



GRANT REQUEST FORM (GRF)

A) New Agreement # EPC-22-002 (to be completed by CGL office)

B) Division	Agreement Manager:	MS-	Phone
ERDD	Ben Wender	43	916-776-0823

C) Recipient's Legal Name	Federal ID Number
The Regents of the University of California, on behalf of the Davis Campus	94-6036494

D) Title of Project
Heavy-Duty Vehicle Electrification and its Potential as a Clean Energy Alternative for Critical Operations

E) Term and Amount

Start Date	End Date	Amount
8/30/2022	3/31/2026	\$ 3,000,362

F) Business Meeting Information

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

Proposed Business Meeting Date 8/10/2022 Consent Discussion

Business Meeting Presenter Ben Wender Time Needed: 5 minutes

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

Agenda Item Subject and Description:

The Regents of the University of California, on behalf of the Davis Campus.

Proposed resolution approving Agreement EPC-22-002 with The Regents of the University of California, on behalf of the Davis Campus for a \$3,000,362 grant, and adopting staff's determination that this action is exempt from CEQA. The project will improve, install, and evaluate bidirectional chargers for heavy duty electric vehicles (EV) to provide backup power and other demand modifying services at a facility in Oakland. (EPIC funding)

Contact: Ben Wender.

G) California Environmental Quality Act (CEQA) Compliance

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

Yes (skip to question 2)

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

Explain why Agreement is not considered a "Project":

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

a) Agreement **IS** exempt.

Statutory Exemption. List PRC and/or CCR section number:

Categorical Exemption. List CCR section number: Cal. Code Regs., tit. 14, § 15303 ; Cal. Code Regs., tit. 14, § 15304

Common Sense Exemption. 14 CCR 15061 (b) (3)

Explain reason why Agreement is exempt under the above section: 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



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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. This project consists of installation of new electric vehicle charging stations that will not result in serious or major disturbance to an environmental resource. Therefore, the project falls within section 15303 and will not have a significant effect on the environment.

Cal. Code Regs., tit. 14, sect. 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 and agricultural purposes are categorically exempt from the provisions of CEQA. In this project, minor trenching may be necessary to install bidirectional charger(s) in the demonstration site parking lot and associated electrical modifications to the property's main building. Approximately 110 ft of trenching as well as installation of bollards to protect the chargers may need to be dug in a currently asphalt-covered area, with no removal of trees. Therefore, the project falls within section 15304 and 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
Nuvve Holding Corp.	\$ 1,049,067
TBD Electrical Contractor	\$ 105,000
TBD - engineer electrical drawings	\$ 25,000
TBD - electric panel install	\$ 15,000
West Oakland Environmental Indicators Project	\$ 65,000

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

Legal Company Name:



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J) Budget Information

Funding Source	Funding Year of Appropriation	Budget List Number	Amount
EPIC	21-22	301.0011	\$3,000,362

R&D Program Area: EGRO: Transportation

TOTAL: \$ 3,000,362

Explanation for "Other" selection

Reimbursement Contract #: Federal Agreement #:

K) Recipient's Contact Information

1. Recipient's Administrator/Officer

Name: Shanna Nation Jose
Address: 1 Shields Ave

City, State, Zip: Davis, CA 95616-5270

Phone: 530-754-7700

E-Mail: snation@ucdavis.edu

2. Recipient's Project Manager

Name: Kieth Graeber
Address: 633 Pena Dr

City, State, Zip: Davis, CA 95618-6570

Phone: 530-220-2272

E-Mail: kegraeber@ucdavis.edu

L) Selection Process Used

- Competitive Solicitation Solicitation #: GFO-21-303
- First Come First Served Solicitation Solicitation #:
- Non-Competitive Bid Follow-on Funding (SB 115)

M) The following items should be attached to this GRF

- | | | |
|---|---|--|
| 1. Exhibit A, Scope of Work | <input checked="" type="checkbox"/> | Attached |
| 2. Exhibit B, Budget Detail | <input checked="" type="checkbox"/> | Attached |
| 3. CEC 105, Questionnaire for Identifying Conflicts | <input checked="" type="checkbox"/> | Attached |
| 4. Recipient Resolution | <input checked="" type="checkbox"/> N/A | <input type="checkbox"/> Attached |
| 5. CEQA Documentation | <input type="checkbox"/> N/A | <input checked="" type="checkbox"/> Attached |

Agreement Manager

Date

Office Manager

Date

Deputy Director

Date

Exhibit A
Scope of Work
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I. TASK ACRONYM/TERM LISTS

A. Task List

Task #	CPR ¹	Task Name
1		General Project Tasks
2	X	V2B Product Enhancements
3		Laboratory Testing And Analysis Of V2B System And Battery Degradation
4	X	Site Planning, Design, Construction, And Commissioning
5		V2B Field Demonstration, Testing, And Performance Analysis
6		Evaluation of Project Benefits
7		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
EV	Electric Vehicle
EVITP	Electric Vehicle Infrastructure Training Program
Recipient	The Regents of the University of California, on behalf of the Davis Campus
RUL	Remaining useful life
TAC	Technical Advisory Committee
V2B	Vehicle-to-Building

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

A. Purpose of Agreement

The purpose of this Agreement is to fund the advancement, implementation, demonstration, and evaluation of vehicle-to-building (V2B) technologies that can provide emergency backup power for critical operations in commercial buildings during grid outages or intentional islanding events. The agreement will also demonstrate that the V2B systems developed are a reliable resource for use in demand response, load shifting, and other demand modifying strategies that can provide benefits to both the installation site and electric system.

B. Problem/ Solution Statement

Problem

Critical commercial buildings typically rely on fossil fueled backup generators that are polluting and expensive to maintain and operate. Large-scale dedicated behind-the-meter storage can be

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.

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cost-prohibitive and potentially underutilized for backup power applications. Discharging energy from electric vehicles (EVs) for V2B services could provide a low-emission and low-cost solution for backup power. However, V2B products require additional features and functionality beyond existing bidirectional chargers, for example the ability to remain operational when disconnected from grid power or to provide variable discharge rates to match fluctuations in local load. There is limited publicly-available information on how effectively V2B technologies can meet the requirements of commercial buildings. Uncertainty remains regarding potential battery degradation, suitability and reliability of various EV types, including medium- and heavy-duty vehicles, for V2B applications.

Solution

This agreement will advance the capabilities of bidirectional charging technologies and demonstrate V2B systems as a demand-side energy source during grid outages and/or scheduled demand reduction events. The project will inform fleets regarding the potential of using heavy duty EVs to provide backup power and other benefits to critical operations while also reducing greenhouse gas and other emissions. On a larger scale, this project will provide publicly available performance data, including EV battery degradation, that can help quantify the statewide potential of V2B and inform utility, regulatory, and fleet investments in V2B programs and products.

C. Goals and Objectives of the Agreement

Agreement Goals

The goals of this agreement include the following.

- Improve the capabilities of bidirectional charging hardware and software to enable V2B functionality.
- Demonstrate that V2B technology with heavy-duty EVs can provide clean, reliable, long-duration backup power for commercial buildings at a lower cost than established alternatives with minimal impact to vehicle performance or building occupants.
- Evaluate potential energy, environmental, and customer benefits achievable statewide from potential use of heavy-duty EVs for bidirectional charging.
- Support market growth for V2B technologies by conducting measurement and validation of performance, costs, and benefits thereby providing publicly available data that can help build customer, manufacturer, and utility confidence.

Ratepayer Benefits:² This Agreement will result in the ratepayer benefits of greater electricity reliability, lower utility costs, and increased safety by advancing the capabilities and market availability of V2B technology that can serve as a flexible, clean demand-side energy resource. The V2B technology demonstrated can increase local energy resilience by providing backup power during outages. Additionally, the V2B technology advanced can support greater electric grid reliability through scheduled or event-based load shedding and/or shifting at times of high grid stress, energy cost, and greenhouse gas emissions.

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

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Technological Advancement and Breakthroughs:³ This Agreement will lead to technological advancement and breakthroughs to overcome barriers to the achievement of the State of California's statutory energy goals by implementing product enhancements to existing V2B technologies that enable V2B functionality. Specific advancements include addition of small integrated battery storage for black start capability and variable discharge rates to match fluctuating building loads. The technologies demonstrated and performance data collected can help support policy goals for simultaneous transition to zero emission transportation and electric grid decarbonization.

Agreement Objectives

The objectives of this Agreement include the following.

- Modify existing bidirectional charging hardware and software to enable V2B operation as an emergency backup power source or as an alternative to grid power for critical loads in commercial buildings.
- Design, procure, install, and commission the V2B system at a demonstration site including the automatic transfer switch, two modified bidirectional chargers, and all other necessary site modifications.
- Evaluate the performance and capability of the V2B system to serve as an emergency battery backup for critical loads during grid outages or as an alternative to grid-supplied electricity under a demand-response program and/or similar demand management event.
- Validate V2B system performance and safety under all operating scenarios.
- Quantify potential statewide benefits of widespread use of V2B as part of demand-side energy management program including customer and system costs and savings.
- Evaluate the impacts of V2B operation on EV battery degradation.
- Evaluate the impacts of V2B operation on building occupants and heavy-duty EV operators.

III. TASK 1 GENERAL PROJECT TASKS

PRODUCTS

Subtask 1.1 Products

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

The Recipient shall:

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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.

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- 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);
- 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

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- 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.

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.

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- 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(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 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

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REPORTS AND INVOICES

Subtask 1.5 Progress Reports and Invoices

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

The Recipient shall:

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

Products:

- Progress Reports
- Invoices

Subtask 1.6 Final Report

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

Subtask 1.6.1 Final Report Outline

The Recipient shall:

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

Recipient Products:

- Final Report Outline (draft and final)

CAM Product:

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

Subtask 1.6.2 Final Report

The Recipient shall:

- Prepare a *Final Report* for this Agreement in accordance with the approved Final Report Outline, Energy Commission Style Manual, and Final Report Template provided by the CAM with the following considerations:

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- 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* 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.

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.

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Match funds must be identified in writing, and the Recipient must obtain any associated commitments before incurring any costs for which the Recipient will request reimbursement.

The Recipient shall:

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

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

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

Products:

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

Subtask 1.8 Permits

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

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The Recipient shall:

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

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

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

Products:

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

Subtask 1.9 Subcontracts

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

The Recipient shall:

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

Products:

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

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TECHNICAL ADVISORY COMMITTEE

Subtask 1.10 Technical Advisory Committee (TAC)

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

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

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

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

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The Recipient shall:

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

Products:

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

Subtask 1.11 TAC Meetings

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

The Recipient shall:

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

The TAC shall:

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

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- Review and provide comments to proposed project Draft Technology Transfer Plan.

Products:

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

Subtask 1.12 Project Performance Metrics

The goal of this subtask is to finalize key performance targets for the project based on feedback from the TAC and report on final results in achieving those targets. The performance targets should be a combination of scientific, engineering, techno-economic, and/or programmatic metrics that provide the most significant indicator of the research or technology's potential success.

The Recipient shall:

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

Products:

- TAC Performance Metrics Summary
- Project Performance Metrics Results

IV. TECHNICAL TASKS

TASK 2 V2B PRODUCT ENHANCEMENTS

The goal of this task is to complete various product enhancements to the bidirectional charging hardware and software to enable V2B operation. This task will also support work with the vehicle manufacturer to enable bidirectional charging with the designated EV(s) at the site.

The Recipient Shall:

- Identify the designated heavy-duty EV(s) to be used at the demonstration site, determine how this impacts V2B product enhancement plans, and provide design and modification support to the vehicle manufacturer as needed to enable V2B capabilities.

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- Implement product enhancements on existing bidirectional charging hardware and software to enable V2B capabilities. Specific enhancements to be made include, but are not limited to:
 - Addition of small battery and black-start capability to enable discharge in the absence of grid-supplied electricity
 - Inclusion of variable charge/discharge functionality from the inverter contained in the bidirectional charger while considering buffers for safety and mobility needs
 - Integration with designated heavy-duty EV(s) at the demonstration site
 - Updates to a customer-facing mobile app for users to input mobility needs, establish limits/setpoints on charging and discharging, and monitor V2B operation
 - Integration with a local facility energy management system (EMS) to monitor and control power consumption and prioritize critical loads at the site
- Prepare a *Summary of Product and Software Enhancements Report* that details the additional features and functionality of the V2B-enabled solutions.
- Prepare a *Product Enhancement Test Plan* that identifies the test procedures and outcomes for all V2B product enhancements completed. This shall include tests for the mobile-app; tests of a complete range of expected charging and discharging setpoints that may be selected by end-user; and failure testing to ensure safety buffers and similar safety mechanisms respond appropriately. The plan shall include all necessary test equipment, test environments, metrics, measurements to be taken, success/failure criteria, and documentation requirements.
 - Metrics and measurements shall address, at a minimum, range of variable output power, black-start capability, app functionality and usability,
 - Conduct the tests described in the test plan, collect relevant data and performance metrics, and document testing results.
- Iteratively implement additional enhancements, as needed, to ensure the V2B system including all hardware and software are ready for installation and field testing at the demonstration site.
- Prepare a draft *Product Enhancement Test Report* that synthesizes results of product enhancement testing and provide a copy to the CAM and the TAC for review and comment.
- Update the draft *Product Enhancement Test Report*, as needed, and prepare a *Final Product Enhancement Test Report* that reflects suggested edits and additions from the CAM and TAC.
- Prepare a *CPR Report #1* in accordance with subtask 1.3 (CPR Meetings).
- Participate in a CPR meeting.

Product(s):

- Summary of Product and Software Enhancements Report
- Product Enhancement Test Plan
- Product Enhancement Test Report (draft and final)
- CPR Report #1

TASK 3 LABORATORY TESTING AND ANALYSIS OF V2B SYSTEM AND BATTERY DEGRADATION

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The goal of this task is to test specific components of the V2B system in a controlled laboratory setting to determine and document each component's electrical, mechanical, or other performance characteristics. This task will also include assessment of the impact of V2B operation on EV batteries to understand their performance and degradation over time and under the operating conditions expected at the demonstration site.

Subtask 3.1 Laboratory Verification, Testing, and Analysis of V2B System

The goal of this subtask is to validate the safe and proper performance of the V2B system and relevant subcomponents prior to installation at the demonstration site.

The Recipient shall:

- Develop a laboratory test representation of the site-specific V2B system that includes but is not limited to enhanced V2B charger hardware and software, transfer switch, battery, and supported loads.
- Develop a test procedure for evaluating the complete V2B system, and document the procedure in a *V2B Laboratory Test Plan*, which will include, at a minimum:
 - Description of the specific use cases to be tested that are based on the expected field conditions such as those for planned and unplanned power shutoffs, peak period load shifting, and automated demand response events,
 - Description of the emergency back-up and load shed/shifting performance expected for each use case including information on the duration, type and size of loads supported, their energy use and peak demand,
 - Description of the simulated communications used to represent communication between site, EV(s), and charging equipment,
 - Methods for calculating avoided energy costs, avoided energy, reduced demand, and/or emissions for a range of expected operating conditions and building loads.
- Submit the draft *V2B Laboratory Test Plan* to the CAM and TAC for review and comment.
- Update the draft *V2B Laboratory Test Plan*, as needed, and provide a final *V2B Laboratory Test Plan* for use in laboratory testing.
- Test the system according to the *V2B Laboratory Test Plan* and document each component's electrical, mechanical or other performance characteristics related to V2B operation and integration with software assets.
- Prepare a *Laboratory V2B System Test Report* summarizing the test results obtained for each use case, the analyses performed to obtain avoided energy, reduced demand, avoided costs and avoided emissions; and discussion of system readiness for installation in the field.

Products:

- V2B Laboratory Test Plan (draft and final)
- Laboratory V2B System Test Report

Subtask 3.2 EV Battery Testing and Analysis

The goal of this subtask is to assess EV battery degradation under controlled laboratory conditions and to develop performance enhancing strategies that optimize battery health and lifetime when used for both mobility and V2B applications.

The Recipient Shall:

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- Identify the type and characteristics of the battery cells used in the designated heavy-duty EV(s) at the demonstration site and procure equivalent cells for laboratory testing.
- Develop a battery degradation test procedure(s) including a baseline (charging only) and both accelerated (duty-cycles with a frequency greater than that expected in the field) and normal duty-cycle conditions, which shall include:
 - Standard charge/discharge and internal resistances tests
 - Remaining Useful Life (RUL) prediction
 - Accelerated duty-cycling at an elevated temperature and C-rate
 - Cycling with the same environmental conditions observed at the V2B demonstration site
- Document the battery degradation test procedure in a draft *EV Battery Degradation Test Plan* and submit the plan to the TAC and CAM for review and comment.
- Update the *EV Battery Degradation Test Plan*, as needed.
- Test and document battery performance characteristics and degradation over the course of duty-cycling
- Complete data analysis of duty-cycle testing to develop RUL predictions for the range of operating conditions expected in a V2B environment as described in the *EV Battery Degradation Test Plan*.
- Develop performance-extending strategies for the EV batteries tested to extend run-time duration, minimize battery degradation, or similar measures. Potential strategies considered include:
 - Average State of Charge (SoC) optimization,
 - Soft limitation of depth of discharge
 - Solar forecasting and demand forecasting
 - Public safety power shutoff warning
 - Heavy duty EV primary-use energy allocation
 - Battery degradation cost assignment
- Develop test procedure(s) to evaluate the operational, cost, energy, and emissions benefits of the performance-extending strategies.
- Update the *EV Battery Degradation Test Plan* to include methods to evaluate new strategies using similar duty-cycle testing procedures as previously described.
- Complete laboratory testing and analysis of battery performance when the battery is operating with each performance-enhancing strategy to develop RUL predictions for the system under these conditions.
- Prepare a *Battery Performance and Operating Strategies Report* that shall include EV battery performance including all newly-developed RUL predictions obtained with standard battery operation in a non-V2B environment, standard battery operation under V2B conditions; and battery operation using performance-extending strategies,

Product(s):

- EV Battery Degradation Test Plan (draft and final)
- Battery Performance and Operating Strategies Report

TASK 4 SITE PLANNING, DESIGN, CONSTRUCTION, AND COMMISSIONING

The goal of this task is to plan, design, construct, and commission the V2B system at the demonstration site. This task will include solicitation of bids for all necessary equipment and

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services, management of all subcontractors and project stakeholders, and construction close out and hand-off to the demonstration site owner.

Subtask 4.1 General Construction Management and Procurement

The goal of this subtask is to manage the design and construction of the project to ensure it is completed on time and within budget. Subtask activities include procurement of necessary services and equipment, subcontractor coordination, preparation of periodic construction updates, and activities to ensure clear communication among the site personnel, building owners, and other project stakeholders.

The Recipient shall:

- Prepare a *Construction Workplan and Base Schedule* documenting all phases and activities in the construction process including dates by which each will start and end, key milestones, and deliverables.
- Identify all necessary materials, supplies, services, and equipment required for the project.
- Obtain multiple subcontractor bids, supplier quotes, and documentation reflecting prices for all necessary materials, services, and equipment.
- Hire and manage all necessary subcontractors and service providers contracted for the project.
- Complete construction progress reports approximately twice per month.
- Maintain a safe construction environment that meets all local, state and federal safety regulations and requirements.
- Update the base schedule as needed to reflect changes in the construction schedule.
- Prepare an *Updated Workplan and Updated Schedule*, as needed, to reflect changes in the project over time.
- Develop contingency plans, as needed, to mitigate construction delays or other issues that are unavoidable and that may adversely impact project progress and completion on time and within budget.
- Participate in weekly construction team meetings, or other periodic meetings, to be determined among project partners.
- Prepare *Construction Meeting Minutes* for each periodic construction team meeting to include a summary of topics discussed, action items and other important project information reviewed.

Product(s):

- Construction Workplan and Base Schedule
- Updated Workplan, as needed
- Updated Schedule, as needed
- Construction Meeting Minutes

Subtask 4.2 Design, Engineering, and Obtaining Permits

The goal of this subtask is to prepare design drawings for the project; obtain engineering approval of the proposed design by a licensed professional engineer able to assume responsibility for project design; and obtain the necessary city and/or county permits for installation of the V2B technology at the demonstration site.

The Recipient Shall:

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- Prepare all necessary design drawings and project documentation.
- Prepare a list of all V2B hardware and software to be installed at the demonstration site including all necessary product specifications, certifications, and/or configurations.
- Ensure design drawings are reviewed and approved by a licensed professional engineer able to assume responsibility for the project design.
- Obtain all necessary permits for project construction and technology installation at the demonstration site per the requirements provided in Subtask 1.8.
- Complete all required activities and submit all required documents in accordance with Subtask 1.8 Permits.
- Prepare a *Project Design Report* that summarizes the project design requirements and includes a copy of the final, “stamped” engineering drawings and the list of hardware and software to be installed.

Product(s):

- Project Design Report
- All products as required under subtask 1.8 Permits

Subtask 4.3 Technology Installation and Commissioning

The goal of this subtask is to install and commission the V2B system at the demonstration site including all construction and installation activities.

The Recipient Shall:

- Complete all necessary construction requirements related to site protection and safety.
- Capture several, high-quality digital photos of the demonstration site before construction begins.
- Coordinate with demonstration site staff and leadership to identify suitable jobsite storage areas for products and equipment, as needed.
- Deliver and store the enhanced V2B system hardware and construction materials/supplies at the jobsite in the designated area.
- Install all specified hardware assets at the demonstration site.
- Commission each installed asset to function as designed and in accordance with the owner’s requirements.
- Test all hardware assets to ensure proper function.
- Adjust hardware assets, as needed, to meet operational requirements.
- Install and configure V2B software on each designed device.
- Test the software on each designated device to ensure connectivity and control of all designated V2B assets.
- Document commissioning steps and asset settings/configurations, as required, to create a digital record of the hardware and software installed for the project.
- Capture several, high-quality digital photos of the newly installed V2B assets and construction site after installation.
- Ensure all site inspections or other approvals are obtained to close the permits obtained for the project.
- Prepare a *Technology Installation and Commissioning Report* that describes all activities completed under Subtask 3.3. including construction, commissioning, and testing activities. Include before and after *Digital site photos*.
- Submit an *AB 841 Certification* that certifies the project has complied with all AB 841 (Ting, Chapter 372, Statutes of 2020) requirements specified in Exhibit C or describes why the

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AB 841 requirements do not apply to the project. The certification shall be signed by Recipient's authorized representative.

- Submit *Electric Vehicle Infrastructure Training Program (EVITP) Certification Numbers of Each EVITP-Certified Electrician* that installed electric vehicle charging infrastructure or equipment. EVITP Certification Numbers are not required to be submitted if AB 841 requirements do not apply to the project.

Product(s):

- Technology Installation and Commissioning Report
- Digital site photos
- AB 841 Certification
- Electric Vehicle Infrastructure Training Program (EVITP) Certification Numbers of Each EVITP-Certified Electrician

Subtask 4.4 Construction Close-Out and Site Owner Hand-off

The goal of this subtask is to update the construction drawings to reflect as-built conditions and complete any other construction close-out activities required at the site and/or by the building owner. This task will also include owner training and hand-off of the V2B system to ensure the owner understands how to operate the V2B system during charging and discharging events.

The Recipient Shall:

- Ensure the jobsite is clean and free of construction debris
- Update construction drawings to reflect "AS-BUILT" conditions
- Provide the demonstration site staff/building owner with a copy of the AS-BUILT drawings, copies of all closed permits, product specifications and product warranties.
- Complete product training with the demonstration site staff and/or building owner, and provide a copy of the *V2B Training Materials* to site staff and/or building owner.
- Document all close-out activities and training conducted in a *Summary Memo of Project Close-out Activities*.
- Prepare a *CPR Report #2* in accordance with subtask 1.3 (CPR Meetings).
- Participate in a CPR meeting.

Product(s)

- V2B Training Materials
- Summary Memo on Project Close-out Activities
- CPR Report #2

TASK 5 V2B FIELD DEMONSTRATION, TESTING, AND PERFORMANCE ANALYSIS

The purpose of this task is to demonstrate that heavy-duty EV(s) are capable of serving as an emergency backup power source for critical loads at the demonstration site, as well as an alternative power source to shed/shift load in response to grid needs. Demonstrations will consist of scheduled backup events reflective of public safety power shutoff events, demand response events, and other use cases developed to test V2B system performance.

The Recipient shall:

- Develop a site-specific description of each use-case for V2B system including during both planned and unplanned events, events occurring in the absence of grid power

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(emergency outage), and scheduled load shed/shift events in response to grid conditions such as high electricity demand, cost, or greenhouse gas emissions. For example:

- grid outage events (planned, emergency unplanned)
- demand management events (TOU, planned)
- a simulated real-time electricity pricing signal (planned)
- Prepare a site-specific measurement and verification plan including what data and critical performance metrics will be measured, what instrumentation is required, and what demonstration conditions are necessary to validate performance for each use-case.
- Create a *V2B Demonstration and Performance Verification Plan* that includes:
 - A description of each key use-case including planned and unplanned power loss, load shifting based on utility requests, and load shifting based on site direction to reduce costs and/or emissions.
 - The tests being conducted for all use cases including minimum duration and quantity of each backup and/or load shed event included in each case.
 - Critical metrics being validated including avoided energy, costs, and emissions during test events as well as the duration and size of loads supported.
 - Measurement and verification devices necessary for measuring, at a minimum, panel-level/circuit-level current, voltage and power.
 - Pass/fail criteria for each documented use case such as minimum duration of backup power required from the EV and minimum current and voltage required during each backup event.
- Specify and procure instrumentation necessary to evaluate V2B system performance under all use cases.
- Demonstrate and verify the performance and utilization of V2B functionality with deployed assets and heavy-duty EV(s) for each use-case according to the verification plan.
- Evaluate system performance using demonstration data collected for all use cases and evaluate their impacts on building energy use, greenhouse gas emissions, and site energy costs.
- Prepare a draft *V2B Demonstration Performance Verification Report* that includes but is not limited to:
 - Description of all use cases demonstrated
 - Demonstration conditions, data collection process, and results of testing
 - Summary of test data collected and analyses performed
 - Estimated benefits such as energy savings, greenhouse gas emissions reductions, improved site resilience, avoided energy costs, and other performance metrics
 - Challenges faced with normal operation of heavy-duty EVs and operation of heavy-duty EVs during test events and remediation activities or recommendations developed to address each challenge.
 - Lessons learned during demonstration and how activities can support future V2B technology deployments
- Submit the draft *V2B Demonstration Performance Verification Report* to the TAC and CAM for feedback and update appropriately.

Products:

- V2B Demonstration and Performance Verification Plan
- V2B Demonstration Performance Verification Report (draft and final)

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TASK 6: EVALUATION OF PROJECT BENEFITS

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

The Recipient shall:

- Complete the *Initial Project Benefits Questionnaire*. The Initial Project Benefits Questionnaire shall be initially completed by the Recipient with 'Kick-off' selected for the 'Relevant data collection period' and submitted to the CAM for review and approval.
- Complete the *Annual Survey* by December 15th 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 \(www.energizeinnovation.fund\)](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)
- Final Project Benefits Questionnaire
- Documentation of Project Profile on EnergizeInnovation.fund
- Documentation of Organization Profile on EnergizeInnovation.fund

TASK 7 TECHNOLOGY/KNOWLEDGE TRANSFER ACTIVITIES

The goal of this task is to conduct activities that will accelerate the commercial adoption of the technology being supported under this agreement. Eligible activities include, but are not limited to, the following:

- Scale-up analysis including manufacturing analysis, independent design verification, and process improvement efforts.
- Technology verification testing, or application to a test bed program located in California.
- Legal services or licensing to secure necessary intellectual property to further develop the technology

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- Market research, business plan development, and cost-performance modeling.
- Entry into an incubator or accelerator program located in California.

The Recipient Shall:

- Quantify potential statewide benefits of widespread use of V2B as part of demand-side energy management program including customer and system costs and savings.
- Develop and submit a *Technology Transfer Plan (Draft/Final)* that identifies the proposed activities the recipient will conduct to accelerate the successful commercial adoption of the technology.
- Present the *Draft Technology Transfer Plan* to the TAC for feedback and comments.
- Develop and submit a *Summary of TAC Comments* that summarizes comments received from the TAC members on the *Draft Technology Transfer 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 Technology Transfer Plan* to the CAM for approval.
- Implement activities identified in *Final Technology Transfer Plan*.
- Develop and submit a *Technology Transfer Summary Report (Draft/Final)* that includes high level summaries of the activities, results, and lessons learned of tasks performed relating to implementing the *Final Technology Transfer Plan*. This report should not include any proprietary information and will include the potential statewide benefits calculated under the project.
- When directed by the CAM, develop presentation materials for an CEC- sponsored conference/workshop(s) on the project.
- When directed by the CAM, participate in annual EPIC symposium(s) sponsored by the 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:

- Technology Transfer Plan (Draft/Final)
- Summary of TAC Comments
- Technology Transfer Summary Report (Draft/Final)
- High Quality Digital Photographs

V. PROJECT SCHEDULE

Please see the attached Excel spreadsheet.

STATE OF CALIFORNIA
STATE ENERGY RESOURCES
CONSERVATION AND DEVELOPMENT COMMISSION

RESOLUTION: The Regents of the University of California, on behalf of the Davis Campus

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

RESOLVED, that the CEC approves Agreement EPC-22-002 with the Regents of the University of California, on behalf of the Davis Campus for a \$3,000,362 grant. The project will improve, install, and evaluate bidirectional chargers for heavy duty electric vehicles (EV) to provide backup power and other demand modifying services at a facility in Oakland; 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 August 10, 2022.

AYE:
NAY:
ABSENT:
ABSTAIN:

Liza Lopez
Secretariat