



STATE OF CALIFORNIA

**GRANT REQUEST FORM (GRF)**

CEC-270 (Revised 12/2019)

CALIFORNIA ENERGY COMMISSION

**A) New Agreement # EPC-21-024 (to be completed by CGL office)**

<b>B) Division</b>	<b>Agreement Manager:</b>	<b>MS-</b>	<b>Phone</b>
ERDD	Michael Ferreira	51	510-364-8808

<b>C) Recipient's Legal Name</b>	<b>Federal ID Number</b>
Communities for Global Sustainability - C4GS LLC.	83-4676661

<b>D) Title of Project</b>
The Zero Energy Live/Learn Residential Ecovillage

**E) Term and Amount**

<b>Start Date</b>	<b>End Date</b>	<b>Amount</b>
4/27/2022	6/30/2024	\$ 1,000,000

**F) Business Meeting Information**

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

Proposed Business Meeting Date 4/13/2022 ☐ 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:**

**Communities for Global Sustainability - C4GS LLC** Proposed resolution approving Agreement EPC-21-024 with Communities for Global Sustainability – C4GS LLC for a \$1,000,000 grant to design an affordable, carbon-free multi-use housing community in San Diego, and adopting staff's determination that this action is exempt from CEQA. The community will maximize energy efficiency, reduce energy demand, integrate renewable energy, and minimize embodied carbon. (EPIC Funding)

**G) California Environmental Quality Act (CEQA) Compliance**

1. Is Agreement considered a "Project" under CEQA?

☒ Yes (skip to question 2)

☐ No (complete the following (PRC 21065 and 14 CCR 15378)):

Explain why Agreement is not considered a "Project":

2. If Agreement is considered a "Project" under CEQA:

a) ☒ Agreement **IS** exempt.

☒ Statutory Exemption. List PRC and/or CCR section number: Cal. Code Regs., tit. 14 § 15262

☐ 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 grant agreement will fund the design, economic analysis, performance modeling, and construction feasibility of a mixed-use development project and the improvement of methods for possible use in advanced energy development efforts (e.g.,

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planning, architectural, and engineering work). Activities will include information collection, research, design, and energy and emissions analyses. Activities will also include economic analysis, preparation of conceptual drawings and design plans, performance modeling, and construction feasibility analysis.

This agreement will not result in the adoption of a plan that will have a legally binding effect on later activities. No construction or changes to the physical environment will be funded by the grant or occur during the design and analysis work. The design activities will take place in existing buildings, and professionals will visit the proposed development site. Therefore, there is no possibility that the activities may have a significant effect on the environment.

This agreement is therefore statutorily exempt from environmental review pursuant to section 15262 of the CEQA Guidelines because it consists of feasibility or planning studies for possible future actions which the Energy Commission has not yet approved, adopted, or funded and does not require the preparation of an EIR or negative declaration but does require consideration of environmental factors. The agreement is also covered by section 15061(b)(3) of the CEQA Guidelines, the common sense exemption, which states that CEQA applies only to projects which have the potential for causing a significant effect on the environment. 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. The agreement does not involve any unusual circumstances, will not result in damage to any scenic resources within a highway officially designated as a state scenic highway, the project site is not included on any list compiled pursuant to Government Code section 65962.5, and will not cause a substantial adverse change in the significance of a historical resource. The agreement, when considered as a whole, will not result in a cumulative impact that is significant on the environment. Therefore, none of the exceptions to exemptions listed in CEQA Guidelines section 15300.2 apply to this agreement and it will not have a significant effect on the environment.

- 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
Guttman & Blaevoet	\$ 272,121
I Am Green Inc	\$ 74,700



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<b>Legal Company Name:</b>	<b>Budget</b>
U.S. Green Building Council - San Diego Chapter	\$ 60,000
Ivy Energy Inc.	\$ 25,305
Rivieh Inc.	\$ 30,000
Westberg & White Inc.	\$ 46,500
ENERlite Consulting	\$ 60,261
TBD (Administrative)	\$ 7,000
TBD (Bookkeeping)	\$ 7,000
TBD (Child Care)	\$ 1,800
TBD (Communications)	\$ 8,200
TBD (Marketing)	\$ 8,800
TBD (Catering)	\$ 7,500

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

<b>Legal Company Name:</b>

**J) Budget Information**

<b>Funding Source</b>	<b>Funding Year of Appropriation</b>	<b>Budget List Number</b>	<b>Amount</b>
EPIC	19-20	301.001G	\$19,774
EPIC	20-21	301.001H	\$980,226

R&amp;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: Adria Fox

Address: 6470 El Cajon Blvd Apt  
217City, State, Zip: San Diego, CA  
92115-2663

Phone:

E-Mail: afox@c4gs.org

**2. Recipient's Project Manager**

Name: Brent Musson

Address: 6470 El Cajon Blvd Apt  
217City, State, Zip: San Diego, CA  
92115-2663

Phone: 858-302-7318

E-Mail: bmusson@c4gs.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)



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**M) The following items should be attached to this GRF**

- |   |  |
|---|--|
| 1. Exhibit A, Scope of Work                         | <input checked="" type="checkbox"/> Attached |
| 2. Exhibit B, Budget Detail                         | <input 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      |
| 5. CEQA Documentation                               | <input type="checkbox"/> N/A                 |

\_\_\_\_\_  
**Agreement Manager**

\_\_\_\_\_  
**Date**

\_\_\_\_\_  
**Office Manager**

\_\_\_\_\_  
**Date**

\_\_\_\_\_  
**Deputy Director**

\_\_\_\_\_  
**Date**

**EXHIBIT A**  
**Scope of Work**  
**Communities for Global Sustainability - C4GS LLC.**

**I. TASK ACRONYM/TERM LISTS**

**A. Task List**

<b>Task #</b>	<b>CPR<sup>1</sup></b>	<b>Task Name</b>
1		General Project Tasks
2	X	Design, Development, Permitting, Community Design
3		Measurement, Verification, and Proving the Business Case
4		Pilot Demonstration
5		Evaluation of Project Benefits
6		Technology/Knowledge Transfer Activities
7		Build Phase Selection
8		Prepare Budget for Construction Phase

**B. Acronym/Term List**

<b>Acronym/Term</b>	<b>Meaning</b>
CAM	Commission Agreement Manager
CAO	Commission Agreement Officer
CEC	California Energy Commission
CEQA	California Environmental Quality Act
COC	Communities of Concern AKA Disadvantaged Communities (DAC'S)
CPR	Critical Project Review
DOD	A battery's depth of discharge (DoD) indicates the percentage of the battery that has been discharged relative to the overall capacity of the battery.
EV	Electric Vehicle
LTO	Lithium-titanate-oxide battery
PV	Photovoltaic
Recipient	Communities for Global Sustainability - C4GS LLC.
TAC	Technical Advisory Committee
ZED	Zero Energy Development

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

**A. Purpose of Agreement**

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

## **EXHIBIT A**

### **Scope of Work**

#### **Communities for Global Sustainability - C4GS LLC.**

The purpose of this Agreement is for Recipient (Communities for Global Sustainability LLC dba C4GS- ZEDlife) to design an affordable multi-use housing community that is built to counter the forces accelerating climate change over the buildings' expected lifespan. Where all buildings will maximize energy efficiency, integrate renewable energy and durability, minimize embodied carbon and keep energy demand to a minimum; in which the community is involved in understanding new and emerging energy technologies through knowledge transfer.

### **B. Problem/ Solution Statement**

#### **Problem**

Construction costs for Zero Energy Development (ZED) housing have traditionally been high for the affordable housing market. Technological advancements in sustainability are only accessible by top tier projects, which limits the energy-saving potential and climate change protection to a small segment of the population. Furthermore, building codes aren't keeping up with emerging technologies, which could lead to cost reduction or create new revenue streams. As well, grid overloads at peak times are causing stress on the current infrastructure, which makes monitoring mixed-use facilities and affordable housing communities difficult.

Due to the rapid acceleration of climate change, we have been less able to move swiftly and to reduce the damage that may endanger Communities of Concern (COC), causing further environmental injustice. Last but not least, COCs have traditionally been gentrified as new development practices and zoning policies have been adopted. The resolution of these issues will aid in promoting clean energy and increasing access to clean technology for all communities.

#### **Solution**

The Recipient and partners will design an affordable multi-use housing community that counters the forces of accelerating climate change over the buildings' expected lifespan. All buildings will be designed to maximize energy efficiency, integrate renewable energy and durability, minimize embodied carbon and keep energy demand to a minimum; where knowledge transfer takes place to help people understand new and emerging energy technologies.

Through Recipient's solution, we empower citizens to take control of their own health and wellbeing, design and implement their own sustainable paths to a better future, create bridges of hope and create self-sustaining, green housing systems that cater to residents of low-income and marginalized communities. All these factors give residents the power to shape their communities.

The model will focus on Communities of Concern (COC = Disadvantaged Communities-DAC's), be aesthetically pleasing to the senses, and be completely NetZero in the build phase and beyond to co-create Zero (fossil) Energy Developments.

**EXHIBIT A**  
**Scope of Work**  
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**C. Goals and Objectives of the Agreement**

**Agreement Goals**

The goals of this Agreement are:

Green Building & Energy Goals:

- Measure the reduction of energy consumption by introducing modeling tools to demonstrate the amount of energy reduced throughout the buildings.
- Measure how the building system will reduce the cost to build and maintain over amortization of the lifetime of the building
- Measure and analyze how the project will reduce pollution by making the new development from low embodied carbon materials to reduce both embodied and operational carbon footprints
- Identify local materials for project build phase and labor wherever possible.
- Demonstrate how the project reduces the time to build by employing a highly pre-engineered system that cuts time from the construction schedule (through onsite, community-led modular building construction) and reduces construction cost.
- Analyze and demonstrate the reduction of energy used by tenants
- Report how and where tenants were involved in the design process and able to understand how to monitor their homes energy consumption
- Utilizes the ZEDPower platform to deliver broader access to emissions-free transportation modalities.
- Pay back the “carbon debt” from the construction process.
- Design the entire building enclosure to capture energy from sunlight and provide exterior spaces covered with solar canopies for an improved community experience.
- Smart Spaces feature advanced sensing and machine-learning technologies that are extremely effective at reducing wasted energy and optimizing energy consumption through active load management.
- Create a model so that the developer/owner and the tenant all share the benefits of the energy assets in a win-win, simple to operate incentive structure.

Knowledge Transfer & Community Goals:

- Increase community and residential knowledge transfer in clean energy and emerging green technologies industries
- Incentivize Smart Energy Behavior by capturing the financial benefits of investments in distributed energy resources.
- Design a system that incentivizes tenants to use energy during the day when the sun is shining or to schedule scheduled loads when plentiful solar energy is available.
- Design an on-site, publicly available Community Center
- Integrate community knowledge transfer into the development
- Demonstrate how the design advances the education of individuals from all walks of life by sharing the experience and best practices gained from the networks of ecovillages and sustainable communities worldwide.

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- Focus on the advancement of human rights, conflict resolution, and reconciliation by empowering local communities to interact globally, while promoting a culture of mutual acceptance and respect, effective communications, and cross-cultural outreach.
- Model the advancement of environmental protection globally by serving as a think tank, incubator, international partner organization, and catalyst for projects that expedite the shift to sustainable and resilient lifestyles.
- Create a pathway to advance citizen and community participation in local decision-making, influencing policy-makers, and educating the public, to accelerate the transition to sustainable living.
- Create a system to generate jobs through for the Green Building industry through Workforce Training, Apprenticeships and Certificate Programs
- Demonstrate how innovative Eco designs and technology can help people and change lives.

Ratepayer Benefits:<sup>2</sup> This Agreement will result in the ratepayer benefits of greater electricity reliability and lower costs through the use of a virtual grid and in unit monitoring. In addition the tenant interface and ongoing knowledge transfer activities will allow consumers to become energy stewards.

Technological Advancement and Breakthroughs:<sup>3</sup> This Agreement will lead to technological advancement and breakthroughs to overcome barriers to the achievement of the State of California's statutory energy goals by providing a combinatorial solution that includes effective design of integrated solar electric rainscreen cladding and roofing [ BIPV ], integrated with a carefully honed and modeled optimized building form which can use the entire external envelope to generate substantial quantities of renewable energy subsidized by displacing conventional high quality cladding materials. Special extrusions with a modular kit of parts will be manufactured in California allowing the skin to be tuned to optimize daylight, natural ventilation, views out and of course external roof terraces to provide a high quality of life at reasonably high densities.

Working with Recipient's light gauge steel framing volumetric prefabrication factory the durability of a low cost social housing construction system has been improved by moving the airtightness to the outside of the perforated vapor permeable steel chassis and up to 24 cm of non combustible external rockfibre insulation is specified – pushing the dew point out of the structural zone to potentially double the life expectancy.

Recipient suggests that on a net zero building with state of the art energy efficiency baked into every design decision, the BIPV will generate a slight annual surplus of

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<sup>2</sup> California Public Resources Code, Section 25711.5(a) requires projects funded by the Electric Program Investment Charge (EPIC) to result in ratepayer benefits. The California Public Utilities Commission, which established 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](http://docs.cpuc.ca.gov/PublishedDocs/WORD_PDF/FINAL_DECISION/167664.PDF)).

<sup>3</sup>



## EXHIBIT A

### Scope of Work

#### Communities for Global Sustainability - C4GS LLC.

renewable electricity – probably around 7 %. Using next generation exchangeable LTO batteries offering up to 30,000 charge cycles @ 70 % DOD [ compared to around 4000 with conventional LiPo4 batteries ] and smart BMS systems combined with Vehicle to Grid EV charging – almost all the solar electricity generated will be consumed or stored by the mixed use development. Programmable Smart Grid capability can also store off peak grid electricity through containerized ice slurry storage to store coolth from night to day to replace conventional aircon and its heavy grid demand.

#### Agreement Objectives

The objectives of this Agreement are to:

- Measure Energy Consumption using modeling tools to demonstrate the amount of energy reduced throughout the buildings.
- Reduce waste by Modular building design
- Reduce the time it takes to build by employing a highly pre-engineered system that cuts time from the construction schedule (through onsite, community-led modular building construction)
- Reduce tenant waste through direct incentives
- Produce an All-electric building design that minimizes energy consumption during peak hours
- Generate jobs through local workforce development programs and increase community engagement without risking quality
- Incentivize Smart Energy Behavior by capturing the financial benefits of investments in distributed energy resources
- Create a knowledge transfer model that informs all cultures and community members on the ZEDlife and zero carbon solutions

### 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.

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**The Recipient shall:**

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

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

For products that require a final version only

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

For all products

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

Instructions for Submitting Electronic Files and Developing Software:

○ **Electronic File Format**

- Submit all data and documents required as products under this Agreement in an electronic file format that is fully editable and compatible with the 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.

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○ **Software Application Development**

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

- Microsoft ASP.NET framework (version 3.5 and up). Recommend 4.0.
- Microsoft Internet Information Services (IIS), (version 6 and up) Recommend 7.5.
- Visual Studio.NET (version 2008 and up). Recommend 2010.
- C# Programming Language with Presentation (UI), Business Object and Data Layers.
- SQL (Structured Query Language).
- Microsoft SQL Server 2008, Stored Procedures. Recommend 2008 R2.
- Microsoft SQL Reporting Services. Recommend 2008 R2.
- XML (external interfaces).

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

## **MEETINGS**

### **Subtask 1.2 Kick-off Meeting**

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

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

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

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

- Terms and conditions of the Agreement;
- Invoicing and auditing procedures;
- Administrative products (subtask 1.1);
- CPR meetings (subtask 1.3);
- Match fund documentation (subtask 1.7);
- Permit documentation (subtask 1.8);

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**Scope of Work**  
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- Subcontracts (subtask 1.9); and
- Any other relevant topics.

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

- The CAM's expectations for accomplishing tasks described in the Scope of Work;
  - An updated Project Schedule;
  - Technical products (subtask 1.1);
  - Progress reports (subtask 1.5);
  - Final Report (subtask 1.6);
  - Technical Advisory Committee meetings (subtasks 1.10 and 1.11); and
  - Any other relevant topics.
- Provide *Kick-off Meeting Presentation* to include but not limited to:
    - Project overview (i.e. project description, goals and objectives, technical tasks, expected benefits, etc.)
    - Project schedule that identifies milestones
    - List of potential risk factors and hurdles, and mitigation strategy
  - Provide an *Updated Project Schedule*, *Match Funds Status Letter*, and *Permit Status Letter*, as needed to reflect any changes in the documents.

**The CAM shall:**

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

**Recipient Products:**

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

**CAM Product:**

- Kick-off Meeting Agenda

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

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

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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.

**EXHIBIT A**  
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**Communities for Global Sustainability - C4GS LLC.**

**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

## EXHIBIT A

### Scope of Work

#### Communities for Global Sustainability - C4GS LLC.

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**)

## EXHIBIT A

### Scope of Work

#### Communities for Global Sustainability - C4GS LLC.

- 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* 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
- 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.



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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*)

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**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.

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**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.

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- Advocate, to the extent the TAC members feel is appropriate, on behalf of the project in its effort to build partnerships, governmental support and relationships with a national spectrum of influential leaders.
- Ask probing questions that insure a long-term perspective on decision-making and progress toward the project's strategic goals.

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

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

**The Recipient shall:**

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

**Products:**

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

**Subtask 1.11 TAC Meetings**

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

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**The Recipient shall:**

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

**The TAC shall:**

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

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- Develop and submit a *TAC Performance Metrics Summary* that summarizes comments received from the TAC members on the proposed project performance metrics. The *TAC Performance Metrics Summary* will identify:
  - TAC comments the Recipient proposes to incorporate into the *Initial Project Benefits Questionnaire*, developed in the Evaluation of Project Benefits task.
  - TAC comments the Recipient does not propose to incorporate with an 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 DESIGN, DEVELOPMENT, PERMITTING AND PILOT PREPARATION

The goals of this task are to: (1) engage the neighborhood, (2) finalize the modular electrical design, the PowerClad roof design, virtual grid utility management systems, sensor technology, deployable loads, energy storage, charging stations, the water systems design, and the transportation system design, (3) develop schematic design and construction documents, and (4) obtain necessary construction and interconnection permits.

#### Subtask 2.1: Community Design and Site Readiness

The goals of this subtask are to: (1) engage the stakeholders near the mixed-use development and a subcontractor's cloud customers in the decision-making processes, (2) establish a communication strategy for residents to provide feedback using historical meter data and create a shared working processes, (3) confirm the availability of the project demonstration site; (4) execute any agreements necessary to secure the demonstration site; (5) host green charrettes and report results

#### The Recipient shall:

- Identify all stakeholders near the mixed-use development utilizing a range of avenues and mechanisms to facilitate the widest possible participation including the initial design and video documentation of kick off meetings with CAM.
- Design, create, and implement an *Outreach Strategy Plan* which is sensitive to the needs of the residents and overall neighborhood and to engage in a cumulative process to enable relationships and trust to build and strengthen over time. The Outreach Strategy Plan will detail the project team's strategy for engaging residents and stakeholders throughout the project including any social media

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strategy and surveys. The questions asked during surveys and how many people were surveyed shall also be included in the Outreach Strategy Plan.

- Solicit households near the mixed-use development for feedback and participation in Green Charretts
- Host green charrettes to discover communities needs and co-design the mixed-use development and produce a *Green Charrettes Report and Manual* which documents - A Summary (1-2 pages with photos) of both the process as well as the top priority issues and goals set during the charrette. In addition, a longer charrette report describing the action items, team members, visions, etc. of the charrette.
- Secure agreements with the selected households regarding their participation in the project and factors such as project timeline, community meetings, survey and green charrettes guidelines.
- Secure similar agreements with any commercial properties involved in the project.
- Prepare and provide a *Site Readiness Verification Document* which will include Contracts or Memorandums of Understanding signed by the residents and owners of the selected households and commercial properties regarding all aspects of the project they and/or their properties will be involved in.
  - Provide assistance and feedback regarding contents of any survey and questions to be administered to the mixed-use development residents.
- Facilitate survey and audit interactions with owners and residents.
  - Facilitate outreach & education about project goals and project details to the community near the mixed-use development and potential residents.

#### Products:

- Outreach Strategy Plan
- Green Charrettes Report and Manual
- Site Readiness Verification Document

#### Subtask 2.2. Pre-Design Planning and Engineering

The goals of this subtask are to collect and prepare all design, engineering, and planning background information necessary to finalize the schematic design for mixed-use development, including the modular, residential energy efficiency, and water and transportation systems. This task will also involve engaging the community as the Recipient adjusts design and prepares for design finalization. All design activities will start from the existing C4GS-ZEDlife design.

#### The Recipient shall:

- Conduct appropriate existing conditions assessment to collect data needed for the design process, including site surveys, modular unit energy and water audits, hazardous material assessments, visual conditions assessment of participating buildings, permitting history, and baseline transportation and parking conditions. This may include any other preliminary title reports, boundary and topographic surveying, easement mapping, underground utility assessment, underground video inspection for sewer and storm drain, drainage evaluation, geo-technical analysis, hazardous material surveying, etc.

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- Review building specifications and requirements with the subcontractor. Conduct preliminary design and produce bill of materials with the subcontractor. Procure pilot test equipment based on initial design and bill of materials. Perform data analysis on the pilot users historical usage data. Perform data analysis on the pilot users during pilot usage data phase and overlay that with the historical lighting schedule. Document findings in an *Existing Conditions Report*.
- Install any required baseline data collection equipment & software.
- Update existing design to address existing conditions documented during the site surveys and audits.
- Identify utility and other incentives that can be used to defray cost of the modular, energy efficiency and water usage package, and transportation measures.
- Develop a *Construction Coordination Plan* that addresses coordination with utilities, permitting agencies, contractors, residents, and the C4GS-ZEDlife Trust.
- Prepare *Permits Assessment Document* describing the scope of the mixed-use development project and outlining the required permits, and non-conforming, non-compliant conditions cases.
- Conduct relevant and necessary review of options for needed changes to regulatory and permitting structure to accommodate modular configurations in San Diego.
- Develop City of San Diego Entitlements Strategy necessary to efficiently review and process modular home permit applications from private parties. The strategy will address needed alterations to City General Plan, Zoning Ordinance, permitting and approval processes, and other regulatory considerations, including electric vehicle infrastructure permit standard development.
- City of San Diego Entitlements Strategy shall be incorporated into the mixed-use development Guidebook developed under Subtask 6.3 below.
- Develop a *Program Narrative* documenting work scope to be performed for each participating mixed-use development building and the shared energy, water, and transportation systems, as well as addressing the other findings developed under Subtask 2.2.

#### Products:

- Existing Conditions Report
- Construction Coordination Plan
- Permits Assessment Document
- Program Narrative

#### Subtask 2.3: Schematic Design

The goals of this subtask are to finalize the mixed-use development modular system schematic design, residential energy efficiency configuration schematic design, water systems schematic design, and shared transportation systems



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design. All design activities will build on the C4GS-ZEDlife pre-design planning from Subtask 2.2.

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

- Develop schematic design that addresses the sizing, siting, and interconnection of the modular system, including PV arrays, energy storage, power conversion equipment, EV chargers, and utility grid intertie.
- Develop schematic design that identifies EV and shared transit parking locations.
- Document the modular engineering plans, specifications, and cost estimates.
- Develop schematic design for residential energy and water retrofits, identifying the proposed energy and water retrofit upgrades and performance specifications criteria.
- Prepare *50% Design Memo*, describing the schematic designs, engineering plans, specifications and cost estimates for the modular, residential energy and water, and transportation upgrades, including as described above.
- Prepare *CPR Report #1* and participate in a CPR meeting in accordance with subtask 1.3.

#### **Products:**

- 50% Design Memo
- CPR Report #1

#### **Subtask 2.4: Design Development (80% drawings)**

The goals of this subtask are to develop 80% drawings for the modular system, residential energy efficiency configuration, water systems, shared transportation systems, and to engage the community as the project team prepares for construction. All design activities will build on the project schematic design from Subtask 2.3.

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

- Develop use cases and operational scenarios for the modular, based on input from block residents, modular engineers and vendors, and other stakeholders. Document updates to the *Modular Functional Specification*.
- Determine plan for proper Integration of the Subcontractor's cloud Supervisory Controller Software and programming the real-time and scheduled light control logic with the low-level modular controller. Adapt existing control algorithms as needed for residential modular control, with reuse of existing algorithms for economic optimization and forecasting, including load forecasting, solar generation forecasting, and EV charging load forecasting. Integrate commercially available modular automation products for control of the flexible residential loads.
- Confirm requirements and architecture for modular control system, and document in *Modular Control System Design Report*. This document will cover

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the modular supervisory and low-level controller, residential load control, and EV charge control.

- Design and engineer the modular system to 80% construction documents, including PV arrays, modular battery and sensor design for tenant pilot areas, energy storage, power conversion equipment, EV chargers, and utility grid intertie. Engineering plan set (80% Design) includes specifications and cost estimates.
- Create draft construction documents for residential energy and water configurations. Develop 80% permit-submission information packet.
- Prepare *80% Design and Engineering Memo*, describing engineering plans, specifications and cost estimates for the modular, residential energy and water, and transportation upgrades including information as described above.

#### Products:

- Modular Functional Specification
- Modular Control System Design Report
- 80% Design and Engineering Memo

#### Subtask 2.5: Construction Drawings

The goals of this subtask are to prepare final construction documents for the project's modular system, residential energy efficiency configurations, and water and transportation systems. All design activities will be built on the project's design development from Subtask 2.4.

#### The Recipient shall:

- Integrate engineering designs into a *Modular Engineering Plan Set* (100% Design) for the full mixed-use development, including all modular, energy efficiency, water, and transportation components exterior to the residential buildings.
- Develop final *Residential Energy and Water Configuration Construction Documents*, including specifications for each modular unit adequate for permit submission.
- Summarize changes in profiles for objective reporting. Review data with the project team and create final data analysis initiatives based on design team feedback. Run post collaboration analysis to account for feedback and relevant summary requests. Develop a final report with before and after data summary points.
- Prepare the projects *100% Design and Engineering Memo*, describing finalized engineering plans, specifications and cost estimates for the project, including the modular, residential energy and water, and transportation upgrades.
- Prepare *CPR Report #2* and participate in a CPR meeting in accordance with subtask 1.3.

#### Products:

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- Modular Engineering Plan Set
- Residential Energy and Water Configuration Construction Documents
- 100% Design and Engineering Memo
- CPR Report #2

**Subtask 2.6: Permitting and Interconnection Agreement**

The goal of this subtask is to secure required permits, execute an interconnection agreement with one of the following Pacific Gas and Electric (PG&E), Southern California Edison (SCE), or San Diego Gas and Electric (SDG&E) for the distributed energy system and establish the proper electricity tariff with the electricity provider.

**The Recipient shall:**

- Obtain required electrical and building permits and any other necessary permits from the City of San Diego, for the site construction, modular, and the residential energy and water configurations.
- Work with PG&E, SCE, or SDG&E to facilitate system interconnection.
- Execute an interconnection agreement with PG&E, SCE, or SDG&E.
- Schedule and execute PG&E, SCE, or SDG&E inspections and testing as necessary.
  - Document results of permit and interconnection process in *System Permitting and Interconnection Memo*

**Products:**

- System Permitting and Interconnection Memo

**Subtask 2.7: Development of Part of Kits Manual**

The goal of this subtask is to develop and design a part-of-kits manual for the project. The manual will be used to guide the build team in completing the build stage of the project and allow the model to be quickly replicated on other sites across the state. The Recipient will design a kit of parts with each component or labor service turned into a fixed price module. This task will provide the material or labor model which neatly fits together to provide a finished community. The task provides a manual which is clearly described and drawn with full specifications and drawings made to be made available on a website.

**The Recipient shall:**

- Design simply *Part of Kits Manual* that describes and identifies each component or labor service needed to complete the building of a ZED mixed use affordable housing community with a pricing guide and materials directory.
- Develop a Website to host 3D modeling of final designs and part of kits manual

**Products:**

- Part of Kits Manual

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#### **TASK 3 MEASUREMENT, VERIFICATION, AND PROVING THE BUSINESS CASE**

The goal of this task is to develop an independent measurement and verification plan for the mixed-use development, to verify that it is meeting the performance targets and delivering the expected benefits. The Recipient will run a pilot test to verify specifications and feasibility of modular, building energy, water, and transportation systems under varying conditions, measure and document their performance, and use the lessons learned from constructing and operating the modular unit pilot tests to refine the business case for future scale-up of Tompkins Residential Live Learn Communities. This task includes a simplified plan for on-going, post-EPIC grant monitoring and verification to evaluate persistence and sustainability of savings, as well as a strategy to report results back to building owners and operators.

##### **Subtask 3.1: Measurement and Verification Plan**

The goal of this subtask is to develop a measurement and verification plan for all aspects of the projects: modular, energy in the modular buildings (appliances and building level HVAC/water heating), water systems, carbon emissions, grid-interactive metrics, building loads, on-site renewable generation, resiliency using passive thermal resiliency, transportation systems, and overall evaluation of the residential experience.

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

- Develop the *Measurement and Verification Plan* that identifies and describes:
  - Key performance criteria for the project, and the input parameters and output metrics that will be measured to verify performance including, but not limited to, energy use (kilowatt hours, therms), renewable energy generation (kilowatt hours), water use (gallons), and cost savings for energy, water, and other benefits as applicable;
  - Monitoring equipment and instrumentation required to collect verification data;
  - Data acquisition criteria, such as sampling frequency for various parameters; analysis methods needed to generate all performance metrics listed in the Agreement Objectives section of this Scope of Work;
  - Mixed-use development energy performance operating scenarios that will be implemented during the verification phase, such as the deployable load mode for each apartment modular.
  - Additional information that will be necessary to complete the measurement and verification task (e.g., self-reported data on mixed-use development resident experience).

##### **Products:**

- Measurement and Verification Plan

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**TASK 4 Pilot Demonstration**

The purpose of this task is to conduct a pilot test of the mixed-use development's virtual grid, battery system, lighting schedule, and user interface. It will be used to determine if it meets the performance targets and delivers the expected benefits through an onsite trial. The Recipient will work to access real data from an existing community in order to test the viability of the switch device, along with the project team's virtual grid. Through this onsite test, the Recipient will evaluate the specifications and feasibility of each apartment being on a microgrid and how residents can share solar resources through a simple lighting indicator. The purpose of the onsite test will be to provide a case study for a demand response system in which residents engage in real-time pricing and receive visual cues whenever their solar budget is exceeded or not exceeded. It also includes a simplified plan for on-going, post-EPIC grant monitoring and verification to evaluate persistence and sustainability of savings, as well as a strategy for reporting results back to owners and operators.

**Subtask 4.1: Preparation for Pilot Test**

The goal of this subtask is to engage pilot test site customers and integrate Ivy Energy and Rivieh technologies.

**The Recipient shall:**

- Develop the *Product Placement Design Packet* which integrates technologies by project partners:
  - Engaging with project partner customers and developing an onsite plan with host customers to promote the lighting indication pilot. (100 units);
  - Integrating the project partner systems and program the real-time and scheduled lighting control logic;
  - Accessing historical meter data from participants
  - Managing a sub-contractor to install a central building meter to monitor real-time usage data from the building.

**Products:**

- Product Placement Design Packet

**Subtask 4.2: Run Pilot Test**

The goal of this subtask is to run a pilot test, collect data, develop a final report with before and after data and summary points for the final integrated virtual grid technologies solution.

**The Recipient shall:**

- Run an onsite pilot test which integrates technologies by project partners:
  - Run Pilot Test
  - Conduct data analysis on the pilot users during pilot usage data and overlaying that with the historical lighting schedule.

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- Summarize change in profiles for objective reporting.
- Review data with the project team and create new data analysis initiatives based on design team feedback.
- Run post collaboration analysis to account for feedback and relevant summary requests.
- Develop a *Pilot Energy Performance Report* with before and after data and summary points.

#### Products:

- Pilot Energy Performance Report

### TASK 5 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 31<sup>st</sup>. 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 31<sup>st</sup> every year on the CEC's public online project and recipient directory on the [Energize Innovation website \(www.energizeinnovation.fund\)](http://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 \(www.energizeinnovation.fund\)](http://www.energizeinnovation.fund), and provide *Documentation of Organization Profile on EnergizeInnovation.fund*, including the profile link.

#### Products:

- Initial Project Benefits Questionnaire
- Annual Survey(s)

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- Final Project Benefits Questionnaire
- Documentation of Project Profile on EnergizeInnovation.fund
- Documentation of Organization Profile on EnergizeInnovation.fund

**TASK 6 TECHNOLOGY/KNOWLEDGE TRANSFER ACTIVITIES**

The goal of this task 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 (Draft/Final)* that outlines how the Recipient will document the planning, construction, commissioning, and operation of the technology or system being demonstrated. The *Project Case Study Plan* should include:
  - An outline of the objectives, goals, and activities of the case study.
  - 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.
- 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 the 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

**EXHIBIT A**  
**Scope of Work**  
**Communities for Global Sustainability - C4GS LLC.**  
at the project sites or related project photographs.

**Products:**

- Project Case Study Plan (Draft/Final)
- Summary of TAC Comments
- Project Case Study (Draft/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 help select which Design Phase projects may 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 minimum, 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.



## **EXHIBIT A**

### **Scope of Work**

#### **Communities for Global Sustainability - C4GS LLC.**

- 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 that includes revisions to the following Design Phase attachments:
  - Attachment 4 - EPIC Application Form
  - Attachment 5 - EPIC Executive Summary
  - Attachment 6 - EPIC Project Narrative
  - Attachment 7 – Project Team Form
  - Attachment 8 – Scope of Work
  - Attachment 9 – Project Schedule
  - Attachment 10 – Budget
  - Attachment 11 – CEQA Compliance Form
  - Attachment 12 – References and Work Product Form
  - Attachment 13 – Commitment and Support Letters
  - Attachment 14 – Project Performance Metrics
  - Attachment 15 -- Applicant Declaration

**EXHIBIT A**  
**Scope of Work**  
**Communities for Global Sustainability - C4GS LLC.**

**TASK 9 PREPARE BUDGET FOR CONSTRUCTION PHASE**

The goal of this task is to conduct activities and prepare a preliminary budget for the construction phase. These deliverables will be used to select which items align to the current budget allotted for the build.

**The Recipient shall:**

- Develop and prepare a *Preliminary Budget Report*, describing designated funds, timeline of funds for receipt, and detailed description of usage of funds pertaining to build specifications.

**Products:**

- Preliminary Budget Report

**V. PROJECT SCHEDULE**

Please see the attached Excel spreadsheet.

STATE OF CALIFORNIA

STATE ENERGY RESOURCES  
CONSERVATION AND DEVELOPMENT COMMISSION

**RESOLUTION: Communities for Global Sustainability – C4GS LLC**

**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-21-024 with Communities for Global Sustainability – C4GS LLC for a \$1,000,000 grant to design an affordable, carbon-free, multi-use housing community in San Diego. The community will maximize energy efficiency, reduce energy demand, integrate renewable energy, and minimize embodied carbon; 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 April 26, 2022.

AYE:

NAY:

ABSENT:

ABSTAIN:

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Liza Lopez  
Secretariat