California Energy Commission
December 13, 2023 Business Meeting
Backup Materials for Agenda Item No 07b:
Nuvve Holding Corp. (Nuvve)

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

RESOLUTION NO: 23-1213-07b

STATE OF CALIFORNIA

STATE ENERGY RESOURCES
CONSERVATION AND DEVELOPMENT COMMISSION

RESOLUTION: **Nuvve Holding Corp. (Nuvve)**

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 ZVI-23-006 with Nuvve for a $1,910,703 grant to install at least three bi-directional charging ports and electrical equipment for microgrids at two San Diego school district sites. This project will expand vehicle-to-grid capabilities through the integration of bi-directional charging ports with microgrids utilizing battery energy storage systems as backup power. Nuvve will develop a scalable vehicle-to-grid and vehicle-to-building blueprint to demonstrate opportunities for other school districts in California to transition to zero-emission school buses and bi-directional charging infrastructure; 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 December 13, 2023.

AYE:
NAY:
ABSENT:
ABSTAIN:

Dated:

_____
Kristine Banaag
Secretariat

CALIFORNIA ENERGY COMMISSION

STATE OF CALIFORNIA CEC-270 (Revised 10/2022)

GRANT REQUEST FORM (GRF)

A. New Agreement Number

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

New Agreement Number: ZVI-23-006

B. Division Information

1. Division Name: Fuels and Transportation
2. Agreement Manager: Lauren Jansen
3. MS: Not Applicable
4. Phone Number: (916) 931-9605

C. Recipient's Information

1. Recipient's Legal Name: Nuvve Holding Corp.
2. Federal ID Number: 86-1617000

D. Title of Project

Title of project: RESCHOOL: Resilient Energy Solutions for Schools

E. Term and Amount

1. Start Date: 12/13/2023
2. End Date: 03/31/2026
3. Amount: $1,910,703

F. Business Meeting Information

1. Are the ARFVTP agreements $75K and under delegated to Executive Director? No
2. The Proposed Business Meeting Date: 12/13/2023
3. Consent or Discussion? Discussion
4. Business Meeting Presenter Name: Lauren Jansen
5. Time Needed for Business Meeting: 5 minutes
6. The email subscription topic is: Clean Transportation Program, V2G Equipment, Vehicle-Grid Integration

Agenda Item Subject and Description:

Nuvve Holding Corp. (Nuvve). Proposed resolution approving agreement ZVI-23-006 with Nuvve for a $1,910,703 grant to install at least three bi-directional charging ports and electrical equipment for microgrids at two San Diego school district sites, and adopting staff's determination that this action is exempt from CEQA. This project will expand vehicle-to-grid capabilities through the integration of bi-directional charging ports with microgrids utilizing battery energy storage systems as backup power. Nuvve will develop a scalable vehicle-to-grid and vehicle-to-building blueprint to demonstrate opportunities for other school districts in California to transition to zero-emission school buses and bi-directional charging infrastructure. (General Fund Funding) Contact: Lauren Jansen (Staff Presentation: 5 minutes)

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:

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. 15301,15303, and 15304

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, are categorically exempt from the provisions of the California Environmental Quality Act (CEQA). This project involves installation of three new bidirectional charging stations at a school transportation facility in San Diego, as well as a new microgrid controller and battery energy storage system. The equipment will be installed in existing, paved parking lots, involving negligible or no expansion of existing or former use of the facility. Therefore, the project falls within section 15301 and will not have a significant effect on the environment.

Cal. Code Regs., tit. 14, sec. 15303 provides that projects which consist of construction and location of limited numbers of new, small facilities or structures; installation of small new equipment and facilities in small structures; and the conversion of existing small structures from one use to another where only minor modifications are made in the exterior of the structure, are categorically exempt from the provisions of CEQA. This project consists of installation of three new bidirectional charging stations, as well as a new microgrid controllers and battery energy storage

systems to two existing sites. The equipment will be installed in existing, paved parking lots. Therefore, the project falls within section 15303 and will not have a significant effect on the environment.

Cal. Code Regs., tit. 14, sec. 15304 provides that projects which consist of minor public or private alterations in the condition of land, water, and/or vegetation which do not involve the removal of healthy, mature, scenic trees except for forestry and agricultural purposes, are categorically exempt from the provisions of CEQA. The charger installations across the existing facilities will require minor trenching of concrete where the single port bi-directional chargers will be placed and backfilling where the surface is restored. Each site is used as a parking lot, which does not have vegetation. There will be no removal of healthy nature or scenic nature. Therefore, the project falls within section 15304 and will not have a significant effect on the environment.

The project 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.

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.

Not applicable

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. 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
Energetics, a Div. Of VSE Corporation	$ 149,939	$10,140
University of California, Riverside	$ 275,000	$0

I. Vendors and Sellers for Equipment and Materials/Miscellaneous

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

Vendor/Seller Legal Company Name	CEC Funds	Match Funds
TBD Based on Selection of Equipment	$407,000	$35,000

J. 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
San Diego Unified School District
Cajon Valley Union School District
University of California, Riverside
Energetics, a Div. Of VSE Corporation

K. 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
General Fund	FY 21/22	601.129ZEV	$1,910,703

TOTAL Amount: $1,910,703

R&D Program Area: Not applicable

Explanation for "Other" selection: Not applicable

Reimbursement Contract #: Not applicable

Federal Agreement #: Not applicable

L. Recipient's Contact Information

1. Recipient's Administrator/Officer

Name: Hailey Johnson

Address: 2488 Historic Decatur Road, Suite 200

City, State, Zip: San Diego, CA, 92106

Phone: 619-483-3448

E-Mail: hjohnson@nuvve.com

2. Recipient's Project Manager

Name: Erich Buss

Address: 2488 Historic Decatur Road, Suite 200

City, State, Zip: San Diego, CA, 92106

Phone: 757-570-0071

E-Mail: ebuss@nuvve.com

M. Selection Process Used

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

Selection Process	Additional Information
Competitive Solicitation #	GFO-22-612
First Come First Served Solicitation #	Not Applicable
Other	Not Applicable

N. Attached Items

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

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

Approved By

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

Agreement Manager: Lauren Jansen

Approval Date: 10/18/2023

Office Manager: Elizabeth John

Approval Date: 10/18/2023

Deputy Director: Melanie Vail

Approval Date: 11/8/2023

Exhibit A
SCOPE OF WORK

TECHNICAL TASK LIST

Task #	CPR	Task Name
1		Administration
2		Planning, Design and Engineering
3		Purchase Orders and Compatibility
4		Installation and Compliance
5	X	Close Out and Commissioning
6		Grid Integration and Bidirectionality
7		Blueprint
8		Operations and Reliability
9		Semi-Annual Electric Vehicle Charger Inventory Reports
10	X	Data Collection and Analysis
11		Project Fact Sheet

KEY NAME LIST

Task #	Key Personnel	Key Subcontractor(s)	Key Partner(s)
1	Erich Buss, Project Manager – Nuvve Holding Corp. (Nuvve) Hailey Johnson, Project Coordinator – Nuvve	• University of California, Riverside • Energetics, a division of VSE Corporation (Energetics)	• San Diego Unified School District • Cajon Valley Union School District
2	Erich Buss, Project Manager – Nuvve Hailey Johnson, Project Coordinator – Nuvve	• University of California, Riverside • Energetics	• San Diego Unified School District • Cajon Valley Union School District
3	Erich Buss, Project Manager – Nuvve	N/A	• San Diego Unified School District

Task #	Key Personnel	Key Subcontractor(s)	Key Partner(s)
	Hailey Johnson, Project Coordinator – Nuvve Engineering – Nuvve		• Cajon Valley Union School District
4	TBD	TBD	TBD
5	Erich Buss, Project Manager – Nuvve Hailey Johnson, Project Coordinator – Nuvve	N/A	• San Diego Unified School District • Cajon Valley Union School District
6	Erich Buss, Project Manager – Nuvve Hailey Johnson, Project Coordinator – Nuvve Engineering – Nuvve	• University of California, Riverside • Energetics	• San Diego Unified School District • Cajon Valley Union School District
7	Erich Buss, Project Manager – Nuvve Hailey Johnson, Project Coordinator – Nuvve Dr. Alfredo A. Martinez-Morales – University of California, Riverside	• University of California, Riverside • Energetics	N/A

Task #	Key Personnel	Key Subcontractor(s)	Key Partner(s)
8	Erich Buss, Project Manager – Nuvve Hailey Johnson, Project Coordinator – Nuvve Engineering – Nuvve	N/A	• San Diego Unified School District • Cajon Valley Union School District
9	Erich Buss, Project Manager – Nuvve Hailey Johnson, Project Coordinator – Nuvve	• University of California, Riverside • Energetics	• San Diego Unified School District • Cajon Valley Union School District
10	Erich Buss, Project Manager – Nuvve Hailey Johnson, Project Coordinator – Nuvve Engineering – Nuvve	N/A	N/A
11	TBD	TBD	TBD

GLOSSARY

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

Term/ Acronym	Definition
AB	Assembly Bill

Term/ Acronym	Definition
AC	Alternating-Current. A charger that operates on a circuit greater than 200 volts and transfers AC electricity to a device in an EV that converts AC to direct current to charge an EV battery.
ADA	Americans with Disabilities Act
ATS	Automatic Transfer Switch
BPT	Bidirectional Power Transfer
BESS	Battery Energy Storage System
CAM	Commission Agreement Manager
CAO	Commission Agreement Officer
CBO	Community-Based Organization
CEC	California Energy Commission
Central System	Charge Point Management System: the central system that manages Charge Points and has the information for authorizing users for using its Charge Points
Charge Point	Physical system where an EV can be charged. A Charge Point has one or more connectors.
Charger	Any connector that can independently provide charge regardless of whether the other connectors associated with a Charge Point are simultaneously charging.
Charging Session	Part of a transaction during which the EV is allowed to request energy.
Charging Station	A physical location with any number of Charge Point(s) and Connector(s) with a unique address. For a charger to be part of a charging station, it must not be further than 0.125 miles (660 feet) from any other charger that is also considered to be part of the same charging station.
Connector	An independently operated and managed electrical outlet on a Charge Point. This usually corresponds to a single physical connector, but in some cases a single outlet may have multiple physical socket types and/or tethered cable/connector arrangements to facilitate different vehicle types (e.g. four-wheeled EVs and electric scooters).
Commissioning	Commissioning activity includes final engineering inspections, unit testing, integration testing and system testing where the full functionality of the microgrid is tested with a simulated grid outage.

Term/ Acronym	Definition
Corrective Maintenance	Maintenance which is carried out after failure detection and is aimed at restoring an asset to a condition in which it can perform its intended function.
CTP	Clean Transportation Program
CPR	Critical Project Review
Depot	Type of "home base" behind-the-fence location where a vehicle is typically kept when not in use (usually parked on a nightly basis).
DC	Direct-Current
DCFC	Direct Current Fast Charger. A charger that enables rapid charging by delivering DC electricity directly to an EV's battery.
Downtime	Downtime is any period of time that a charger is not operational.
ESB	Electric School Bus
EV	Electric Vehicle
EVSE	Electric Vehicle Supply Equipment
EVSP	Electric Vehicle Service Provider
EVITP	Electric Vehicle Infrastructure Training Program
Excluded Downtime	Downtime that is caused by events outside of the control of the funding recipient and is subtracted from total downtime when calculating uptime percentages.
FTD	Fuels and Transportation Division
GFO	Grant Funding Opportunity
GHG	Greenhouse Gas
Hardware	The machines, wiring, and other physical components of an electronic system including onboard computers and controllers.
Installed	Attached or placed at a location and available for use in a charging session.
Interoperability	Successful communication between the software controlling charging on the EV and the software controlling the charger. Interoperability failures are communication failures between the EV and charger that occur while the software of each device is operating as designed.
ISO	International Organization of Standardization
kW	Kilowatt

Term/ Acronym	Definition
kWh	Kilowatthour
Maintenance Event	Any instance in which preventive or corrective maintenance is carried out on equipment.
MDHD	Medium- and heavy-duty
OCPP	Open Charge Point Protocol
Operational	A charging port is considered operational or "up" when its hardware and software are both online and available for use, or in use, and the charging port successfully dispenses electricity as expected.
Operative	A state indicating the charger is operational and available to charge or currently charging.
Operative Status	A status reported by the charger's onboard software indicating whether the charger is in an operative state. The status may directly report 'Operative' or some other status that indirectly indicates the charger is in an operative state. Conversely, the charger may report 'Inoperative' or some other status indicating that it is in not in an operative state.
Preventive Maintenance	Maintenance that is regularly and routinely performed on physical assets to reduce the chances of equipment failure and unplanned machine downtime.
Private	Charging ports located at parking space(s) that are privately owned and operated, often dedicated to a specific driver or vehicle (for example, a charging port installed in a garage of a single-family home).
PO	Purchase Order
PTO	Permission to Operate
Public	Charging ports located at parking space(s) designated by the property owner or lessee to be available to and accessible by the public.
Recipient	Nuvve Holding Corp. or Nuvve
SB	Senate Bill
Shared Private	Charging ports located at parking space(s) designated by a property owner or lessee to be available to, and accessible by, employees, tenants, visitors, and residents. Examples include workplaces and shared parking at multifamily residences.

Term/ Acronym	Definition
Software	A set of instructions, data or programs used to operate computers and execute specific tasks.
UL	Underwriters Laboratories
Uptime	A charging port is considered "up" when its hardware and software are both online and available for use, or in use, and the charging port successfully dispenses electricity in accordance with requirements for minimum power level. Uptime is the percentage of time a charging port is "up".
V2G	Vehicle-to-Grid
VGI	Vehicle Grid Integration
WBS	Work Breakdown Schedule
ZEV	Zero-emission vehicle

Background

The Budget Act of 2021 (Assembly Bill (AB) 128, Ting, Chapter 21, Statutes of 2021, as amended by Senate Bill (SB) 129, Skinner, Chapter 69, Statutes of 2021 and SB 170, Skinner, Chapter 240, Statutes of 2021) appropriated $785,000,000 from the General Fund to support infrastructure deployments and manufacturing projects for zero-emission light-duty and medium- and heavy-duty (MDHD) vehicles.

AB 118 (Núñez, Chapter 750, Statutes of 2007), created the Clean Transportation Program (CTP). 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 CTP through January 1, 2024. The CTP 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-, MDHD vehicle technologies.
- Retrofit MDHD 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 April 3, 2023, the CEC released a Grant Funding Opportunity (GFO) 22-612 entitled "Electric School Bus Bi-Directional Infrastructure." This competitive grant solicitation was to fund projects that support the ability to enable managed charging and bi-directional power flow for electric school buses (ESBs) and their associated infrastructure. In response to GFO-22-612, the Recipient submitted application #03 which was proposed for funding in the CEC's Notice of Proposed Awards on September 27, 2023. GFO-22-612 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:

The deployment of vehiclegrid integration (VGI), vehicle-to-grid (V2G), and microgrids in California face various barriers. Scientific and technological challenges include insufficient understanding of the relevant processes, inadequate data acquisition technologies, and a lack of detailed engineering designs. Market barriers include limited consumer knowledge and a shortage of system supply and maintenance infrastructure. Institutional obstacles involve regulatory hurdles and a lack of adopted standards. Finally, cost may be a financial hurdle to customers and fleet managers if adequate funding for implementation and deployment are not accessible. These barriers persist due to the complexity of the technologies, the emerging nature of the field, and financial considerations.

Now is the time to address these barriers in light of California's ambitious clean energy goals, climate change mitigation, the necessity of grid resilience, and the potential for economic opportunities and growth. The Recipient specializes in V2G technology and has developed innovative platforms and software solutions for VGI. By utilizing its expertise, the Recipient can contribute to the advancement and wider adoption of VGI and V2G systems.

Goals of the Agreement:

The goal of this Agreement is to demonstrate VGI at two California school district project sites. The planning, execution, commissioning, testing, operations, and data collection and analysis of the two use cases in this project will inform the development

of a blueprint as a replicable approach to help other school bus fleets transition to zero-emission and bi-directional charging infrastructure.

Objectives of the Agreement:

The objective of this Agreement is to develop a microgrid at two project sites, which includes deploying and commissioning at least three new bi-directional electric vehicle supply equipment (EVSE), utilizing three existing EVSEs, in addition to the interconnection and operability of two Battery Energy Storage Systems (BESS). By the end of the agreement term, each project site will have successfully discharged energy back to the grid and/or applicable BESS at least five times. Additionally, each site will demonstrate at least one successful islanding operation of at least one hour duration and participate in at least five grid service events.

The success of the discharges and islanding will be measured via the Recipient's GIVe™ system logs and metering data.

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 that includes the CAM and may include the Commission Agreement Officer (CAO) and a representative of the CEC 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.
- Provide a written statement of project activities that have occurred after the notice of proposed awards but prior to the execution of the agreement using match funds. If none, provide a statement that no work has been completed using match funds prior to the execution of the agreement. All pre-execution match expenditures must conform to the requirements in the Terms and Conditions of this Agreement.
- Discuss the following administrative and technical aspects of this Agreement:
  - Agreement Terms and Conditions
  - Critical Project Review (CPR) (Task 1.2)
  - Match fund documentation (Task 1.7) No reimbursable work may be done until this documentation is in place.
  - Permit documentation (Task 1.8)
  - Subawards needed to carry out project (Task 1.9)
  - The CAM's expectations for accomplishing tasks described in the Scope of Work
  - An updated Schedule of Products and Due Dates

- Monthly Calls (Task 1.4)
- Quarterly Progress Reports (Task 1.5)
- Technical Products (Product Guidelines located in Section 5 of the Terms and Conditions)
- Final Report (Task 1.6)

Recipient Products:

- Updated Schedule of Products
- Updated List of Match Funds
- Updated List of Permits
- Written Statement of Match Share Activities

CAM Product:

- Kick-Off Meeting Agenda

Task 1.2 Critical Project Review (CPR) Meetings

CPRs provide the opportunity for frank discussions between the CEC and the Recipient. The goal of this task is to determine if the project should continue to receive CEC 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 CAO, the Fuels and Transportation Division (FTD) program lead, other CEC staff and Management as well as other individuals selected by the CAM to provide support to the CEC.

The CAM shall:

- Determine the location, date, and time of each CPR meeting with the Recipient. These meetings generally take place at the CEC, but they may take place at another location or remotely.
- 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 CEC 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 and the CAM. 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 CAM.

  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 CAM will determine the appropriate meeting participants.

  The administrative portion of the meeting shall be a discussion with the CAM about the following Agreement closeout items:

  - What to do with any equipment purchased with CEC funds (Options)
  - CEC request for specific "generated" data (not already provided in Agreement products)
  - Need to document Recipient's disclosure of "subject inventions" developed under the Agreement, if applicable
  - "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 Calls

The goal of this task is to have calls at least monthly between 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.

Task 1.5 Quarterly 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 Quarterly 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. 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.

Product:

- Quarterly Progress Reports

Task 1.6 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 and is limited to 25-pages. If the Recipient has obtained confidential status from the CEC 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.

In addition to any other applicable requirements, the Final Report must comply with the Americans with Disabilities Act (ADA) of 1990 (42 U.S.C. 12101 et seq.), which prohibits discrimination on the basis of disability; all applicable regulations and guidelines issued pursuant to the ADA; Cal. Gov. Code sects. 7405 and 11135; and Web Content Accessibility Guidelines 2.0, or a subsequent version, as published by the Web Accessibility Initiative of the World Wide Web Consortium at a minimum Level AA success criteria.

The Recipient shall:

- Prepare an Outline of the Final Report, if requested by the CAM.
- Prepare a Final Report complying with ADA requirements and 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 Final Report in Microsoft Word format or similar electronic format as approved by the CAM.

Products:

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

Task 1.7 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 CEC budget for this task will be zero dollars, the Recipient may utilize match funds for this task. 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 CAM at least 2 working days prior to the kick-off meeting. If no match funds were part of the proposal that led to the CEC awarding this Agreement and none have been identified at the time this Agreement starts, then state such in the letter. If match funds were a part of the proposal that led to the CEC awarding this Agreement, then provide in the letter a list of the match funds that identifies the:
  - Amount of 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 CAM if during the course of the Agreement additional match funds are received.

- Notify the CAM 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 1.8 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 CEC budget for this task will be zero dollars, the Recipient may 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 CAM 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 CAM.
    - As permits are obtained, send a copy of each approved permit to the CAM.

- If during the course of the Agreement permits are not obtained on time or are denied, notify the CAM 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 1.9 Obtain and Execute Subawards

The goal of this task is to ensure quality products and to procure subrecipients 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.

The Recipient shall:

- Manage and coordinate subrecipient activities.
- If requested by the CAM, submit a draft of each subaward required to conduct the work under this Agreement to the CAM for review.
- If requested by the CAM, submit a final copy of the executed subaward.
- If Recipient intends to add new subrecipients or change subrecipients, then the Recipient shall notify the CAM.

Products:

- Letter describing the subawards needed, or stating that no subawards are required
- Draft subcontracts (if requested)
- Final subcontracts (if requested)

TECHNICAL TASKS

TASK 2 PLANNING, DESIGN AND ENGINEERING

The goal of this task is to plan and coordinate the project activities, milestones, schedules, and resources for two project sites (i.e., San Diego Unified School District and Cajon Valley Union School District, respectively). This goal aims to ensure effective communication, risk management, and engineering design for the successful implementation of the project.

The Recipient shall:

- Develop and submit to the CAM a *Site Specific Project Schedule*, which is to include milestones and meeting schedules with all relevant stakeholders. This schedule will

also define the objectives of each project site, including the desired outcomes, deliverables, and measurable success criteria.
- Create and submit to the CAM a comprehensive *Work Breakdown Schedule (WBS)*. This will break the project deliverables down into smaller, manageable work packages.
- Create and submit to the CAM a *Communication Plan* and a *Risk Management Plan* to facilitate smooth coordination and minimize project risks at both sites. The communication plan will facilitate clear and consistent communication among stakeholders, while the risk management plan will outline the project's processes, planned mitigation, and responsibilities for risk management.
- Determine the need for additional metering at each project site.
- Obtain *Utility Drawings* and submit to the CAM, if required.
- Negotiate and sign *Installation Contracts* with contractors and submit to the CAM.

Products:

- Site Specific Project Schedule
- WBS
- Communication Plan
- Risk Management Plan
- Utility Drawings
- Installation Contracts

TASK 3 PURCHASE ORDERS AND COMPATABILITY

The goal of this task is to purchase all components necessary to implement the microgrid, including the BESS, at both project sites and at least 3 bi-directional Direct Current Fast Chargers and ensure all components are compatible with at least 3 customer-owned ESBs per project site, for 2 school districts in 2 locations.

The Recipient shall:

- Prepare and submit to the CAM an *Equipment List* that includes a list of all equipment and service agreements that will be purchased for the project. Any equipment listed must meet the requirements listed in the Minimum Technical Requirements in the Eligibility Requirements section of GFO-22-612. Recipient must receive CAM Written Approval prior to purchasing equipment on the Equipment List.
- Provide CAM with a *Written Statement of Charger and Bus Compatibility* signed by charger manufacturer and bus manufacturer confirming interoperability.
- Coordinate the ordering and delivery of EVSE for San Diego Unified School District and provide the *EVSE Purchase Order (PO)* to the CAM.
- Coordinate ordering and delivery of BESS and additional required equipment for both sites and provide *BESS PO, Automatic Transfer Switch (ATS) PO*, and *Microgrid Controller PO* for each applicable site.

Products:

- Equipment List
- Written Statement of Charger and Bus Compatibility
- EVSE PO
- BESS PO
- ATS PO
- Microgrid Controller PO

TASK 4 INSTALLATION AND COMPLIANCE

The goal of this task is to execute and manage the installation of the project, including tasks such as obtaining permits, conducting construction activities, and ensuring interoperability and reliability across all installed EVSE, BESS, and associated infrastructure, as well as providing proof of compliance with Underwriters Laboratories (UL) 1741, Open Charge Point Protocol (OCPP) 2.0.1 and International Organization of Standardization (ISO) 15118-20.

The Recipient shall:

- Provide *Proof of UL 1741 Supplement compliance* for existing site's EVSEs to the CAM.
- Prepare the dynamic *Bidirectional Power Transfer (BPT) Test Plan* and provide a copy to the CAM. This plan shall include, but is not limited to, an extensive rigorous test plan to ensure interoperability and reliability to validate the ability to provide stringent grid services through the EVSEs leveraging of PLC and ISO 15118-20 including dynamic BPT.
- Prepare *BPT Test Plan Results* and provide a copy to the CAM.
- Provide a copy of the *Certification of OCPP 2.0.1 compliance* for newly installed EVSE to the CAM. OCPP 2.0.1 natively supports bidirectionality.
- Provide a copy of the *Certification of UL 1741 Supplement compliance* for new BESS and EVSEs to the CAM.
- Submit an *AB 841 Certification* that certifies the project has complied with all AB 841 (2020) requirements specified in Exhibit C or describes why the AB 841 requirements do not apply to the project. The certification shall be signed by Recipient's authorized representative.
- Submit *Electric Vehicle Infrastructure Training Program (EVITP) Certification Numbers* of each EVITP certified electrician that installed EV charging infrastructure or equipment. EVITP Certification Numbers are not required to be submitted if AB 841 requirements do not apply to the project.
- Oversee the construction start and preconstruction meeting. Provide at least (6) six *High Quality Digital Photographs* of preconstruction to the CAM.
- Initiate the installation of additional metering, if determined necessary in Task 2.
- Initiate additional electrical modifications to existing infrastructure. This shall include but is not limited to: moving source and/or load wiring as needed, evaluating necessity for additional metering and/or submetering, and running UG Conduit and

Cables for anticipated BESS. Provide at least (6) six *High Quality Digital Photographs* of UG Conduit and Cables to the CAM.
- Obtain *Permission to Operate (PTO)* from applicable utilities. Provide a copy to the CAM.
- Manage the installation of EVSE, BESS, Microgrid controller, ATS, and additional metering as required at each project site. Provide at least (6) six *High Quality Digital Photographs* of installation to the CAM.
- Ensure the completion of all construction activities.

Products:

- Proof of UL 1741 Supplement compliance for existing site's EVSE
- BPT Test Plan
- BPT Test Plan Results
- Certification of OCPP 2.0.1 Compliance
- Certification of UL 1741 Supplement compliance for new BESS and EVSEs
- AB 841 Certification
- EVITP Certification
- High Quality Digital Photographs of Preconstruction
- High Quality Digital Photographs of UG Conduit and Cables
- PTO
- High Quality Digital Photographs of Installation

TASK 5 CLOSE OUT AND COMMISSIONING

The goal of this task is to complete remaining activities which includes commissioning the EVSE; as well as compiling lessons learned, disseminating information, creating a commissioning closeout presentation, and submitting a commissioning closeout report.

The Recipient shall:

- Ensure the construction at both sites is fully completed and meets all requirements. Provide at least (6) six *High Quality Digital Photographs* of completed construction and commissioned EVSEs at San Diego Unified School District to the CAM.
  - Requirements include, but are not limited to, three functional EVSEs, a BESS, ATS and a microgrid controller at each site
- Perform commissioning closeout tasks including a *Commissioning Closeout Presentation* and *Commissioning Closeout Report* and provide to the CAM which shall include, but is not limited to:
  - Lessons learned
  - Disseminating information to the operations team
  - A written notification of completion of commissioning
  - Testing results of actual equipment commissioned

- Documentation of all aspects of the site that may become useful for troubleshooting or operational issues in the future. This includes asset information of all chargers onsite, which is stored in a secure site record, as well as site diagrams, relevant electrical and network schematics, and any other unique info that may prove useful in the future.

Products:

- High Quality Digital Photographs of Completed Construction and Commissioned EVSEs
- Commissioning Closeout Presentation
- Commissioning Closeout Report

[CPR WILL OCCUR DURING THIS TASK. See Task 1.2 for details.]

TASK 6 GRID INTEGRATION AND BIDIRECTIONALITY

The goal of this task is to demonstrate V2G technology and solidify microgrids at both project sites through the use of BESS, grid forming inverters, and ATS that will be capable of providing power during utility outages, using bi-directional ESBs and EVSE to extend the microgrids' energy capacity (kilowatthour or kWH).

The Recipient shall:

- Create a microgrid with bi-directional ESBs and EVSE at each site, using the ATS or microgrid interconnect device to disconnect some of an adjacent building's premise wiring from the local distribution utility, San Diego Gas & Electric. This will allow the sites to provide power during utility outages. Demonstrate at least one successful islanding operation of at least one hour duration. Demonstrate at least (5) five successful V2G discharge events and provide *V2G Discharge Data* from each project site microgrid system. Provide a copy to the CAM.
- Provide *Utility Statement of Participation in Grid Services*, such as EV-related tariffs, Emergency Load Reduction Program, grid emergency events, demand response, and other utility programs, as available, to the CAM.
- Demonstrate cost saving mechanisms and provide a *Pricing Breakdown* for each project sites' participation in Time of Use, Demand Charge Management, or BESS buffered Demand Charge Management. Provide a copy to the CAM.

Products:

- V2G Discharge Data
- Utility Statement for Participation in Grid Services
- Pricing Breakdown

TASK 7 BLUEPRINT

The goal of this task is to develop a bi-directional charging infrastructure Blueprint that serves the needs of other school districts to plan the installation of bi-directional charging infrastructure.

The Recipient shall:

- Prepare a *Blueprint Outline* that conveys the intended structure of the Blueprint and the intended goals and outcomes of major sections of the Blueprint. The Blueprint should for bi-directional charging infrastructure should be structured as follows:
  - Identify the actions and milestones needed for implementation of bi-directional charging infrastructure.
    - Identify optimal locations for bi-directional charging infrastructure deployment and the rationale for being considered optimal.
    - ESB usage and driving patterns in order to maximize and optimize the type and placement of bi-directional charging infrastructure to support the buses and the grid.

  - Minimize the risks and uncertainties surrounding the design, permitting, planning, and financing of bi-directional charging infrastructure network through engagement.
    - Engage utilities to support grid delivery, reliability, and resiliency.
    - Address impacts of increased charging on utility rates.
    - Engage local jurisdictions and planning organizations to ensure they are involved in the planning and permitting of the infrastructure.
    - Engage regional workplaces, business owners, and operators in the planning process and education on the benefits of bi-directional charging infrastructure.
    - Engage regional Community-Based Organizations (CBOs), community leaders, California Native American Tribes, and potentially affected local residents in the planning process and education on the benefits of zero-emission vehicle (ZEV) transportation. With regional organizations, determine if a community-needs assessment is warranted and develop an appropriate scope.
    - Engage financial institutions to ensure they are educated, involved, and committed to participate in the implementation of the bi-directional charging infrastructure blueprint.

  - Analyze the combination of technologies and systems that offer the best mix of economic, environmental, and technical performance specific to the project/region.
    - Explore innovative bi-directional charging infrastructure options to address potential infrastructure barriers. Technology options may include wireless charging, high-powered charging, overhead catenary systems, solar chargers, robotic chargers, mobile chargers/refuelers, curbside, streetlamp, and intersection chargers, or autonomous garages.

- Include appropriate VGI standards and open standards-based network communications.
- Include the ability to support emerging connectors and/or interfaces for heavy-duty vehicles, open standards-based network communications, the inclusion of appropriate VGI standards, and/or other methods for enhancing grid-reliability by providing data to utilities to predict charging behavior and associated impacts on the grid.
- Include the use of interoperable MDHD charging connectors and/or charging interfaces compatible with MDHD vehicles sold by multiple original automotive equipment manufacturers for widespread use across California and North America.
- Include other methods for enhancing grid-reliability by providing data to utilities to predict charging behavior and associated impacts on the grid.

- Document actions or steps adopted by the local jurisdiction and the impact of those actions or steps on the development of bi-directional charging infrastructure.

- Identify analytical tools, software applications, and data needed to improve future bi-directional charging infrastructure planning activities.

- Identify each task or area of responsibility required of the project partners and stakeholder groups to develop a replicable approach for other fleets transitioning to zero-emission and bi-directional charging infrastructure.

- Describe the outreach strategy necessary for local communities, supported by education and outreach materials appropriate for potentially affected residents, in the languages needed for those communities.

- Describe collaboration with community colleges, CBOs and community leaders to develop workforce development strategies that enable training, education, and readiness for the local community workforce to obtain the requisite knowledge, skills, and ability to develop, support, and maintain the MDHD ZEV fleets.

- Summarize the types of jobs that could be created for the local community.

- Identify goals to reduce greenhouse gas (GHG) emissions, criteria air pollutants, and toxic air contaminants for the region, and the emitters at the local level that would need to be targeted.

- Identify the benefits that would accrue to High Fire-Threat Districts, disadvantaged communities, low-income communities, priority populations, and/or tribal lands to the maximum extent possible. Address health and safety, access and education, financial benefits, economic development, and consumer protection.

- Complete *Draft Blueprint* and provide to the CAM.
- Incorporate feedback as provided by the CAM in a *Final Blueprint* and provide to the CAM.

Products:

- Blueprint Outline
- Draft Blueprint
- Final Blueprint

TASK 8 OPERATIONS AND RELIABILITY

Task 8.1 Operations

The Recipient shall:

- Operate the installed chargers during the term of this agreement.
- Ensure that the charger uptime for each charger installed in the project is least 97 percent of each year for six years after the beginning of operation.

Without limitation to other rights and remedies which the CEC may have, including but not limited to survival provisions specified in the Terms and Conditions of this agreement, this requirement to ensure operationality for six years after the beginning of operation shall survive the completion or termination date of this agreement. In addition to other requirements in the Terms and Conditions of this agreement, all CEC-reimbursable expenditures must be incurred within the agreement term.

Task 8.2 Recordkeeping

The goal of this task is to collect and maintain records of charger operation and reliability. The Recipient shall collect and retain the remote monitoring and maintenance records specified in this section. The Recipient shall collect and retain records for each charger installed and operated as part of this agreement. The Recipient shall retain records for each charger for 9 years from the date the charger begins operation.

The Recipient Shall:

- Collect and retain the Remote Monitoring and Maintenance data below from each charger installed and operated as part of this Agreement.
- Retain the data below for 9 years from the date the charger begins operation. Provide records to the CEC within 10 business days of request.
  1. Provide digital records in a comma separated values file unless another file format is approved by the CEC for the request.
  2. Provide a clear and understandable data dictionary that describes each data element and any associated units with all digital records.

Remote Monitoring Data

1. Connector operative status and error codes on a 15-minute interval including charger identification number and date-time stamp.
   a. If the Recipient uses OCPP 1.6 to communicate between the charger and central system, the recipient shall collect the OCPP 1.6 Protocol Data Unit Status Notification.
2. A record of each customer attempt to initiate a charge including charger identification number, transaction identification number, and date-time stamp.
3. A record of each failed attempt to charge including charger identification number, transaction identification number, and date-time stamps and reason for failure.

Maintenance Data

1. Reports of inoperative chargers or charger failures resulting in inability to charge, such as a customer complaint, internal diagnostics, or inspection.
2. Records of any maintenance conducted on chargers installed and operated as part of the agreement. Records should specify the following:
   a. Date and time of the maintenance event
   b. Whether maintenance was corrective or preventive in nature
   c. Whether and for how long the charger was in an inoperative state prior to maintenance.
   d. Whether the charger was in an operative state following maintenance

Products:

1. Remote Monitoring Records
2. Maintenance Records
3. Data Dictionary

Task 8.3 Maintenance Requirements

The goal of this task is to increase reliability through timely and effective preventive and corrective maintenance. The Recipient shall conduct maintenance on each charger installed and operated as part of the Agreement as specified in this section.

The Recipient Shall:

- Conduct preventive maintenance, as specified by the charger manufacturer, on the charger hardware by a certified technician annually. The time interval between consecutive preventive maintenance visits to any charger shall be no more than 13 months.

- Complete corrective maintenance within 10 business days of the beginning of a time when the charger is inoperative or exhibiting failures that result in an inability to charge.
- Report on preventive and corrective maintenance in each Quarterly Report on Charger Reliability and Maintenance described in Task 8.4.

Products:
- Report on preventive and corrective maintenance in maintenance section of Quarterly Report on Charger Reliability and Maintenance Report described in Task 8.4.

Task 8.4 Reporting

The goal of this task is to provide reports on charger reliability and maintenance.

The Recipient shall:

- Write and submit to the CEC quarterly reports on charger reliability and maintenance. Each report shall include:
  - A summary of charger downtime, including total downtime and the number and frequency of downtime events, the minimum, median, mean, and maximum duration, and the causes of downtime events. Downtime events include:
    a. The time that the status or error codes returned by a charger indicate that it is in a state other than an operative state (inoperative). The duration of time counted as downtime based on remote monitoring will be the interval between the time of the first charger status record that the charger is inoperative, or the failure of the charger to send operational status on specified interval, and the subsequent status record that the charger is operative.
    a. A charger is in an inoperative state or failing to deliver charge, which may be known by consumer notification, internal diagnostics, inspection, or other methods.
    b. In the event there is a conflict between the sections (a) and (b), the operative state of the charger shall be determined by (b).
  - A summary of Excluded Downtime, including total excluded downtime and the number and frequency of excluded downtime events, the minimum, median, mean, and maximum duration, and the causes of excluded downtime events. 'Excluded Downtime' includes:
    a. **Grid Power Loss:** Power supplied by third-party provider is not supplied at levels required to for minimum function of chargers. This may include, but is not limited to, service outages due to utility equipment malfunction or public safety power shut-offs. This does not include power generation or storage equipment installed to serve the station exclusively. Documentation from power provider detailing outage is required to claim this as excluded time.

b. **Vandalism and/or Theft:** Any physical damage to the charger and / or station committed by a third-party. This may include, but is not limited to, theft of charging cables, damage to connectors from mishandling, damage to screens, etc. A maximum of 5 days may be claimed as excluded downtime for each event. The CAM may authorize additional excluded downtime for extenuating circumstances on a case-by-case basis. A police report or similar third-party documentation is required to claim this as excluded time.
c. **Communication Network Outages:** Loss of communication due to cellular or internet service provider system outages can be claimed as excluded downtime provided the chargers revert to a free charge state during communication losses. A free charge state is when the charger is operational and dispenses energy and free of charge.
d. **Planned Outage for Maintenance and/or Upgrade:** Any planned maintenance or upgrade work that takes the charger offline. This must be scheduled in advance of the charger being placed in an inoperative state. The maximum downtime that can be excluded for planned maintenance and/or upgrade is 24 hours for any 12-month period.
e. **Force Majeure:** Downtime caused by unforeseen events, not described in (a) – (d) above, that are outside of the control of the Recipient may be treated as Excluded Downtime upon approval by the CEC. For such downtime to be considered, the Recipient shall include a narrative description of the event and why it was out of their control in the annual report for the CEC to review and make a determination. The CEC has sole discretion in approving downtime in this category.
f. **Operating Hours:** Hours in which the charger in in an operative state but are outside of the identified hours of operation of the charging station.

- A summary and calculation of uptime. Each report shall include, for the 12 months preceding the report, the monthly uptime percentage of each charger (Charger Uptime) installed and operated as part of this agreement. Charger uptime shall be calculated as:

$$U_c = \frac{T_c - D_c + E_c}{T_c}$$

U_c = Charger Uptime
T_c = Total charger minutes in the reporting period
D_c = Total charger downtime for the reporting period, in minutes.
E_c = Total charger excluded downtime in the reporting period, in minutes.

- A summary of charge data, including:
  a. Total number of attempts to charge
  b. Total number of failed attempts to charge

c. Failed attempts to charge by the following categories:
    i. Number of charge attempts that failed due to payment system failures
    ii. Number of charge attempts that failed due to interoperability failures
    iii. Number of charge attempts that failed due to charger hardware or software failures
    iv. Number of charge attempts that failed due to other reasons
b. A summary and explanation of "other reasons" for charge attempt failures
c. A description of steps taken to reduce the number of failed charge attempts, and the success rate of those steps

- The total number of maintenance dispatch events that occurred since the last report, the number of days to complete each maintenance event reported, and a narrative description of significant maintenance issues. Details of all excluded downtime and a narrative description of events that caused the excluded downtime.

Product:

- Quarterly Report on Charger Reliability and Maintenance, delivered with each Quarterly Progress Report, described in Task 1.5.

TASK 9 SEMI-ANNUAL ELECTRIC VEHICLE CHARGER INVENTORY REPORTS

The goal of this task is to provide information on the number of chargers in the Recipient's charging network in California, including both public and shared private, serving all vehicle sectors (light-, MDHD) excluding any charger used solely for private use at a single-family residence or a multifamily housing unit with four or fewer units.

The Recipient shall:

- Prepare an *Electric Vehicle Charger Inventory Report,* in a format provided by the CAM, that includes:
    - For chargers serving light-duty EVs:
        - Number of public AC charging ports aggregated at the county level by charging network provider
        - Number of shared private AC charging ports aggregated at the county level by charging network provider
        - Number of public direct-current (DC) fast charging ports aggregated at the county level by charging network provider
        - Number of shared private DC fast charging ports aggregated at the county level by charging network provider
    - For chargers serving MDHD vehicles:
        - Number of public AC charging ports aggregated at the county level by charging network provider
        - Number of shared private AC charging ports aggregated at the county level by charging network provider

    - Number of public DC fast charging ports aggregated at the county level by charging network provider
    - Number of shared private DC fast charging ports aggregated at the county level by charging network provider
    - Number of other publicly available charging ports at the county level by charging network provider
    - Number of other depot charging ports by power output (less than 50 kilowatts (kW), between 50 – 150 kW, 150 kW – 350 kW, 350 kW and above) at the county level by charging network provider (if applicable)
- Submit the *Electric Vehicle Charger Inventory Report* to the CAM no later than 30 calendar days after the Agreement is executed and then each calendar half-year thereafter. Reports are due at the end of July and end of January.

Product:

- Electric Vehicle Charger Inventory Report

Task 10 DATA COLLECTION AND ANALYSIS

The goal of this task is to collect operational data from the project and to analyze that data for economic and environmental impacts.

The Recipient shall:

- For all EV chargers and charging stations installed on or after January 1, 2024:
    - Comply with recordkeeping and reporting standards as described in CEC's regulations. These requirements are not applicable to those EV chargers and charging stations installed at residential real property containing four or fewer dwelling units.
    - Comply with all industry best practices and charger technology capabilities that are demonstrated to increase reliability, as described in CEC's regulations.
    - Without limitation to other requirements in this grant agreement, Recipient shall comply with any other regulatory requirements, including but not limited to uptime requirements and operation and maintenance requirements. Such regulatory requirements may, but will not necessarily, be enacted after execution of this grant agreement. Once regulations are final, they will apply to work under this grant agreement irrespective of when finalized. Any updates to regulations may also be applicable to work under this grant agreement.
    - If the Recipient is an electric vehicle service provider (EVSP) or other third-party entity that is not the site host, the EVSP or third-party entity shall provide a disclosure to the site host about the site host's right to designate the EVSP or third-party as the entity to report the data on behalf of the site host. The Recipient shall verify receipt by signing the disclosure.

- Collect and provide the following data:
  - Number, type, date and location of chargers installed.
  - Nameplate capacity of the installed equipment, in kW for chargers.
  - Number and type of outlets per charger.
  - Location type, such as street, parking lot, hotel, restaurant or multi-unit housing.
  - Total cost per charger, the subsidy from the CEC per charger, federal subsidy per charger, utility subsidy per charger, and privately funded share per charger.
- Collect and provide 12 months of throughput, usage, and operations data from the project including, but not limited to:
  - Number of charging sessions
  - Average charger station downtime
  - Peak power delivered (kW)
  - Duration of active charging, hourly
  - Duration of charging session, hourly (e.g., vehicle parked but not actively charging)
  - Average session duration
  - Energy delivered (kWh)
  - Average kWh dispensed
  - Types of vehicles using the charging equipment
  - Applicable price for charging, including but not limited to: electric utility tariff, EVSP service contract, or public charger price
  - Payment method for public charging
  - Energy delivered back to grid or facility if a bidirectional charging use case (kWh)
  - Maximum capacity of the new fueling system
  - Normal operating hours, up time, downtime, and explanations of variations
  - Gallons of gasoline and/or diesel fuel displaced (with associated mileage information)
  - Expected air emissions reduction, for example:
    - Non-methane hydrocarbons
    - Oxides of nitrogen
    - Particulate Matter
    - Formaldehyde
  - Duty cycle of the current fleet and the expected duty cycle of future vehicle acquisitions
- Identify any current and planned use of renewable energy at the facility.
- Identify the source of the alternative fuel.
- Describe any energy efficiency measures used in the facility that may exceed Title 24 standards in Part 6 of the California Code Regulations.
- Provide data on potential job creation, economic development, and increased state revenue as a result of expected future expansion.

- Provide a quantified estimate of the project's carbon intensity values for life-cycle GHG emissions.
- Compare any project performance and expectations provided in the proposal to CEC with actual project performance and accomplishments.
- Submit the *Data* described above electronically in a quarterly progress report throughout the duration of the agreement.
- Provide a *Data Collection and Information Analysis Report* that lists and analyzes all the data and information described above.

Products:

- Data submitted with quarterly reports (Task 1.5)
- Data Collection and Information Analysis Report

[CPR WILL OCCUR DURING THIS TASK. See Task 1.2 for details.]

TASK 11 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 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) of pre and post technology installation at the project sites or related project photographs.

Products:

- Initial Project Fact Sheet
- Final Project Fact Sheet
- High Quality Digital Photographs of pre and post technology installation at the project sites or related project photographs