STATE OF CALIFORNIA
GRANT REQUEST FORM (GRF)
CEC-270 (Revised 12/2019) CALIFORNIA ENERGY COMMISSION

A) New Agreement # EPC-21-031 (to be completed by CGL office)

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

C) Recipient's Legal Name	Federal ID Number
Self-Help Enterprises	94-1592676

D) Title of Project
Colegio ZNE Village

E) Term and Amount

Start Date	End Date	Amount
6/1/2022	6/30/2024	$ 1,000,000

F) Business Meeting Information

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

Proposed Business Meeting Date 5/11/2022 ☐ Consent ☒ Discussion

Business Meeting Presenter Michael Ferreira Time Needed: 5 minutes

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

Agenda Item Subject and Description:
SELF-HELP ENTERPRISES. Proposed resolution approving Agreement EPC-21-031 with Self-Help Enterprises for a $1,000,000 grant to engage a multi-disciplinary team to design a zero net energy, all-electric, mixed-use, transit-oriented affordable housing community in California's Central Valley, and adopting staff's determination that this project is exempt from CEQA. This project will enable the evaluation and integration of emerging energy technologies and construction practices using advanced analysis methods to create an affordable, equitable, decarbonized, resilient, replicable development. (EPIC funding) Contact: Michael Ferreira.

G) California Environmental Quality Act (CEQA) Compliance

1. Is Agreement considered a "Project" under CEQA?
   ☒ Yes (skip to question 2)
   ☐ No (complete the following (PRC 21065 and 14 CCR 15378)):

   Explain why Agreement is not considered a "Project":

2. If Agreement is considered a "Project" under CEQA:
   a) ☒ Agreement **IS** exempt.
      ☐ Statutory Exemption. List PRC and/or CCR section number:
      ☐ Categorical Exemption. List CCR section number:
      ☒ Common Sense Exemption. 14 CCR 15061 (b) (3)

      Explain reason why Agreement is exempt under the above section: This project will be the design of a mixed-use development. This will include economic analysis, conceptual drawings, performance modeling, and construction feasibility analysis. No construction or changes to the physical environment will occur during

this project. The activity is covered by the general rule that CEQA applies only to projects which have the potential for causing a significant effect on the environment. Under Cal. Code Regs., tit. 14, §15061(b)(3), where it can be seen with certainty that there is no possibility that the activity in question may have a significant effect on the environment, the activity is not subject to CEQA.

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

Check all that apply

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

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

Legal Company Name:	**Budget**
Mogavero Architects, Inc.	$ 344,176
Arup US, Inc.	$ 399,942
Association for Energy Affordability, Inc.	$ 50,000
Enterprise Community Partners, Inc.	$ 40,000
4 Creeks, Inc.	$ 45,616
Capital Engineering Consultants, Inc.	$ 46,690
Harris & Sloan Consulting Engineers, Inc.	$ 33,192
KLA, Inc.	$ 25,447
Melas Energy Engineering	$ 8,298
designTECH Interior Design Services, Inc.	$ 6,639

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

Legal Company Name:

J) Budget Information

Funding Source	**Funding Year of Appropriation**	**Budget List Number**	**Amount**
EPIC	18-19	301.001F	$500,000
EPIC	20-21	301.001H	$500,000

R&D Program Area: EDMFO: EDMF TOTAL: $ 1,000,000

Explanation for “Other” selection

Reimbursement Contract #: Federal Agreement #:

K) Recipient's Contact Information

1. Recipient's Administrator/Officer

Name: Kristin Ainley
Address: 8445 W Elowin Ct

City, State, Zip: Visalia, CA 93291-9262
Phone: 559-802-1637
E-Mail: kristina@selfhelpenterprises.org

2. Recipient's Project Manager

Name: Kristin Ainley
Address: 8445 W Elowin Ct

City, State, Zip: Visalia, CA 93291-9262
Phone: 559-802-1637
E-Mail: kristina@selfhelpenterprises.org

L) Selection Process Used

☒ Competitive Solicitation Solicitation #: GFO-20-305
☐ First Come First Served Solicitation Solicitation #:
☐ Non-Competitive Bid Follow-on Funding (SB 115)

M) The following items should be attached to this GRF

1.	Exhibit A, Scope of Work		☒ Attached
2.	Exhibit B, Budget Detail		☒ Attached
3.	CEC 105, Questionnaire for Identifying Conflicts		☒ Attached
4.	Recipient Resolution	☒ N/A	☐ Attached
5.	CEQA Documentation	☒ N/A	☐ Attached

_____ _____
Agreement Manager **Date**

_____ _____
Office Manager **Date**

_____ _____
Deputy Director **Date**

EXHIBIT A
Scope of Work
Self-Help Enterprises

I. TASK ACRONYM/TERM LISTS

A. Task List

Task #	CPR[1]	Task Name
1		General Project Tasks
2		Architectural and Engineering Design
3		Operational and Embodied Energy and Carbon Emissions Analysis and Optimization
4	X	Climate and Infrastructure Resilience
5		Cost Estimation, Tracking, and Lifecycle Cost-Benefit Analysis
6		Evaluation of Project Benefits
7		Technology/Knowledge Transfer Activities
8		Build Phase Selection

B. Acronym/Term List

Acronym/Term	Meaning
AACE	American Association of Cost Engineering, a non-profit professional association
BESS	Building Energy Storage System
CAM	Commission Agreement Manager
CAO	Commission Agreement Officer
CD	Construction Documents
CEC	California Energy Commission
CEQA	California Environmental Quality Act
CPR	Critical Project Review
DD	Design Development
EVSE	Electric Vehicle Supply Equipment
LCCA	Lifecycle Cost-Benefit Analysis
MDR	Minimum Design Requirement
PV	Photovoltaic
SD	Schematic Design
TAC	Technical Advisory Committee
WBLCA	Whole-Building Lifecycle Assessment

[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
Self-Help Enterprises

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

A. Purpose of Agreement

The purpose of this Agreement is to fund a multi-disciplinary team to design a zero-net energy, all-electric, mixed-use, transit-oriented affordable housing community in California's Central Valley. These funds will be used to enable the evaluation and integration of emerging energy technologies and construction practices using advanced analysis methods to create an affordable, equitable, decarbonized, resilient, replicable community.

B. Problem/ Solution Statement

Problem

California is experiencing an affordable housing shortage and subsequently grappling with an ever-increasing homeless population. Simultaneously, the worsening climate crisis disproportionately affects low-income populations and community members experiencing homelessness. Combined, these realities demonstrate the urgent demand for creating affordable, climate-resilient communities for people to live. These developments need to not only be rapidly scalable; they must also be fully decarbonized, zero net energy projects, so as not to further contribute to the climate catastrophe.

This is easier said than done. The reality is that evaluating and implementing the emerging energy technologies required for all-electric, zero net energy construction is typically cost-prohibitive in affordable development. In most cases, there is not sufficient funding to deviate from the business-as-usual approach, and the projects that manage to do so tend to be one-offs. Project teams that are able to achieve progressive sustainability goals in affordable development projects must prioritize replicability and dissemination. Highly innovative, rapidly buildable, broadly replicable, climate-resilient design outcomes are needed.

Solution

The solution to this problem is a zero-net energy, fully electric demonstration project that features replicable, cost-effective technologies and construction practices and prioritizes knowledge transfer throughout the design and construction processes.

To achieve these goals, the team will draw on experience with innovative energy and carbon analysis methods to evaluate emerging energy technologies and advanced construction practices, and we will do so in partnership with local engineers and builders to ensure technical knowledge transfer. We will engage a locally established multifamily housing contractor during the design phase to bridge conceptual thinking and actual building construction. The Recipient will leverage the design team's regional and national presence to disseminate identified best practices and lessons learned. To ensure that these best practices are translated into lasting, scalable policy change, we will work with regulatory and financing agencies to encourage industry standardization and streamlined funding processes. The project team will carry out this advocacy work, in collaboration with a designated cohort of subject matter experts in the housing and sustainability sectors.

C. Goals and Objectives of the Agreement

Agreement Goals

The goals of this Agreement are to:

- Develop a construction-ready design for a zero-net energy, all-electric, climate-resilient, affordable mixed-use community.
- Integrate emerging energy technologies, advanced construction practices, and grid interactivity to reduce lifecycle energy use and costs, as well as associated emissions.
- Quantify the lifecycle social, economic, and environmental net benefits of the project.
- Disseminate identified best practices regionally and nationally.

Ratepayer Benefits:[2] This Agreement will result in the ratepayer benefits of greater electricity reliability and lower costs. Greater electricity reliability is a positive effect of low-energy development. More construction inherently translates to an increased electrical load on the grid, which has the potential to disrupt grid reliability. Optimizing new development for zero net energy reduces the added grid load, which maintains the grid's resilience and reliability, which directly benefits ratepayers. This Agreement also aims to achieve peak load shifting, which will also contribute to grid reliability. This Agreement will lower costs to ratepayers by reducing the total effective greenhouse gas (GHG) emissions/energy use ratio (total GHG emissions relative to total energy consumption), thus contributing to cost effectively advancing decarbonization for the ratepayer. Lower carbon emissions have been proposed in CEC research to benefit ratepayers both directly, through the reduced cost of decarbonized energy sources, and indirectly, through the avoidance of energy system costs in response to climate-induced disasters.

Technological Advancement and Breakthroughs: 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 prioritizing innovation, buildability, and replicability. Furthermore, the project team includes local design and construction firms who specialize in affordable development to ensure that they are involved throughout the Agreement and learn how to independently design and implement energy efficiency and renewable energy technologies. As such, this Agreement will leverage the project team's state and national platform, while partnering with local firms to prioritize buildability in the design, thereby ensuring that the project achieves its goal to scale the adoption of energy efficiency and renewable energy technologies in the affordable development context.

Agreement Objectives

The objectives of this Agreement are to:

- Achieve zero carbon emissions for at least 75 percent of annual hours per the time-dependent source emissions profile.
- Provide functional recovery of at least Tier 1 and Tier 2 loads after an outage event.

[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).

- Reduce the embodied carbon of the structure, envelope, and interior finishes by at least 10 percent from the defined baseline building.
- Reduce potable water consumption by at least 30 percent over baseline.
- Provide housing for low-income people, including a combination of one-bedroom and multi-bedroom units.
- Reduce average utility bills to $30 per month or less.

III. TASK 1 GENERAL PROJECT TASKS

PRODUCTS

Subtask 1.1 Products

The goal of this subtask is to establish the requirements for submitting project products (e.g., reports, summaries, plans, and presentation materials). Unless otherwise specified by the Commission Agreement Manager (CAM), the Recipient must deliver products as required below by the dates listed in the **Project Schedule (Part V).** All products submitted which will be viewed by the public, must comply with the accessibility requirements of Section 508 of the federal Rehabilitation Act of 1973, as amended (29 U.S.C. Sec. 794d), and regulations implementing that act as set forth in Part 1194 of Title 36 of the Federal Code of Regulations**.** All technical tasks should include product(s). Products that require a draft version are indicated by marking **"(draft and final)"** after the product name in the "Products" section of the task/subtask. If "(draft and final)" does not appear after the product name, only a final version of the product is required. With respect to due dates within this Scope of Work, **"days"** means working days.

The Recipient shall:

For products that require a draft version, including the Final Report Outline and Final Report

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

For products that require a final version only

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

For all products

- Submit all data and documents required as products in accordance with the following:

EXHIBIT A
Scope of Work
Self-Help Enterprises

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 California Energy Commission's (CEC) software and Microsoft (MS)-operating computing platforms, or with any other format approved by the CAM. Deliver an electronic copy of the full text of any Agreement data and documents in a format specified by the CAM, such as memory stick.

  The following describes the accepted formats for electronic data and documents provided to the CEC as products under this Agreement, and establishes the software versions that will be required to review and approve all software products:
  - Data sets will be in MS Access or MS Excel file format (version 2007 or later), or any other format approved by the CAM.
  - Text documents will be in MS Word file format, version 2007 or later.
  - Project management documents will be in Microsoft Project file format, version 2007 or later.

- **Software Application Development**

  Use the following standard Application Architecture components in compatible versions for any software application development required by this Agreement (e.g., databases, models, modeling tools), unless the CAM approves other software applications such as open-source programs:
  - Microsoft ASP.NET framework (version 3.5 and up). Recommend 4.0.
  - Microsoft Internet Information Services (IIS), (version 6 and up) Recommend 7.5.
  - Visual Studio.NET (version 2008 and up). Recommend 2010.
  - C# Programming Language with Presentation (UI), Business Object and Data Layers.
  - SQL (Structured Query Language).
  - Microsoft SQL Server 2008, Stored Procedures. Recommend 2008 R2.
  - Microsoft SQL Reporting Services. Recommend 2008 R2.
  - XML (external interfaces).

  Any exceptions to the Electronic File Format requirements above must be approved in writing by the CAM. The CAM will consult with the CEC's Information Technology Services Branch to determine whether the exceptions are allowable.

MEETINGS

Subtask 1.2 Kick-off Meeting

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

EXHIBIT A
Scope of Work
Self-Help Enterprises

The Recipient shall:

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

  The administrative portion of the meeting will include discussion of the following:
  - Terms and conditions of the Agreement;
  - Invoicing and auditing procedures;
  - Administrative products (subtask 1.1);
  - CPR meetings (subtask 1.3);
  - Match fund documentation (subtask 1.7);
  - Permit documentation (subtask 1.8);
  - Subcontracts (subtask 1.9); and
  - Any other relevant topics.

  The technical portion of the meeting will include discussion of the following:
  - The CAM's expectations for accomplishing tasks described in the Scope of Work;
  - An updated Project Schedule;
  - Technical products (subtask 1.1);
  - Progress reports (subtask 1.5);
  - Final Report (subtask 1.6);
  - Technical Advisory Committee meetings (subtasks 1.10 and 1.11); and
  - Any other relevant topics.

- Provide *Kick-off Meeting Presentation* to include but not limited to:
  - Project overview (i.e. project description, goals and objectives, technical tasks, expected benefits, etc.)
  - Project schedule that identifies milestones
  - List of potential risk factors and hurdles, and mitigation strategy

- Provide an *Updated Project Schedule, Match Funds Status Letter,* and *Permit Status Letter*, as needed to reflect any changes in the documents.

The CAM shall:

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

Recipient Products:

- Kick-off Meeting Presentation
- Updated Project Schedule *(if applicable)*
- Match Funds Status Letter (subtask 1.7) *(if applicable)*
- Permit Status Letter (subtask 1.8) *(if applicable)*

EXHIBIT A
Scope of Work
Self-Help Enterprises

CAM Product:

- Kick-off Meeting Agenda

Subtask 1.3 Critical Project Review (CPR) Meetings

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

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

The Recipient shall:

- Prepare and submit a *CPR Report* for each CPR meeting that: (1) discusses the progress of the Agreement toward achieving its goals and objectives; and (2) includes recommendations and conclusions regarding continued work on the project.
- Attend the CPR meeting.
- Present the CPR Report and any other required information at each CPR meeting.

The CAM shall:

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

Recipient Products:

- CPR Report(s)

CAM Products:

- CPR Agenda
- Progress Determination

Subtask 1.4 Final Meeting

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

The Recipient shall:

- Meet with CEC staff to present project findings, conclusions, and recommendations. The final meeting must be completed during the closeout of this Agreement. This meeting will be attended by the Recipient and CAM, at a minimum. The meeting may occur in person or by electronic conferencing (e.g., WebEx), with approval of the CAM. The technical and administrative aspects of Agreement closeout will be discussed at the meeting, which may be divided into two separate meetings at the CAM's discretion.
    - The technical portion of the meeting will involve the presentation of findings, conclusions, and recommended next steps (if any) for the Agreement. The CAM will determine the appropriate meeting participants.
    - The administrative portion of the meeting will involve a discussion with the CAM and the CAO of the following Agreement closeout items:
        - Disposition of any procured equipment.
        - The CEC's request for specific "generated" data (not already provided in Agreement products).
        - Need to document the Recipient's disclosure of "subject inventions" developed under the Agreement.
        - "Surviving" Agreement provisions such as repayment provisions and confidential products.
        - Final invoicing and release of retention.
- Prepare a *Final Meeting Agreement Summary* that documents any agreement made between the Recipient and Commission staff during the meeting.
- Prepare a *Schedule for Completing Agreement Closeout Activities*.
- Provide copies of *All Final Products* on a USB memory stick, organized by the tasks in the Agreement.

Products:

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

REPORTS AND INVOICES

Subtask 1.5 Progress Reports and Invoices

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

The Recipient shall:

- Submit a monthly *Progress Report* to the CAM. Each progress report must:
    - Summarize progress made on all Agreement activities as specified in the scope of work for the preceding month, including accomplishments, problems,

milestones, products, schedule, fiscal status, and an assessment of the ability to complete the Agreement within the current budget and any anticipated cost overruns. See the Progress Report Format Attachment for the recommended specifications.

- Submit a monthly or quarterly *Invoice* that follows the instructions in the "Payment of Funds" section of the terms and conditions, including a financial report on Match Funds and in-state expenditures.

Products:

- Progress Reports
- Invoices

Subtask 1.6 Final Report

The goal of this subtask is to prepare a comprehensive Final Report that describes the original purpose, approach, results, and conclusions of the work performed under this Agreement. When creating the Final Report Outline and the Final Report, the Recipient must use the CEC Style Manual provided by the CAM.

Subtask 1.6.1 Final Report Outline

The Recipient shall:

- Prepare a *Final Report Outline* in accordance with the *Energy Commission Style Manual* provided by the CAM.

Recipient Products:

- Final Report Outline (draft and final)

CAM Product:

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

Subtask 1.6.2 Final Report

The Recipient shall:

- Prepare a *Final Report* for this Agreement in accordance with the approved Final Report Outline, Energy Commission Style Manual, and Final Report Template provided by the CAM with the following considerations:
  - Ensure that the report includes the following items, in the following order:
    - Cover page (**required**)
    - Credits page on the reverse side of cover with legal disclaimer (**required**)
    - Acknowledgements page (optional)
    - Preface (**required**)
    - Abstract, keywords, and citation page (**required**)
    - Table of Contents (**required**, followed by List of Figures and List of Tables, if needed)
    - Executive summary (**required**)
    - Body of the report (**required**)

    - References (if applicable)
    - Glossary/Acronyms (If more than 10 acronyms or abbreviations are used, it is required.)
    - Bibliography (if applicable)
    - Appendices (if applicable) (Create a separate volume if very large.)
    - Attachments (if applicable)
- Submit a draft of the Executive Summary to the TAC for review and comment.
- Develop and submit a *Summary of TAC Comments on Draft Final Report* received on the Executive Summary. For each comment received, the recipient will identify in the summary the following:
    - Comments the recipient proposes to incorporate.
    - Comments the recipient does propose to incorporate and an explanation for why.
- Submit a draft of the report to the CAM for review and comment. The CAM will provide written comments to the Recipient on the draft product within 15 days of receipt.
- Incorporate all CAM comments into the *Final Report*. If the Recipient disagrees with any comment, provide a *Written Responses to Comments* explaining why the comments were not incorporated into the final product.
- Submit the revised *Final Report* electronically with any Written Responses to Comments within 10 days of receipt of CAM's Written Comments on the Draft Final Report, unless the CAM specifies a longer time period or approves a request for additional time.

Products:

- Summary of TAC Comments on Draft Final Report
- Draft Final Report
- Written Responses to Comments *(if applicable)*
- Final Report

CAM Product:

- Written Comments on the Draft Final Report

MATCH FUNDS, PERMITS, AND SUBCONTRACTS

Subtask 1.7 Match Funds

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

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

The Recipient shall:

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

If match funds were a part of the proposal that led to the CEC awarding this Agreement, then provide in the letter:
    - A list of the match funds that identifies:
        - The amount of cash match funds, their source(s) (including a contact name, address, and telephone number), and the task(s) to which the match funds will be applied.
        - The amount of each in-kind contribution, a description of the contribution type (e.g., property, services), the documented market or book value, the source (including a contact name, address, and telephone number), and the task(s) to which the match funds will be applied. If the in-kind contribution is equipment or other tangible or real property, the Recipient must identify its owner and provide a contact name, address, telephone number, and the address where the property is located.
        - If different from the solicitation application, provide a letter of commitment from an authorized representative of each source of match funding that the funds or contributions have been secured.
- At the Kick-off meeting, discuss match funds and the impact on the project if they are significantly reduced or not obtained as committed. If applicable, match funds will be included as a line item in the progress reports and will be a topic at CPR meetings.
- Provide a *Supplemental Match Funds Notification Letter* to the CAM of receipt of additional match funds.
- Provide a *Match Funds Reduction Notification Letter* to the CAM if existing match funds are reduced during the course of the Agreement. Reduction of match funds may trigger a CPR meeting.

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

Subtask 1.8 Permits
The goal of this subtask is to obtain all permits required for work completed under this Agreement in advance of the date they are needed to keep the Agreement schedule on track. Permit costs and the expenses associated with obtaining permits are not reimbursable under this Agreement, with the exception of costs incurred by University of California recipients. Permits must be identified and obtained before the Recipient may incur any costs related to the use of the permit(s) for which the Recipient will request reimbursement.

The Recipient shall:
- Prepare a *Permit Status Letter* that documents the permits required to conduct this Agreement. If no permits are required at the start of this Agreement, then state this in the letter. If permits will be required during the course of the Agreement, provide in the letter:
    - A list of the permits that identifies: (1) the type of permit; and (2) the name, address, and telephone number of the permitting jurisdictions or lead agencies.
    - The schedule the Recipient will follow in applying for and obtaining the permits. The list of permits and the schedule for obtaining them will be discussed at the Kick-off meeting (subtask 1.2), and a timetable for submitting the updated list, schedule, and copies of the permits will be developed. The impact on the project

if the permits are not obtained in a timely fashion or are denied will also be discussed. If applicable, permits will be included as a line item in progress reports and will be a topic at CPR meetings.

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

Products:

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

Subtask 1.9 Subcontracts

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

The Recipient shall:

- Manage and coordinate subcontractor activities in accordance with the requirements of this Agreement.
- Incorporate this Agreement by reference into each subcontract.
- Include any required Energy Commission flow-down provisions in each subcontract, in addition to a statement that the terms of this Agreement will prevail if they conflict with the subcontract terms.
- If required by the CAM, submit a draft of each *Subcontract* required to conduct the work under this Agreement.
- Submit a final copy of each executed subcontract.
- Notify and receive written approval from the CAM prior to adding any new subcontractors (see the discussion of subcontractor additions in the terms and conditions).

Products:

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

TECHNICAL ADVISORY COMMITTEE

Subtask 1.10 Technical Advisory Committee (TAC)

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

- Provide guidance in project direction. The guidance may include scope and methodologies, timing, and coordination with other projects. The guidance may be based on:

  - Technical area expertise;
  - Knowledge of market applications; or
  - Linkages between the agreement work and other past, present, or future projects (both public and private sectors) that TAC members are aware of in a particular area.
- Review products and provide recommendations for needed product adjustments, refinements, or enhancements.
- Evaluate the tangible benefits of the project to the state of California, and provide recommendations as needed to enhance the benefits.
- Provide recommendations regarding information dissemination, market pathways, or commercialization strategies relevant to the project products.
- Help set the project team's goals and contribute to the development and evaluation of its statement of proposed objectives as the project evolves.
- Provide a credible and objective sounding board on the wide range of technical and financial barriers and opportunities.
- Help identify key areas where the project has a competitive advantage, value proposition, or strength upon which to build.
- Advocate, to the extent the TAC members feel is appropriate, on behalf of the project in its effort to build partnerships, governmental support and relationships with a national spectrum of influential leaders.
- Ask probing questions that insure a long-term perspective on decision-making and progress toward the project's strategic goals.

The TAC may be composed of qualified professionals spanning the following types of disciplines:

- Researchers knowledgeable about the project subject matter;
- Members of trades that will apply the results of the project (e.g., designers, engineers, architects, contractors, and trade representatives);
- Public interest market transformation implementers;
- Product developers relevant to the project;
- U.S. Department of Energy research managers, or experts from other federal or state agencies relevant to the project;
- Public interest environmental groups;
- Utility representatives;
- Air district staff; and
- Members of relevant technical society committees.

The Recipient shall:

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

Products:

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

Subtask 1.11 TAC Meetings

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

The Recipient shall:

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

The TAC shall:

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

Products:

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

Subtask 1.12 Project Performance Metrics

The goal of this subtask is to finalize key performance targets for the project based on feedback from the TAC and report on final results in achieving those targets. The performance targets

should be a combination of scientific, engineering, techno-economic, and/or programmatic metrics that provide the most significant indicator of the research or technology's potential success.

The Recipient shall:

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

Products:

- TAC Performance Metrics Summary
- Project Performance Metrics Results

IV. TECHNICAL TASKS

TASK 2: ARCHITECTURAL AND ENGINEERING DESIGN

Subtask 2.1 Design Team Kick-off

The goals of this task are to: 1) align the full design team around the project's minimum requirements, goals, methods and approaches, expectations, and performance metrics; 2) establish a common starting point by collectively evaluating the existing housing prototype design through the lens of energy and carbon optimization, affordability and equity, and climate resilience.

The Recipient shall:

- Hold two-day design charrette that includes the full design team.
- Collectively develop a *Charrette Report* that describes charrette outcomes, including, but not limited to:
  - Project goals and performance targets;
  - Sketches and markups of existing site plan and existing housing prototype;
  - Historical and future climate analysis and their implications for the project;
  - Assessment of other natural and man-made hazards and their implications for the project.
- Conduct a multi-disciplinary review of existing template design, which assesses:

  - Suitability for natural ventilation and other passive design strategies, as well as daylighting opportunities;
  - Potential for integration of emerging energy technologies, full electrification, and advanced construction techniques;
  - Overall construction efficiency.
- Prepare a *Design Review Summary Report* that describes lessons learned from the existing housing prototype design review, organized by discipline. The Design Review Summary Report will be a high-level summary that discusses:
  - Suitability of existing template design for natural ventilation, daylighting, and other passive design strategies;
  - Potential for integration of emerging energy technologies, full electrification, and advanced construction techniques;
  - Overall construction efficiency;
  - Recommended design modifications or future design studies to undertake in the Schematic Design phase of new design.

Products:
- Charrette Report
- Design Review Summary Report

Subtask 2.2 Schematic Design
The goal of this subtask is to develop architectural and engineering schematic design (SD) drawings and supporting documentation.

The Recipient shall:
- Articulate and document in a *Program Document* the broad project goals and programming requirements, including:
  - Residential unit mix;
  - Transportation needs;
  - Building amenities;
  - Operational goals;
  - Site characteristics;
  - Energy and carbon goals.
- Develop conceptual design options for site plan and building plans.
- Model promising options for further analysis and selection in a three-dimensional building information modeling (BIM) environment.
- Develop a *Planning Entitlement Drawing Design Package* from the selected concept design, which describes the physical geometry and aesthetics of the buildings for City planning review process and approval.
- Obtain a planning approval letter from the city upon completion of the planning review process.
- Complete the *Schematic Design Drawing Set* to include:
  - Document code analysis;
  - Architectural drawing set that describes all of the basic parameters of how the buildings will appear, including plans, sections, elevations, and a site plan;
  - Primary material selection and documentation;
  - Site survey;

- Landscape Architecture concept;
- Preliminary civil engineering drawings.

Products:

- Program Document
- Planning Entitlement Drawing Design Package
- Schematic Design Drawing Set

Subtask 2.3 Design Development

The goal of this subtask is to develop architectural and engineering design development (DD) drawings and supporting documentation.

The Recipient shall:

- Engage the structural, mechanical, electrical, civil, interiors and landscape designers to identify the physical geometry, power, water, and waste requirements of the selected engineered systems, including, but not limited to:
  - Mechanical;
  - Electrical;
  - Plumbing;
  - Waste;
  - Structural elements.
- Engage the general contractor and conduct a constructability review.
- Modify and coordinate the building design to accommodate the engineered system physical requirements, accessibility and City planning conditions.
- Prepare a *Design Development Drawing Set* that will lock in and describe the size and character of the project and all building systems so that a DD cost estimate can be conducted. The Design Development Drawing Set will include:
  - All major architecture concepts, described in the plan, section, and elevation;
  - Structural engineering drawings;
  - Mechanical and plumbing engineering drawings;
  - Initial Title 24 analysis;
  - Electrical engineering drawings;
  - Civil engineering drawings;
  - Interior design concepts;
  - Landscape architecture drawings.
- Prepare *Design Development Written Specifications* for Construction Specification Institute Divisions 3-12.
-

Products:

- Design Development Drawing Set
- Design Development Written Specifications

Subtask 2.4 Construction Documents
The goal of this subtask is to develop architectural and engineering construction documents (CD) and supporting documentation.

The Recipient shall:

- Prepare a *Construction Document Drawing Set* that illustrates and describes the further development of the Project and details the materials, systems and calculations required for construction of the work. The Construction Document Drawing Set will include:
    - All necessary architecture drawings;
    - Structural engineering drawings and calculations;
    - Mechanical and plumbing engineering drawings and calculations;
    - Title 24 documentation;
    - Electrical engineering drawings and calculations;
    - Civil engineering drawings;
    - Interior design and material drawings;
    - Landscape architecture drawings and irrigation calculations.
- Submit the Construction Document Drawing Set to the City of Visalia's building department for compliance review.
- Respond to the city's comments and make design changes as required.
- Obtain a City Building Department Plan Check Readiness Letter stating that the plan check is complete.
- Prepare all *Written Construction Specifications* as necessary.

Products:

- Construction Document Drawing Set
- Written Construction Specifications

TASK 3: WHOLE-LIFE CARBON ANALYSIS AND OPTIMIZATION

Subtask 3.1 Existing Design Operational Carbon Analysis
The goal of this subtask is to model the operational energy consumption and carbon emissions of the existing template design. The results of this modeling exercise will serve as a baseline against which future designs will be compared.

The Recipient shall:

- Generate a digital three-dimensional thermal model of the existing template design from as-built construction drawings and calculations to characterize relative consumption by energy end use.
- Use the generated model to calculate hourly energy consumption and carbon emissions by end use.
- Produce an *Existing Template Design Operational Energy and Carbon Emissions Memo,* which includes:
    - Descriptions of the modeling methodology and included assumptions;
    - Results of energy calculations;
    - Results of carbon emissions calculations;
    - Recommendations for design, engineering, and/or construction modifications to reduce overall energy use and/or carbon emissions.

Products:

- Existing Design Operational Energy and Carbon Emissions Memo

Subtask 3.2 Existing Design Embodied Carbon Analysis

The goal of this subtask is to model the lifecycle embodied carbon associated with the existing template design. The results of this modeling exercise will serve as a baseline against which future designs will be compared.

The Recipient shall:

- Obtain material quantities and all other whole-building lifecycle assessment (WBLCA) inputs from a combination of as-built construction drawings, construction specifications, and/or an existing three-dimensional model. The information will be gathered for:
    - Structure;
    - Envelope;
    - Interior Finishes.
- Conduct a WBLCA to determine the embodied carbon emissions associated with the existing template design. The scope of the WBLCA will include:
    - Production, including material extraction, material transport to factory, and product manufacturing;
    - Construction, including transport to site and construction installation;
    - Use, including maintenance, repair, and replacement;
    - End-of-life, including transport to disposal, waste processing, and disposal;
    - Reuse, recovery, and recycling potential.
- Produce an *Existing Template Design WBLCA Memo*, which includes:
    - Descriptions of the modeling methodology and included assumptions;
    - Results of the WBLCA;
    - Recommendations for design and construction modifications and/or material substitutions to reduce overall embodied carbon.

Products:

- Existing Template Design WBLCA Memo

Subtask 3.3 SD Operational Carbon Emissions Analysis and Optimization

The goal of this subtask is to model the operational energy consumption and carbon emissions of the proposed building at the end of the schematic design phase using a genetic optimization approach.

The Recipient shall:

- Generate a digital three-dimensional energy model of the proposed building.
- Apply a genetic algorithm to rapidly search the solution space of possible combinations of measures for the best performing packages. The associated scripts will be used to:
    - Create individual models of up to 10 HVAC/domestic hot water measures and up to 30 other priority energy/carbon reduction measures based on the Project Narrative of this proposal and any additional measures deemed relevant to the design;
    - Create starting packages of measures through statistical sampling;
    - Evolve increasingly better-performing packages over many successive iterations.

        - "Performance" will be evaluated based on cost, annual energy consumption and carbon emissions, as well as additional metrics to be determined by the project team.
- Identify the best-performing packages of measures and the energy savings and carbon reductions associated with those measures.
- Produce a *Schematic Design Operational Energy and Carbon Emissions Memo,* which includes:
    - Descriptions of the modeling methodology and included assumptions;
    - Descriptions of best-performing packages of energy/carbon reduction measures to be implemented in DD phase;
    - Energy consumption and carbon emissions reductions associated with those packages.

Products:
- Schematic Design Operational Energy and Carbon Emissions Memo

Subtask 3.4 SD Embodied Carbon Analysis and Optimization
The goal of this subtask is to model the lifecycle embodied carbon associated with the proposed building at the end of the schematic design phase.

The Recipient shall:
- Coordinate with the architectural and structural teams to utilize the BIM model for material quantity exports adequate for WBLCA purposes.
- Obtain material quantities and all other WBLCA inputs from a combination of design drawings, design narratives, and/or a three-dimensional model. The information will be gathered for:
    - Structure;
    - Envelope;
    - Interior Finishes.
- Facilitate, as needed, project-specific customization of LCA data in the chosen WBLCA tool. Customization of proprietary tools is outside of the team's control, but the team will facilitate this exercise and the flow of information between manufacturers, regional industry associations, and the WBLCA tool developers as necessary.
- Conduct a WBLCA to determine the embodied carbon emissions associated with the proposed building. The scope of the WBLCA will have the same scope as that of the Existing Template Design.
- Produce a *Schematic Design WBLCA Memo*, which includes:
    - Descriptions of the modeling methodology and included assumptions;
    - Results of the SD-phase WBLCA, including performance relative to the baseline building;
    - Recommendations for design and construction modifications and/or material substitutions to reduce overall embodied carbon.

Products:
- Schematic Design WBLCA Memo

Subtask 3.5 DD Operational Carbon Analysis and Optimization
The goals of this subtask are to model the operational energy consumption and carbon emissions of the proposed building at the end of the DD phase and ensure that the relevant Minimum Design Requirements (MDRs), as outlined in the Grant Solicitation Manual, are being met.

The Recipient shall:

- Update the digital three-dimensional energy model created in the SD phase, including modifications and details added to the building geometry, materials, and systems.
- Use the generated model to calculate hourly energy consumption and carbon emissions by end use.
- Produce a *Design Development Operational Energy and Carbon Emissions Memo,* which includes:
    - Descriptions of the modeling methodology and included assumptions;
    - Results of energy and carbon emissions calculations for the building as designed;
    - Comparison of performance relative to the baseline building and the building proposed at SD;
    - Assessment of progress toward the following MDRs:
        - All building end-uses are electric;
        - A minimum of 20 percent of the building's peak load is available to be temporarily managed or curtailed to respond to grid conditions.
    - Recommendations for CD-phase engineering and/or construction modifications that may reduce overall energy use and/or carbon emissions and/or enable the project to comply with MDRs stated above.

Products:

- Design Development Operational Energy and Carbon Emissions Memo

Subtask 3.6 DD Embodied Carbon Analysis and Optimization
The goal of this subtask is to model the lifecycle embodied carbon associated with the proposed building at the end of the DD phase.

The Recipient Shall:

-
- Continue coordination with the architectural and structural teams to ensure the three-dimensional model can be used for material quantity exports appropriate for WBLCA purposes.
- Use WBLCA to test embodied carbon reduction measures and integrate those measures with the least impact on cost, schedule, and performance, and greatest replicability, into design and specifications. Optimization measures may include:
    - Specification of lower carbon concrete mix;
    - Integration of biobased alternatives to conventional fossil fuel-based materials;
    - Selection of carbon-storing aggregate;
    - Design with advanced framing techniques and other material reduction strategies.
- Produce a *Design Development WBLCA Memo*, which includes:
    - Descriptions of the modeling methodology and included assumptions;

- Results of the DD-phase WBLCA, including performance relative to the baseline building and the building proposed at SD;
- Recommendations for design and construction modifications and/or material substitutions to reduce overall embodied carbon.

Products:

- Design Development WBLCA Memo

Subtask 3.7: Fifty Percent CD Operational Carbon Analysis and Optimization
The goals of this subtask are to model the operational energy consumption and carbon emissions of the proposed building and ensure that the relevant MDRs are being met at fifty percent CD.

The Recipient Shall:

- Update the digital three-dimensional energy model created in the DD phase, including modifications and details added to the building geometry, materials, or systems.
- Use the updated model to calculate hourly energy consumption and carbon emissions by end use.
- Produce a *Fifty Percent Construction Documents Operational Energy and Carbon Emissions Memo,* which includes:
  - Descriptions of the modeling methodology and included assumptions;
  - Results of energy and carbon emissions calculations for the building as designed;
  - Comparison of performance relative to the baseline building and the building proposed at SD and DD;
  - Summary of compliance with MDRs stated in Subtask 3.5;
  - Identification and description of key contributors to overall energy consumption and carbon emissions reductions;
  - Identification and description for additional opportunities for further reductions in overall energy consumption and carbon emissions reductions.
  - Lessons learned.

Products:

- Fifty Percent Construction Documents Operational Energy and Carbon Emissions Memo

Subtask 3.8: Fifty Percent CD Embodied Carbon Analysis and Optimization
The goal of this subtask is to model the lifecycle embodied carbon associated with the proposed building halfway through the construction documents phase.

The Recipient Shall:

-
- Refine the WBLCA model based on design and specification details developed in this phase.
- Continue to test, evaluate, and integrate embodied carbon reduction measures into the design and specifications.
- Produce a *Fifty Percent Construction Documents WBLCA Memo*, which includes:
  - Descriptions of the modeling methodology and included assumptions;

- Results of the Fifty percent CD-phase WBLCA, including performance relative to the baseline building and the building proposed at SD and DD;
- Identification and description of key contributors to overall embodied carbon reductions;
- Identification and description for opportunities for further reductions in overall embodied carbon;
- Lessons learned.

Products:

- Fifty Percent Construction Documents WBLCA Memo

Subtask 3.9: Renewable Energy Generation and Storage

The goal of this subtask is to develop renewable energy and distributed generation and storage strategies that are required to achieve the project's energy and resilience goals.

The Recipient Shall:

- Assess renewable energy generation strategies, which may include:
  - Solar photovoltaic (PV);
  - Solar thermal;
- Assess storage strategies, which may include:
  - Chemical/flow batteries;
  - Electric vehicle storage (with vehicle-to-building/vehicle-to-grid integration);
  - Thermal energy storage.
- Develop a *Schematic Design Renewable Energy Generation and Storage Narrative,* which includes:
  - Estimated Tier 1 critical loads & Tier 2 priority loads from the SD energy model;
  - Estimated minimum renewable energy generation and storage systems sizes;
  - Estimated minimum PV and/or solar thermal system(s) area(s)/capacity(s);
  - Estimated storage system size for Tier 1 and 2 loads based on resiliency model;
  - Estimated mandatory (20 percent of total spaces) and future (remaining spaces) energy vehicle (EV) loads, inclusive of an automated load management / charge control system;
  - Preliminary renewable energy generation and storage system layouts per NEC and National Fire Protection Agency code requirements for the renewable energy storage system.
- Support the electrical engineer during the DD phase, by providing:
  - Renewable energy, Battery Energy Storage System (BESS), and Electric Vehicle Supply Equipment (EVSE) interconnection options;
  - *Markups of Design Development Drawing Set*, which outline the renewable energy, BESS, and EVSE options*;*
  - Revision of critical load assessment, as necessary;
  - Optimization of renewable energy and BESS system size(s) and space take areas, as necessary;
  - Assistance with engaging the solar plus storage vendors for purposes of coordination.
  - Assistance with meeting the following MDRs:

        - Residential load during peak demand (4-9pm) is met through a combination of on-site renewables, onsite storage, and load management;
        - All residential end uses are controllable through a home energy management system and can respond to real-time pricing signals;
        - The microgrid controller(s) are interoperable with DER aggregation platforms;
        - The buildings can island from the grid during an outage and can shed discretionary loads to provide power to Tier 1 critical loads and Tier 2 priority loads;
        - The microgrid is sized for indefinite renewables-driven backup power of Tier 1 critical loads;
        - 20 percent of all parking spaces associated with the project have EV charging signals capable of responding to grid and building signals;
        - All remaining parking spaces are EV ready.
- Support the electrical engineer during the CD phase, by providing:
    - *Markups of Renewable Energy, BESS, and EVSE Systems Interconnection Drawings and Equipment Specifications*;
    - Assistance with meeting the MDRs outlined above.

Products

- Schematic Design Renewable Energy Generation and Storage Narrative
- Markups of Design Development Drawing Set
- Markups of Renewable Energy, BESS, and EVSE Systems Interconnection Drawings and Equipment Specifications

TASK 4: CLIMATE AND INFRASTRUCTURE RESILIENCE

Subtask 4.1: Climate Hazard and Population Sensitivity Assessment and Response

The goals of this subtask are to: 1) identify the site's future climate and infrastructure hazards and the intended occupants' sensitivities to those hazards; and 2) to develop a suite of climate and infrastructure resilience design responses.

The Recipient shall:

- Use future-shifted climate data to assess future climate hazards on the site.
- Use demographic data, academic research, and team expertise to identify anticipated sensitivities and vulnerabilities to the future climate hazards on site.
- Produce a *Future Climate and Infrastructure Resilience Narrative,* which includes:
    - Identified future climate and infrastructure hazards relevant to the project, as well as the time frames in which those hazards are projected to occur.
    - Identified project population sensitivities and vulnerabilities to the future climate and infrastructure hazards.
    - Recommended risk mitigating design responses that address those hazards.

Products:

- Future Climate and Infrastructure Resilience Narrative

Subtask 4.2: Design Resilience Assessment
The goals of this subtask are to "stress test" the proposed building design against the demands of future climate and infrastructure risks and to develop and integrate effective response strategies to those risks.

The Recipient shall:

- Conduct the operational energy and carbon emissions analyses described in Task 3 using future-shifted typical meteorological year and EnergyPlus Weather (or similar) formatted weather files.
- Produce a *Schematic Design Resilience Assessment Report* at the end of SD, a *Design Development Resilience Assessment Report* at the end of DD, and a *Fifty Percent Construction Documents Resilience Assessment Report* halfway through CD*,* which includes:
    - Summary of the Future Climate and Infrastructure Resilience Narrative from Subtask 4.1.
    - Results of the energy consumption and carbon emissions analyses.
    - Summary of significant changes in the results that may affect building energy consumption patterns such as equipment space requirements, climate-dependent passive design strategies, among other changes.
    - Recommended mitigations through changes to the building envelope or systems.

Products:

- Schematic Design Resilience Assessment Report
- Design Development Resilience Assessment Report
- Fifty Percent Construction Documents Resilience Assessment Report

TASK 5: COST ESTIMATION AND LIFECYCLE COST-BENEFIT ANALYSIS
The goal of this task is to use cost estimation, tracking, and lifecycle cost-benefit analysis (LCCA) to identify the optimal combination of systems and materials that can be replicated in zero net energy, fully electric multifamily housing.

The Recipient shall:

- Develop a *Schematic Design Project Cost Estimate and LCCA Memo* that is consistent with a Class 5 American Association of Cost Engineering (AACE) 18R-97 cost estimate classification for priority measures and includes a bundled optimization LCCA of optimum result(s).
- Integrate cost estimates into the genetic optimization developed under Subtask 3.3.
    - Constrain genetic optimization pareto front (a set of nondominated solutions, being chosen as optimal, if no objective can be improved without sacrificing at least one other objective) using either capital cost or lifecycle cost (or both).
- Update cost estimates during DD to Class 4 AACE 18R-97 detail for priority measures output from the genetic optimization.
- Update LCCA results during DD.
- Prepare *Design Development Project Cost Estimate and LCCA Memo*.
- Update cost estimates during CD to Class 3 AACE 18R-97 detail for priority measures output from the genetic optimization and incorporate additional relevant measure additions/deletions.

- Update lifecycle cost-benefit analysis results during CD.
- Prepare a *Fifty Percent Construction Documents Project Cost Estimate and LCCA Memo.*

Products:

- Schematic Design Project Cost Estimate and LCCA Memo
- Design Development Project Cost Estimate and LCCA Memo
- Fifty Percent Construction Documents Project Cost Estimate and LCCA Memo

TASK 6: EVALUATION OF PROJECT BENEFITS

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

The Recipient shall:

- Complete *the Initial Project Benefits Questionnaire*. The Initial Project Benefits Questionnaire shall be initially completed by the Recipient with 'Kick-off' selected for the 'Relevant data collection period' and submitted to the CAM for review and approval.
- Complete the *Annual Survey* each year as of January 31st. The Annual Survey includes but is not limited to the following information:
    - Technology commercialization progress
    - New media and publications
    - Company growth
    - Follow-on funding and awards received
- Complete the *Final Project Benefits Questionnaire*. The Final Project Benefits Questionnaire shall be completed by the Recipient with 'Final' selected for the 'Relevant data collection period' and submitted to the CAM for review and approval.
- Respond to CAM questions regarding the questionnaire drafts.
- Complete and update the project profile at least once a year at a minimum by January 31st every year on the CEC's public online project and recipient directory on the Energize Innovation website (www.energizeinnovation.fund), and provide *Documentation of Project Profile on EnergizeInnovation.fund*, including the profile link.
- If the Prime Recipient is an Innovation Partner on the project, complete and update the organizational profile on the CEC's public online project and recipient directory on the Energize Innovation website (www.energizeinnovation.fund), and provide *Documentation of Organization Profile on EnergizeInnovation.fund*, including the profile link.

Products:

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

TASK 7: TECHNOLOGY/KNOWLEDGE TRANSFER ACTIVITIES

Subtask 7.1 Technology/Knowledge Transfer Activities

EXHIBIT A
Scope of Work
Self-Help Enterprises

The goal of this subtask is to ensure the technological learning that resulted from the project is captured and disseminated to the range of professions that will be responsible for future deployments of this technology or similar technologies.

The Recipient Shall:

- Develop and submit a *Project Case Study Plan* that outlines how the Recipient will document the planning, construction, commissioning, and operation of the technology or system being demonstrated. **Additionally, the plan will include a strategy for assessing the replicability and scalability of the fully developed project.**
  The *Project Case Study Plan* should include:
  - An outline of the objectives, goals, and activities of the case study.
  - **A strategy for pursuing policy and regulatory changes to incentivize carbon-free development, identifying:**
    - **Barriers in existing State policies that currently inhibit carbon-free construction.**
    - **Solutions for overcoming these barriers.**
    - **Funding streams to promote construction of carbon-free, affordable development and to work with regulatory agencies on permit streamlining to assist with replicability.**
  - The organization that will be conducting the case study and the plan for conducting it.
  - A list of professions and practitioners involved in the technology's deployment.
  - Specific activities the recipient will take to ensure the learning that results from the project is disseminated to those professions and practitioners.
  - Presentations/webinars/training events to disseminate the results of the case study.

- Present the *Draft Project Case Study Plan* to the TAC for review and comment.
  - **Feedback to include a focus on the following areas:**
    - **Green building policy;**
    - **Sustainable building practices and energy efficiency;**
    - **Affordable housing development and finance.**

  - **Feedback to include a list of potential activities to support the cohort's recommendations (e.g., a coalition-building model to advocate for the adoption of policies that will further standardization and repetition to scale this type of development).**

- Develop and submit a *Summary of TAC Comments* that summarizes comments received from the TAC members on the *Draft Project Case Study Plan*. This document will identify:
  - TAC comments the recipient proposes to incorporate into the *Final Technology Transfer Plan*.
  - TAC comments the recipient does not propose to incorporate with and explanation why.

- Submit the *Final Project Case Study Plan* to the CAM for approval.
- Execute the *Final Project Case Study Plan* and develop and submit a *Project Case Study (Draft/Final)*
- When directed by the CAM, develop presentation materials for an CEC- sponsored conference/workshop(s) on the project.
- When directed by the CAM, participate in annual EPIC symposium(s) sponsored by the California CEC.
- Provide at least (6) six *High Quality Digital Photographs* (minimum resolution of 1300x500 pixels in landscape ratio) of pre and post technology installation at the project sites or related project photographs.

Products:

- Project Case Study Plan (draft and final)
- Summary of TAC Comments
- Project Case Study (draft and final)
- High Quality Digital Photographs

TASK 8: BUILD PHASE SELECTION

The goal of this task is to conduct activities and prepare deliverables for the selection process for the Build Phase. These deliverables will be used to select which Design Phase projects will receive funding for the Build Phase. In addition, deliverables developed under this task will be used to amend the agreement for those projects chosen to move onto Build Phase.

The Recipient shall:

- Develop and prepare *Conceptual Design and Engineering Report*, describing drawings, design plans, and photos of an architectural-scale model of the project. At least photos from each perimeter side of the model shall be included in the report (e.g., north, east, south, and west views). The actual architectural-scale models will be on display during the team's project presentation at the event, as well as during a model showcase networking session
- Develop and submit an *Energy and Emissions Performance Model Report*, detailing the plan for software modeling of the development's expected energy and emissions performance and impacts on tenants' energy bills.
- Prepare and submit an *Emerging Technologies and Strategies Report*, describing the emerging technologies and strategies proposed to be used in the Build Phase and why they were chosen.
- Prepare and submit a *Zero-Emission Cost-Benefit Analysis Report* detailing the estimated cost difference between the zero-emission build-out compared to standard building design, construction, and operations.
- Prepare and submit a *Community Engagement Plan* documenting the strategy for soliciting and incorporating input from the community throughout the design process.

- Create and submit a two-minute *Concept Video* that will air at the Zero-Emission Building Forum (i.e., Showcase Event).
- Develop and submit additional *Presentation Materials* for the Zero-Emission Building Forum, as determined, and requested by the CAM.
- Provide a presentation to the Build Phase Evaluation Committee.
- Develop and submit a Build *Phase Amendment* Package that includes revisions as necessary to all of the Design Phase "full application" attachments:
    - Attachment 4 - EPIC Application Form (i.e., Design Phase application, confirmed and/or amended, as necessary, for the Build Phase)
    - Attachment 5 - EPIC Executive Summary (i.e., Design Phase application, confirmed and/or amended, as necessary, for the Build Phase)
    - Attachment 6 - EPIC Project Narrative (i.e., Design Phase application, confirmed and/or amended, as necessary, for the Build Phase)
    - Attachment 7 – Project Team Form
    - Attachment 8 – Scope of Work
    - Attachment 9 – Project Schedule
    - Attachment 10 – Budget
    - Attachment 11 – CEQA Compliance Form (Must be filled out again, to reflect at a minimum: (a) changes in the proposed project and (b) any changed external circumstances that are relevant to the prior environmental impact analysis.) (Applicant must confer with Lead Agency, if proposed project has increased in magnitude or changed in a way that is relevant to the prior environmental impact analysis.)
    - Attachment 12 – References and Work Product Form
    - Attachment 13 – Commitment and Support Letters
    - Attachment 14 – Project Performance Metrics
    - Attachment 15 -- Applicant Declaration (must be filled out again)

Products:

- Conceptual Design and Engineering Report
- Energy and Emissions Performance Model Report
- Emerging Technologies and Strategies Report
- Zero-Emission Cost-Benefit Analysis Report
- Community Engagement Plan
- Concept Video
- Presentation Materials
- Build Phase Amendment Package

V. PROJECT SCHEDULE

Please see the attached Excel spreadsheet.

RESOLUTION NO: 22-0511-18b

STATE OF CALIFORNIA

STATE ENERGY RESOURCES
CONSERVATION AND DEVELOPMENT COMMISSION

RESOLUTION: SELF-HELP ENTERPRISES

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

RESOLVED, that the CEC approves Agreement EPC-21-031 with Self-Help Enterprises for a $1,000,000 grant to engage a multidisciplinary team to design a zero net energy, all-electric, mixed-use, transit-oriented affordable housing community in Visalia, California. This project will enable the evaluation and integration of emerging energy technologies and construction practices using advanced analysis methods to create an affordable, equitable, decarbonized, resilient, and replicable development; and

FURTHER BE IT RESOLVED, that the Executive Director or their designee shall execute the same on behalf of the CEC.

CERTIFICATION

The undersigned Secretariat to the CEC does hereby certify that the foregoing is a full, true, and correct copy of a Resolution duly and regularly adopted at a meeting of the CEC held on May 11, 2022.
AYE:
NAY:
ABSENT:
ABSTAIN:

_____
Liza Lopez
Secretariat