**California Energy Commission**
**September 10, 2025 Business Meeting**
**Backup Materials for The Regents of the University of California, on behalf of the Davis Campus**

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: 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 CEQA findings contained in the Agreement or Amendment Request Form (as applicable); and

**RESOLVED**, that the CEC approves agreement EPC-25-016 with The Regents of the University of California, on behalf of the Davis Campus for a $2,188,796 grant. This project will develop a low-cost, virtual, EV submetering solution and demonstrate it at an existing charging site in Santa Barbara. The submetering solution will enable increased tariff flexibility, managed charging program participation, and simplified electricity cost allocation for workplaces, fleets, multi-unit dwellings, and public charging; 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-25-016

## B. Division Information

1. Division Name: ERDD
2. Agreement Manager: Ran Laviv
3. MS-:51
4. Phone Number: 916-258-2951

## C. Recipient's Information

1. Recipient's Legal Name: The Regents of the University of California, on behalf of the Davis Campus
2. Federal ID Number: 94-6036494

## D. Title of Project

Title of project: Demonstrating Electric Vehicle Sub-Metering Solutions (DEVS)

## E. Term and Amount

1. Start Date: 10/1/2025
2. End Date: 10/1/2028
3. Amount: $2,188,796.00

## 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: 5 minutes.
6. The email subscription topic is: Electric Program Investment Charge (EPIC)

**Agenda Item Subject and Description:**

The Regents of the University of California, on behalf of the Davis Campus. Proposed resolution approving agreement EPC-25-016 with The Regents of the University of California, on behalf of the Davis Campus for a $2,188,796 grant, and adopting staff's recommendation that this action is exempt from CEQA. This project will develop a low-cost, virtual, electric vehicle submetering solution and demonstrate it at an existing charging site in Santa Barbara. The submetering solution will enable increased tariff flexibility, managed charging program participation, and simplified electricity cost allocation for workplaces, fleets, multi-unit dwellings, and public charging. (EPIC funding) Contact: Antonio Gomez

## 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, sec. 15301, 15306

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 California Environmental Quality Act (CEQA).

The project will gather information from an existing site in Santa Barbara and the technology is unlikely to increase demand for the existing public chargers. There will be no, or minimal, alterations of the current charging hardware at the site. The alterations consist solely of a software solution which will not result in any impact on the land or result in digging, alteration, trenching or an impact of the surrounding environment. Subsequent to the implementation of the solution, the project will then primarily consist of basic data collection, research, and data analysis which do not result in a serious or major disturbance to an environmental resource. Therefore, the project is exempt under Cal. Code Regs., tit 14, sec. 15301.

Cal. Code Reg., tit 14 sec. 15306 provides that projects which consist of basic data collection, research, experimental management, and resource evaluation activities which do not result in a serious or major disturbance to an environmental resource.

This project will result in the creation of a software solution, implementing the software solution, and analyzing resulting data to model the effect of submetering of electric vehicles charging stations. There will not be a disturbance to an environmental resource. Therefore, the project is exempt under Cal. Code Regs., tit 14, sec. 15306.

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 |
|---|---|---|
| PowerFlex Systems, LLC | $ 1,000,000 | $115,331 |
| The Regents of the University of California, Santa Barbara | $ 350,000 | $42,686 |

| Subcontractor Legal Company Name | CEC Funds | Match Funds |
|---|---|---|
| County of Santa Barbara | $ 98,285 | $10,920 |
| Community Environmental Council | $ 49,973 | **$**0 |

## 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 |
|---|---|---|
| No vendors to report | **$** | **$** |

## 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 | $ 2,188,796 |

**TOTAL Amount:** $ 2,188,796

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: Nicole Tardiff

Address: 1 Shields Ave

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

Phone: 530-754-7700

E-Mail: awards@ucdavis.edu

**2. Recipient's Project Manager**

Name: Dahlia Garas

Address: 1605 Tilia St., Suite 100 1 Shields Ave

City, State, Zip: Davis, CA 95616

Phone: 530-752-2570

E-Mail: dmgaras@ucdavis.edu

## 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 |
| 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:** Ran Laviv

**Approval Date:** 7/30/2025

**Branch Manager:** Reynaldo Gonzalez (Delegated Approval to Peter Chen)

**Approval Date:** 8/1/2025

**Director:** Jonah Steinbuck (Delegated Approval to Branch Manager)

**Approval Date:** 8/1/2025

# Exhibit A
# Scope of Work
# The Regents of the University of California, on behalf of the Davis Campus

## I. TASK ACRONYM/TERM LISTS

### A. Task List

| Task # | CPR[1] | Task Name |
|---|---|---|
| 1 | | General Project Tasks |
| 2 | | County Data Collection for Analysis |
| 3 | X | Development of Submetering Solution |
| 4 | | Apply to become a Registered MDMA |
| 5 | | Development and Accuracy Validation of MDMA Submetering |
| 6 | X | Comparative Analysis of Site Energy Costs with and without Submetering across different Electricity Tariffs |
| 7 | | Forecasting EV Charging Demand and Optimizing Station Utilization through Dynamic Pricing |
| 8 | | Development and Optimization of EV Charging Tariff Structures |
| 9 | | Stakeholder Engagement and Community Outreach for Submetering Benefits Awareness |
| 10 | | Economic and Grid Impact Analysis of Submetering in California |
| 11 | | Disseminate Results about the Market Potential of Submetering to Broader California Stakeholders and Potential Users |
| 12 | | Evaluation of Project Benefits |
| 13 | | 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 |
| DER | Distributed Energy Resources |
| EV | Electric Vehicle |
| EVSE | Electric Vehicle Supply Equipment (Charging Station) |
| IOU | Investor-Owned Utility |
| MDMA | Meter Data Management Agent |
| MVP | Minimum Viable Product |
| Nox | Nitrogen Oxides (Air Pollutants) |
| PM | Particulate Matter |
| PHEV | Plug-in Hybrid Electric Vehicle |
| SB 100 | California Senate Bill 100 (Clean Energy Policy) |
| TAC | Technical Advisory Committee |
| TOU | Time-of-Use (Tariffs) |
| VGI | Vehicle-Grid Integration |

| Acronym/Term | Meaning |
|---|---|
| VMT | Vehicle Miles Traveled |
| ZEV | Zero-Emission Vehicle |

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

### A. Purpose of Agreement

The purpose of this Agreement is to fund the development and demonstration of a flexible submetering solution, utilizing embedded submeters within Electric Vehicle Supply Equipment (EVSE) and customer owned external submeters, enabling vehicle-grid integration (VGI) benefits while reducing the costs associated with utility-grade meters. This project will assess the technical and economic feasibility of submetering for fleets, multi-unit dwellings, workplaces, and public charging, paving the way for broader adoption across California.

### B. Problem/ Solution Statement

**Problem**

The high cost of installing utility-grade meters has been a major barrier to separately metering Electric Vehicle (EV) charging loads. This limits access to dynamic electricity rates and VGI benefits. Existing submetering solutions rely on expensive hardware or proprietary systems, making widespread adoption difficult. There is also little research on the feasibility of using embedded EVSE submeters for different applications, such as fleets, multi-unit dwellings, workplaces, and public charging. While the California Public Utilities Commission (CPUC) has set standards for Meter Data Management Agents (MDMAs), only a few MDMA has been approved to date with limited applications and demonstrations. No solution exists for broader EV charging use cases, despite California's large network of California Type Evaluation Program compliant EVSEs.

Property owners and fleet operators also struggle to manage and allocate EV charging costs. The County of Santa Barbara, for example, operates 200+ PowerFlex EV charging stations across various sites. These chargers serve County fleets, employees, and the public, but they are connected to building meters, making cost allocation difficult. County staff must manually calculate and reimburse energy costs across 22 departments, a time-consuming and inefficient process. Additionally, utility owned submeters are too expensive to install, so the County is seeking a virtual submetering solution to streamline cost recovery and improve energy tracking. Beyond the County of Santa Barbara use case, a flexible submetering solution will offer an affordable and scalable solution to help California achieve its clean energy and zero-emissions vehicle goals.

**Solution**

This project will develop and demonstrate a software-defined submetering solution to address cost barriers and operational challenges faced by EV site hosts, including public agencies, fleet

operators, and multi-unit dwelling managers. By leveraging embedded submeters within EVSEs, the solution will enable accurate energy tracking, flexible cost allocation, and seamless access to EV-specific electricity tariffs. This eliminates the need for costly utility owned submeters, reducing administrative burdens for property owners and streamlining cost recovery. A real-world demonstration will validate the solution at select sites, resolving long-standing challenges with manually allocating EV charging costs and enabling participation in time-of-use (TOU) programs for cost savings.

The technological breakthrough of this project lies in developing a flexible software defined MDMA which integrates with embedded EVSE submeters and customer owned submeters, removing the need for additional infrastructure. The demonstration will validate the solution's accuracy and reliability, proving its ability to separate EV loads from building loads and automate billing. Additionally, the project will quantify the economic, environmental, and grid benefits of submetering, using real-world data to identify high-impact sites for broader deployment and perform outreach to low-income and disadvantaged community stakeholders that will benefit from the submetering solution. The solution will also enable dynamic tariff participation and optimized charging strategies, enhancing VGI, reducing energy costs, and accelerating equitable EV adoption. By removing financial and administrative barriers, this project seeks to develop a scalable solution that supports California's clean energy and transportation goals.

### C. Goals and Objectives of the Agreement

**Agreement Goals**

The goals of this Agreement are to:

- Develop and demonstrate a cost-effective flexible submetering solution that enables EV charging loads to be separately metered using embedded submeters within EVSEs or customer owned submeters.
- Validate the accuracy and reliability of the submetering solution through real-world deployments at select sites, ensuring compliance with CPUC and utility standards for MDMAs.
- Quantify the economic, environmental, and grid benefits of submetering, demonstrating how the technology can lower energy costs, enhance grid flexibility, and support equitable EV adoption.
- Design and model the impact of submetering-based charging tariff structures that reflect both time-varying energy costs and congestion-related costs in shared facilities such as workplaces, multi-unit dwellings, and industrial or commercial complexes.
- Create a scalable and replicable model for submetering deployment, enabling widespread adoption by fleets, workplaces, multi-unit dwellings, and public charging networks across California.

Ratepayer Benefits:[1] This Agreement will result in ratepayer benefits of lower costs and greater electricity reliability by enabling cost-effective submetering for EV charging and improving the management of EV charging demand. By eliminating the need for expensive utility-grade meters, this project reduces costs for site hosts, making EV charging infrastructure more affordable and accessible. Additionally, the submetering solution allows EV drivers to access lower-cost, EV-specific electricity rates, reducing fueling costs compared to gasoline or hybrid vehicles, which can further encourage EV adoption.

The project also improves electricity reliability by enabling the management of EV charging demand in real-time. With submetering-enabled demand management and congestion pricing, charging can be shifted away from peak hours, easing stress on the grid. These improvements will support a more balanced and efficient grid, reducing the risk of overloads while advancing VGI in California.

Technological Advancement and Breakthroughs:[2] This Agreement will lead to technological advancements and breakthroughs by developing and demonstrating a flexible, software-based, submetering solution that enables EV charging loads to be separately metered without requiring costly utility-grade meters. This project will enable site hosts to accurately track and allocate EV charging costs and access EV-specific and dynamic electricity tariffs by integrating embedded submeters within EVSEs and customer-owned submeters with a MDMA. This technology removes financial and administrative barriers for fleets, workplaces, and multi-unit dwellings, supporting the expansion of affordable and equitable EV charging infrastructure across California.

Additionally, this Agreement will enhance VGI and optimize energy use by enabling real-time charging demand management. The project will introduce new submetering-based tariff designs that reflect both time-varying energy costs and congestion-related costs, ensuring efficient station utilization and fair cost allocation. These advancements will help balance electricity demand, prevent grid overloads, and lower energy costs, directly supporting California's statutory energy goals, by facilitating the transition to a clean, resilient, and equitable energy system.

## Agreement Objectives

The objectives of this Agreement are to:

- Develop and deploy a software-based submetering solution built on the existing PowerFlex platform that enables EV charging loads to be separately metered using

[1] 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).

[2] 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.

embedded or external submeters, eliminating the need for utility-grade meters. The solution will support Open Charge Point Protocol (OCPP) based communication over Wi-Fi, cellular, and ethernet, and include advanced capabilities such as EVSE group-level submetering, circuit-level metering for non-networked chargers, joint optimization with load management, and, as a stretch goal, user-based submetering for shared EVSEs. The solution will be implemented and tested at pilot sites.

- Demonstrate and validate the submetering solution at select sites to ensure accuracy, reliability, and compliance with CPUC and utility standards for MDMAs and achieve verification of metering accuracy within CPUC and utility-approved tolerances.
- Analyze cost savings and economic benefits of submetering for site hosts, EV drivers, and ratepayers, including access to EV-specific and dynamic tariffs to allow a quantified reduction in EV fueling costs compared to standard utility tariffs.
- Develop and model the effects of submetering-based charging tariff structures that account for both time-varying energy costs and congestion-related costs in shared facilities such as workplaces, multi-unit dwellings, and commercial sites. It will allow cost reduction and improved charger availability.
- Identify high-impact sites for broader submetering adoption and develop outreach strategies to scale deployment across California and engage with at least 2 additional site hosts and other stakeholders for potential expansion.

## 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 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), 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:**

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

***TECHNICAL ADVISORY COMMITTEE***

**Subtask 1.11 Technical Advisory Committee (TAC)**
The goal of this subtask is to create an advisory committee for this Agreement. The TAC should be composed of diverse professionals. The composition will vary depending on interest, availability, and need. TAC members will serve at the CAM's discretion. The purpose of the TAC is to:

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

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

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

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

**The Recipient shall:**

- Prepare a *List of Potential TAC Members* that includes the names, companies, physical and electronic addresses, and phone numbers of potential members. The list will be discussed at the Kick-off meeting, and a schedule for recruiting members and holding the first TAC meeting will be developed.
- Recruit TAC members. Ensure that each individual understands member obligations and the TAC meeting schedule developed in subtask 1.12.
- Prepare a *List of TAC Members* once all TAC members have committed to serving on the TAC.
- Submit *Documentation of TAC Member Commitment* (such as Letters of Acceptance) from each TAC member.

**Products:**
- List of Potential TAC Members
- List of TAC Members
- Documentation of TAC Member Commitment

**Subtask 1.12 TAC Meetings**
The goal of this subtask is for the TAC to provide strategic guidance for the project by participating in regular meetings, which may be held via teleconference.

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

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

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

**Subtask 1.13 Project Performance Metrics**
The goal of this subtask is to finalize key performance targets for the project based on feedback from the TAC and report on final results in achieving those targets. The performance targets

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

**The Recipient shall:**

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

**Products:**

- TAC Performance Metrics Summary
- Project Performance Metrics Results

## IV. TECHNICAL TASKS

### TASK 2 COUNTY DATA COLLECTION FOR ANALYSIS

The goal of this task is to collect and ingest data from the County of Santa Barbara electric vehicle charging facilities to share with project partners and initiate the analysis of the benefits of the submetering solution.

**The Recipient shall:**

- Collect EV charging and site data from County owned facilities and share them with project partners after signing data sharing agreements.
- Analyze data and identify possible County of Santa Barbara owned EV charging facilities that will substantially benefit from submetering technology and provide a *Data Ingestion Report*.
- Collect feedback from PowerFlex, research partners, and the County of Santa Barbara staff to identify and recommend additional County sites that might benefit from active participation in this project. This could include research analysis or in the submetering tests.
- Prepare Data Ingestion Report, summarizing trends in EV charger usage over time at County of Santa Barbara sites, including utilization by the County fleet, County employees, and members of the public. The report may also incorporate other relevant data sources, such as County-provided meter data.

**Products:**

- Data Ingestion Report

### TASK 3 DEVELOPMENT OF SUBMETERING SOLUTION

The goal of this task is to develop software to collect, validate, aggregate, and format meter data from EVSEs and physical submeters in accordance with the requirements for an MDMA.

**The Recipient shall:**

- Distill MDMA program requirements into product requirements including:
  - Software requirements
  - Hardware requirements
  - Communications protocols
- Create a *MDMA Test Plan* that includes but is not limited to an outline of:
  - The tests being conducted
  - Testing procedures
  - Facilities and equipment used for testing
  - Metrics to be gathered
  - Success criteria
- Evaluate EVSE and metering hardware against MDMA program requirements.
- Develop prototype submetering solution, built on existing Powerflex platform, capable of the following:
  - Supports communication with various EVSE types via OCPP over wi-fi, cellular, and ethernet.

    - Beyond basic MDMA requirements, enhance submetering for large charging sites:
        - Submetering by EVSE group, where customers can group EVSEs under one or more submeters, aligning with tenant boundaries or VGI program participation (e.g., dynamic pricing or demand response). By default, this will use embedded EVSE submeters.
        - Circuit-level submetering, where external multi-input metering can be used to monitor panel circuits and allow flexible load grouping even with non-networked EVSEs.
        - Joint optimization across submeters, where integrating adaptive load management with submetering can allow sites to install more chargers while limiting load distribution and enable different groups of chargers to respond to distinct price signals (e.g., one may follow TOU rates, while another prioritizes fast charging).
        - User-based submetering (stretch goal), where accurate cost allocation can be achieved by user, without fixed EVSE assignments (e.g., shared EVSEs in a multi-unit dwelling could be billed directly to a tenant only when they are actively using the EVSE).
- Execute *MDMA Test Plan* on the prototype submetering solution.
- Refine prototype solution into Minimum Viable Product (MVP).
- Execute *MDMA Test Plan* on MVP.
- Prepare a *MDMA* Requirements and *Test Report (draft and final)* that includes but is not limited to:
    - Process and results of the test
    - Technical issues
    - Lessons learned for this phase in the project
    - Summary of technical requirements
- Prepare a *MDMA System Design and Architecture Report*, documenting system components, interaction between components, protocols, data formats and data flows.
- Prepare a *CPR Report* in accordance with subtask 1.3 (CPR Meetings).
- Participate in a CPR meeting.

**Products:**
- MDMA Test Plan
- MDMA Requirements and Test Report (draft and final)
- MDMA System Design and Architecture Report
- CPR Report

**TASK 4 APPLY TO BECOME A REGISTERED MDMA**

The goal of this task is to apply to become a registered MDMA with one or more California Investor Owned Utilities (IOUs).

**The Recipient shall:**
- Prepare an MDMA application in accordance with utility requirements.
- Submit MDMA application to at least one IOU.
- Complete system tests as required by the IOS.

- Prepare *MDMA Application Report* that includes but is not limited to:
    - Process and results of the application
    - Technical and process issues.
    - Lessons learned for this phase in the project

**Products:**

- MDMA Application Report

**TASK 5 DEPLOYMENT AND ACCURACY VALIDATION OF MDMA SUBMETERING SOLUTION**

The goals of this task are to validate the accuracy and reliability of the MDMA submetering solution through real-world deployments. This task will assess compliance with CPUC and utility standards, ensure data integrity, and confirm the solution's ability to correctly measure and report EV charging energy use. The findings will support further optimization and broader adoption of submetering technology.

**The Recipient shall:**

- Develop a test plan outlining objectives, procedures, conditions, facilities, and equipment for MDMA submetering accuracy testing. Document this in the *MDMA Submetering Test Plan*.
- Prepare demonstration sites by coordinating with site hosts and ensuring necessary infrastructure and permissions are in place.
- Deploy the MDMA submetering solution and verify data collection functionality.
- Conduct accuracy testing by comparing submetered energy measurements against utility-grade meters or other reference standards to ensure compliance with regulatory accuracy requirements.
- Analyze data integrity by evaluating the consistency, latency, and completeness of submetering data transmitted through the MDMA solution.
- Document test results and findings in the *Accuracy Testing and Validation Report*. that includes accuracy validation data, challenges encountered, and recommendations for further improvements.

**Products:**

- MDMA Submetering Test Plan
- Accuracy Testing and Validation Report

**TASK 6 COMPARATIVE ANALYSIS OF SITE ENERGY COSTS WITH AND WITHOUT SUBMETERING ACROSS DIFFERENT ELECTRICITY TARIFFS**

The goals of this task are to evaluate the financial impact of submetering by comparing site energy costs under different electricity tariffs, both with and without submetering. This analysis

will determine potential cost savings for site hosts, fleet operators, and EV drivers while identifying the economic feasibility of submetering-based tariff structures.

**The Recipient shall:**

- Analyze energy usage and cost data from demonstration sites with and without submetering. Summarize findings in the *Energy Cost Data Summary*.
- Identify and categorize applicable electricity tariffs, including standard, EV-specific, and dynamic tariffs, and document them in the *Electricity Tariff Comparison Report*.
- Conduct a comparative analysis of site energy costs under different tariffs, evaluating the impact of submetering on overall energy expenses. Present results in the *Comparative Energy Cost Analysis Report*.
- Assess cost allocation differences between submetered and non-submetered scenarios, including the effect on site hosts, tenants, and EV drivers. Document findings in the *Comparative Energy Cost Analysis Report*.
- Develop recommendations for optimizing cost savings through submetering and dynamic tariff selection. Include recommendations in the *Comparative Energy Cost Analysis Report*.
- Prepare a *CPR Report* in accordance with subtask 1.3 (CPR Meetings).
- Participate in a CPR meeting.

**Products:**

- Energy Cost Data Summary
- Electricity Tariff Comparison Report
- Comparative Energy Cost Analysis Report
- CPR Report

## TASK 7 FORECASTING EV CHARGING DEMAND AND OPTIMIZING STATION UTILIZATION THROUGH DYNAMIC PRICING

The goals of this task are to develop a methodology for forecasting EV charging demand under different electricity tariff structures and optimize station utilization through demand-based attraction modeling. This task will analyze how time-varying and dynamic pricing models influence charging behavior and congestion patterns, helping site hosts predict how participation in submetering and improved pricing strategies will affect their site's utilization and economics.

**The Recipient shall:**

- Analyze historical EV charging data from demonstration sites and external sources to establish baseline demand patterns. Summarize findings in the *Charging Demand Data Summary*.
- Identify key factors influencing EV charging demand, including tariff structures, time-of-use pricing, driver preferences, and congestion effects. Document findings in the *Demand Forecasting Framework Report*.
- Develop a demand forecasting methodology that models charging behavior under different electricity tariffs, including flat-rate, time-of-use, and congestion-based dynamic pricing structures. Describe the methodology in the *Demand Forecasting Framework Report*.

- Integrate a demand-based attraction model into the forecasting framework to assess how dynamic price adjustments, charger availability, power output, and driver travel behavior influence station utilization. Document the model in the *Demand Forecasting Framework Report*.
- Validate the forecasting methodology and attraction model using numerical simulations and real-world data where available to assess accuracy and effectiveness in balancing station usage and reducing congestion.
- Analyze the potential impact of demand forecasting and congestion-based pricing on site operations, cost savings, and grid load management. Summarize insights in the *Forecasting Validation Report*.

**Products:**
- Charging Demand Data Summary
- Demand Forecasting Framework Report
- Forecasting Validation Report

**TASK 8 DEVELOPMENT AND OPTIMIZATION OF EV CHARGING TARIFF STRUCTURES**

The goal of this task is to design new electric vehicle (EV) charging tariff structures at shared facilities that reflect both the contribution of the charging event to shared time-varying energy costs as well as congestion-related costs due to discrete plug in events. This task will leverage submetering technology to develop efficient pricing mechanisms that enhance charging station utilization and ensure cost recovery for site hosts.

**The Recipient shall:**
- Analyze real-world charging data from Powerflex chargers at the County of Santa Barbara to understand congestion effects at EVSEs and provide a *Congestion Data Analysis Summary.*
- Design and implement a congestion pricing model using copositive duality (COP) —a mathematical approach that allows modeling of complex, real-world behaviors like when and where EVs plug in, even when those behaviors are hard to capture with traditional methods. The model will assign marginal energy and congestion costs based on discrete plug-in events and prepare a *Draft Manuscript on COP based EV Charging Tariffs.*
- Study how the inclusion of a demand-based attraction model developed in Task 7 can better adjust dynamic station pricing based on factors such as EVSE availability, driver preferences, power levels, and congestion levels.
- Evaluate demand charge impacts on the tariff by modeling the inclusion or exclusion of EV loads in demand charge calculations for commercial and multi-unit dwelling facilities and prepare a *Draft Manuscript on Demand Charge Allocation in Submetered EV Charging*.

**Products:**
- Congestion Data Analysis Summary
- Draft Manuscript on COP based EV Charging Tariffs
- Draft Manuscript on Demand Charge Allocation in Submetered EV Charging

## TASK 9 STAKEHOLDER ENGAGEMENT AND COMMUNITY OUTREACH FOR SUBMETERING BENEFITS AWARENESS

The goal of this task is to engage a diverse group of stakeholders and raise awareness about the benefits of submetering, ensuring that community input is incorporated into policy recommendations and program design for EV charging rate design**.**

**The Recipient shall:**

- Prepare a *Stakeholder Engagement Plan* that outlines the approach for engaging with Zero-Emission Vehicle (ZEV) infrastructure planners, and implementers who participate in regional planning activities to electrify municipal and public fleets and EVSE site host on the benefits of submetering.
- Develop a *Listening Session Standard Operating Procedure (SOP)* for listening sessions to ensure a structured, consistent approach to gathering community feedback on submetering and EV charging rate design.
- Host at least two listening sessions with stakeholders (either in-person or virtual) to provide information and gather feedback from stakeholders on their needs and concerns regarding submetering and EV charging rates. Provide a *Summary Report on the Listening Sessions.*
- Coordinate with local community-based organizations to ensure outreach efforts are inclusive, especially for underrepresented populations, and that materials are available in multiple languages including English and Spanish.
- Conduct stakeholder workshop(s) highlighting the practical benefits of virtual submetering and prepare associated *Stakeholder Workshop Materials and Agendas*.
- Develop a *Stakeholder Feedback Summary Report* that summarizes insights and recommendations from the outreach activities and stakeholder workshops.
- As needed, conduct outreach to local property owners, managers, and residents through workshops, informational materials, and community meetings to explain the benefits and potential savings from implementing submetering systems.

**Products:**

- Stakeholder Engagement Plan
- Listening Session Standard Operating Procedure (SOP)
- Summary Report on the Listening Sessions
- Stakeholder Workshop Materials and Agendas
- Stakeholder Feedback Summary Report

## TASK 10 ECONOMIC AND GRID IMPACT ANALYSIS OF SUBMETERING IN CALIFORNIA

The goal of this task is to assess the financial, environmental, and grid impacts of submetering in California. The analysis will quantify cost savings, emissions reductions, and demand flexibility benefits to inform policymakers, utilities, and various types of site hosts on its economic viability and role in grid decarbonization.

**The Recipient shall:**

- Assess ratepayer cost impacts for different types of site hosts by comparing submetering to traditional metering, analyzing savings from lower infrastructure costs, EV-specific tariffs, and optimized charging schedules. Summarize findings in the *Submetering Cost-Benefit Analysis Report.*
- Model emissions reductions by simulating charging shifts to lower-carbon periods based on grid intensity and expected behavior changes. Include results in the *Submetering Cost-Benefit Analysis Report*.
- Evaluate grid reliability impacts by analyzing submetering's effects on load flexibility, peak demand reduction, and demand response participation. Document findings in the *Submetering Cost-Benefit Analysis Report.*
- Compare submetering costs and benefits across workplaces, fleets, multi-unit dwellings, and public sites to identify where it provides the most value.
- Summarize insights in the *Submetering Cost-Benefit Analysis Report.*

**Products:**

- Submetering Cost-Benefit Analysis Report

**TASK 11 DISSEMINATE RESULTS ABOUT THE MARKET POTENTIAL OF SUBMETERING TO BROADER CALIFORNIA STAKEHOLDERS AND POTENTIAL USERS**

The goal of this task is to share the results of this project with sites who may benefit from submetering.

**The Recipient shall:**

- Prepare *Briefing Materials* which include but is not limited to:
  - The benefits of submetering for different types of charging sites.
  - The benefits of submetering for site hosts.
  - The benefits of submetering for drivers.
- Prepare a *Benefits of Submetering Presentation Materials* for a general audience which includes but is not limited to:
  - The benefits of submetering for different types of charging sites.
  - The benefits of submetering for site hosts.
  - The benefits of submetering for drivers.
  - Results of the demonstration project.
- Deliver presentations at a conference, webinar, or as a recorded video.

**Products:**

- Benefits of Submetering Presentation Materials
- Briefing Materials

**TASK 12: EVALUATION OF PROJECT BENEFITS**

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

**The Recipient shall:**

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

**Products:**

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

## TASK 13 TECHNOLOGY/KNOWLEDGE TRANSFER ACTIVITIES

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

**The Recipient Shall:**

- Develop and submit a *Project Case Study Plan* that outlines how the Recipient will document the planning, construction, commissioning, and operation of the technology or system being demonstrated. The Project Case Study Plan should include:
    - An outline of the objectives, goals, and activities of the case study.
    - The organization that will be conducting the case study and the plan for conducting it.

  - A list of professions and practitioners involved in the technology's deployment.
  - Specific activities the recipient will take to ensure the learning that results from the project is disseminated to those professions and practitioners.
  - Presentations/webinars/training events to disseminate the results of the case study.
- Present the draft *Project Case Study Plan* to the TAC for review and comment.
- Develop and submit a *Summary of TAC Comments* that summarizes comments received from the TAC members on the draft *Project Case Study Plan*. This document will identify:
  - TAC comments the Recipient proposes to incorporate into the final *Technology Transfer Plan*.
  - TAC comments the Recipient does not propose to incorporate with and explanation why.
- Submit the final *Project Case Study Plan* to the CAM for approval.
- Execute the final Project Case Study Plan and develop and submit a Project Case Study.
- When directed by the CAM, develop presentation materials for a CEC sponsored conference/workshop(s) on the project.
- When directed by the CAM, participate in annual EPIC symposium(s) sponsored by the California CEC.
- Provide at least (6) six High Quality Digital Photographs (minimum resolution of 1300x500 pixels in landscape ratio) of pre and post technology installation at the project sites or related project photographs.

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

## V. PROJECT SCHEDULE

Please see the attached Excel spreadsheet.