California Energy Commission
November 12, 2025 Business Meeting
Backup Materials for Gridscape Solutions, Inc.

The following backup materials for the above-referenced agenda item are available in this PDF packet as listed below:

1. Proposed Resolution
2. Grant Request Form
3. Scope of Work

[PROPOSED]

RESOLUTION NO: 25-1112-XX

STATE OF CALIFORNIA

STATE ENERGY RESOURCES
CONSERVATION AND DEVELOPMENT COMMISSION

RESOLUTION: Gridscape Solutions, Inc.

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

RESOLVED, that the CEC approves agreement EPC-25-036 with Gridscape Solutions, Inc. for a $10,000,000 grant. This project will design, develop, and demonstrate a Hybrid Battery Energy Storage System (HBESS) at the Bay Area Vaishnav Parivar Temple and Cultural Community Center in San Jose and the San Pasqual Band of Mission Indians Tribal Government Complex in Valley Center. The HBESS will leverage mixed battery chemistries and advanced micro battery management systems to address the limitations of existing battery energy storage systems; 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 November 12, 2025.

AYE:
NAY:
ABSENT:
ABSTAIN:

Dated:

_____
Kim Todd
Secretariat

STATE OF CALIFORNIA
CALIFORNIA ENERGY COMMISSION

CEC-270 (Revised 01/2024)

GRANT REQUEST FORM (GRF)

A. New Agreement Number

IMPORTANT: New Agreement # to be completed by Contracts, Grants, and Loans Office.

New Agreement Number: EPC-25-036

B. Division Information

1. Division Name: ERDD
2. Agreement Manager: Alexander Wyckoff
3. MS-:51
4. Phone Number: 916-352-0568

C. Recipient's Information

1. Recipient's Legal Name: Gridscape Solutions, Inc.
2. Federal ID Number: 46-1804754

D. Title of Project

Title of project: Innovative Hybrid Battery Energy Storage Solution for Value Stacked Grid Services

E. Term and Amount

1. Start Date: 12/1/2025
2. End Date: 12/31/2029
3. Amount: $10,000,000.00

F. Business Meeting Information

1. Are the ARFVTP agreements $75K and under delegated to Executive Director? No
2. The Proposed Business Meeting Date: 11/12/2025
3. Consent or Discussion? Consent
4. Business Meeting Presenter Name: Elyse Kedzie
5. Time Needed for Business Meeting: 0 minutes.
6. The email subscription topic is: Electric Program Investment Charge (EPIC)

Agenda Item Subject and Description:

Gridscape Solutions, Inc. Proposed resolution approving agreement EPC-25-036 with Gridscape Solutions, Inc. for a $10,000,000 grant and adopting staff's recommendation that this action is exempt from CEQA. This project will design, develop, and demonstrate a Hybrid Battery Energy Storage System (HBESS) at the Bay Area Vaishnav Parivar Temple and Cultural Community Center in San Jose and the San Pasqual Band of Mission Indians Tribal Government Complex in Valley Center. The HBESS leverages mixed battery chemistries and advanced micro battery management systems to address the limitations of existing battery energy storage systems. (EPIC funding) Contact: Alexander Wyckoff

G. California Environmental Quality Act (CEQA) Compliance

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

If yes, skip to question 2.

If no, complete the following (PRC 21065 and 14 CCR 15378) and explain why Agreement is not considered a "Project":

Agreement will not cause direct physical change in the environment or a reasonably foreseeable indirect physical change in the environment because:

2. **If Agreement is considered a "Project" under CEQA answer the following questions.**

a) Agreement **IS** exempt?

Yes

Statutory Exemption?
No

If yes, list PRC and/or CCR section number(s) and separate each with a comma. If no, enter "None" and go to the next question.

PRC section number: None

CCR section number: None

Categorical Exemption?
Yes

If yes, list CCR section number(s) and separate each with a comma. If no, enter "None" and go to the next question.

CCR section number: Cal. Code Regs., tit. 14, § 15301 ; Cal. Code Regs., tit. 14, § 15303 ; Cal. Code Regs., tit. 14, § 15304 ;

Common Sense Exemption? 14 CCR 15061 (b) (3)
Yes
If yes, explain reason why Agreement is exempt under the above section. If no, enter "Not applicable" and go to the next section.

Project Site 1 - Bay Area Vaishnav Parivar Temple and Cultural Community Center - 175 Nortech Parkway, San Jose, CA (demonstration site #1)

Cal. Code Regs., tit. 14, Sec. 15301 provides that projects which consist of the operation, repair, maintenance, permitting, leasing, licensing, or minor alternations of existing public or private structures, facilities, mechanical equipment, or topographical features, and which involve negligible or no expansion of existing or former use at the time of the lead agency's determination, are categorically exempt from the provisions of the California Environmental Quality Act (CEQA). The proposed project will install and demonstrate a 100kW/250kWh hybrid battery energy storage system (including lithium iron phosphate, sodium ion, and second life EV batteries) to provide energy resiliency to the Bay Area Vishnav Parivar Temple and Cultural Community Center located at 175 Nortech Parkway, San Jose, CA. The demonstration will be located on an existing, already developed site. Thus, the Project will involve the minor alternation of an existing facility and will result in negligible or no expansion of use beyond the already existing infrastructure. Therefore, the project falls within section 15301 and will not have a significant effect on the environment.

Cal. Code Regs., tit. 14, Sec. 15303 provides that projects which consist of construction and location of limited numbers of new, small facilities or structures; installation of small new equipment and facilities in small structures; and the conversion of existing small structures from one use to

another where only minor modifications are made in the exterior of the structure, are categorically exempt from the provisions of CEQA. Up to 1,000 feet of trenching at a depth of 4 feet will be required to install electrical cable and then backfilled. The ground surface will be covered with crushed gravel and containers will be placed on a concrete pad. Associated support equipment (inverters, transformers, switchgear, metering) will also be installed on concrete pads. Therefore, the proposed project falls within section 15303 and will not have a significant effect on the environment.

Cal.Code Regs., tit. 14, Sec. 15304 provides that projects which consist of minor public or private alterations in the condition of land, water, and/or vegetation which do not involve removal of healthy, mature, scenic trees except for forestry or agricultural purposes are categorically exempt from the provisions of CEQA. Examples listed in section 15304 include, but are not limited to, minor trenching and backfilling where the surface is restored. The proposed project consists of trenching and backfilling in bare land for installation of electric cable. The Project would not remove any healthy, mature, or scenic trees. The trenching would be temporary, and the surface would be restored. Therefore, the project falls within section 15304 and will not have a significant effect on the environment.

This project does not involve impacts on any particularly sensitive environment; any cumulative impacts of successive projects of the same type in the same place that might be considered significant; does not involve unusual circumstances that might have a significant effect on the environment; will not result in damage to scenic resources within a highway officially designated as a state scenic highway; the project sites are not included on any list compiled pursuant to Government Code section 65962.5, and the project will not cause a substantial adverse change in the significance of a historical resource. Therefore, none of the exceptions to categorical exemptions listed in CEQA Guidelines section 15300.2 apply to this project, and this project will not have a significant effect on the environment.

For Project Site 2 - San Pasqual Band of Mission Indians Tribal Government Complex - 16400 Kumeyaay Way, Valley Center, CA (demonstration site #2)

This project is covered by the Common Sense Exemption under 14 CCR 15061(b)(3), which provides 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 San Pasqual Band of Mission Indians, a federally recognized tribe of Kumeyaay people indigenous to Southern California and northern Mexico, has a headquarters in Valley Center, California. The project will take place entirely on land that is self-governed by the San Pasqual Band of Mission Indians. To comply with CEQA, the CEC must evaluate impacts to land within the jurisdiction of the State of California, which is therefore limited to potential off-reservation impacts of the project.

In 2020, the San Pasqual Band of Mission Indians initiated construction of a microgrid project at its Tribal Government Complex with 180 kW of solar PV and 120kW/480kWh stationary battery storage. The critical loads include a Red Cross evaluation center, fire station, police station, and wastewater treatment plant. Other non-critical loads at the government complex include the Tribal Administration Building and the Education Building. This project will occur at this same site (a previously disturbed area) and will involve the installation of a 500kW/1MWh hybrid battery energy storage system (also including lithium iron phosphate, sodium ion, and second life EV batteries). The complex is in a high wildfire threat area, and the demonstration of this energy storage system

is aimed at providing energy security to tribal operations during emergencies, including PSPS events.

The hybrid battery storage system installation will be a minor alteration to an existing facility within the interior of the San Pasqual Band of Mission Indians tribal land with no expansion beyond the government complex. Vehicle trips associated with the construction of the project will be temporary and the operation of the hybrid battery system will result in a negligible number of regular operational trips for maintenance. Therefore, no adverse effects to off-site air or water quality will occur because of the project. The installation and operation of the hybrid battery system would not substantially degrade the existing visual character or quality of off-reservation visual resources, as the system components are not visually obtrusive. The project will not have a significant adverse effect on the off-reservation environment due to unusual circumstances, result in a significant cumulative impact, damage resources within a designated state scenic highway, cause a substantial adverse change to the significance of a historical resource, or be located on a listed hazardous waste site. For these reasons, the project meets the CEQA Common Sense Exemption. Additionally, the project is categorically exempt from CEQA under California Code of Regulations, title 14, section 15301, as a minor alteration of existing facility, involving no expansion of the existing use.

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

No

If yes, answer yes or no to all that applies. If no, list all as “no” and “None” as “yes”.

Additional Documents	Applies
Initial Study	No
Negative Declaration	No
Mitigated Negative Declaration	No
Environmental Impact Report	No
Statement of Overriding Considerations	No
None	Yes

H. Is this project considered “Infrastructure”?

No

I. Subcontractors

List all Subcontractors listed in the Budget (s) (major and minor). Insert additional rows if needed. If no subcontractors to report, enter “No subcontractors to report” and “0” to funds. **Delete** any unused rows from the table.

Subcontractor Legal Company Name	CEC Funds	Match Funds
Scalvy Inc.	$ 2,780,000	**$1,720,000**
Relyion Energy Inc.	$ 95,000	**$**0
UNIGRID Inc.	$ 95,000	**$**0

Subcontractor Legal Company Name	CEC Funds	Match Funds
Ava Community Energy	$ 95,000	**$**0
Gridscape Energy Solutions, Inc.	$ 1,250,000	**$100,000**

J. Vendors and Sellers for Equipment and Materials/Miscellaneous

List all Vendors and Sellers listed in Budget(s) for Equipment and Materials/Miscellaneous. Insert additional rows if needed. If no vendors or sellers to report, enter "No vendors or sellers to report" and "0" to funds. **Delete** any unused rows from the table.

Vendor/Seller Legal Company Name	CEC Funds	Match Funds
Underwriters Laboratories, Inc.	**$**940,000	**$360,000**
Hardcraft Industries, Inc.	**$**150,000	**$**50,000
Chroma Systems Solutions, Inc.	**$180,000**	**$120,000**
Keysight Technologies, Inc.	**$464,000**	**$226,000**
East West Products Manufacturing and Services, Inc.	**$500,000**	**$200,000**
Vector Software, Inc.	**$46,080**	**$30,720**
Sunbelt Rentals, Inc.	**$30,000**	**$0**
National Construction Rentals, Inc.	**$30,000**	**$0**
The Home Depot, Inc.	**$90,000**	**$0**
Consolidated Electrical Distributors, Inc.	**$700,000**	**$50,000**
Contemporary Amperex Technology USA Inc.	**$375,000**	**$97,500**
UNIGRID, Inc.	**$200,000**	**$100,000**
Currents Marketplace, Inc.	**$125,000**	**$75,000**
W.W. Grainger, Inc.	**$475,000**	**$125,000**
Amazon.com, Inc.	**$200,000**	**$50,000**

K. Key Partners

List all key partner(s). Insert additional rows if needed. If no key partners to report, enter "No key partners to report." **Delete** any unused rows from the table.

Key Partner Legal Company Name
No key partners to report

L. Budget Information

Include all budget information. Insert additional rows if needed. If no budget information to report, enter "N/A" for "Not Applicable" and "0" to Amount. **Delete** any unused rows from the table.

Funding Source	Funding Year of Appropriation	Budget List Number	Amount
EPIC	24-25	301.001L	$10,000,000

TOTAL Amount: $ 10,000,000

R&D Program Area: ESTB: ETSI

Explanation for "Other" selection Not applicable

Reimbursement Contract #: Not applicable

Federal Agreement #: Not applicable

M. Recipient's Contact Information

1. Recipient's Administrator/Officer

Name: Yasmin Salim

Address: 46711 Fremont Blvd

City, State, Zip: Fremont, CA 94538-6539

Phone: 510-894-6030

E-Mail: yasmin@grid-scape.com

2. Recipient's Project Manager

Name: Vipul Gore

Address: 46711 Fremont Blvd

City, State, Zip: Fremont, CA 94538-6539

Phone: 510-894-6030

E-Mail: vipulgore@grid-scape.com

N. Selection Process Used

There are three types of selection process. List the one used for this GRF.

Selection Process	Additional Information
Competitive Solicitation #	GFO-23-317
First Come First Served Solicitation #	Not applicable
Other	Not applicable

O. Attached Items

1. List all items that should be attached to this GRF by entering “Yes” or “No”.

Item Number	Item Name	Attached
1	Exhibit A, Scope of Work/Schedule	Yes
2	Exhibit B, Budget Detail	Yes
3	CEC 105, Questionnaire for Identifying Conflicts	Yes
4	Recipient Resolution	No
5	Awardee CEQA Documentation	Yes

Approved By

Individuals who approve this form must enter their full name and approval date in the MS Word version.

Agreement Manager: Alexander Wyckoff

Approval Date: 10/01/2025

Branch Manager: Reynaldo Gonzalez

Approval Date: 10/02/2025

Director: Reynaldo Gonzalez for Jonah Steinbuck

Approval Date: 10/02/2025

Exhibit A
Scope of Work
Gridscape Solutions, Inc.

I. TASK ACRONYM/TERM LISTS

A. Task List

Task #	CPR[1]	Task Name
1		General Project Tasks
2		System Design and Engineering
3		Product Development
4	X	System Testing and Certification
5	X	System Installation and Commissioning
6	X	Operations, Measurement and Verification
7		Community Engagement
8		Evaluation of Project Benefits
9		Technology/Knowledge Transfer Activities

B. Acronym/Term List

Acronym/Term	Meaning
CAM	Commission Agreement Manager
CAO	Commission Agreement Officer
CEC	California Energy Commission
CPR	Critical Project Review
TAC	Technical Advisory Committee
BESS	Battery Energy Storage System
HBESS	Hybrid Battery Energy Storage System
mBMS	Micro Battery Management System
LFP	Lithium-Ion Phosphate
LCOS	Levelized Cost of Storage
EV	Electric Vehicles
EMS	Energy Management System
PCS	Power Control System
AI/ML	Artificial Intelligence / Machine Learning
UL	Underwriters Laboratories
NFPA	National Fire Protection Association
ISO/DSO	Independent System Operator / Distribution System Operator
DER	Distributed Energy Resources
M&V	Measurement & Verification

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

A. Purpose of Agreement

[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
Gridscape Solutions, Inc.

The purpose of this Agreement is to fund the design, development, testing, deployment, and operation of a Hybrid Battery Energy Storage System (HBESS) that leverages mixed battery chemistries and advanced micro battery management systems (mBMS) to address the limitations of existing battery energy storage systems and support California's transition to a sustainable, reliable, and decarbonized energy grid.

B. Problem/ Solution Statement

Problem

Battery energy storage systems (BESS) are critical for supporting renewable energy integration, but current technologies face significant challenges in cost, safety, and performance. While most of the energy storage deployed in California today is lithium-ion technology, lithium-based batteries are still prone to safety issues like deflagration and degrade quickly with frequent charge-discharge cycles, limiting their lifespan and effectiveness for grid services. Despite advancements, these limitations constrain the range of effective applications for certain BESS solutions, particularly in applications requiring long-duration storage. The urgency to address these barriers is critical as California and other regions strive to meet climate goals and ensure grid stability.

Solution

The project will address the limitations of current battery energy storage systems (BESS) by developing and deploying a Hybrid Battery Energy Storage System (HBESS) that combines multiple battery chemistries, including lithium-ion, sodium-ion, and second-life batteries. This hybrid approach leverages attributes of the different battery chemistries and types to enhance overall system safety, performance, cost, and operational life.

The HBESS mitigates safety risks, such as deflagration in LFP batteries, by integrating safer technologies.

By incorporating second-life batteries, the project also reduces costs and supports California's sustainability goals. The mBMS will optimize the power and energy delivery to minimize degradation impacts, extending the lifecycle of the HBESS to over 20 years. This hybrid system will be able to perform a wide range of functions, including grid services, peak load reduction, and backup power, making it suitable for long-duration storage needs.

The project's advancements in battery chemistry and management will significantly improve the technical and economic performance of energy storage systems, reducing costs to below $0.05/kWh. This will enable large-scale deployment, supporting California's renewable energy and storage targets. The HBESS will also contribute to a decarbonized, reliable, and resilient energy grid, helping to achieve California's statutory energy goals. The project will take a multi-phased approach, demonstrating the system at different scales at two different facilities, each located in disadvantaged communities.

C. Goals and Objectives of the Agreement

Agreement Goals

The goals of this Agreement are to:

- Develop and demonstrate a HBESS that integrates mixed battery chemistries, including Lithium-Ion, Sodium-Ion, and second-life EV batteries, for optimized performance across various applications.
- Extend battery system life to 20 years or more, reducing the need for costly BESS replacements and lowering Levelized Cost of Storage (LCOS) to under $0.05/kWh.
- Deploy and demonstrate the HBESS system in two phases at two different facilities, each located in disadvantaged communities. A 100 kW/250 kWh configuration will be piloted in the first phase, and a 500kW/1MWh configuration will be piloted in the second phase. Both will focus on long-duration applications such as demand response, energy arbitrage, and resiliency.
- Achieve improved cost-effectiveness by utilizing second-life EV batteries and reducing system component costs by integrating the power conversion system (PCS), battery management system (BMS), and energy management system (EMS) into a unified platform.
- Enhance safety, operational efficiency, and scalability through an intelligent, AI/ML-driven micro BMS that customizes battery cell-level management for each specific use case.
- Contribute to California's energy storage goals by creating a commercially viable solution that addresses performance gaps in current BESS technologies, with a focus on reducing costs and increasing grid reliability.

Ratepayer Benefits:[2]

This Agreement will result in ratepayer benefits of greater electricity reliability, lower costs, and increased safety. The HBESS will enhance grid reliability by providing flexible, long-duration energy storage and supporting fast power response needs, such as demand charge management and black start capabilities. By integrating multiple battery chemistries, including second-life EV batteries, the project will reduce costs through a lower LCOS and extend the battery life to 20 years, eliminating the need for costly mid-life replacements. Additionally, the system's advanced safety features, such as thermal runaway mitigation and intelligent battery management, will improve the overall safety and operational efficiency of energy storage systems, mitigating risk to ratepayers.

Technological Advancement and Breakthroughs:[3]

This Agreement will lead to technological advancements and breakthroughs that address barriers to achieving California's statutory energy goals. The integration of Lithium-Ion, Sodium-Ion, and second-life EV batteries into a single, modular, and scalable HBESS represents a significant step forward in energy storage technology. This approach optimizes performance for

[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).

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

diverse applications, such as grid services, backup power, and resiliency, by leveraging the strengths of each battery technology. The system's intelligent mBMS, which operates at the cell and module levels, improves efficiency and safety by dynamically managing the appropriate battery chemistry for each use case. This innovation not only reduces costs but also increases the scalability of energy storage solutions, making them more accessible and efficient for widespread deployment. Furthermore, the project's advancements in battery lifetime, reaching up to 20 years, and its ability to reduce degradation through advanced sensing and intelligent management, will help California achieve its energy storage and decarbonization goals while ensuring long-term grid reliability.

Agreement Objectives

The objectives of this Agreement are to:

- Design and build a scalable Hybrid Battery Energy Storage System (HBESS) prototype that integrates mixed battery chemistries (Li-Ion, Na-Ion, and second-life EV batteries) and a modular micro–Battery Management System (mBMS) for optimized performance.
- Deploy the HBESS at two demonstration sites located in disadvantaged communities (first at 100 kW/250 kWh scale, and second at 500 kW/1 MWh scale), ensuring integration with existing grid infrastructure to validate real-world operation across different use cases.
- Collect, analyze, and report operational and economic performance data to stakeholders, targeting a Levelized Cost of Storage (LCOS) of less than $0.05/kWh.
- Ensure compliance with UL, NFPA, and other industry standards (e.g., UL9540, UL9540A, NFPA) to support the safe and efficient commercialization of the technology.
- Develop a detailed roadmap for scaling and commercializing the HBESS, including strategies for wide-scale deployment and market adoption.
- Engage with the relevant local communities and implement a comprehensive project case study, to ensure that the ratepayer benefits of this deployment are maximized.

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.

Exhibit A
Scope of Work
Gridscape Solutions, Inc.

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.

- **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, and other CEC staff relevant to the Agreement. The Recipient's Project Manager and any other individuals deemed necessary by the CAM or the Project Manager shall participate in 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., Teams, Zoom), with approval of the CAM.

  The Kick-off meeting will include discussion of the following:
  - The CAM's expectations for accomplishing tasks described in the Scope of Work;
  - An updated Project Schedule;
  - Terms and conditions of the Agreement;
  - Invoicing and auditing procedures;
  - Travel;
  - Equipment purchases;
  - Administrative and Technical products (subtask 1.1);
  - CPR meetings (subtask 1.3);
  - Monthly Calls (subtask 1.5)
  - Quarterly Progress reports (subtask 1.6)
  - Final Report (subtask 1.7)
  - Match funds (subtask 1.8);
  - Permit documentation (subtask 1.9);
  - Subawards(subtask 1.10);
  - Technical Advisory Committee meetings (subtasks 1.11 and 1.12);
  - Agreement changes;
  - Performance Evaluations; 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 needed)*
- Match Funds Status Letter (subtask 1.7)
- Permit Status Letter (subtask 1.8)

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 may 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 may 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. A

determination of unsatisfactory progress This may result in project delays, including a potential Stop Work Order, while the CEC determines whether the project should continue.
- 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(s)
- 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 of the following Agreement close-out 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* organized by the tasks in the Agreement.

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

MONTHLY CALLS, REPORTS AND INVOICES

Subtask 1.5 Monthly Calls

The goal of this task is to have calls at least monthly between the CAM and Recipient to verify that satisfactory and continued progress is made towards achieving the objectives of this Agreement on time and within budget.

The objectives of this task are to verbally summarize activities performed during the reporting period, to identify activities planned for the next reporting period, to identify issues that may affect performance and expenditures, to verify match funds are being proportionally spent concurrently or in advance of CEC funds or are being spent in accordance with an approved Match Funding Spending Plan, to form the basis for determining whether invoices are consistent with work performed, and to answer any other questions from the CAM. Monthly calls might not be held on those months when a quarterly progress report is submitted or the CAM determines that a monthly call is unnecessary.

The CAM shall:

- Schedule monthly calls.
- Provide questions to the Recipient prior to the monthly call.
- Provide call summary notes to Recipient of items discussed during call.

The Recipient shall:

- Review the questions provided by CAM prior to the monthly call
- Provide verbal answers to the CAM during the call.

Product:

- Email to CAM concurring with call summary notes.

Subtask 1.6 Quarterly 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 *Quarterly 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 reporting period, 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. Progress reports are due to the CAM the 10th day of each January, April, July, and October. The Quarterly Progress Report template can be found on the ECAMS Resources webpage available at: https://www.energy.ca.gov/media/4691
- Submit a monthly or quarterly *Invoice* on the invoice template(s) provided by the CAM.

Recipient Products:

- Quarterly Progress Reports
- Invoices

CAM Product:
- Invoice template

Subtask 1.7 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 1.7.1 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 Products:
- Energy Commission Style Manual
- Comments on Draft Final Report Outline
- Acceptance of Final Report Outline

Subtask 1.7.2 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
- Final Report

CAM Product:
- Written Comments on the Draft Final Report

MATCH FUNDS, PERMITS, AND SUBAWARDS

Subtask 1.8 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. 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 application 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 application 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 1.9 Permits
The goal of this subtask is to obtain all permits and certifications 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 and Certification 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 or certifications will be required during the course of the Agreement, provide in the letter:
    - A list of the permits and certifications 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 certifications 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 and Certifications* (including the appropriate information on each permit) and an *Updated Schedule for Acquiring Permits and Certifications*.
- Send the CAM a *Copy of Each Approved Permit and Certification*.
- 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 and Certification Status Letter
- Updated List of Permits and Certifications
- Updated Schedule for Acquiring Permits and Certifications
- Copy of Each Approved Permit and Certification

Subtask 1.10 Obtain and Execute Subawards and Agreements with Site Hosts

The goals of this subtask are to: (1) procure subawards and execute subrecipients and site host agreements, as applicable, required to carry out the tasks under this Agreement; and (2) ensure that the subawards subrecipients and site host agreements are consistent with the terms and conditions of this Agreement and the Recipient's own contracting policies and procedures.

The Recipient shall:

- Execute and manage subawards and coordinate subrecipients activities in accordance with the requirements of this Agreement.
- Execute and manage site host agreements and ensure the right to use the project site throughout the term of the Agreement, as applicable. A site host agreement is not required if the Recipient is the site host.
- Notify the CEC in writing immediately, but no later than five calendar days, if there is a reasonable likelihood the project site cannot be acquired or can no longer be used for the project.
- Incorporate this Agreement by reference into each subaward.
- Include any required Energy Commission flow-down provisions in each subaward, in addition to a statement that the terms of this Agreement will prevail if they conflict with the subaward terms.
- Submit a *Subawards and Site Letter* to the CAM describing the subawards and any site host agreement needed or stating that no subawards or site host agreements are required.
- If requested by the CAM, submit a draft of each *Subaward* and any *Site Host Agreement* required to conduct the work under this Agreement.
- If requested by the CAM, submit a final copy of each executed *Subaward* and any *Site Host Agreement*.
- Notify and receive written approval from the CAM prior to adding any new subrecipient (see the terms regarding subrecipient additions in the terms and conditions).

Products:

- Subawards and Site Letter
- Draft Subawards (if requested by the CAM)
- Draft Site Host Agreement (if requested by the CAM)
- Final Subawards (if requested by the CAM)
- Final Site Host Agreement (if requested by the CAM)

TECHNICAL ADVISORY COMMITTEE

Subtask 1.11 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 ensure 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 1.12.
- 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 1.12 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 ensure a long-term perspective on decision-making and progress toward the project's strategic goals.
- Review and provide comments to proposed project performance metrics.
- 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 1.13 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 section of 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 SYSTEM DESIGN AND ENGINEERING

The goal of this task is to design and engineer the Hybrid BESS system (which includes the Scalvy mBMS system as well as Li-ion, Na-ion and second-life EV batteries) for each site to prepare for construction.

The Recipient shall:

- Prepare a *System Requirements Document* for both the 100kW/250kWh Phase 1 HBESS system and the 500kW/1MWh Phase 2 HBESS system that contains the following:
    - Functional requirements at Independent System Operator (ISO),Distribution System Operator (DSO), and other electrical system level requirements
    - The use cases under which the system will be exercised, including those aimed at demonstrating the stacking of at least two grid or customer services
    - A test plan that exercises the system under specific scenarios
    - The control and operational data signals required to be exchanged among subsystems (ISO, DSO, local transformer monitor/controller, solar photovoltaic, electrical equipment)
    - Data acquisition requirements
    - End to end cybersecurity requirements for integration into the targeted systems

- Prepare a *System Architecture and Design Document* for both the 100kW/250kWh Phase 1 HBESS system and the 500kW/1MWh Phase 2 HBESS system that contains the following:
    - Allocation of system functional requirements into different modules of the system being demonstrated, namely, ISO, DSO and other electrical systems
    - Definition of various UL or equivalent certification standards that the system needs to comply with, including fire safety, maintenance and reliability
    - Definition of communications channels in the form of physical connectivity: wired or wireless or any other appropriate methods
    - Definition of client/server connection protocols among diverse physical and virtual (simulated) actors – server locations, data exchange protocols (and data security standards (encryption, number of bits, specific algorithms)
    - Definition of appropriate open standards that will facilitate communication among all of the actors
    - Definition of equipment and operational requirements for the equipment used to transition from grid connected to islanded operation and vice versa
    - Integration of all Rule 21 compliance elements and requirements into the overall system requirements
    - Definition of key considerations for managing sites with multiple DERs (i.e., including solar, stationary batteries, backup systems, etc.)
    - Design of the end-to-end communications system

Products:
- System Requirements Document
- System Architecture and Design Document

TASK 3 PRODUCT DEVELOPMENT
The goal for this task is to design and procure the materials/equipment necessary for the HBESS system (including the Scalvy mBMS) and develop the first product.

The Recipient shall:
- Develop a *Product Development Plan* that includes:
    - A procurement schedule for major components of both the HBESS and the Scalvy mBMS
    - A timeline for manufacturing and assembly of the first HBESS system
    - A timeline for the development and assembly of the Scalvy mBMS
    - A description of major milestones, with a risk analysis for each milestone
- Provide *Notification of Approved Engineering Drawings* for each site.
- Procure necessary equipment and materials from various vendors
- Provide *Photographs of Completed* Assembly once the construction project has been completed and received applicable permits (provided as part of Task 1.8).
- Complete engineering drawings for each site.

Products:
- Product Development Plan
- Notification of Approved Engineering Drawings for each site
- Photographs of completed first system

TASK 4 SYSTEM TESTING AND CERTIFICATION
The goal for this task is measure, test and certify the HBESS system (including the Scalvy mBMS) as per applicable UL and NFPA standards.

The Recipient shall:
- Develop a *Certification Test Plan* that includes:
  - Prerequisites for Testing and Certification (i.e. Component List, Design)
  - Timeline for testing and certification
  - Major milestones
  - Use Case and Standards testing compliance requirements
  - Certification Checklist
- Complete testing for the HBESS system and the Scalvy mBMS system
- Obtain UL 9540 certification for the HBESS system including the Scalvy mBMS, and UL 1741 certification for the Scalvy mBMS system
- Provide *Final Test Reports* and *Compliance Certificates*
- Conduct a CPR meeting with all project stakeholders and prepare a *CPR Report #1.*

Products:
- Certification Test Plan(s)
- Final Test Reports for tests carried out as part of UL 9540 and UL 1741 certification
- Compliance Certificates, including UL 9540 for the HBESS system (including Scalvy mBMS) and UL 1741 for the Scalvy mBMS
- CPR Report #1

TASK 5 SYSTEM INSTALLATION AND COMMISSIONING
The goal for this task is to install and commission both the 100kW/250kWh Phase 1 HBESS system and the 500kW/1MWh Phase 2 HBESS system (both equipped with the Scalvy mBMS) at the respective project sites.

The Recipient shall:
- Develop a *Construction Plan* for both the 100kW/250kWh Phase 1 HBESS system and the 500kW/1MWh Phase 2 HBESS system that includes but not limited to:
  - A procurement schedule for major components necessary for construction and installation
  - A timeline for construction and installation
  - A description of major milestones, with a risk analysis for each milestone
- Procure equipment and materials necessary for construction and installation from various vendors
- Provide *Photographs of Completed Construction* once the construction project has been completed and received applicable permits (provided as part of Task 1.9).
- Complete engineering drawings for each site.
- Develop an *Interconnection Plan* for each site and review with individual utilities
- Develop a *Commissioning Checklist* for each site
- Complete commissioning for each site.
- Demonstrate system readiness by providing evidence that each item on the *Commissioning Checklist* has been completed.
- Document system readiness with a *Commissioning Report* for each site.

- Conduct a CPR meeting with all project stakeholders and prepare a *CPR Report #2.*

Products:

- Construction Plan for each site
- Photographs of Completed Construction for each site
- Interconnection Plan for each site
- Commissioning Checklist for each site
- Commissioning Report for each site
- CPR Report #2

TASK 6 OPERATIONS, MEASUREMENT, AND VERIFICATION (M&V)

The goal of this task is to create an M&V plan for the HBESS system and operate the HBESS system at the project sites and measure and test its performance against the M&V plan.

The Recipient shall:

- Create a *Measurement and Verification Plan* to be approved by the CAM that includes but is not limited to a:
    - A testing protocol, detailing the:
        - Tests being conducted on the HBESS, including those aimed at demonstrating the stacking of at least two grid or customer services (including long-term energy storage, frequency regulation, spinning and non-spinning reserves, flexible ramping, voltage support, demand response, black start capability, system resource adequacy (RA) capacity, local RA capacity, flexible RA capacity, transmission investment deferral, distribution investment deferral, microgrid/islanding, time-of-use (TOU) bill management, demand charge management, increased use of self-generation, distributed energy conversion, battery life extension, and backup power).
        - Tests being conducted on the Scalvy mBMS, including those aimed at demonstrating its ability to: characterize cells and their chemistries, blend different battery technologies for specific use cases, improve system performance, lifecycle, safety and reliability.
    - A list of critical metrics being tracked throughout the demonstration period, including benchmark, current and targeted performances for the following metrics, at a minimum:
        - Discharge and charge cycles, system availability, cost per kWh, round trip efficiency, product lifetime, energy storage duration, system resilience based on duration, system resilience based on voltage, meantime between failures, capacity and state of charge imbalance between battery cells, redundancy score, PCS power density, battery energy Utilization per cycle
    - A description of the measurement tools used in verifying these critical metrics
    - A description of the desired certifications
- Operate the HBESS system, including the Scalvy mBMS, for a minimum of 12 months at each site.
- Collect and analyze operational data from the 12-month demonstration periods, including, at a minimum:
    - Performance under 10-hour duration

    - Degradation rate when providing multiple services, roundtrip efficiency, average daily charge/discharge profiles, estimated return on investment, and value of customer and grid benefits generated
- Prepare a *Measurement and Verification Report* which includes but is not limited to:
    - A detailed discussion of, at a minimum:
        - A description and analysis of the process and results of the final demonstration carried out in accordance with the Measurement and Verification Plan approved by the CAM
        - Testing of the product
        - A description and analysis of the technical issues encountered throughout the demonstration and data collection period
        - An analysis of the degree of success achieved in extending system life to 20 years or more and lowering the Levelized Cost of Storage (LCOS) to <$0.05/kWh.
    - Lessons learned for this phase in the project
- Conduct a CPR meeting with all project stakeholders and prepare a *CPR Report #3*.

Products:
- Measurement and Verification Plan
- Measurement and Verification Report
- CPR Report #3

TASK 7 COMMUNITY ENGAGEMENT
The goal of this task is to engage community members across the sites throughout the life of the project to build relationships among stakeholder groups such as industry, workforce, and support community residents and businesses, and form a coalition of support for the proposed project. Successful outreach will result in local communities adopting clean energy instead of traditional diesel generators; increased understanding of the benefits of the system and technology; community members experiencing the benefits of the technology, particularly during power outages; and the community members receiving economic and workforce development opportunities.

The Recipient shall:
- Develop targeted community outreach strategies for each of the two project sites
- Compile data on the financial, energy and other benefits generated by the project and the technology for the relevant local communities
- Develop a comprehensive *Community Engagement Plan*, to be approved by the CAM, that includes, at a minimum:
    - Pre- and post-outreach surveys to quantify and analyze community understanding and experiences
    - Identify vulnerable communities who are disproportionately and negatively affected by air pollution and extreme weather events due to climate change
    - Community outreach activities (e.g., community stakeholder engagement, field trips/site tours, community events, displays)
    - Identify relevant partnerships (e.g., community groups, religious groups, public works staff, workforce)
- Implement the outreach strategies at each of the two project sites
- Collect community feedback

- Establish a community stakeholder group for each project site
- Train and provide leadership for field educators to participate in community organizing and stakeholder engagement.
- Aggregate results in a *Community Engagement Report*

Products:
- Community Engagement Plan
- Community Engagement Report

TASK 8: 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* by January 31st of each year. 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 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 9 TECHNOLOGY/KNOWLEDGE TRANSFER ACTIVITIES
The goal of this task is to ensure the technological learning that resulted from the demonstration(s) 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. The Project Case Study Plan should include, at a minimum:
    - 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.
- When directed by the CAM, develop presentation materials for a 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 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

V. PROJECT SCHEDULE

Please see the attached Excel spreadsheet.