



STATE OF CALIFORNIA

GRANT REQUEST FORM (GRF)

CEC-270 (Revised 12/2019)

CALIFORNIA ENERGY COMMISSION

A) New Agreement # ARV-21-015 (to be completed by CGL office)

B) Division	Agreement Manager:	MS-	Phone
600 Fuels and Transportation Division	Tiffany Hoang	06	916-237-2557

c) Recipient's Legal Name	Federal ID #
Rhombus Energy Solutions, Inc.	45-4588965

D) Title of Project
Demonstrate Solar-Storage-Equipped Quad-Port High-Power Vehicle-to-Vehicle Mobile Charging

E) Term and Amount

Start Date	End Date	Amount
07/15/2021	07/31/2024	\$ 998,320

F) Business Meeting Information

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

Proposed Business Meeting Date 07 / 15 / 2021 ☐ Consent ☒ Discussion

Business Meeting Presenter Matt Alexander Time Needed: 5 minutes

Please select one list serve. Altfuels (AB118-ARFVTP)

Agenda Item Subject and Description:

RHOMBUS ENERGY SOLUTIONS, INC. Proposed resolution approving Agreement ARV-21-015 with Rhombus Energy Solutions, Inc. for a \$998,320 grant to develop and demonstrate a mobile fast-charging solution suited for workplace charging, public charging, and rapidly dispatchable charging services in emergency events for light-duty electric vehicles, and adopting staff's determination that this action is exempt from CEQA. (ARFVTP funding) Contact: Matt Alexander. (Staff presentation: 5 minutes)

G) California Environmental Quality Act (CEQA) Compliance

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

☒ Yes (skip to question 2) ☐ **No** (complete the following (PRC 21065 and 14 CCR 15378)):

Explain why Agreement is not considered a "Project":

Agreement will not cause direct physical change in the environment or a reasonably foreseeable indirect physical change in the environment because project is to develop a vehicle.

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

a) ☒ Agreement **IS** exempt.

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

☒ Categorical Exemption. List CCR section number: 15301 "Existing Facilities", 15306 "Information Collection"

☐ Common Sense Exemption. 14 CCR 15061 (b) (3) Explain reason why Agreement is exempt under the above section:

Cal. Code Regs., tit. 14, sec. 15301 provides that projects which consist of the operation, repair, maintenance, permitting, leasing, licensing, or minor alteration

**GRANT REQUEST FORM (GRF)**

of existing public or private structures, facilities, mechanical equipment, or topographical features, and which involve negligible or no expansion of use beyond that existing at the time of the lead agency's determination, are categorically exempt from the provisions of the California Environmental Quality Act. This project involves conversion of an electric utility van with battery storage, rooftop solar and a fast charging system that will be demonstrated in several Chula Vista locations. The vehicle will be parked in paved parking lots and will provide mobile charging for up to 4 electric vehicles at a time. No installation is needed for the vehicle and the vehicle will likely service multiple sites per day. The existing parking lots will continue operations with negligible or no expansion of the existing use. Therefore, the project falls within section 15301 and will not have a significant effect on the environment.

Cal. Code Regs., 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, are categorically exempt from the provisions of CEQA. This project consists of demonstrating an electric utility van for mobile charging to electric vehicles in various locations in Chula Vista. Mobile charging data will be collected including the energy delivered, the types of vehicles, and payment methods. The mobile charging will take place at existing paved locations and will not result in a serious or major disturbance to an environmental resource. Therefore, the project falls within section 15306 and will not have a significant effect on the environment.

- b) ☐ Agreement **IS NOT** exempt. (consult with the legal office to determine next steps)

Check all that apply

- ☐ Initial Study
☐ Negative Declaration
☐ Mitigated Negative Declaration
☐ Environmental Impact Report
☐ Statement of Overriding Considerations

H) List all subcontractors (major and minor) and equipment vendors: (attach additional sheets as necessary)

Legal Company Name:	Budget
Smartville Inc.	\$ 466,918
City of Chula Vista	\$ 99,000

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

Legal Company Name:
Smartville, Inc.
City of Chula Vista



STATE OF CALIFORNIA

GRANT REQUEST FORM (GRF)

CEC-270 (Revised 12/2019)

CALIFORNIA ENERGY COMMISSION

J) Budget Information

Funding Source	Funding Year of Appropriation	Budget List Number	Amount
ARFVTP	18/19	601.118K	\$998,320

R&D Program Area: Select Program Area TOTAL:

Explanation for "Other" selection

Reimbursement Contract #:

Federal Agreement #:

K) Recipient's Contact Information**1. Recipient's Administrator/Officer**

Name: Kevin Stone

Address: 10915 Technology Place

City, State, Zip: San Diego, CA
92127

Phone: (619) 708-1156

E-Mail:

kstone@rhombusenergysolutions.com

2. Recipient's Project Manager

Name: Ed Munar

Address: 10915 Technology Place

City, State, Zip: San Diego, CA
92127

Phone: (619) 417-2566

E-Mail: ed@rhombusenergy.com

L) Selection Process Used☒ Competitive Solicitation Solicitation #: GFO-20-605☐ First Come First Served Solicitation Solicitation #: - -**M) The following items should be attached to this GRF**

1. Exhibit A, Scope of Work
2. Exhibit B, Budget Detail
3. CEC 105, Questionnaire for Identifying Conflicts
4. Recipient Resolution
5. CEQA Documentation

☒ N/A
☐ N/A

☒ Attached
☒ Attached
☒ Attached
☐ Attached
☒ Attached

Tiffany Hoang

Agreement Manager

6/7/21

Date

Paul Theng

Office Manager

6/7/21

Date

John P. Butler II

Deputy Director

6/7/21

Date

Exhibit A SCOPE OF WORK

TECHNICAL TASK LIST

Task #	CPR	Task Name
1		Administration
2		Develop Integrated 240kWh Energy Storage and 120kW DC Quadport Charging System
3	X	Test and Validate Mobile Charging Functions
4		Mobile Charging Vehicle Retrofitting and Installation
5		Mobile Charging Vehicle Use Cases Demonstration at Chula Vista
6		Project Fact Sheet
7		Data Collection and Analysis

KEY NAME LIST

Task #	Key Personnel	Key Subcontractor(s)	Key Partner(s)
1	Joseph Gottlieb of Rhombus Energy	Smartville, Inc	N/A
2	Joseph Gottlieb of Rhombus Energy	Smartville, Inc	N/A
3	Joseph Gottlieb of Rhombus Energy	Smartville, Inc	N/A
4	Joseph Gottlieb of Rhombus Energy	Smartville, Inc	N/A
5	Joseph Gottlieb of Rhombus Energy	Smartville, Inc and the City of Chula Vista	N/A
6	Joseph Gottlieb of Rhombus Energy	Smartville, Inc	N/A
7	Joseph Gottlieb of Rhombus Energy	Smartville, Inc	N/A

GLOSSARY

Specific terms and acronyms used throughout this scope of work are defined as follows:

Term/ Acronym	Definition
CAM	Commission Agreement Manager
CAO	Commission Agreement Officer
CEC	California Energy Commission
Clean Transportation Program	Formerly known as the Alternative and Renewable Fuel and Vehicle Technology Program
CPR	Critical Project Review
FTD	Fuels and Transportation Division

Recipient	Rhombus Energy Solutions, Inc.
TAC	Technical Advisory Committee

Background

Assembly Bill (AB) 118 (Núñez, Chapter 750, Statutes of 2007), created the Clean Transportation Program, formerly known as the Alternative and Renewable Fuel and Vehicle Technology Program. The statute authorizes the California Energy Commission (CEC) to develop and deploy alternative and renewable fuels and advanced transportation technologies to help attain the state's climate change, clean air, and alternative energy policies. AB 8 (Perea, Chapter 401, Statutes of 2013) re-authorizes the Clean Transportation Program through January 1, 2024. The Clean Transportation Program has an annual budget of approximately \$100 million and provides financial support for projects that:

- Reduce California's use and dependence on petroleum transportation fuels and increase the use of alternative and renewable fuels and advanced vehicle technologies.
- Produce sustainable alternative and renewable low-carbon fuels in California.
- Expand alternative fueling infrastructure and fueling stations.
- Improve the efficiency, performance and market viability of alternative light-, medium-, and heavy-duty vehicle technologies.
- Retrofit medium- and heavy-duty on-road and non-road vehicle fleets to alternative technologies or fuel use.
- Expand the alternative fueling infrastructure available to existing fleets, public transit, and transportation corridors.
- Establish workforce training programs and conduct public outreach on the benefits of alternative transportation fuels and vehicle technologies.

On August 7, 2020, the CEC released a Grant Solicitation and Application Package entitled "BESTFIT Innovative Charging Solutions" under the Clean Transportation Program. This competitive grant solicitation was to fund projects that demonstrate transformative technology solutions and work to accelerate the successful commercial deployment of electric vehicle (EV) charging for both light-duty (LD) and medium- and heavy-duty (MD/HD) applications. In response to GFO-20-605, Rhombus Energy Solutions (Recipient) submitted application #27 which was proposed for funding in the CEC's Notice of Proposed Awards on April 16, 2021. GFO-20-605 and Recipient's application are hereby incorporated by reference into this Agreement in their entirety.

In the event of any conflict or inconsistency between the terms of the Solicitation and the terms of the Recipient's Application, the Solicitation shall control. In the event of any conflict or inconsistency between the Recipient's Application and the terms of CEC's Award, CEC's Award shall control. Similarly, in the event of any conflict or inconsistency between the terms of this Agreement and the Recipient's Application, the terms of this Agreement shall control.

Problem Statement:

Many communities have seen a rise in electric vehicle (EVs) adoption, but the lack of resources to permit and build EV charging infrastructure has limited the user convenience of EVs. Traditional stationary charging ports can have a very low utilization rate if charging speeds are

slow or the charger is not conveniently located. Low-income and disadvantaged communities, in particular, have consistently been underserved. This issue is doubly problematic because these communities are often the most impacted by the air quality issues that vehicle electrification can successfully address. One of the greatest hurdles to the use of EVs in low-income communities is this lack of charging infrastructure. This is a “chicken-and-egg” problem because without enough EVs, the private sector actors will not deploy charging stations in low-income/disadvantaged areas, and without charging resources, the residents of these areas will not buy EVs. The mobile charging vehicle solution will focus on the problems of high operational costs, high purchase costs, and high installation costs for the Light Duty vehicle sector.

Technological problems that the mobile charging vehicle will address are:

- Low efficiency power conversion, especially DC fast charger power conversion from AC to DC dispersed across four ports.
- Use of 2nd-use EV batteries for commercial energy storage.
- Integration at the system level for a mobile EV fast charger with solar and energy storage.

The mobile charging vehicle provides a low-cost and scalable solution for workplace charging, public charging, event-based charging, as well as dispatchable emergency charging and will provide efficient DC fast charging with mobile flexibility.

The mobile charging vehicle addresses cost and financial issues related to the high cost of EV charger infrastructure in low income communities such as permitting, installation and grid upgrades, and will help to mitigate the impact of power demand and improve grid resiliency.

Goals of the Agreement:

The goal of this Agreement is to develop a mobile light duty EV charging solution, with an electric utility van equipped with rooftop solar, a 240 kWh Energy Storage system, and the 120 kW four-port DC fast charger system.

Objectives of the Agreement:

The objectives of this Agreement are to:

- Develop a 240 kWh second-use EV battery energy storage unit.
- Develop a 120 kW four-port multi-functional DC fast charger system for light duty EVs.
- Integrate the energy storage and charger system into a mobile charging vehicle on an electric truck platform.
- Incorporate a solar roof for auxiliary power, including testing and validation.
- Operate the mobile charging vehicle for one year at the City of Chula Vista venues to demonstrate the multiple use cases and functionalities of a mobile EV fast charger for light duty vehicles.
- Assess the operational results via demonstration data collection and analysis and report the results.

TASK 1 ADMINISTRATION

Task 1.1 Attend Kick-off Meeting

The goal of this task is to establish the lines of communication and procedures for implementing this Agreement. The Commission Agreement Manager (CAM) shall designate the date and location of this meeting and provide an agenda to the Recipient prior to the meeting.

The Recipient shall:

- Attend a “Kick-Off” meeting with the CAM, the Commission Agreement Officer (CAO), and a representative of the Energy Commission Accounting Office. The Recipient shall bring their Project Manager, Agreement Administrator, Accounting Officer, and any others determined necessary by the Recipient or specifically requested by the CAM to this meeting.
- Discuss the following administrative and technical aspects of this Agreement:
 - Agreement Terms and Conditions
 - Critical Project Review (Task 1.2)
 - Match fund documentation (Task 1.6) No reimbursable work may be done until this documentation is in place.
 - Permit documentation (Task 1.7)
 - Subcontracts needed to carry out project (Task 1.8)
 - The CAM’s expectations for accomplishing tasks described in the Scope of Work
 - An updated Schedule of Products and Due Dates
 - Monthly Progress Reports (Task 1.4)
 - Technical Products (Product Guidelines located in Section 5 of the Terms and Conditions)
 - Final Report (Task 1.5)

Recipient Products:

- Updated Schedule of Products
- Updated List of Match Funds
- Updated List of Permits

Commission Agreement Manager Product:

- Kick-Off Meeting Agenda

Task 1.2 Critical Project Review (CPR) Meetings

CPRs provide the opportunity for frank discussions between the Energy Commission and the Recipient. The goal of this task is to determine if the project should continue to receive Energy Commission funding to complete this Agreement and to identify any needed modifications to the tasks, products, schedule or budget.

The CAM may schedule CPR meetings as necessary, and meeting costs will be borne by the Recipient.

Meeting participants include the CAM and the Recipient and may include the Commission Agreement Officer, the Fuels and Transportation Division (FTD) program lead, other Energy Commission staff and Management as well as other individuals selected by the CAM to provide support to the Energy Commission.

The CAM shall:

- Determine the location, date, and time of each CPR meeting with the Recipient. These meetings generally take place at the Energy Commission, but they may take place at another location.
- Send the Recipient the agenda and a list of expected participants in advance of each CPR. If applicable, the agenda shall include a discussion on both match funding and permits.
- Conduct and make a record of each CPR meeting. Prepare a schedule for providing the written determination described below.
- Determine whether to continue the project, and if continuing, whether or not modifications are needed to the tasks, schedule, products, and/or budget for the remainder of the Agreement. Modifications to the Agreement may require a formal amendment (please see section 8 of the Terms and Conditions). If the CAM concludes that satisfactory progress is not being made, this conclusion will be referred to the Lead Commissioner for Transportation for his or her concurrence.
- Provide the Recipient with a written determination in accordance with the schedule. The written response may include a requirement for the Recipient to revise one or more product(s) that were included in the CPR.

The Recipient shall:

- Prepare a CPR Report for each CPR that discusses the progress of the Agreement toward achieving its goals and objectives. This report shall include recommendations and conclusions regarding continued work of the projects. This report shall be submitted along with any other products identified in this scope of work. The Recipient shall submit these documents to the CAM and any other designated reviewers at least 15 working days in advance of each CPR meeting.
- Present the required information at each CPR meeting and participate in a discussion about the Agreement.

CAM Products:

- Agenda and a list of expected participants
- Schedule for written determination
- Written determination

Recipient Product:

- CPR Report(s)

Task 1.3 Final Meeting

The goal of this task is to closeout this Agreement.

The Recipient shall:

- Meet with Energy Commission staff to present the findings, conclusions, and recommendations. The final meeting must be completed during the closeout of this Agreement.

This meeting will be attended by, at a minimum, the Recipient, the Commission Grants Office Officer, and the Commission Agreement Manager. The technical and administrative aspects of Agreement closeout will be discussed at the meeting, which may be two separate meetings at the discretion of the Commission Agreement Manager.

The technical portion of the meeting shall present an assessment of the degree to which project and task goals and objectives were achieved, findings, conclusions, recommended next steps (if any) for the Agreement, and recommendations for improvements. The Commission Agreement Manager will determine the appropriate meeting participants.

The administrative portion of the meeting shall be a discussion with the Commission Agreement Manager and the Grants Officer about the following Agreement closeout items:

- What to do with any equipment purchased with Energy Commission funds (Options)
 - Energy Commission's request for specific "generated" data (not already provided in Agreement products)
 - Need to document Recipient's disclosure of "subject inventions" developed under the Agreement
 - "Surviving" Agreement provisions
 - Final invoicing and release of retention
- Prepare a schedule for completing the closeout activities for this Agreement.

Products:

- Written documentation of meeting agreements
- Schedule for completing closeout activities

Task 1.4 Monthly Progress Reports

The goal of this task is to periodically 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 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, and to form the basis for determining whether invoices are consistent with work performed.

The Recipient shall:

- Prepare a Monthly Progress Report which summarizes all Agreement activities conducted by the Recipient for the reporting period, including an assessment of the ability to complete the Agreement within the current budget and any anticipated cost overruns. Each progress report is due to the Commission Agreement Manager within 10 days of the end of the reporting period. The recommended specifications for each progress report are contained in Section 6 of the Terms and Conditions of this Agreement.

- In the first Monthly Progress Report and first invoice, document and verify match expenditures and provide a synopsis of project progress, if match funds have been expended or if work funded with match share has occurred after the notice of proposed award but before execution of the grant agreement. If no match funds have been expended or if no work funded with match share has occurred before execution, then state this in the report. All pre-execution match expenditures must conform to the requirements in the Terms and Conditions of this Agreement.

Product:

- Monthly Progress Reports

Task 1.5 Final Report

The goal of the Final Report is to assess the project's success in achieving the Agreement's goals and objectives, advancing science and technology, and providing energy-related and other benefits to California.

The objectives of the Final Report are to clearly and completely describe the project's purpose, approach, activities performed, results, and advancements in science and technology; to present a public assessment of the success of the project as measured by the degree to which goals and objectives were achieved; to make insightful observations based on results obtained; to draw conclusions; and to make recommendations for further projects and improvements to the FTD project management processes.

The Final Report shall be a public document. If the Recipient has obtained confidential status from the Energy Commission and will be preparing a confidential version of the Final Report as well, the Recipient shall perform the following activities for both the public and confidential versions of the Final Report.

The Recipient shall:

- Prepare an Outline of the Final Report, if requested by the CAM.
- Prepare a Final Report following the latest version of the Final Report guidelines which will be provided by the CAM. The CAM shall provide written comments on the Draft Final Report within fifteen (15) working days of receipt. The Final Report must be completed at least 60 days before the end of the Agreement Term.
- Submit one bound copy of the Final Report with the final invoice.

Products:

- Outline of the Final Report, if requested
- Draft Final Report
- Final Report

Task 1.6 Identify and Obtain Matching Funds

The goal of this task is to ensure that the match funds planned for this Agreement are obtained for and applied to this Agreement during the term of this Agreement.

The costs to obtain and document match fund commitments are not reimbursable through this Agreement. Although the Energy Commission budget for this task will be zero dollars, the Recipient may utilize match funds for this task. Match funds shall be spent concurrently or in advance of Energy Commission funds for each task during the term of this Agreement. Match funds must be identified in writing and the associated commitments obtained before the Recipient can incur any costs for which the Recipient will request reimbursement.

The Recipient shall:

- Prepare a letter documenting the match funding committed to this Agreement and submit it to the Commission Agreement Manager at least 2 working days prior to the kick-off meeting. If no match funds were part of the proposal that led to the Energy Commission awarding this Agreement and none have been identified at the time this Agreement starts, then state such in the letter. If match funds were a part of the proposal that led to the Energy Commission awarding this Agreement, then provide in the letter a list of the match funds that identifies the:
 - Amount of each cash match fund, its source, including a contact name, address and telephone number and the task(s) to which the match funds will be applied.
 - Amount of each in-kind contribution, a description, documented market or book value, and its 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 shall identify its owner and provide a contact name, address and telephone number, and the address where the property is located.
- Provide a copy of the letter of commitment from an authorized representative of each source of cash match funding or in-kind contributions that these funds or contributions have been secured. For match funds provided by a grant a copy of the executed grant shall be submitted in place of a letter of commitment.
- Discuss match funds and the implications to the Agreement if they are reduced or not obtained as committed, at the kick-off meeting. If applicable, match funds will be included as a line item in the progress reports and will be a topic at CPR meetings.
- Provide the appropriate information to the Commission Agreement Manager if during the course of the Agreement additional match funds are received.
- Notify the Commission Agreement Manager within 10 days if during the course of the Agreement existing match funds are reduced. Reduction in match funds must be approved through a formal amendment to the Agreement and may trigger an additional CPR meeting.

Products:

- A letter regarding match funds or stating that no match funds are provided
- Copy(ies) of each match fund commitment letter(s) (if applicable)
- Letter(s) for new match funds (if applicable)
- Letter that match funds were reduced (if applicable)

Task 1.7 Identify and Obtain Required Permits

The goal of this task 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. Although the Energy Commission budget for this task will be zero dollars, the Recipient shall budget match funds for any expected expenditures associated with obtaining permits. Permits must be identified in writing and obtained before the Recipient can make any expenditure for which a permit is required.

The Recipient shall:

- Prepare a letter documenting the permits required to conduct this Agreement and submit it to the Commission Agreement Manager at least 2 working days prior to the kick-off meeting. If there are no permits required at the start of this Agreement, then state such in the letter. If it is known at the beginning of the Agreement that permits will be required during the course of the Agreement, provide in the letter:
 - A list of the permits that identifies the:
 - Type of permit
 - Name, address and telephone number of the permitting jurisdictions or lead agencies
 - The schedule the Recipient will follow in applying for and obtaining these permits.
- Discuss the list of permits and the schedule for obtaining them at the kick-off meeting and develop a timetable for submitting the updated list, schedule and the copies of the permits. The implications to the Agreement 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 the Progress Reports and will be a topic at CPR meetings.
- If during the course of the Agreement additional permits become necessary, provide the appropriate information on each permit and an updated schedule to the Commission Agreement Manager.
- As permits are obtained, send a copy of each approved permit to the Commission Agreement Manager.
- If during the course of the Agreement permits are not obtained on time or are denied, notify the Commission Agreement Manager within 5 working days. Either of these events may trigger an additional CPR.

Products:

- Letter documenting the permits or stating that no permits are required
- A copy of each approved permit (if applicable)
- Updated list of permits as they change during the term of the Agreement (if applicable)
- Updated schedule for acquiring permits as changes occur during the term of the Agreement (if applicable)
- A copy of each final approved permit (if applicable)

Task 1.8 Obtain and Execute Subcontracts

The goal of this task is to ensure quality products and to procure subcontractors required to carry out the tasks under this Agreement consistent with the Agreement Terms and Conditions and the Recipient's own procurement policies and procedures. It will also provide the Energy Commission an opportunity to review the subcontracts to ensure that the tasks are consistent with this Agreement, and that the budgeted expenditures are reasonable and consistent with applicable cost principles.

The Recipient shall:

- Manage and coordinate subcontractor activities.

- Submit a draft of each subcontract required to conduct the work under this Agreement to the Commission Agreement Manager for review.
- Submit a final copy of the executed subcontract.
- If Recipient decides to add new subcontractors, then the Recipient shall notify the CAM.

Products:

- Letter describing the subcontracts needed, or stating that no subcontracts are required
- Draft subcontracts
- Final subcontracts

TECHNICAL TASKS

TASK 2 DEVELOP AN INTEGRATED 240KWH ENERGY STORAGE AND 120KW DC QUADPORT CHARGING SYSTEM

The goal of this task is to develop the Smartville 240 kWh second-use EV battery energy storage unit integrated with the Rhombus 120 kW four port charger product.

The Recipient shall:

- Create a connection block diagram and control flowchart for the Smartville 240 kWh energy storage unit to visualize overall product architecture.
- Develop the electrical design architecture for the Rhombus 120 kW four port charger.
- Generate a power stage wiring diagram for the energy storage/integrated charger system.
- Develop and submit a summary report that shall include: specification highlights for the program, details about the support vehicle chassis/platform requirements, energy storage sub-system performance specifications, EV charger specifications, rooftop solar system specifications and over-arching system capability expectations. The report shall also include an initial assessment of certification requirements and a high-level project schedule identifying key sub-system development milestones.

Products:

- Task 2 Summary report

TASK 3 TEST AND VALIDATE MOBILE CHARGING SYSTEM

The goal of this task is to integrate the charger and energy storage hardware and solar roof system into the mobile charging vehicle, test and validate the system under a number of functional requirements, and determine the long-term certification requirements.

The Recipient shall:

- Assemble battery storage and charger components.
- Test and validate system subcomponents and functions, including:
 - Power sharing among 4 charging ports.
 - Test data showing both individual charger and combined system charging capability (kW/port) with 1 to 4 cars connected simultaneously.
 - Battery energy storage charging and discharging.
 - Test data showing energy storage system charge & discharge capability, including voltage, current, power, temperature and energy flow.
 - Verify operation at both top and bottom state of charge limit conditions.
 - Evaluate battery capacity (kWh).
 - Charger operations by a typical user.
 - Test data showing charger capability (Peak/avg power and energy transfer), including the number of different vehicles charged, average charge/vehicle, average charging time/vehicle, etc.
 - User interaction/interface displaying proper charging status.
 - Collect user feedback on EV charger touch screen interface using an online survey tool.
- Software/firmware to function properly within safety specifications.

Perform and document critical EV charging safety tests aligned with UL 2022 & UL 2231 certification guidelines.

- Energy storage unit “swapability”
 - Perform and document safely removing and replacing an energy storage unit including indication of total service time.
- PV System Capability
 - Test PV system capability including plot of power vs. time & kWh/day contribution to system overall energy consumption.
- Engage with UL to assess and document recommended certifications requirements beyond standard EV charger UL 2202/UL2231 requirements. Certification, typically for safety requirements such as Underwriters Laboratory (UL) listing, may be required for the energy storage system, the charger system, and possibly the integrated system.
 - Examples include certifications for energy storage, charger, and integrated systems.
- Develop and submit a summary report on the testing and validation activities.

Products:

- Testing and Validation Summary report

[CPR WILL BE HELD IN THIS TASK. See Task 1.2 for details]

TASK 4 MOBILE CHARGING VEHICLE RETROFITTING AND INSTALLATION

The goal of this task is to develop a system within the mobile charging vehicle to allow for ease of energy storage unit swapability.

The Recipient shall:

- Develop, install, and test the swappable energy storage system configuration.
 - Procure a suitable vehicle for retrofitting purposes.
 - Retrofit the mobile charging vehicle to accommodate swappable energy storage unit which would include modification of cargo space to accommodate key components and reinforce vehicle chassis where required.
 - Install rooftop PV system on the rooftop of the mobile charging vehicle.
 - Validate vehicle operation including proper drivetrain functions, driving, charging, solar-charging, and secure deployment.
- Develop and submit a summary report on the vehicle retrofit task. The summary report shall include photos of the retrofit and installation.

Products:

- Vehicle Retrofit Summary Report

TASK 5 MOBILE CHARGING VEHICLE USE CASES DEMONSTRATION AT CHULA VISTA

The goal of this task is to operate the mobile charging vehicle at a number of venues in the City of Chula Vista and perform multiple mobile charging use-cases including demonstrations under emergency or event based dispatching activities.

The Recipient shall:

- Develop a Mobile Charging Demonstration Plan.
- Perform outreach to the City of Chula Vista staff prior to site deployment on community outreach, including public announcements via social media and other outlets. Announcements will include project demonstration times, locations, and services offered.
- Operate the mobile charging vehicle with clear signage and staff oversight to facilitate EV driver utilization.
- Document utilization of the mobile charging vehicle, including total kWh discharged, number and type of vehicles, and a participant summary, which will be included in the summary report on Chula Vista operations.
- Deploy the mobile charging vehicle system during regular business hours at locations identified in the Demonstration Plan that will include but is not limited to: (1) Chula Vista Library, (2) Police Department, (3) City Hall, and (4) one or more neighborhood parking lots.
- Conduct trials of the mobile charging vehicle emergency charging system at a minimum of two locations (to be determined) and demonstrate charging with a coordinated group of participating EVs.
- Develop and submit a summary report on Chula Vista operations. The summary report shall include photos at each site where demonstration occurred.

Products:

- Copy of Chula Vista Mobile Charging Demonstration Plan
- Summary report on Chula Vista operations

TASK 6 PROJECT FACT SHEET

The goal of this task is to develop an initial and final project fact sheet that describes the CEC-funded project and the benefits resulting from the project for the public and key decision makers.

The Recipient shall:

- Prepare an Initial Project Fact Sheet at the start of the project that describes the project and the expected benefits. Use the format provided by the CAM.
- Prepare a Final Project Fact Sheet at the project's conclusion that describes the project, the actual benefits resulting from the project, and lessons learned from implementing the project. Use the format provided by the CAM.
- Provide at least (6) six High Quality Digital Photographs (minimum resolution of 1300x500 pixels in landscape ratio) from the project.

Products:

- Initial Project Fact Sheet
- Final Project Fact Sheet
- High Quality Digital Photographs

TASK 7 DATA COLLECTION AND ANALYSIS

The goal of this task is to collect operational data from the project, to analyze that data for economic and environmental impacts, and to include the data and analysis in the regular progress reports and the Final Report.

The Recipient shall:

- Develop a data collection test plan for deployed charging equipment.
- Troubleshoot any issues identified.
- Collect a minimum of 12 months of data on charging events for the deployed infrastructure including, but not limited to:
 - Charge and session duration
 - Energy delivered (kWh)
 - Peak power delivered (kW)
 - Applicable price for charging, including but not limited to: electric utility tariff, EVSP service contract, or public charger price
 - Payment method
 - Types of vehicles using the charging equipment
 - Number of unique vehicles and frequency of “repeat vehicles”
 - Energy delivered back to grid or facility if a bidirectional charging use case (kWh)
- Submit the data described above electronically in a monthly progress report throughout the duration of the data collection period.
- Develop a plan to provide other relevant data and information throughout the duration of the funding agreement including, but not limited to:
 - Lessons learned
 - Best practices (e.g., permitting and installation processes)
 - Job creation
 - Economic development
 - Increased state revenue
- Submit the data described above electronically in a quarterly progress report throughout the duration of the agreement.
- Identify any planned use of renewable energy in the project.
- Compare any project capability and expectations provided in the proposal to the Energy Commission with actual project capability and accomplishments.
- Collect data, information, and analysis described above and include it in the Final Report.

Products:

- Data Collection Test Plan
- Data collection on charging events will be submitted electronically in a monthly progress report.
- Data collection on other relevant data and information described above will be submitted electronically in a quarterly progress report.
- Data collection information and analysis will be included in the Final Report.

STATE OF CALIFORNIA

STATE ENERGY RESOURCES
CONSERVATION AND DEVELOPMENT COMMISSION

RESOLUTION - RE: RHOMBUS ENERGY SOLUTIONS, INC.

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

RESOLVED, that the CEC approves Agreement ARV-21-015 with Rhombus Energy Solutions, Inc. for a \$998,320 grant to develop and demonstrate a mobile fast-charging solution suited for workplace charging, public charging, and rapidly dispatchable charging services in emergency events for light-duty EVs; and

FURTHER BE IT RESOLVED, that the Executive Director or his/her 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 July 15, 2021.

AYE:

NAY:

ABSENT:

ABSTAIN:

Liza Lopez
Secretariat