California Energy Commission
September 10, 2025 Business Meeting
Backup Materials for It's Electric Incorporated

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: 25-0910-XX

STATE OF CALIFORNIA

STATE ENERGY RESOURCES
CONSERVATION AND DEVELOPMENT COMMISSION

RESOLUTION: It's Electric Incorporated

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-25-019 with It's Electric Incorporated for a $1,004,245 grant. This project will develop and demonstrate a curbside bidirectional EV charger in Richmond that integrates with existing urban infrastructure to support development of a grid-supportive public charging network and enable broader EV adoption; 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 September 10, 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-25-019

B. Division Information

1. Division Name: ERDD
2. Agreement Manager: Katelynn Dinius
3. MS-:51
4. Phone Number: 916-776-3468

C. Recipient's Information

1. Recipient's Legal Name: It's Electric Incorporated
2. Federal ID Number: 86-3023317

D. Title of Project

Title of project: Urban Resilience with Curbside Bidirectional Electric Vehicle Charging

E. Term and Amount

1. Start Date: 10/1/2025
2. End Date: 10/4/2028
3. Amount: $1,004,198.00

F. Business Meeting Information

1. Are the ARFVTP agreements $75K and under delegated to Executive Director? No
2. The Proposed Business Meeting Date: 9/10/2025.
3. Consent or Discussion? Discussion
4. Business Meeting Presenter Name: Antonio Gomez
5. Time Needed for Business Meeting: 15 minutes.
6. The email subscription topic is: Electric Program Investment Charge (EPIC)

Agenda Item Subject and Description:

It's Electric Incorporated. Proposed resolution approving agreement EPC-25-019 with It's Electric for a $1,004,245 grant, and adopting staff's recommendation that this action is exempt from CEQA. This project will develop and demonstrate a curbside bidirectional electric vehicle charger in Richmond that integrates with existing urban infrastructure to support development of a grid-supportive public charging network and enable broader EV adoption. (EPIC funding) Contact: Katelynn Dinius

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, sec. 15303; Cal. Code Regs., tit. 14, sec. 15311

Common Sense Exemption? 14 CCR 15061 (b) (3)
No

If yes, explain reason why Agreement is exempt under the above section. If no, enter "Not applicable" and go to the next section.

Cal. Code Regs., tit. 14, sec. 15301 provides that projects which consist of the operation, repair, maintenance, permitting, leasing, licensing, or minor alteration 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 involves the installation of two new 7.6kW Level 2 AC electric vehicle (EV) chargers at UC Berkeley's Field Station in Richmond, CA, located within an area already designated for research and equipment testing. The scope of work includes trenching within previously paved and disturbed areas to connect the EV charger to an existing power source, and civil engineering activities necessary to support permitting and installation. The charger will be installed for demonstration purposes, with no expansion of building footprint, and tested on vehicles as part of a 1.5-year demonstration phase. Permission for new circuiting and installation is being secured from the City of Richmond, Building Division. The project represents a minor alteration to existing facilities, with no increase in use beyond current activities at the Richmond Field Station.

Cal. Code Regs., tit. 14, sec. 15303 provides a categorical exemption from CEQA for the 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. The project involves the installation of two

small curbside V2G chargers and associated cabling within an existing paved and previously disturbed area at UC Berkeley's Richmond Field Station. Trenching and ground disturbance are minimal and limited to utility connections. The equipment is comparable in scale to common public infrastructure such as parking meters or light poles. The installation is intended for a temporary demonstration phase and does not require any structural modifications or expansions of existing facilities.

Cal. Code Regs., tit. 14, sec. 15311 provides a categorical exemption from CEQA for the construction or placement of minor structures accessory to existing institutional, commercial, or industrial facilities. The project includes the installation of two curbside V2G chargers at the Richmond Field Station, which is a fully developed institutional research site. These chargers are accessory to the existing use of the site as a testing and demonstration facility and will support ongoing research related to grid-interactive EV charging technologies. The equipment is installed within an existing paved area and will not alter the function or capacity of the facility.

The project does not involve impacts on any particularly sensitive environment; will not impact an environmental resource of hazardous or critical concern where designated, precisely mapped, and officially adopted pursuant to law by federal, state, or local agencies; does not involve 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 site is 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.

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"?

Yes

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
University of Delaware	$ 299,953	**$**173,774
The Regents of the University of California, on behalf of the Berkeley Campus	$ 300,000	**$**85,400

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
TBD Nationally Recognized Testing Laboratory (California-based)	**$**225,000	**$**0
TBD System Integration Support	**$**0	**$**32,000
Digi-Key Corporation	**$**10,000	**$**0
McMaster-Carr Supply Company	**$**10,000	**$**0
TBD Publication Support	**$**4,000	**$**0
TBD Testing Support	**$**0	**$**77,400

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	$1,004,198

TOTAL Amount: $ 1,004,198

R&D Program Area: ESB: Transportation

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: Shannon Dulaney

Address: BROOKLYN NAVY YARD MORRIS AVE BUILDING 12819

City, State, Zip: BROOKLYN, NY 11205-1095

Phone:

E-Mail: shannon@itselectric.us

2. Recipient’s Project Manager

Name: Shannon Dulaney

Address: BROOKLYN NAVY YARD MORRIS AVE BUILDING 12819

City, State, Zip: BROOKLYN, NY 11205-1095

Phone:

E-Mail: shannon@itselectric.us

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-24-302
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

Item Number	Item Name	Attached
2	Exhibit B, Budget Detail	Yes
3	CEC 105, Questionnaire for Identifying Conflicts	Yes
4	Recipient Resolution	No
5	Awardee CEQA Documentation	No

Approved By

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

Agreement Manager: Katelynn Dinius

Approval Date: 7/31/2025

Branch Manager: Reynaldo Gonzalez

Approval Date: 7/31/2025

Director: Jonah Steinbuck delegated to Branch Manager

Approval Date: 7/31/2025

Exhibit A
Scope of Work
It's Electric Incorporated

I. TASK ACRONYM/TERM LISTS

A. Task List

Task #	CPR[1]	Task Name
1		General Project Tasks
2		V2G OCPP Site Management Tool
3		Design & Engineering of Custom V2G Integration Modules
4		MVP V2G EVSE and Cable Fabrication
5	X	MVP Initial EVSE and Cable Benchtop Testing
6		Beta V2G EVSE and Cable Fabrication
7		Beta EVSE and Cable Benchtop Testing
8		UL and EnergyStar Certification
9		Charger Installation
10	X	Demonstration Testing and Troubleshooting
11		EVSE and Cable Demonstration
12		Evaluation of Project Benefits
13		Technology/Knowledge Transfer Activities

B. Acronym/Term List

Acronym/Term	Meaning
A	Ampere
API	Application Programming Interface
CAD	Computer Aided Design
CAM	Commission Agreement Manager
CAO	Commission Agreement Officer
CEC	California Energy Commission
CPR	Critical Project Review
EV	Electric Vehicle
EVSE	Electric Vehicle Service Equipment
FCC	Federal Communications Commission
IOU	Investor Owned Utility
kW	Kilowatt
MRP	Market Ready Product
MVP	Minimally Viable Prototype
MW	Megawatt
NRTL	Nationally Recognized Testing Laboratory
OCPP	Open Charge Point Protocol
TAC	Technical Advisory Committee
UL	Underwriters Laboratories
V2G	Vehicle to Grid
V2X	Vehicle to Everything

[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
It's Electric Incorporated

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

A. Purpose of Agreement

The purpose of this Agreement is to design, fabricate, and demonstrate a curbside bidirectional vehicle-to-grid (V2G) electric vehicle (EV) charger that integrates with existing urban infrastructure. This project aims to expand equitable access to advanced V2G technology in underserved communities, enabling these communities to benefit from grid resilience. By demonstrating this novel curbside V2G solution, the project will accelerate the development of a grid-supportive public charging network and support broader EV adoption.

B. Problem/ Solution Statement

Problem

California's transportation electrification efforts are accelerating, but the existing public EV charging infrastructure is not yet equipped to not only enable widespread EV charging but also support the electric grid. One grid-supportive method is bidirectional charging, which allows EVs to return power to the grid during times of peak demand. Today, there are a handful of bidirectional EV chargers available in North America, and they are typically designed for use at privately owned, off-street parking locations such as residences and fleet depots. These chargers are significantly more expensive and poorly suited for public applications. There is little economic motivation for site owners to adopt V2G hardware, and even less opportunity for public users to benefit from it.

The absence of bidirectional public charging stems in part from a lack of interoperable standards, as most public infrastructure still relies on legacy protocols and lacks support for more advanced communications such as International Organization for Standardization (ISO) 15118-20 or Local Interconnect Network (LIN)-based control. Additionally, without standardized software platforms that conform to protocols like Open Charge Point Protocol (OCPP) 2.0.1 and meet National Electric Vehicle Infrastructure (NEVI) requirements, even bidirectional-capable hardware remains isolated from utility programs and grid management platforms.

The state's electrical grid is increasingly strained by evening peak loads made worse by unmanaged charging behavior. Without widespread deployment of responsive infrastructure like V2G, utilities must pursue costly upgrades to distribution systems. At the same time, underserved communities are at risk of being excluded from the economic and resilience benefits of grid-supportive transportation electrification. Without public hardware and software platforms that support advanced metering, bidirectional power flow, flexible signaling protocols, and grid interoperability, the role of EVs as distributed energy assets will remain unrealized.

Solution

This Agreement will develop a curbside alternating current (AC) bidirectional EV charger ("V2G Charger") and a complementary Society of Automotive Engineers (SAE) J3068 Active Cable ("Active Cable") to enable scalable, public V2G charging. The Active Cable is a smart charging cable that manages communication and control signals between the charger and the EV, allowing bidirectional power flow. A key innovation of the V2G charger is the SAE J3068-based Universal Socket, which uses a single, standardized connector that supports a wide range of

EVs. By using the Universal Socket, the system reduces installation complexity and cost while enabling more advanced communication functions to support broader adoption.

The charger's hardware and software platform will comply with key industry protocols to ensure interoperability and safety. It will support the OCPP 2.0.1 and the Open Charge Point Interface (OCPI) 2.2.1, which are communication standards that allow chargers to connect with networks, utilities, and energy management platforms. The system will also meet the requirements of the NEVI program and comply with Underwriters Laboratories (UL) 2954, a safety standard related to EV charging and V2G systems.

To ensure broad compatibility with electric vehicles and their onboard chargers, the solution will support multiple signaling protocols. These include the legacy SAE J1772 pulse-width modulation signals commonly used in current AC chargers, LIN-CP, a newer signaling method designed for more advanced control, and ISO 15118-20, the emerging international standard for high-level communication between EVs and chargers that supports secure bidirectional power flow and features like Plug and Charge. Plug and Charge is a feature that allows an EV to automatically authenticate and start charging securely as soon as it's plugged in, without needing manual payment or app interaction.

To support adoption and ensure equitable access, the system will operate under a novel business model in which there is no cost to the driver or property owner for hardware installation. Instead, the model leverages reverse metering, where energy exported to the grid from participating EVs during V2G sessions generates a revenue stream. Drivers enrolled in these programs will receive a share of the reverse metering fees, allowing them to earn money or receive discounted utility rates for providing grid services. A small portion of the revenue is retained by the operator to cover operational costs and support platform growth.

C. Goals and Objectives of the Agreement

Agreement Goals

The goals of this Agreement are to:

- Develop and validate a standards-compliant, curbside AC bidirectional charger and SAE J3068 Active Cable for real-world public settings.
- Demonstrate the technical feasibility and system-level benefits of curbside V2G, including support for grid stability and peak demand reduction.
- Evaluate the economic case for curbside V2G participation for drivers and site hosts.
- Assess potential utility system cost savings from widespread curbside V2G deployment in dense urban areas.
- Assess the impact of curbside V2G infrastructure on EV adoption, especially for users without access to private charging.
- Quantify the environmental benefits of V2G during peak fossil-fuel generation periods.
- Establish a clear path to commercialization via certification and stakeholder engagement.

Ratepayer Benefits:[2] This Agreement will deliver ratepayer benefits of enhanced electricity reliability and reduced costs by enabling the use of EV batteries a flexible, distributed energy resources in dense urban areas. When connected to bidirectional chargers and aggregated, EVs represent a significant source of grid power. For example, 1,000 EVs connected to 6 kW bidirectional chargers could provide up to 6 megawatts of dispatchable energy. This is comparable to the output of two wind turbines or a 36-acre solar installation. Critically, this power is co-located at the distribution level, reducing strain on substations and avoiding delays from regional interconnection queues. Importantly, this bidirectional capability is in addition to the charger's primary function, which is to charge vehicles.

A single 6 kW bidirectional curbside charger is expected to cost between $10,000 and $20,000 to install.[3] At 50% utilization, a deployment of 2,000 chargers (capable of providing 6 MW of on-demand power) would cost $20 million to $40 million, or roughly $330,000 to $660,000 per megawatt. This is significantly lower than current capital costs for land-based wind ($1.75 million/MW),[4] utility-scale solar ($1.16 million/MW), or stationary battery storage ($1.71 million/MW),[5] not including land acquisition or interconnection costs. These savings represent a meaningful opportunity for investor-owned utilities (IOUs) to reduce capital expenditures on generation, transmission, and operations.

This Agreement directly supports California's climate and equity goals by addressing the transportation sector, which is the single largest contributor to the state's greenhouse gas (GHG) emissions, responsible for 50 percent of the total.[6] Achieving the deep decarbonization targets outlined in Executive Order S-3-05, Senate Bill 32, and Executive Order N-79-20 requires both accelerating EV adoption and ensuring the grid can support this transition. By enabling EVs to return power to the grid, bidirectional curbside chargers can reduce the need for fossil-fuel peaker plants, particularly in underserved communities where grid vulnerability and air pollution burdens are highest.

Technological Advancement and Breakthroughs:[7]
The EV charging market is rapidly shifting toward direct current (DC) fast charging, with chargers now delivering up to 350 kW, alongside growing integration of smart charging solutions. Despite this progress, significant challenges remain in ensuring equitable access to charging infrastructure, especially for residents lacking dedicated parking spaces. Meanwhile, the bidirectional EV charger market remains in its early stages but is gaining momentum, driven by rising interest in V2G technologies that ease grid strain.

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[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] It's Electric estimate, based on deployments made in 2024 and 2025.

[4] https://www.nrel.gov/docs/fy24osti/88335.pdf

[5] https://atb.nrel.gov/electricity/2024/utility-scale_battery_storage

[6] https://www.energy.ca.gov/about/core-responsibility-fact-sheets/transforming-transportation

[7] 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.

This Agreement introduces a critical technological advancement with the development of the SAE J3068 Active Cable and its integrated SAE J3068 LIN-CP protocol. The detachable cable not only simplifies the charging experience for drivers but also enables a shift in how EVs interact with chargers, utility systems, and grid services. By embedding driver credentials and account associations directly into the charging cable through the LIN-CP protocol, users can easily initiate sessions and opt into grid-supportive programs. The system enables real-time opt-in and compensation for managed charging and V2G participation. These functionalities address California's grid strain challenges by encouraging flexible load behavior through economic incentives.

Agreement Objectives

The objectives of this Agreement are to:

- Design, build, and deploy a curbside AC bidirectional EV charger featuring a SAE J3068-based Universal Socket and SAE J3068 Active Cable, integrating key safety and communication functions to support V2G.
- Conduct a six-month demonstration, collecting real-world performance data to validate bidirectional charging, V2G participation, and grid responsiveness.
- Demonstrate interoperability with a diverse set of EVs using SAE J1772, LIN-CP, and ISO 15118-20 protocols.
- Use collected data to estimate revenue streams for drivers and site hosts, including reverse metering, demand response, and other utility grid services.
- Develop distribution system models to estimate how curbside V2G adoption could reduce peak load and/or defer infrastructure upgrades in constrained urban grids.
- Evaluate the influence of reliable, revenue-generating public curbside charging on EV total cost of ownership and accessibility for underserved populations.
- Analyze emissions impacts using grid data to estimate avoided GHG and NO_x emissions from displacing fossil-based peaker plants through V2G discharges.
- Complete product certification milestones (e.g., UL 2954, ENERGY STAR, FCC) through a Nationally Recognized Testing Laboratory (NRTL).
- Disseminate engineering documentation, performance findings, and commercialization strategy to utilities, policymakers, and industry stakeholders.

III. TASK 1 GENERAL PROJECT TASKS

PRODUCTS

Subtask 1.1 Products

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

The Recipient shall:

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

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

For products that require a final version only

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

For all products

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

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

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

  The list of permits and the schedule for obtaining them will be discussed at the Kick-off meeting (subtask 1.2), and a timetable for submitting the updated list, schedule, and copies of the permits will be developed. The impact on the project if the permits are not obtained in a timely fashion or are denied will also be discussed. If applicable, permits will be included as a line item in progress reports and will be a topic at CPR meetings.
- If during the course of the Agreement additional permits become necessary, then provide the CAM with an *Updated List of Permits* (including the appropriate information on each permit) and an *Updated Schedule for Acquiring Permits*.
- Send the CAM a *Copy of Each Approved Permit*.
- If during the course of the Agreement permits are not obtained on time or are denied, notify the CAM within 5 days. Either of these events may trigger a CPR meeting.

Products:
- Permit Status Letter
- Updated List of Permits *(if applicable)*
- Updated Schedule for Acquiring Permits *(if applicable)*

- Copy of Each Approved Permit *(if applicable)*

Subtask 1.10 Obtain and Execute Subawards and Agreements with Site Hosts
The goals of this subtask are to: (1) procure subawards required to carry out the tasks under this Agreement; and (2) ensure that the subawards are consistent with the terms and conditions of this Agreement.

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 and as a result, tasks under this Agreement are unable to be carried out or the Agreement is at-risk of not achieving its goals and objectives.
- 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 *Subaward 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 of subrecipient additions in the terms and conditions).

Products:
- 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.

Exhibit A
Scope of Work
It's Electric Incorporated

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 V2G OCPP SITE MANAGEMENT TOOL

The goal of this task is to design, develop, and implement the V2G OCPP Site Management Tool, which is a web-based platform that enables monitoring, control, and analysis of bidirectional charging behavior across a network of chargers. The tool will use the OCPP, a widely adopted open standard for EV charger communication, ensuring interoperability with all compliant EV charging hardware. The tool will include administrative and user-facing dashboards, enabling both system-level oversight and localized interaction with charging assets. Key functionalities include archiving charging session data, controlling charging power levels, and supporting bidirectional power flow for V2G operations.

The Recipient shall:

- Develop the V2G OCPP Site Management Tool, ensuring compatibility with the OCPP and incorporating features such as data archiving, power level control, and bidirectional power flow management.
- Integrate application programming interface (API) connections that allow the V2G OCPP Site Management Tool to interface with Recipient's existing EV charging software operating system, enabling real-time data exchange and coordinated site-level control.
- Test the V2G OCPP Site Management Tool with the EVSE developed in Task 4. Ensure the platform can interpret signals and manage energy flows during V2G operations conducted in Task 5.
- Design the V2G OCPP Site Management Tool to interface with the market ready product (MRP) units developed under Task 6. Prepare the system for operational testing with these chargers as part of Task 7, verifying its performance in both charging and discharging modes.
- Prepare the V2G OCPP Site Management Tool for deployment in real-world pilots, ensuring the platform is capable of managing and monitoring field installations and demonstration testing scheduled for Task 10 and Task 11. Task 2 deliverables must be completed prior to initiating field testing.
- Submit a *V2G OCPP Site Management Tool Report*, including but not limited to, a summary of platform architecture, integration approach, test procedures, performance outcomes, and lessons learned.

Products:

- V2G OCPP Site Management Tool Report (draft and final)

TASK 3 DESIGN AND ENGINEERING OF CUSTOM V2G INTEGRATION MODULES

The goal of this task is to integrate the existing industrial design and curbside form factor developed by the Recipient with the V2G signaling technology, resulting in a fully functional, bidirectional Level 2 curbside EVSE. Engineering work will focus exclusively on the internal components, such as electronics, power conversion systems, control modules, and communication interfaces, allowing the project to leverage the Recipient's existing MRP enclosure, mounting system, and mechanical design. This task involves both electronics and mechanical engineering and will primarily be conducted as desktop design work. However, early benchtop hardware prototypes may be fabricated and tested to inform the iterative design process.

The Recipient shall:

- Integrate the Recipient's existing industrial design and mechanical form factor with the V2G signaling hardware and control protocols to support bidirectional energy flow.
- Conduct electronics and mechanical engineering work to develop the internal systems for a fully functional, bidirectional Level 2 curbside EV charger, with an emphasis on modularity, standards compliance, and manufacturability.
- Build and test benchtop electronic components to validate circuit behavior, signal integrity, and control architecture. These early tests will support iterative development of the final V2G module design.
- Provide project partners with necessary technical resources including CAD files, electrical schematics, firmware/software interfaces, and a bill of materials to enable successful integration of V2G functionality.
- Submit an *V2G Integration Modules Engineering Report,* including but not limited to, a summary of key engineering decisions, design assumptions, integration challenges, and preliminary test results.
- Submit finalized *V2G Integration Modules Design Documents* as evidence of progress, providing a foundation for prototype construction in subsequent phases.

Products:

- V2G Integration Modules Engineering Report (draft and final)
- V2G Integration Modules Design Documents

TASK 4 MVP V2G EVSE AND CABLE FABRICATION

The purpose of this task is to fabricate and commission four (4) minimally viable prototype (MVP) V2G curbside chargers and four (4) MVP SAE J3068 Active Charging Cables. These MVP units will serve as test hardware for validating basic V2G functionality and system integration, based on engineering designs completed under Task 3.

The Recipient shall:

- Fabricate and commission four (4) curbside EVSE units using hardware from Recipient's existing production inventory.
- Provide four (4) standard "Type 1 to Type 2" EV charging cables for use as base units for MVP SAE J3068 Active Cables.
- Implement physical modifications to the charger enclosures ("envelope") as required to enable V2G functionality.
- Provide the four (4) modified curbside chargers and cables for V2G system integration and assembly.
- Procure materials and components for the custom V2G interface module, which will enable signal translation between the Recipient's standard hardware and V2G-capable EVs.
- Develop MVP V2G Chargers and MVP SAE J3068 Active Cables.
- Conduct gross functionality testing of all fabricated units to confirm basic operation of V2G signal flow and power management.
- Coordinate with project partners to support compatibility with the V2G OCPP Site Management Tool developed in Task 2.
- Oversee and support benchtop testing of assembled MVP units, feeding results back into engineering refinements for future phases.

- Submit an *Engineering Report on the MVP Fabrication* of both the V2G Charger and the SAE J3068 Active Charging Cable.

Products:
- Engineering Report on the MVP Fabrication (draft and final)

TASK 5 MVP INITIAL EVSE AND CABLE BENCHTOP TESTING
The goals of this task are to test the MVP V2G EVSE and MVP SAE J3068 Active Cable fabricated during Task 4. Results for this testing will inform Task 6.

The Recipient shall:
- Conduct benchtop and high-bay testing of the MVP V2G EVSE and MVP SAE J3068 Active Cable.
- Validate basic system functionality, including bidirectional power flow, communication signaling (SAE J1772, LIN-CP, and ISO 15118-20), and mechanical/electrical integrity of all components.
- Use testing results to inform the design revisions and engineering improvements for Task 6 prototype development.
- Submit an *Engineering Report on EVSE and Cable Benchtop Testing***,** including but not limited to**,** the test setup, procedures, results, and key findings from MVP EVSE and cable testing.
- Conduct and participate in CPR Meeting #1.

Products:
- Engineering Report on EVSE and Cable Benchtop Testing (draft and final)
- CPR #1 Report

TASK 6 BETA V2G EVSE AND CABLE FABRICATION
The goal of this task is to fabricate four (4) MRP V2G Chargers and four (4) SAE J3068 Active Charging Cables based on engineering insights and testing outcomes from Task 5. These MRPs will incorporate updated designs and functional improvements identified during MVP testing.

The Recipient shall:
- Fabricate four (4) MRP V2G Chargers and four (4) SAE J3068 Active Charging Cables, incorporating hardware modifications and software refinements based on Task 5 results.
- Coordinate logistics and deliver all MRP units and cables to testing site.
- Submit a *Logistics Report*, including but not limited to, photo documentation of completed hardware, packaging, and delivery.

Products:
- Logistics Report

TASK 7 BETA EVSE AND CABLE BENCHTOP TESTING
The goal of this task is to test and validate the performance and interoperability of the MRP V2G Chargers and MRP SAE J3068 Active Charging Cables fabricated by UD in Task 6. Testing will be performed using benchtop and high-bay setups. This task will confirm readiness for

certification and field deployment. Upon successful testing, two (2) MRP units will be sent to a California-based Nationally Recognized Testing Laboratory (NRTL) for safety and compliance certification. The remaining two (2) units will be prepared for demonstration.

The Recipient shall:

- Conduct benchtop and high-bay testing of the MRP V2G Chargers and MRP SAE J3068 Active Charging Cables.
- Deliver two (2) MRP systems to a California-based NRTL for product safety and certification testing.
- Prepare two (2) remaining MRP systems for demonstration installation and testing.
- Submit a *Test Report on MVP V2G Charger and MRP Cables*, including but not limited to, a summary of functional validation, interoperability results, and identified performance metrics.

Products:

- Test Report on MVP V2G Charger and MRP Cables (draft and final)

TASK 8 UL CERTIFICATION AND PRODUCT LISTING

The goal of this task is to complete required product testing and certifications to enable commercial deployment of the MRP V2G Chargers. This includes UL 2954 safety certification, ENERGY STAR® certification, FCC electromagnetic compatibility compliance, and/or other relevant standards certifications needed for commercialization and product listing. These activities will be conducted with a California-based Nationally Recognized Testing Laboratory (NRTL).

The Recipient shall:

- Manage and oversee the full certification process with a California-based Nationally Recognized Testing Laboratory (NRTL) using two (2) MRP chargers delivered during Task 7. Certification scope includes:
  - UL 2954 safety certification
  - ENERGY STAR® testing and certification or other relevant certifications needed for commercialization and product listing
  - FCC electromagnetic compatibility testing
- Conduct any required modifications to the design, engineering, or documentation of the EVSE based on certification testing outcomes. Modifications may include updated schematics, bill of materials (BOM), or firmware revisions.
- Provide a *Testing Design and Engineering Modifications Summary* resulting from the certification process.
- Provide *Proof of Online Registration* for relevant certifications needed for commercialization and product listing (e.g., UL, ENERGY STAR, FCC).

Products:

- Testing Design and Engineering Modifications Summary (draft and final)
- Proof of Online Registration

TASK 9 CHARGER INSTALLATION

The goal of this task is to install and operate the two (2) MRP V2G Chargers fabricated in Task 6 and tested in Task 7. The EVSE will be installed at a testing laboratory.

The Recipient shall:

- Bid and award an electrical contract for the installation of two (2) MRP V2G Chargers. Bids will be solicited from qualified electrical contractors. Selected contractor(s) must be licensed and utilize EVITP-certified installers.
- Oversee permitting activities, ensuring submission of required documentation and coordination with the selected contractor.
- Execute a *Site Host Agreement* to authorize and document the installation and use of the chargers.
- Oversee charger installation at the Richmond Field Laboratory, ensuring proper delivery, siting, and construction activities are completed.
- Energize and commission the MRP chargers using:
    - Recipient-managed V2G-capable EV
    - A production EV with SAE J3068 control of onboard bidirectional charging
- Conduct initial charging sessions to verify functionality, identify and correct faults, and validate charge/discharge power controls.
- Document installation activities in an *EVSE Installation Report*.

Products:

- Site Host Agreement
- EVSE Installation Report (draft and final)

TASK 10 DEMONSTRATION TESTING AND TROUBLESHOOTING

The goal of this task is to design and execute testing protocols that demonstrate V2G functionality of the MRP chargers installed in Task 9. Testing will be conducted in collaboration with project partners to support commissioning and troubleshooting. Results may lead to necessary hardware modifications.

The Recipient shall:

- Design and execute testing protocols to demonstrate V2G functionality and validate performance of the MRP V2G chargers installed as part of Task 9.
- Conduct testing and troubleshooting activities in partnership with project partners**,** including but not limited to, how V2G-enabled EV reacts to voltage/frequency deviations with a grid simulator capable of mimicking power system dynamics.
- Evaluate V2G charging sessions and identify hardware or system-level issues.
- Implement modifications to the charger hardware or hardware design as informed by test outcomes. Updated components or systems must be validated through repeated testing.
- Incorporate testing-driven modifications into the final *MRP Design Deliverable* and submit to the NRTL overseeing UL testing and certification under Task 8.
- Source V2G-capable electric vehicles for testing, including through direct engagement with EV OEMs such as Ford and Kia.
- Submit a *Demonstration Testing Report* detailing, but not limited to, testing protocols, session data, findings, design changes, and V2G performance outcomes.
- Conduct and participate in CPR Meeting #2.

Products:

- MRP Design Deliverable (draft and final)
- Demonstration Testing Report (draft and final)
- CPR Report #2

TASK 11 EVSE AND CABLE DEMONSTRATION
The goal of this task is to complete demonstration testing of the deployed MRP V2G chargers and evaluate their performance under real-world operating conditions. Testing results will be compiled into engineering reports and shared with project stakeholders. Community engagement is central to this task, with local drivers participating in the pilot and a public demonstration event conducted.

The Recipient shall:
- Monitor and record real-world test data from both demonstration MRP V2G chargers over the full duration of live deployment.
- Compile test data and submit a *Utilization and Equipment Engineering Report*, including but not limited to, system performance, reliability, and observed charging behavior.
- Recruit local V2G-capable EV drivers who live or work near the deployment site to participate in the demonstration. Participation may include managed charging and V2G discharging.
- Collect user feedback on the charging experience, including charger usability, app experience, and charging reliability.
- Manage participant engagement, including driver sign-up, user account creation, distribution of SAE J3068 cables, and feedback collection through the Recipient's native charging application.
- Host a *Live Demonstration Day* showcasing the deployed V2G chargers to project stakeholders, EV drivers, partners, and the public.
- Submit a *V2G Demonstration Testing Engineering Report*, summarizing technical findings, user feedback, and operational insights gained through field use.

Products:
- Utilization and Equipment Engineering Report (draft and final)
- Live Demonstration Day
- V2G Demonstration Testing Engineering Report (draft and final)

TASK 12: EVALUATION OF PROJECT BENEFITS *(Mandatory task)*
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 13 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
- Market research, business plan development, and cost-performance modeling.
- Entry into an incubator or accelerator program located in California.

The Recipient Shall:

- Develop and submit a *Technology Transfer Plan* 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* 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.
- 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 and final)
- Summary of TAC Comments
- Technology Transfer Summary Report (draft and final)
- High Quality Digital Photographs

V. PROJECT SCHEDULE

Please see the attached Excel spreadsheet (Attachment 5).