

GRANT REQUEST FORM (GRF)

CEC-270 (Revised 10/2015)

CALIFORNIA ENERGY COMMISSION

New Agreement EPC-15-069 (To be completed by CGL Office)

Division	Agreement Manager:	MS-	Phone
ERDD	Nicholas Blair	51	916-445-5377

Recipient's Legal Name	Federal ID Number
The Zero Net Energy (ZNE) Alliance	47-5562137

Title of Project
Lancaster Advanced Energy Community (AEC) Project

Term and Amount	Start Date	End Date	Amount
	6/13/2016	3/30/2018	\$ 1,469,779

Business Meeting Information
 ARFVTP agreements under \$75K delegated to Executive Director.

Proposed Business Meeting Date	5/17/2016	<input type="checkbox"/> Consent	<input checked="" type="checkbox"/> Discussion
Business Meeting Presenter	Anthony Ng	Time Needed:	5 minutes

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

Agenda Item Subject and Description

THE ZERO NET ENERGY (ZNE) ALLIANCE. Proposed resolution approving Agreement EPC-15-069 with TheAlliance for a \$1,469,779 grant to develop innovative business models and policy frameworks that overcome adoption barriers for Zero Net Energy residential communities and Community Distributed Energy Resources. This project will provide tools and training for other local governments, project developers, home builders, utilities, and other stakeholders on how to use the project's technical and financial models to advance Zero Net Energy and Distributed Energy Resource projects.

California Environmental Quality Act (CEQA) Compliance

- Is Agreement considered a "Project" under CEQA?
 - Yes (skip to question 2) No (complete the following (PRC 21065 and 14 CCR 15378)): Explain why Agreement is not considered a "Project": Agreement will not cause direct physical change in the environment or a reasonably foreseeable indirect physical change in the environment because
- If Agreement is considered a "Project" under CEQA:
 - a) Agreement **IS** exempt. (Attach draft NOE)
 - Statutory Exemption. List PRC and/or CCR section number: Pub. Resources Code §§ 21102, 21150; Cal. Code Regs., tit 14, § 15262 and sec. 15268.
 - Categorical Exemption. List CCR section number: Cal. Code Regs., tit 14 §15306
 - Common Sense Exemption. 14 CCR 15061 (b) (3)
 Explain reason why Agreement is exempt under the above section:
 This project will be performing feasibility and planning studies, through development of a master community design that includes innovative financial and business models that create a community-level design for possible future projects which the Energy Commission has not yet approved. The project does not require the preparation of an EIR or Negative Declaration, but does require consideration of environmental factors. ZNE in cooperation with the City of Lancaster and local developers will assist in the development of permitting for distributed generation and solar powered residential communities that have been identified. However, the ministerial permits for these developments are covered under CEQA statutory exemption (Cal. Code Regs., tit 14, sec 15268).
 - b) Agreement **IS NOT** exempt. (Consult with the legal office to determine next steps.)
 Check all that apply

<input type="checkbox"/> Initial Study	<input type="checkbox"/> Environmental Impact Report
<input type="checkbox"/> Negative Declaration	<input type="checkbox"/> Statement of Overriding Considerations
<input type="checkbox"/> Mitigated Negative Declaration	

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

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Legal Company Name:	Budget
Energy Solutions International	\$ 464,793
Olivine, Inc.	\$ 314,956
ConSol	\$ 255,030
NHA Advisors	\$ 50,000
Sharon Tobar	\$ 65,000
Stacey Hobart	\$ 30,000

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

Legal Company Name:

Budget Information			
Funding Source	Funding Year of Appropriation	Budget List No.	Amount
EPIC	14-15	301.001B	\$1,469,779
			\$
R&D Program Area:	EDMFO: EDMF	TOTAL:	\$1,469,779
Explanation for "Other" selection			
Reimbursement Contract #:		Federal Agreement #:	

Recipient's Administrator/ Officer				Recipient's Project Manager			
Name:	Richard Schorske			Name:	Richard Schorske		
Address:	826 Point San Pedro Rd			Address:	826 Point San Pedro Rd		
City, State, Zip:	San Rafael, CA 94901-2535			City, State, Zip:	San Rafael, CA 94901-2535		
Phone:	415-870-9316 /	Fax:	- -	Phone:	415-870-9316 /	Fax:	- -
E-Mail:	richards@dsnetwork.org			E-Mail:	richards@dsnetwork.org		

Selection Process Used	
<input checked="" type="checkbox"/> Competitive Solicitation	Solicitation #: GFO-15-312
<input type="checkbox"/> First Come First Served Solicitation	

The following items should be attached to this GRF		
1. Exhibit A, Scope of Work	<input checked="" type="checkbox"/>	Attached
2. Exhibit B, Budget Detail	<input checked="" type="checkbox"/>	Attached
3. CEC 105, Questionnaire for Identifying Conflicts	<input checked="" type="checkbox"/>	Attached
4. Recipient Resolution	<input checked="" type="checkbox"/> N/A	<input type="checkbox"/> Attached
5. CEQA Documentation	<input checked="" type="checkbox"/> N/A	<input type="checkbox"/> Attached

Agreement Manager

Date

Office Manager

Date

Deputy Director

Date

EXHIBIT A Scope of Work

I. TASK ACRONYM/TERM LISTS

A. Task List

Task #	CPR ¹	Task Name
1		General Project Tasks
2	X	Develop Public-Private Business Model for New ZNE Residential Communities
3		Develop Business Model Frameworks and Streamlined Planning and Permitting for Community DER Projects
4		Evaluation of Project Benefits
5		Technology/Knowledge Transfer Activities

B. Acronym/Term List

Acronym/Term	Meaning
AEC	Advanced Energy Community
AHJ	Authority Having Jurisdiction
CAISO	California Independent Systems Operator
CAM	Commission Agreement Manager
CAO	Commission Agreement Officer
CCA	Community Choice Aggregation
CFD	Community Facilities District
City	City of Lancaster
CPR	Critical Project Review
DER	Distributed Energy Resources
DR	Demand Response
EV	Electric Vehicle
LCE	Lancaster Choice Energy
PACE	Property Assessed Clean Energy
PEA	A Power Efficiency Agreement (PEA) is a financial instrument developed that provides a no-cost, no-risk shared savings model to drive customer adoption of intelligent energy storage.
PV	Photovoltaic
SCE	Southern California Edison

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

EXHIBIT A Scope of Work

Acronym/Term	Meaning
TAC	Technical Advisory Committee
V-NEM	Virtual Net Energy Metering
ZERO-CA	California Homebuilder Foundation Zero Energy Residential Optimization-Community Achievement (ZERO-CA) project was funded in through EPIC GFO 15-308. The ZERO-CA project analyzes and prioritizes above-code energy savings measures for ZNE new construction in key California climate zones and develops cost-effective measure packages for each climate zone. Project partner Energy Solutions is a subcontractor on this project leading plug load modeling. This work will be leveraged to the extent possible for the Richmond AEC project.
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 fund development of policy, planning and business models that overcome known barriers to achieving the State's statutory energy goals

B. PROBLEM/ SOLUTION STATEMENT

Problem

Solar Photovoltaic (PV) is an essential aspect of any Zero Net Energy (ZNE) strategy; however the incremental costs of adding solar PV to new construction are prohibitive because they cannot capture economies of scale experienced in other aspects of production buildings. Two primary examples include: high up front capital cost that must be passed to the home buyer through the sales price of the home, and independent interconnection applications needing to be submitted for each home.

High up-front cost is the greatest single market barrier to accelerated deployment of stationary storage and Electric Vehicles (EV). While technology costs are decreasing steadily, business model innovations are needed to reduce up-front capital costs and customer risk in order to achieve the State's stationary storage, EV, and sustainable freight goals. The solar lease model transformed California's solar market, and the Energy Saving Performance Contract has become a primary means of funding capital-intensive energy efficiency projects. However, these models have not yet been demonstrated, documented and refined in the EV and stationary storage industries.

Solution

This project will address financial barriers to new ZNE construction by developing a novel financing mechanism that allows the land developer or homebuilder to finance shared distributed energy resources (DER) through the same mechanism that has long been used to finance other community infrastructure and resources such as water, sewers, streets, schools and parks. The project will establish a policy framework and financial model for land-secured

EXHIBIT A Scope of Work

financing which can be used to fund solar and other microgrid technologies in the context of both ZNE developments and Community DER deployment generally. By providing access to low-interest municipal bonds that are repaid through residents' property taxes, local governments can help homebuilders and homebuyers cost-effectively comply with the State's 2020 ZNE goal by reducing up front and total cost for renewables. Local governments that adopt this model will also create more attractive markets for new development by enabling the creation of adjacent community solar – in addition to rooftop solar – thereby expanding the feasibility and cost-efficiency of new ZNE residential developments.

This project will address capital barriers facing stationary storage and EV adoption by developing: 1) a Community DER Valuation Framework, and 2) public/private business models for solar PV + stationary storage, and grid-integrated EVs + stationary storage (with an initial focus on medium-duty E-Buses and E-Trucks in fleet applications). The project will seek to extend the solar Power Purchase Agreement model to the storage domain by leveraging a new financial instrument developed that provides a no-cost, no-risk shared savings model to drive customer adoption of intelligent energy storage – known as the Power Efficiency Agreement™ (PEA™). Given unique EV cost dynamics, the project will re-position batteries as part of the fuel-related operating expense rather than positioning the battery as part of the initial vehicle capital expense. This shift immediately creates initial price parity – or in many cases a price advantage – for EVs compared with fossil-fueled equivalents. Key benefits of this model include: (i) establishing lower up-front capital costs and maintaining the capital/operating cost proportionality to which fleet managers are accustomed, (ii) enabling the bundling of battery lease contracts with other grid-services revenue models, potentially including use of re-purposed EV batteries in stationary storage arrays which can help mitigate utility demand charges for customer fleet recharging; (iii) removing the battery replacement and disposal burden from the customer, and (iv) enabling EV manufacturers to maintain the strong battery management and governance necessary to optimize performance and revenue throughout the battery life-cycle.

C. GOALS AND OBJECTIVES OF THE AGREEMENT

Agreement Goals

The goals of this project are to:

1. Develop innovative business models and policy frameworks that overcome adoption barriers for ZNE residential communities and Community DERs, including grid-integrated EV; and
2. Provide tools and training for other local governments, project developers, home builders, utilities, and other stakeholders on how to use the project's technical and financial models to advance ZNE and DER projects.

Ratepayer Benefits:² This Agreement will result in the ratepayer benefits of greater electricity reliability, lower costs, and increased safety by: 1) Facilitating breakthroughs in ZNE community policy, finance and interconnection and 2) Facilitating development of economically attractive opportunities to deploy integrated solar PV, stationary storage and grid-integrated EVs.

² California Public Resources Code, Section 25711.5(a) requires projects funded by the Electric Program Investment Charge (EPIC) to result in ratepayer benefits. The California Public Utilities Commission, which established the EPIC in 2011, defines ratepayer benefits as greater reliability, lower costs, and increased safety (See CPUC "Phase 2" Decision 12-05-037 at page 19, May 24, 2012, http://docs.cpuc.ca.gov/PublishedDocs/WORD_PDF/FINAL_DECISION/167664.PDF).

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Technological Advancement and Breakthroughs:³ This Agreement will support the development and commercialization of technological advancements and breakthroughs that overcome barriers to the achievement of the State of California's statutory energy goals by: 1) Developing novel policy models, financing mechanisms, metering scenarios, and streamlined interconnection processes for ZNE communities; 2) Developing a Community DER Valuation Framework to enable transparent and flexible methodology for modeling integrated DER value streams, and 3) Developing innovative public/private business models for (a) integrated solar PV + stationary storage and (b) medium-duty EV + stationary storage.

Agreement Objectives

The objectives of this Agreement are to:

1. Develop a municipal finance model and policy framework for new residential ZNE communities;
2. Develop a Community DER Valuation Framework for grid-integrated Community DERs (focusing on solar PV, grid integrated electric vehicles, and battery storage);
3. Plan and permit a medium-density affordable housing project to be a ZNE microgrid that enables cost-effective deployment of advanced technologies and streamlined utility interconnection;
4. Plan and permit a public/private partnership Community DER project an estimated 4 megawatts of energy storage (using repurposed EV batteries), an estimated 9 megawatts of solar, and an estimated 30 electric-buses (representing potentially 4 megawatts of controllable load); and
5. Conduct workshops –in Northern, Central, and Southern California – to educate public and private sector leaders on how to leverage the Project's innovative financial models and program designs to accelerate ZNE and DER project deployment.

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

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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

- 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.
- Submit the final product to the CAM once agreement has been reached on the draft. The CAM will provide written approval of the final product within 15 days of receipt, unless otherwise specified in the task/subtask for which the product is required.
- If the CAM determines that the final product does not sufficiently incorporate his/her comments, submit the revised product to the CAM within 10 days of notice by the CAM, unless the CAM specifies a longer time period.

For products that require a final version only

- Submit the product to the CAM for approval.
- If the CAM determines that the product requires revision, submit the revised product to the CAM within 10 days of notice by the CAM, unless the CAM specifies a longer time period.

For all products

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

- **Electronic File Format**

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

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

- Data sets will be in MS Access or MS Excel file format (version 2007 or later), or any other format approved by the CAM.

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- 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.

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.

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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

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).

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- 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)

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

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- provided in Agreement products).
 - Need to document the Recipient's disclosure of "subject inventions" developed under the Agreement.
 - "Surviving" Agreement provisions such as repayment provisions and confidential products.
 - Final invoicing and release of retention.
- Prepare a *Final Meeting Agreement Summary* that documents any agreement made between the Recipient and Commission staff during the meeting.
 - Prepare a *Schedule for Completing Agreement Closeout Activities*.
 - Provide *All Draft and Final Written Products* on a CD-ROM or USB memory stick, organized by the tasks in the Agreement.

Products:

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

REPORTS AND INVOICES

Subtask 1.5 Progress Reports and Invoices

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

The Recipient shall:

- Submit a monthly *Progress Report* to the CAM. Each progress report must:
 - Summarize all Agreement activities conducted by the Recipient for the preceding month, including 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.
 - Provide a synopsis of the project progress, including accomplishments, problems, milestones, products, schedule, fiscal status, and any evidence of progress such as photographs.
- Submit a monthly or quarterly *Invoice* that follows the instructions in the "Payment of Funds" section of the terms and conditions. In addition, each invoice must document and verify:
 - Energy Commission funds received by California-based entities;
 - Energy Commission funds spent in California (*if applicable*); and
 - Match fund expenditures.

Products:

- Progress Reports
- Invoices

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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 and approve 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 a Style Manual provided by the CAM.

Subtask 1.6.1 Final Report Outline

The Recipient shall:

- Prepare a *Final Report Outline* in accordance with the *Style Manual* provided by the CAM.
- Submit a draft of the outline to the CAM for review and comment.
- Once agreement has been reached on the draft, submit the final outline to the CAM. The CAM will provide written approval of the final outline within 10 days of receipt.

Recipient Products:

- Final Report Outline (draft and final)

CAM Product:

- Style Manual

Subtask 1.6.2 Final Report

The Recipient shall:

- Prepare a *Final Report* for this Agreement in accordance with the approved Final Report Outline and the Style Manual provided by the CAM.
- Submit a draft of the report to the CAM for review and comment. Once agreement on the draft report has been reached, the CAM will forward the electronic version for Energy Commission internal approval. Once the CAM receives approval, he/she will provide written approval to the Recipient.
- Submit one bound copy of the Final Report to the CAM.

Products:

- Final Report (draft and final)

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.

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The Recipient shall:

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

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

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

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.

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- 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.

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:

EXHIBIT A

Scope of Work

- 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
- Members of relevant technical society committees.

The Recipient shall:

- Prepare a *List of Potential TAC Members* that includes the names, companies, physical and electronic addresses, and phone numbers of potential members. The list will be discussed at the Kick-off meeting, and a schedule for recruiting members and holding the first TAC meeting will be developed.
- Recruit TAC members. Ensure that each individual understands member obligations and the TAC meeting schedule developed in subtask 1.11.
- Prepare a *List of TAC Members* once all TAC members have committed to serving on the TAC.
- Submit *Documentation of TAC Member Commitment* (such as Letters of Acceptance) from each TAC member.

Products:

- List of Potential TAC Members
- List of TAC Members
- Documentation of TAC Member Commitment

Subtask 1.11 TAC Meetings

The goal of this subtask is for the TAC to provide strategic guidance for the project by participating in regular meetings, which may be held via teleconference.

EXHIBIT A

Scope of Work

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

IV. TECHNICAL TASKS

TASK 2 DEVELOP PUBLIC-PRIVATE BUSINESS MODEL FOR NEW ZNE RESIDENTIAL COMMUNITIES

The goals of this task are to 1) Establish the legal precedent and policy framework to expand land-secured (property tax) financing model to renewable energy projects serving new residential subdivisions in order to provide homebuilders and local governments a cost-effective method for complying with 2020 State energy goals; 2) Develop a municipal finance model for new residential ZNE community developments leveraging legal precedent from Property Assessed Clean Energy PACE programs; and 3) Plan and permit a medium-density master metered ZNE subdivision microgrid that enables deployment of innovative DER business models and streamlined permitting and interconnection.

Subtask 2.1 Research and Develop Legal and Policy Framework for Land Secured Financing

The goal of this subtask is to establish the legal precedent and policy framework to expand land-secured (property tax) financing model to renewable energy projects serving new residential communities in order to accelerate the development of new ZNE residential subdivisions.

The Recipient shall:

- Review current legal framework and precedent for land-secured financing of assets in new residential subdivisions (e.g. Mello Roos).
- Review current legal framework and precedent for land-secured financing of energy improvements in existing homes (e.g. PACE).
- Identify gaps in existing land secured financing mechanisms (e.g. PACE and Mello Roos) with respect to financing shared community renewable generation and/or storage projects.

EXHIBIT A Scope of Work

- Characterize the primary and secondary market for municipal bonds used to finance shared community assets and repaid through property taxes.
- Determine how the proposed use of land-secured financing for PV differs from commonly accepted uses for groups such as Mello Roos, and how these differences may affect risk profile, repayment schedules, interest rates, bond resale markets, and availability of capital.
- Research alternative development, delivery, ownership and maintenance models for land-secured projects serving new communities, including the roles that cities, utilities, CCAs, HOAs or alternative/novel private or public/private business entities.
- Review the current legal frame work for Virtual Net Energy Metering (V-NEM) to determine alternative ways that V-NEM could apply to multi-property developments.
- Characterize and conduct a comparative evaluation of several different alternatives for allocating and crediting homeowners for the power generated by community solar projects developed using the land-secured financing model. These alternatives may include but are not limited to:
 - Leveraging existing Net Energy Metering (NEM) tariffs.
 - Developing a new NEM tariff designed to accommodate distribution of energy in single family subdivisions served by an adjacent PV farm.
 - Developing an alternative (non-NEM) tariff whereby a CCA would maintain ownership of the community scale PV and provide the respective homeowners a special rate schedule to account for the investment made through property taxes.
- Perform interviews with relevant stakeholders to identify legal, economic, and practical barriers to including renewable energy resources (Solar P.V., Wind, and Storage) within financing plans for new residential development. The team will develop interview questions for the following groups:
 - Local governments: Opportunities and challenges for: a) local action (policies, public/private partnerships, etc.) to advance the State's statutory energy goals, b) applying land-secured financing to ZNE community and Community DER developments, and c) organizational partnerships between IOUs, CCAs, school districts, counties, transit authorities and other organizations;
 - CCAs: CCA role in ZNE new construction, partnership opportunities with local jurisdictions, opportunities and challenges with tariff setting, metering and billing;
 - Land developers, renewable energy developers and homebuilders: Opportunities and challenges to: a) accelerate the use of land-secured financing to fund new construction renewable energy projects, b) strengthen and coordinate project development relationships with the public sector, and c) practical issues and development economics such as availability of land for solar farms vs. conventional residential rooftop PV model.
 - Market stakeholders / advisers: Opportunities and challenges to use land-secured financing for ZNE community and Community DER projects, including, but not limited to: applicant risk, project risk, and risk inherent to the local economy, as well as what regulatory and market frameworks to accelerate a market for land-secured financing for ZNE community and Community DER projects.
- Compile research findings and interview responses into a *Legal and Policy Framework Report*. This report will:
 - Identify specific areas in which existing legislation and/or legal precedents (CCAs, PACE, Mello Roos, NEM tariffs) are robust and already support the land-secured financing model, versus those areas in which more work will be needed. The report will identify strategies and tools to overcome gaps, barriers and limitations within existing laws and mechanisms.

EXHIBIT A

Scope of Work

- Develop alternative ownership and operational legal structures of land-secured renewable and/or storage projects.
- Prepare models for land secured financing of energy assets in new residential communities. This will be a guidance document for local and State policy makers, and will include policy recommendations for ownership and legal structures. Community DER to facilitate the market for land-secured financing of ZNE community and Community DER projects.
- Evaluate options and calculate cost differences for various methods of reaching ZNE at the subdivision scale, such as:
 - Making substantial improvements to building energy efficiency prior to deploying community-scale off-site PV versus building to code and using off-site PV as the sole vehicle to achieve ZNE on a community-wide basis.
 - Centralizing PV generation for the subdivision on an adjacent parcel versus dispersing the same total generation capacity across rooftops, including the cost of leasing rooftop PV.
- Prepare findings on cost-effectiveness of ZNE community design alternatives.

Products

- Legal and Policy Framework Report (Draft and Final)

Subtask 2.2 Develop ZNE Subdivision Municipal Financial Model

The goal of this task is to develop a flexible and transparent financial model for using land-secured financing to fund solar and other energy technologies to decrease the cost to develop new ZNE subdivisions.

The Recipient shall:

- Develop and provide a *ZNE Community Conceptual Model Template Report* to explore alternative model structures and determine the most appropriate structure for the spreadsheet model in the ZNE Community Financial Model. This includes:
 - Defining the scope of the financial model;
 - Defining the input variables;
 - Identifying and describe the assumptions that affect the model structure; and
 - Defining the outputs that the model needs generate.
- Develop and provide *ZNE Community Financial Model Specification Report* that lays out the structure of the model in detail. This report will identify key assumptions and methodologies of the model. This includes:
 - Research design, technology and construction cost trends over the last several years, current year, and future trend forecasts to estimate current costs and identify opportunities to improve project cost-effectiveness.
 - Research client creditworthiness considerations, primary market opportunities and challenges, and other key inputs to the forecasting section of the model.
 - Organize and summarize the inputs to the forecasting section of the model.
- Develop the model's foundation, including the sheets for inputs, timing flags, and indexing factors.
- Develop the set of calculations to help determine the feasibility of funding energy projects through a Community Facilities District CFD bond issue. This includes calculating project tax revenue, debt service cost, and other cash flows.
- Develop presentation functionality for financial statements, charts, primary commercial inputs, and summary results for a range of stakeholders.

EXHIBIT A

Scope of Work

- Develop check sheets, sensitivity features, and a table of contents with a version control tracking mechanism.
- Research the factors that contribute to the risk profile for applicants seeking to leverage land-secured financing.
- Develop a flexible and transparent risk profile that includes, but is not limited to:
 - Complete property ownership/tax-base diversification profile that determines the burden for taxpayers and risk associated with those who may not pay their property taxes on time.
 - The rate of project build-out. As build-out proceeds in a residential district, the special tax burden shifts relatively quickly from a single property developer or a small group of home builders to individual homeowners.
 - Regulatory hurdles and risks, including if the applicant has obtained necessary zoning, permits, and entitlements, as well as State and Federal proceedings which may threaten the integrity of the project.
 - Stage of development/construction
 - Developer intentions (e.g., to sell raw land, obtain entitlements and then sell the entitled land with that value added but before anything is built, put in the infrastructure, and sell finished lots, or develop and then sell or hold the property)
 - Location, size, and construction uncertainties of the project,
 - Track record of applicant. This is important for tax base diversification; if the developer or home builder does not pay the special tax or assessment, the only recourse a bondholder has is to look to the developer's property in the district to satisfy the bond debt.
 - Estimated downstream project costs (builder and ultimately homebuyer). It is important to understand alternate investment opportunities and associated risk of the project not recognizing the full downstream valuation.
- Determine foreclosure covenant and value-to-lien ratio to see security features for a municipal issuer's land-secured bonds.
- Rigorously test the model, including the basis for each assumption and variable, to ensure the robustness and integrity of the product.
- Prepare and provide *ZNE Community Financial Model Report* for presentation and scaled adoption. This report will include a framework for identifying suitable energy projects, establishing project costs, estimating CFD tax revenue, estimating the debt service cost for the bonds and projecting coverage of debt service. The model will also outline the next steps needed to continue the CFD development process if the project is determined to be feasible.
- Prepare and provide a *ZNE Community Financial Model Supporting Documentation Report* with the following sections: Introduction, Assumptions and Inputs, Macro Handling, Outputs and KPIs, Known Issues.
- Prepare and provide a *Municipal-Financed ZNE Community Market Characterization, Challenges and Opportunities Report* summarizing the: state of the market, important forecasted changes in technology costs/availability, regulation and markets, challenges with current market influences, and key transformational opportunities that would accelerate the market for municipal financing of ZNE development projects.
- Participate in CPR Meeting as described in Task 1.3 and prepare a *CPR Report*

Products

- ZNE Community Finance Conceptual Model Template Report (Draft and Final)
- ZNE Community Financial Model Specification Report (Draft and Final)

EXHIBIT A Scope of Work

- ZNE Community Financial Model Report (Draft and Final)
- ZNE Community Financial Model Supporting Documentation Report (Draft and Final)
- Municipal-Financed ZNE Community Market Characterization, Challenges and Opportunities Report (Draft and Final)
- CPR Report

Subtask 2.3 Plan and Permit a Low-Income ZNE Subdivision Microgrid

The goal of this subtask is to plan and permit a public housing development as a ZNE community microgrid so that: a) appropriate tradeoffs are made to maximize cost-effective grid and customer benefits in the final design, and b) critical market facilitation needs and opportunities are identified and recommended for different stakeholders.

The Recipient shall:

- Conduct research, outreach and power engineering to define the technical requirement and customer needs for the microgrid in a *Technical Requirements and Customer Needs Specification Report*. This report will set the expectations for what the microgrid is capable of achieving with regard to localized improvements in grid reliability, demand reduction, cost savings, and grid services.
- Review existing City of Lancaster (City) infrastructure development projects, focusing initially on the public housing development that will be entering the planning process during this phase of the project schedule.
- Review planned private sector projects to identify potential ZNE community project sites near areas of the macro-grid that experience congestion or other capacity or grid-balancing issues.
- Engage the City, developers and builders with projects currently in the planning or exploration phase to prime the market for scaled adoption of municipal bond-funded ZNE communities.
- Review and analyze City planning and building department permitting requirements, and Southern California Edison (SCE) interconnection requirements, for the planned ZNE community microgrid.
- Determine opportunities to streamline permitting and interconnection processes and/or reduce development fees.
- Model distributed generation technologies, optimum load- or site-specific usage patterns, price information, and performance data for available equipment using a DER-CAM. Model scenario variations will be run to identify the best practices for distributed generation load balancing within the subdivision microgrid.
- Develop and provide the *Control System Specification Report* to ensure that the microgrid, with technical advisory from the participating utility, is designed to deliver the expected benefits – both financially and operationally. The control system must reliably maintain system stability, optimally balance supply and demand, and rapidly respond to real-time changing conditions on the central power grid.
- Develop and provide a *ZNE Subdivision Microgrid Technical Design* to serve as a guide for project developers that:
 - Identifies the components of the microgrid, with technical advisory from the participating utility, that pertain to eligible distributed generation technologies, controls, distribution infrastructure, smart meters/inverters, and monitoring services for the grid manager, active market participants, and passive market participants.
 - Details the recommended market structure for internal energy and billing management.

EXHIBIT A

Scope of Work

- Specifies requirements for system integration, safety, and reliability.
- Determine the costs of: a) energy resources, b) switchgear, protection and transformers, c) smart grid communication and controls, d) site engineering and construction, and d) operations and markets. Thus, key aspects of this research are to identify potential soft cost savings opportunities and technology, design, and construction cost reductions that would positively impact the overall project cost-effectiveness and value proposition.
- Analyze the trade-offs between full microgrid capabilities and essential infrastructure, generation, and controls technologies to develop a *Cost-Benefit Analysis for Grid-Integrated ZNE Communities Report*.
- Develop and an Interconnection Application Tool for a ZNE Subdivision Microgrid and prepare a *ZNE Subdivision Permitting and Interconnection Challenges and Opportunities Report*. By working with project approvers to address topics such as: bi-directional metering, tariff structures for generation in excess of the community's need (and storage capacity), requirements and costs of insuring islanding capabilities, procedural challenges of utility interconnection approval and permit acquisition, interoperability and safety standards, legal structures, and metering and billing details based on the ownership structure and technical design.

Products:

- Technical Requirements and Customer Needs Specification Report (Draft and Final)
- Control System Specification Report (Draft and Final)
- ZNE Subdivision Microgrid Technical Design (Draft and Final)
- Cost-Benefit Analysis for Grid-Integrated ZNE Communities Report (Draft and Final)
- ZNE Subdivision Permitting and Interconnection Challenges and Opportunities Report (Draft and Final)

TASK 3: DEVELOP BUSINESS MODEL FRAMEWORKS AND STREAMLINED PLANNING AND PERMITTING FOR COMMUNITY DER PROJECTS

The goals of this task are to: 1) Develop a Community DER valuation framework (focusing on solar PV, stationary storage, grid-integrated EVs and building Demand Response (DR)); 2) Develop innovative public/private business and procurement models for (a) integrated solar + stationary storage, and (b) EVs + stationary storage; and 3) Plan and permit a public/private partnership Community DER deployment with an estimated 4 added megawatts of energy storage, an estimated 9 added megawatts of solar, an estimated 30 added medium- and heavy-duty EVs representing an estimated 4 megawatts of controllable load.

Subtask 3.1 Develop Community DER Valuation Framework

The goal of this subtask is to develop a framework for valuing public and private DERs available to provide services within the community and to the grid.

The Recipient shall:

- Identify technical requirements and cost inputs for integrating EVs with buildings, other DERs, and the grid.
- Develop and provide a *Community DER Business Model Framework Specification Report* that addresses diverse combinations of energy storage with solar, building DR, and Vehicle-Grid Integration (VGI) enabled EVs, including novel arrangements for asset and resource ownership, finance and governance.
- Identify technical requirements and cost inputs for integrating stationary storage with other DERs.

EXHIBIT A

Scope of Work

- Identify technical requirements and cost inputs for integrating solar PV with other DERs.
- Identify opportunities for energy cost savings, revenues, and grid benefits from all relevant forms ofVGI, including smart charging (V1G), Vehicle-to-Grid (V2G), and Vehicle-to-Solar, Vehicle-to-Building (V2B), and Vehicle-to-Storage configurations.
- Identify opportunities for seamlessly optimizing capacity allocated from stationary storage to any combination of demand charge reduction, energy arbitrage, DR, and participation in the energy market's ancillary services.
- Develop and provide a *Community DER Valuation Framework Report*. This report will flexibly account for evolving revenue-realization opportunities through changing TOU periods, new retail DR programs, and increasingly available wholesale programs and market participation opportunities. It will also flexibly adapt to newly-required or beneficial operational modes to enable modeling and analysis of the highest-value asset configuration for developers, customers, utilities, and ISOs.
- Develop and provide a *Community DER Valuation Framework User Manual* to model the integrated benefits of solar, stationary storage, EVs, DR, and other DERs. Processes will be documented, and recommendations and best practices will be developed to inform future revisions.
- Compile technology research and business model implications into a *Community DER Market Characterization and Implementation Strategy Report* that will highlight the current state of the evolving DER industry (technologies, business models, market opportunities) for different customer segments, review DER industry trends and forecasts, identify critical follow-on market facilitation opportunities, and provide strategic considerations for Community DER implementation that incorporate public health and safety, economic development, and other objectives relevant to public and private sector actors.

Products:

- Community DER Business Model Framework Specification Report (Draft and Final)
- Community DER Valuation Framework Report
- Community DER Valuation Framework User Manual (Draft and Final)
- Community DER Market Characterization and Implementation Strategy Report (Draft and Final)

Subtask 3.2 Facilitate Development of Scalable Public/Private Partnerships and Procurement Models

The goal of this subtask is facilitate development of scalable public/private business and procurement models for grid-integrated DERs, including EVs, stationary storage, solar PV, and building DR.

The Recipient shall:

- Compile findings from literature and interview research into a *Buyer Perceptions and Business Model Challenges and Opportunities Report* summarizing the results of interviews with key stakeholders, and identifying local- and State-level market facilitation activities, and business model opportunities that overcome observed market, institutional and regulatory barriers to accelerated adoption of EVs in fleets.
- Assess the costs and benefits of new versus repurposed batteries, and determine critical economies of scale necessary to make secondary value streams from repurposed batteries cost-effective.

EXHIBIT A

Scope of Work

- Review existing research EV business model innovation opportunities that reduce EV ownership expenses on both a first-cost and Total Cost of Ownership (TCO) basis.
- Identify and address gaps in current TCO models to inform the overall EV business model development process.
- Review the legal precedent and governance model established through internationally deployed split battery ownership models, including the recent battery lease model announced by Daimler/Smart for its Smart for Two.
- Review battery case study models to determine relevance to project goals and to model and validate EV provider inputs and assumptions, and identify and quantify the risk associated key assumptions contributing to the value proposition.
- Interview numerous key public and private fleet managers to determine key considerations in fleet vehicle procurement, and opportunities for and concerns with scaled procurements of EVs in fleets. The interview questions will pertain to:
 - Buying considerations: Key economic metrics, relevance of emissions and fuel costs, range and other performance attributes, maintenance costs and service capabilities, driver satisfaction, convenience, and safety, vehicle insurance, financial strength of vehicle provider, etc.;
 - Opportunities for procuring EVs: Well-suited and not well-suited drive patterns, implications of emerging regulations on fuel prices, and review of upcoming procurement plans mandating or encouraging inclusion of EVs; and
 - Concerns with EVs: Price (both capital and operating costs), maintenance, range anxiety, battery degradation and replacement, technology maturity, etc.
- Interview EV providers to discuss business model innovations, including split assets ownership models, operational rights, allocation of VGI value streams, shareholder returns, and other opportunities and concerns.
- Interview automotive and general liability insurance companies to identify insurance implications of public agency staff operating EVs, including handling direct current charging equipment.
- Develop and provide an *Integrated EV and Stationary Storage Procurement Model Report* for simultaneously procuring EVs and stationary storage using second-life batteries.
- Facilitate development of a *Public/Private Partnership for Integrated Solar PV + Stationary Storage Signed Agreement* involving a Power Efficiency Agreement™ (PEA™) financing model. Provisions will be made to protect consumers in this agreement.
- Facilitate development of a *Public/Private Partnership for Grid-integrated EVs + Stationary Storage Signed Agreement*. Provisions will be made to protect consumers in this agreement.
- Develop and provide *Public/Private Business Model Summary Report* to describe the tools and models used to model and validate assumptions, contractual obligations for all parties, insurance considerations, approaches to risk mitigation, promising customer verticals, key project stakeholders, and ability to scale and facilitate the State's 2025 EV and Sustainable Freight goals.

Products:

- Buyer Perceptions and Business Model Challenges and Opportunities Report (Draft and Final)
- Integrated EV and Stationary Storage Procurement Model Report (Draft and Final)

EXHIBIT A Scope of Work

- Public/Private Partnership for Integrated Solar PV + Stationary Storage Signed Agreement
- Public/Private Partnership for Grid-integrated EVs + Stationary Storage Signed Agreement
- Public/Private Business Model Summary Report (Draft and Final)

Subtask 3.3 Plan and Permit Large-Scale Community DER Deployment

The goal of this subtask is to plan and permit a large-scale Community DER project with an estimated 4 added megawatts of energy storage (using repurposed EV batteries), an estimated 9 added megawatts of solar, and an estimated 30 added electric-buses (representing an estimated 4 added megawatts of controllable load).

The Recipient shall:

- Prepare and provide a *Site Profile Reports* for pilot sites that will include but will not be limited to following:
 - A description of the site, including location, building uses, and other qualitative descriptive information;
 - Engineering Drawings;
 - Building load data, including monthly electricity use and demand;
 - Solar PV production data;
 - Projected cost savings and revenue opportunities.
 - Develop Weather and Load Forecasting Technologies and System Integration Business Standards, including solar irradiance and cloud cover information systems for the Green Station Network energy storage system to maintain optimum system production across the network.
- Conduct outreach to host sites for Community DER deployment.
- Apply the Community DER Valuation Framework (developed in Task 3.1) to assess the value that increased deployment of solar, energy storage and EV would have on community goals and create a Community DER Implementation Plan.
- Identify the Authorities Having Jurisdiction (AHJs). The primary AHJs include: City of Lancaster, SCE and California Independent Systems Operator (CAISO).
- Review and analyze permitting requirements and interconnection for the planned Green Station Network and VGI deployments to determine processes required and opportunities to streamline processes and/or reduce development fees.
- Obtain host site commitments for specified DER projects to create an individual DER profile for each host site.
- Define site specifications and draft a site-specific design package for each site, informed by site walks, data collection, the DER Valuation Framework, and project engineering.
- Develop and provide an *Interconnection Application for Community DER Project Report*.
- Develop permit applications for deployment of large-scale energy storage through the Lancaster Green Station Network.
- Acquire necessary *Permit and Interconnection Approvals* from City, utility and CAISO and provide CAM with a copy.
- Prepare and provide a *Community DER Permitting and Interconnection Challenges and Opportunities Report* that will provide a process evaluation documenting the requirements, timing, and the “market readiness” for large-scale integrated DER projects. It will identify the project stakeholders involved and how well their processes are evolved to accommodate more advanced and integrated projects.

EXHIBIT A Scope of Work

Products:

- Site Profile Reports
- Interconnection Application for Community DER Project Report (Draft and Final)
- Copy of Permit and Interconnection Approvals
- Community DER Permitting and Interconnection Challenges and Opportunities Report (Draft and Final)

TASK 4 EVALUATION OF PROJECT BENEFITS

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

The Recipient shall:

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

EXHIBIT A

Scope of Work

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

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

Products:

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

TASK 5 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*. The Plan will target local governments (especially planning, community development, economic development, sustainability, and Air District staff and elected officials), Councils of Government, homebuilders, project developers, ZNE Early Adopters and utilities (including IOUs, POUs, and CCAs) as market makers. At a minimum, it will include:
 - An explanation of how the knowledge gained from the project will be made available to the public, including the targeted market sector and potential outreach to end users, utilities, regulatory agencies, and others.
 - A description of the intended use(s) for and users of the project results.
 - Published documents, including date, title, and periodical name.
 - Copies of documents, fact sheets, journal articles, press releases, and other documents prepared for public dissemination. These documents must include the Legal Notice required in the terms and conditions. Indicate where and when the documents were disseminated.

EXHIBIT A

Scope of Work

- 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.
- Develop a *Project Database Report*. Throughout the project the team will be collecting data on all key AEC project areas. The team will store all data in a secure database and report the findings to the CAM
- Maintain rigorous documentation of:
 - Permitting and interconnection processes and associated costs,
 - Key methodologies used to develop frameworks, business models and project technical designs; this will include key data, models, stakeholder processes, and challenges and lessons learned,
 - Assumptions used to develop all frameworks, models and designs,
 - Technical design costs and opportunities to reduce costs. Costs will be captured as variable and fixed costs, capital and operating costs, design costs, technology costs, soft costs, etc. to facilitate a thorough understanding of opportunities to reduce costs.
- Conduct technology transfer activities in accordance with the Technology/Knowledge Transfer Plan. These activities will be reported in the Progress Reports.
- When directed by the CAM, develop *Presentation Materials* for an Energy Commission-sponsored conference/workshop on the results of the project.
- Prepare a *Technology/Knowledge Transfer Report* on technology transfer activities conducted during the project.
- Develop a *Lancaster AEC Case Study* summarizing the processes, challenges and lessons learned during Phase 1 of the Lancaster AEC Project. The document will reference specific deliverables developed throughout the project for more in depth information.
- Produce a *Master Community Design Report and Graphics*. The Master Community Design will identify and map facilities targeted for ZNE community and Community DER development projects, as well as medium-duty EV and associated infrastructure deployments. It will identify designs and technologies at the site level, estimated cost-effectiveness, and opportunities to network disparate DER assets to enhance reliability, ratepayer savings and maximize grid services value. Assemble an *AEC Community Toolkit*. The AEC Community Toolkit will include:
 - Project Case Study
 - Project Master Community Design,
 - Recommendations for follow market facilitation activities,
 - Delivery Models for Land-Secured Financing of Energy Assets in new Residential Communities,
 - ZNE Community Financial Model and Supporting Documentation,
 - Community DER Valuation Framework and Supporting Documentation, and
 - Public/Private Business Models for Grid-Integrated DERs (focusing on solar, stationary storage, EVs and building DR).
- Secure facilities and plan logistics for workshops in Northern, Central, and Southern California to present project tools and models. When possible, the Recipient will hold these workshops in conjunction with ongoing conferences/meetings of the target audiences to maximize travel expense and minimize time away.
- Create *Promotional Materials* inviting the target audiences to attend the workshops to learn about the Richmond AEC project.
- Publicize workshops with direct email campaigns, website postings and printed media through key channels, including:

EXHIBIT A

Scope of Work

- Local Governments.
- Home Builders
- Solar, Storage and EV Industry Groups
- Supplement the ZNE Community Toolkit materials with *Workshop Presentations Materials* highlighting the experiences on the following topics:
 - Overview of the Lancaster AEC Project,
 - Using Municipal Financing to Accelerate ZNE Community Development – the concept and legal precedent, alternative legal and ownerships frameworks, technical considerations, and customer relations,
 - Using the ZNE Community Financial Model – evaluating and framing the business and policy case for ZNE community development,
 - Using the Community DER Valuation Framework – evaluating and framing the business and policy case for Community DER projects,
 - DER Permitting and Interconnection Best Practices – challenges, opportunities, lessons learned and best practices from a large scale Community DER project,
 - Disruptive DER Business Models – innovative DER business models creating opportunities for public/private partnerships and mass adoption of Community DERs, and
 - Fleet Electric Vehicle Deployment Strategies to Reduce Operating Costs and Emissions – assessing the economic, environmental and public health benefits of large-scale fleet electrification initiatives.
- Facilitate development of the *Workshop Agenda*, scheduling speakers and speaker preparation.
- Extend dissemination of materials through key channels following the workshops, including on ZNE Alliance and trade group networks.
- Pursue placement of articles about of the Project in relevant local and trade media.

Products:

- Initial Fact Sheet (Draft and Final)
- Final Project Fact Sheet (Draft and Final)
- Presentation Materials (Draft and Final)
- Technology/Knowledge Transfer Plan (Draft and Final)
- Technology/Knowledge Transfer Report (Draft and Final)
- Project Database Report (Draft and Final)
- Lancaster AEC Case Study (Draft and Final)
- Master Community Design Report and Graphics (Draft and Final)
- AEC Community Toolkit
- Promotional Materials (Draft and Final)
- Workshop Presentation Materials
- Workshop Agenda

V. PROJECT SCHEDULE

Please see the attached Excel spreadsheet.

STATE OF CALIFORNIA

STATE ENERGY RESOURCES
CONSERVATION AND DEVELOPMENT COMMISSION

RESOLUTION - RE: ZERO NET ENERGY ALLIANCE

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

RESOLVED, that the Energy Commission approves Agreement EPC-15-069 from GFO-15-312 with Zero Net Energy (ZNE) Alliance for a \$1,469,779 grant to develop innovative business models and policy frameworks that overcome adoption barriers for ZNE residential communities and community distributed energy resources in the City of Lancaster. This project will provide tools and training for other local governments, project developers, home builders, utilities, and other stakeholders on how to use the project's technical and financial models to advance ZNE and distributed energy resource projects; and

FURTHER BE IT 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 May 17, 2016.

AYE: [List of Commissioners]

NAY: [List of Commissioners]

ABSENT: [List of Commissioners]

ABSTAIN: [List of Commissioners]

Cody Goldthrite,
Secretariat