission's authority as a responsible agency, that would lessen or further mitigate the impacts of the Compton Avenue project.

The reasons for my conclusions are as follows:

The proposed project includes two main construction components: (1) Upgrading equipment efficiencies from the baseline energy code requirements; and (2) Altering construction materials and techniques used to build the new residential structures. The proposed project would fund Zero Net Energy upgrades for 30 multifamily residences within the Plan. All of the construction and operation for the proposed Agreement will be within the activities evaluated by the Plan CEQA documents and housing permit identified above. The scope of work of the proposed Agreement has no omissions from, or conflicts of information with, the County's Negative Declaration or Administrative Housing Permit.

**STATE OF CALIFORNIA**

**STATE ENERGY RESOURCES  
CONSERVATION AND DEVELOPMENT COMMISSION**

RESOLUTION - RE: Electric Power Research Institute, Inc. (EPRI) Project

**WHEREAS**, the Electric Power Research Institute, Inc. entered into grant Agreement Number EPC-15-094 with the State Energy Resources Conservation and Development Commission (Energy Commission) for a grant in the amount of \$4,942,809 to fund cost competitive ZNE design strategies combining occupant needs with technology solutions at three residential communities.

**WHEREAS**, proposed Amendment 2 to Agreement Number EPC-15-094, "Demonstration of Affordable, Comfortable, Grid Integrated Zero Net Energy Communities" (hereinafter also known as "Project"), with Electric Power Research Institute, Inc. involves three (3) separate Project sites in the County of Los Angeles and the Cities of Belmont and Fresno.

**WHEREAS**, as to the Project site in the City of Belmont:

1. The City of Belmont is the Lead Agency for the 1320 Talbryn Drive, which is one of three Project sites for Amendment 2 to Agreement Number EPC-15-094;
2. An Initial Study was prepared to determine if the residential development would have a significant effect on the environment and thereafter a Mitigated Negative Declaration was prepared;
3. The City of Belmont adopted the Mitigated Negative Declaration and Mitigation, Monitoring and Reporting Program, by resolution, copies of which are on file with the Energy Commission; and
4. The City of Belmont reviewed and considered the Initial Study, Mitigated Negative Declaration, and the Mitigation Monitoring and Reporting Program and adopted findings required by the California Environmental Quality Act, and approved the Project.

**WHEREAS**, as to the Project site in the County of Los Angeles:

1. The County of Los Angeles is the Lead Agency for 6218 Compton Avenue, which is the second of three Project sites for Amendment 2 to Agreement Number EPC-15-094;
2. The County of Los Angeles prepared an Initial Study and Negative Declaration for the Florence Firestone Community Standards District, which includes Compton

- Avenue, to assess the potentially significant environmental impacts of the Community Standards District as well as prepared an Administrative Housing Permit that assessed zoning and development standards; and
3. The County of Los Angeles adopted the Initial Study and Negative Declaration, by resolution, copies of which are on file with the Energy Commission.

**WHEREAS**, the Energy Commission is considering proposed Amendment 2 to Agreement Number EPC-15-094, a grant to fund the “Demonstration of Affordable, Comfortable, Grid Integrated Zero Net Energy Communities” Project for the sites listed above; and

**WHEREAS**, prior to acting on the Amendment 2 to Agreement EPC-15-094, the Energy Commission desires to make certain findings pursuant to the CEQA Guidelines, title 14, section 15096;

**NOW THEREFORE, BE IT RESOLVED:**

1. As to the Project site in the City of Belmont:
  - a. The Energy Commission has reviewed the information contained in the Initial Study, Mitigated Negative Declaration, Mitigation, and Monitoring, and Reporting Program, as well as the CEQA findings contained in the Lead Agency’s corresponding resolution that are relevant to its approval of Amendment 2 to Agreement Number EPC-15-094, which are adopted to the extent that they are relevant to the Energy Commission’s decision to approve Amendment 2 to Agreement Number EPC-15-094.
  - b. The City of Belmont has already adopted the mitigation measures recommended in the aforementioned documents, has authority to implement the mitigation measures or to seek any required approvals for the mitigation measures, and the Energy Commission has no direct authority to implement the mitigation measures.
  - c. The Energy Commission has reviewed and considered the Initial Study, Mitigated Negative Declaration, and Mitigation, Monitoring, and Reporting Program and finds that they are adequate for its use as the decision-making body for its consideration of Amendment 2 to Agreement Number EPC-15-094.
  - d. Approval of Amendment 2 to Agreement Number EPC-15-094 is within the scope of the activities evaluated in the Mitigated Negative Declaration.
  - e. Since the Mitigated Negative Declaration was finalized, there have been no substantial project changes and no substantial changes in the project circumstances that would require major revisions to it due to the involvement of new significant environmental effects or an increase in the severity of previously identified significant impacts, and there is no new information of substantial importance that would change the conclusion set forth therein.
  - f. The Energy Commission has not identified any feasible alternative or additional feasible mitigation measures within its power that would substantially lessen or avoid any significant effect the Project would have on the environment.

2. As to the Project site in the County of Los Angeles:
  - a. The Energy Commission has reviewed the information contained in the Initial Study, Negative Declaration and Administrative Housing Permit, as well as the CEQA findings contained in the Lead Agency's corresponding resolution that are relevant to its approval of Amendment 2 to Agreement Number EPC-15-094, which are adopted to the extent that they are relevant to the Energy Commission's decision to approve Amendment 2 to Agreement Number EPC-15-094.
  - b. The Energy Commission has reviewed and considered the Initial Study, the Negative Declaration and the Administrative Housing Permit and finds that they are adequate for its use as the decision-making body for its consideration Amendment 2 to Agreement Number EPC-15-094.
  - c. Approval of Amendment 2 to Agreement Number EPC-15-094 is within the scope of the activities evaluated in the Initial Study, Negative Declaration and Administrative Housing Permit.
  - d. Since the Initial Study, Negative Declaration and Administrative Housing Permit were finalized there have been no substantial project changes and no substantial changes in the project circumstances that would require major revisions to it due to the involvement of new significant environmental effects or an increase in the severity of previously identified significant impacts, and there is no new information of substantial importance that would change the conclusion set forth therein.
  - e. The Energy Commission has not identified any feasible alternative or additional feasible mitigation measures within its power that would substantially lessen or avoid any significant effect the Project would have on the environment.

**BE IT FURTHER RESOLVED**, the Energy Commission finds, based on the information contained in the environmental review documents described above, including findings of fact and that the mitigation measures incorporated therein will prevent Amendment 2 to Agreement Number EPC-15-094 from having any significant environmental impacts.

**BE IT FURTHER RESOLVED**, the Energy Commission adopts staff CEQA findings contained in the Agreement or Amendment Request Form (as applicable).

**BE IT FURTHER RESOLVED**, that the Energy Commission approves Amendment 2 to Agreement Number EPC-15-094 with Electric Power Research Institute, Inc. to change the project demonstration sites, make minor scope changes, add subcontractors, reallocate funding across budget categories, and extend the term of the agreement by 12 months; and

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

## **CERTIFICATION**

The undersigned Secretariat to the Commission does hereby certify that the foregoing is a full, true, and correct copy of a Resolution duly and regularly adopted at a meeting of the California Energy Commission held on April 11, 2018.

AYE: [List of Commissioners]

NAY: [List of Commissioners]

ABSENT: [List of Commissioners]

ABSTAIN: [List of Commissioners]

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Cody Goldthrite,  
Secretariat