

**GRANT REQUEST FORM (GRF)**



New Agreement EPC-16-061 (To be completed by CGL Office)

ERDD	Ostap Loredo-Contreras	43	916-327-1552
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Nuvve Corporation	27-3711082
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Intelligent Electric Vehicle Integration (INVENT)

7/3/2017	12/31/2020	\$ 4,200,000
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ARFVTP agreements under \$75K delegated to Executive Director.

Proposed Business Meeting Date	6/14/2017	<input type="checkbox"/> Consent	<input checked="" type="checkbox"/> Discussion
Business Meeting Presenter	Ostap Loredo-Contreras	Time Needed:	5 minutes

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

**Agenda Item Subject and Description**

NUVVE CORPORATION. Proposed resolution approving agreement GFO-16-303-14 with Nuvve Corporation for a \$4,200,000 grant to demonstrate large scale electric vehicle fleet integration impacts on the grid, as well as to assess and provide quantification of potential benefits of plug-in electric vehicle's as grid assets amid a suitable population of vehicle users in concentrated and distributed areas

- 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
- If Agreement is considered a "Project" under CEQA:
  - a) Agreement **IS** exempt. (Attach draft NOE)
    - Statutory Exemption. List PRC and/or CCR section number: \_\_\_\_\_
    - Categorical Exemption. List CCR section number: Cal. Code Regs., tit 14, § 15301 -- Cal. Code Regs., tit 14, § 15306
    - Common Sense Exemption. 14 CCR 15061 (b) (3)

Explain reason why Agreement is exempt under the above section:  
 The installation of these vehicles chargers is classified as exempt from the provisions of CEQA under Section 15301 Class 1 existing facilities, and Section 15306 Class 6 data collection. The proposed project consists of minor alterations to existing structures involving no expansion of use and consists only of minor alterations in the condition of the land (in existing parking lot), and data collection. In addition, none of the exceptions to the exemptions apply.
  - b) Agreement **IS NOT** exempt. (Consult with the legal office to determine next steps.)

Check all that apply

<input type="checkbox"/> Initial Study	<input type="checkbox"/> Environmental Impact Report
<input type="checkbox"/> Negative Declaration	<input type="checkbox"/> Statement of Overriding Considerations
<input type="checkbox"/> Mitigated Negative Declaration	

Legal Company Name:	Budget
The Regents of the University of California, San Diego	\$ 1,211,808
Strategen	\$ 74,600
FleetCarma	\$ 40,524
Joel R Point Charging Station Consultant	\$ 60,000
	\$
	\$
	\$
	\$
	\$



## EXHIBIT A Scope of Work

### I. ASK ACRONYM/TERM LISTS

#### A. Task List

Task #	CPR <sup>1</sup>	Task Name
1		General Project Tasks
2		VGI Services & Evaluation
3		Testing & Data Collection
4	X	Enabling Technologies
5		Fleet Management
6		Economics, Markets, Regulations
7		Standards
8		Technology/Knowledge Transfer Activities
9		Evaluation of Project Benefits

#### B. Acronym/Term List

Acronym/Term	Meaning
CAM	Commission Agreement Manager
CAO	Commission Agreement Officer
CPR	Critical Project Review
DER	Distributed Energy Resources
EV	Electrical Vehicle
EVSE	Electrical Vehicle Supply Equipment
INVENT	Intelligent Electric Vehicle Integration
IOU	Investor-Owned Utility
NRTL	Nationally Recognized Testing Laboratory
OASIS	Open-Access Same-Time Information System used by the California ISO
PEV	Plug-in Electric Vehicle
SC	Smart Charging
STPR	Services Test Plan Report
SYSVIEW	System View, an advanced VGI analysis tool
TAC	Technical Advisory Committee
UCSD	University of California San Diego
V2B	Vehicle-to-Building
V2G	Vehicle-to-Grid
VGI	Vehicle-Grid Integration

<sup>1</sup> Please see subtask 1.3 in Part III of the Scope of Work (General Project Tasks) for a description of Critical Project Review (CPR) Meetings.

## **EXHIBIT A**

### **Scope of Work**

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

##### **A. Purpose of Agreement**

The purpose of this Agreement is to fund an Advanced Vehicle-Grid Integration for Fleets project to demonstrate the real-world benefits and serve as a launch pad for wide commercial deployments.

##### **B. Problem/ Solution Statement**

###### **Problem**

Despite limited market success, plug-in electric vehicles (PEVs) are still too expensive for most people. Purchase and ownership costs must be reduced further to enable mass market penetration. However, as the PEV population grows, demands for electricity as a transportation fuel may lead to congestion and overloading on the transmission and local distribution grid. Simultaneously, increasing introduction of renewable energy sources requires that more closely coordinated grid capabilities be adopted to effectively regulate grid voltage and frequency on a real time basis and especially to address the many issues pertaining to the massive morning and afternoon ramping concerns. The CAISO created future scenarios of net load curves to illustrate these changing conditions. Net load is the difference between forecasted load and expected electricity production from variable generation resources. In certain times of the year, these curves produce a “belly” appearance in the mid-afternoon that quickly ramps up to produce an “arch” similar to the neck of a duck represented by the CAISO “Duck Curve.” If comprehensive solutions using multiple approaches are not effectively executed, these issues may result in investor-owned utilities (IOUs) being required to proceed with huge investments in the electric grid infrastructure. This might include a range of expenditures ranging from costly increases for baseload generation capacity build outs to distribution asset upgrades including replacement of local transformers and a broader portfolio of local distribution assets.

###### **Solution**

With vehicle-to-grid (V2G) services capturing different grid value streams such as Frequency Regulation (V2G), Adaptive Power (Smart Charging (SC) – V1G, Smart Charging/Discharging - V2G), and peak-shaving services (V2B) as part of California’s solution, the PEV fleet owner/operator can symbiotically assist in improving and assuring grid stabilization while earning revenues. These revenues can be shared with the ratepayer to save in transportation energy costs and thereby effectively lower the cost of PEV ownership. V2G services can also help mitigate intermittency issues associated with renewables by (1) continuously injecting or absorbing energy to and from the grid every few seconds to help to regulate frequency; and (2) be orderly and intelligently dispatched over a larger time period to mitigate the enormous needs of for capacity ramping in the morning and afternoon zones of the “Duck Curve.” Perhaps most importantly, PEVs represent one of the most appropriate solutions to act as dispatchable distributed energy resources (DER) during California’s renewable-rich mid-day periods by “feeding the belly of the Duck,” or absorbing excess energy which might otherwise be curtailed or create transmission network congestion problems. The services are investigated from different aspects as shown in Table 1:

# EXHIBIT A Scope of Work

Technical
Markets
Economics
Regulations
EV Owner

Table 1 Service Aspects

The project will involve 10 BMW i3, 40 Nissan Leaf and Mitsubishi EVs in different fleets at the UCSD site. The architecture used in the project is based on EVs, electrical vehicle supply equipment (EVSE) and a cloud-based aggregator/service platform shown in Figure 1. The aggregator receives external signals (frequency, Automatic Gain Control (AGC), solar forecast, voltage, current) and communicates with the aggregated EVs via the EVSEs to direct them to charge or discharge according to predefined service requirements.

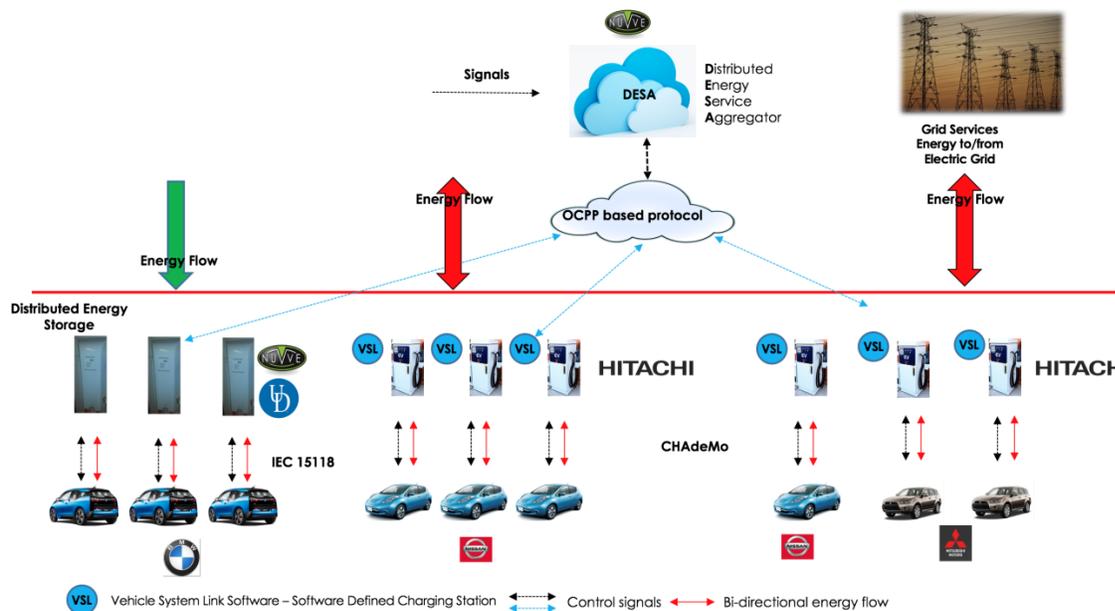


Figure 1 – System Architecture

## C. Goals and Objectives of the Agreement

### Agreement Goals

The primary goals of this Agreement are to demonstrate large scale PEV fleet integration impacts on the grid, as well as to assess and provide quantification of potential benefits of PEVs as grid assets amid a suitable population of vehicle users in concentrated and distributed areas.

## EXHIBIT A Scope of Work

Ratepayer Benefits:<sup>2</sup> This Agreement will result in a diverse portfolio of ratepayer benefits including improved energy asset utilization and greater reliability by implementing methods to intelligently regulate energy supply and demand. The project will also demonstrate methods to lower and avoid ratepayer costs by demonstrating viable system-level functionality that can preclude or postpone the need for upgrades to the electric grid. Moreover, the demonstration intends to collaborate closely with the statewide IOU Distribution Resource Planning activities to directly inform grid planners about the versatility and reliability of PEVs. This activity will avoid introduction of assets that would otherwise be required for mitigating capacity and congestion limits on the aging distribution and transmission grid.

Technological Advancement and Breakthroughs:<sup>3</sup> In demonstrating the value of solar forecasting coupled with V2G implementation, this Agreement will contribute to technological advancement and breakthroughs required to overcome barriers in achieving California's statutory energy goals for wide-scale integration of renewable energy and lowering the cost of PEV ownership. It also facilitates a first in California demonstration of exactly how PEVs can be directly utilized as an intelligent dispatchable DER asset with capabilities to avoid or defer grid upgrades that would otherwise be required due to the volatile effects and potential episodes of surplus of renewable energy on the grid.

### Agreement Objectives

The objectives of this Agreement are to:

- Lower the cost of PEV ownership and thereby increase PEV penetration
- Regulate frequency in a narrow band around 60 Hz
- Inject or absorb energy to mitigate sudden ramps up or down
- Delay or avoid costly upgrades to the transmission and distribution grid

### III. TASK 1 GENERAL PROJECT TASKS

#### PRODUCTS

##### Subtask 1.1 Products

The goal of this subtask is to establish the requirements for submitting project products (e.g., reports, summaries, plans, and presentation materials). Unless otherwise specified by the Commission Agreement Manager (CAM), the Recipient must deliver products as required below by the dates listed in the **Project Schedule (Part V)**. Products that require a draft version are indicated by marking “**(draft and final)**” after the product name in the “Products” section of the task/subtask. If “(draft and final)” does not appear after the product name, only a final version of the product is required. With respect to due dates within this Scope of Work, “**days**” means working days.

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

<sup>3</sup> California Public Resources Code, Section 25711.5(a) also requires EPIC-funded projects to lead to technological advancement and breakthroughs to overcome barriers that prevent the achievement of the state's statutory and energy goals.

## **EXHIBIT A**

### **Scope of Work**

#### **The Recipient shall:**

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

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

##### For products that require a final version only

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

##### For all products

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

##### Instructions for Submitting Electronic Files and Developing Software:

###### ○ **Electronic File Format**

- Submit all data and documents required as products under this Agreement in an electronic file format that is fully editable and compatible with the Energy Commission's software and Microsoft (MS)-operating computing platforms, or with any other format approved by the CAM. Deliver an electronic copy of the full text of any Agreement data and documents in a format specified by the CAM, such as memory stick or CD-ROM.

The following describes the accepted formats for electronic data and documents provided to the Energy Commission as products under this Agreement, and establishes the software versions that will be required to review and approve all software products:

- Data sets will be in MS Access or MS Excel file format (version 2007 or later), or any other format approved by the CAM.
- Text documents will be in MS Word file format, version 2007 or later.
- Documents intended for public distribution will be in PDF file format.
- The Recipient must also provide the native Microsoft file format.
- Project management documents will be in Microsoft Project file format, version 2007 or later.

###### ○ **Software Application Development**

Use the following standard Application Architecture components in compatible versions for any software application development required by this Agreement (e.g., databases, models, modeling tools), unless the CAM approves other software applications such as open source programs:

## EXHIBIT A Scope of Work

- Microsoft ASP.NET framework (version 3.5 and up). Recommend 4.0.
- Microsoft Internet Information Services (IIS), (version 6 and up) Recommend 7.5.
- Visual Studio.NET (version 2008 and up). Recommend 2010.
- C# Programming Language with Presentation (UI), Business Object and Data Layers.
- SQL (Structured Query Language).
- Microsoft SQL Server 2008, Stored Procedures. Recommend 2008 R2.
- Microsoft SQL Reporting Services. Recommend 2008 R2.
- XML (external interfaces).

Any exceptions to the Electronic File Format requirements above must be approved in writing by the CAM. The CAM will consult with the Energy Commission's Information Technology Services Branch to determine whether the exceptions are allowable.

### MEETINGS

#### Subtask 1.2 Kick-off Meeting

The goal of this subtask is to establish the lines of communication and procedures for implementing this Agreement.

#### The Recipient shall:

- Attend a "Kick-off" meeting with the CAM, the Commission Agreement Officer (CAO), and any other Energy Commission staff relevant to the Agreement. The Recipient will bring its Project Manager and any other individuals designated by the CAM to this meeting. The administrative and technical aspects of the Agreement will be discussed at the meeting. Prior to the meeting, the CAM will provide an agenda to all potential meeting participants. The meeting may take place in person or by electronic conferencing (e.g., WebEx), with approval of the CAM.

The administrative portion of the meeting will include discussion of the following:

- Terms and conditions of the Agreement;
- Administrative products (subtask 1.1);
- CPR meetings (subtask 1.3);
- Match fund documentation (subtask 1.7);
- Permit documentation (subtask 1.8);
- Subcontracts (subtask 1.9); and
- Any other relevant topics.

The technical portion of the meeting will include discussion of the following:

- The CAM's expectations for accomplishing tasks described in the Scope of Work;
- An updated Project Schedule;
- Technical products (subtask 1.1);
- Progress reports and invoices (subtask 1.5);
- Final Report (subtask 1.6);
- Technical Advisory Committee meetings (subtasks 1.10 and 1.11); and
- Any other relevant topics.

## **EXHIBIT A**

### **Scope of Work**

- Provide an *Updated Project Schedule*, *List of Match Funds*, and *List of Permits*, as needed to reflect any changes in the documents.

#### **The CAM shall:**

- Designate the date and location of the meeting.
- Send the Recipient a *Kick-off Meeting Agenda*.

#### **Recipient Products:**

- Updated Project Schedule (*if applicable*)
- Updated List of Match Funds (*if applicable*)
- Updated List of Permits (*if applicable*)

#### **CAM Product:**

- Kick-off Meeting Agenda

#### **Subtask 1.3 Critical Project Review (CPR) Meetings**

The goal of this subtask is to determine if the project should continue to receive Energy Commission funding, and if so whether any modifications must be made to the tasks, products, schedule, or budget. CPR meetings provide the opportunity for frank discussions between the Energy Commission and the Recipient. As determined by the CAM, discussions may include project status, challenges, successes, advisory group findings and recommendations, final report preparation, and progress on technical transfer and production readiness activities (if applicable). Participants will include the CAM and the Recipient, and may include the CAO and any other individuals selected by the CAM to provide support to the Energy Commission.

CPR meetings generally take place at key, predetermined points in the Agreement, as determined by the CAM and as shown in the Task List on page 1 of this Exhibit. However, the CAM may schedule additional CPR meetings as necessary. The budget will be reallocated to cover the additional costs borne by the Recipient, but the overall Agreement amount will not increase. CPR meetings generally take place at the Energy Commission, but they may take place at another location, or may be conducted via electronic conferencing (e.g., WebEx) as determined by the CAM.

#### **The Recipient shall:**

- Prepare a *CPR Report* for each CPR meeting that: (1) discusses the progress of the Agreement toward achieving its goals and objectives; and (2) includes recommendations and conclusions regarding continued work on the project.
- Submit the CPR Report along with any other *Task Products* that correspond to the technical task for which the CPR meeting is required (i.e., if a CPR meeting is required for Task 2, submit the Task 2 products along with the CPR Report).
- Attend the CPR meeting.
- Present the CPR Report and any other required information at each CPR meeting.

#### **The CAM shall:**

- Determine the location, date, and time of each CPR meeting with the Recipient's input.
- Send the Recipient a *CPR Agenda* and a *List of Expected CPR Participants* in advance of the CPR meeting. If applicable, the agenda will include a discussion of match funding and permits.

## **EXHIBIT A**

### **Scope of Work**

- Conduct and make a record of each CPR meeting. Provide the Recipient with a *Schedule for Providing a Progress Determination* on continuation of the project.
- Determine whether to continue the project, and if so whether modifications are needed to the tasks, schedule, products, or budget for the remainder of the Agreement. If the CAM concludes that satisfactory progress is not being made, this conclusion will be referred to the Deputy Director of the Energy Research and Development Division.
- Provide the Recipient with a *Progress Determination* on continuation of the project, in accordance with the schedule. The Progress Determination may include a requirement that the Recipient revise one or more products.

#### **Recipient Products:**

- CPR Report(s)
- Task Products (draft and/or final as specified in the task)

#### **CAM Products:**

- CPR Agenda
- List of Expected CPR Participants
- Schedule for Providing a Progress Determination
- Progress Determination

#### **Subtask 1.4 Final Meeting**

The goal of this subtask is to complete the closeout of this Agreement.

#### **The Recipient shall:**

- Meet with Energy Commission staff to present project findings, conclusions, and recommendations. The final meeting must be completed during the closeout of this Agreement. This meeting will be attended by the Recipient and CAM, at a minimum. The meeting may occur in person or by electronic conferencing (e.g., WebEx), with approval of the CAM.

The technical and administrative aspects of Agreement closeout will be discussed at the meeting, which may be divided into two separate meetings at the CAM's discretion.

- The technical portion of the meeting will involve the presentation of findings, conclusions, and recommended next steps (if any) for the Agreement. The CAM will determine the appropriate meeting participants.
- The administrative portion of the meeting will involve a discussion with the CAM and the CAO of the following Agreement closeout items:
  - Disposition of any state-owned equipment.
  - Need to file a Uniform Commercial Code Financing Statement (Form UCC-1) regarding the Energy Commission's interest in patented technology.
  - The Energy Commission's request for specific "generated" data (not already provided in Agreement products).
  - Need to document the Recipient's disclosure of "subject inventions" developed under the Agreement.
  - "Surviving" Agreement provisions such as repayment provisions and confidential products.
  - Final invoicing and release of retention.

## EXHIBIT A Scope of Work

- Prepare a *Final Meeting Agreement Summary* that documents any agreement made between the Recipient and Commission staff during the meeting.
- Prepare a *Schedule for Completing Agreement Closeout Activities*.
- Provide *All Draft and Final Written Products* on a CD-ROM or USB memory stick, organized by the tasks in the Agreement.

### Products:

- Final Meeting Agreement Summary (*if applicable*)
- Schedule for Completing Agreement Closeout Activities
- All Draft and Final Written Products

## REPORTS AND INVOICES

### Subtask 1.5 Progress Reports and Invoices

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

#### The Recipient shall:

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

### Products:

- Progress Reports
- Invoices

### Subtask 1.6 Final Report

The goal of this subtask is to prepare a comprehensive Final Report that describes the original purpose, approach, results, and conclusions of the work performed under this Agreement. The CAM will review the Final Report, which will be due at least **two months** before the Agreement end date. When creating the Final Report Outline and the Final Report, the Recipient must use the Style Manual provided by the CAM.

#### Subtask 1.6.1 Final Report Outline

#### The Recipient shall:

- Prepare a *Final Report Outline* in accordance with the *Style Manual* provided by the CAM. (*See Task 1.1 for requirements for draft and final products.*)

#### Recipient Products:

- Final Report Outline (draft and final)

## EXHIBIT A Scope of Work

### CAM Product:

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

### Subtask 1.6.2 Final Report

#### The Recipient shall:

- Prepare a *Final Report* for this Agreement in accordance with the approved Final Report Outline, Style Manual, and Final Report Template provided by the CAM with the following considerations:
  - Ensure that the report includes the following items, in the following order:
    - Cover page (**required**)
    - Credits page on the reverse side of cover with legal disclaimer (**required**)
    - Acknowledgements page (optional)
    - Preface (**required**)
    - Abstract, keywords, and citation page (**required**)
    - Table of Contents (**required**, followed by List of Figures and List of Tables, if needed)
    - Executive summary (**required**)
    - Body of the report (**required**)
    - References (if applicable)
    - Glossary/Acronyms (If more than 10 acronyms or abbreviations are used, it is required.)
    - Bibliography (if applicable)
    - Appendices (if applicable) (Create a separate volume if very large.)
    - Attachments (if applicable)
  - Ensure that the document is written in the third person.
  - Ensure that the Executive Summary is understandable to the lay public.
    - Briefly summarize the completed work. Succinctly describe the project results and whether or not the project goals were accomplished.
    - Identify which specific ratepayers can benefit from the project results and how they can achieve the benefits.
    - If it's necessary to use a technical term in the Executive Summary, provide a brief definition or explanation when the technical term is first used.
  - Follow the Style Guide format requirements for headings, figures/tables, citations, and acronyms/abbreviations.
  - Ensure that the document omits subjective comments and opinions. However, recommendations in the conclusion of the report are allowed.
  - Include a brief description of the project results in the Abstract.
- Submit a draft of the report to the CAM for review and comment. The CAM will provide written comments to the Recipient on the draft product within 15 days of receipt
- Consider incorporating all CAM comments into the Final Report. If the Recipient disagrees with any comment, provide a written response explaining why the comment was not incorporated into the final product
- Submit the revised Final Report and responses to comments within 10 days of notice by the CAM, unless the CAM specifies a longer time period or approves a request for additional time.
- Submit one bound copy of the *Final Report* to the CAM along with *Written Responses to*

## EXHIBIT A Scope of Work

*Comments on the Draft Final Report.*

### Products:

- Final Report (draft and final)
- Written Responses to Comments on the Draft Final Report

### CAM Product:

- Written Comments on the Draft Final Report

## MATCH FUNDS, PERMITS, AND SUBCONTRACTS

### Subtask 1.7 Match Funds

The goal of this subtask is to ensure that the Recipient obtains any match funds planned for this Agreement and applies them to the Agreement during the Agreement term.

While the costs to obtain and document match funds are not reimbursable under this Agreement, the Recipient may spend match funds for this task. The Recipient may only spend match funds during the Agreement term, either concurrently or prior to the use of Energy Commission funds. Match funds must be identified in writing, and the Recipient must obtain any associated commitments before incurring any costs for which the Recipient will request reimbursement.

### The Recipient shall:

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

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

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

## EXHIBIT A Scope of Work

- Provide a *Match Funds Reduction Notification Letter* to the CAM if existing match funds are reduced during the course of the Agreement. Reduction of match funds may trigger a CPR meeting.

### Products:

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

### Subtask 1.8 Permits

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

### The Recipient shall:

- Prepare a *Permit Status Letter* that documents the permits required to conduct this Agreement. If no permits are required at the start of this Agreement, then state this in the letter. If permits will be required during the course of the Agreement, provide in the letter:
  - A list of the permits that identifies: (1) the type of permit; and (2) the name, address, and telephone number of the permitting jurisdictions or lead agencies.
  - The schedule the Recipient will follow in applying for and obtaining the permits.The list of permits and the schedule for obtaining them will be discussed at the Kick-off meeting (subtask 1.2), and a timetable for submitting the updated list, schedule, and copies of the permits will be developed. The impact on the project if the permits are not obtained in a timely fashion or are denied will also be discussed. If applicable, permits will be included as a line item in progress reports and will be a topic at CPR meetings.
- If during the course of the Agreement additional permits become necessary, then provide the CAM with an *Updated List of Permits* (including the appropriate information on each permit) and an *Updated Schedule for Acquiring Permits*.
- Send the CAM a *Copy of Each Approved Permit*.
- If during the course of the Agreement permits are not obtained on time or are denied, notify the CAM within 5 days. Either of these events may trigger a CPR meeting.

### Products:

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

### Subtask 1.9 Subcontracts

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

### The Recipient shall:

## **EXHIBIT A**

### **Scope of Work**

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

#### **Products:**

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

### **TECHNICAL ADVISORY COMMITTEE**

#### **Subtask 1.10 Technical Advisory Committee (TAC)**

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

- Provide guidance in project direction. The guidance may include scope and methodologies, timing, and coordination with other projects. The guidance may be based on:
  - Technical area expertise;
  - Knowledge of market applications; or
  - Linkages between the agreement work and other past, present, or future projects (both public and private sectors) that TAC members are aware of in a particular area.
- Review products and provide recommendations for needed product adjustments, refinements, or enhancements.
- Evaluate the tangible benefits of the project to the state of California, and provide recommendations as needed to enhance the benefits.
- Provide recommendations regarding information dissemination, market pathways, or commercialization strategies relevant to the project products.

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

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

## **EXHIBIT A**

### **Scope of Work**

- Members of relevant technical society committees.

#### **The Recipient shall:**

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

#### **Products:**

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

#### **Subtask 1.11 TAC Meetings**

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

#### **The Recipient shall:**

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

#### **Products:**

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

# EXHIBIT A

## Scope of Work

### IV. TECHNICAL TASKS

#### **TASK 2 INTELLIGENT VEHICLE GRID INTEGRATION (VGI) SERVICES & EVALUATION**

The main goals of this task are to demonstrate, validate, and produce a description of a variety of Vehicle Grid Integration (VGI) services in a large, broadly defined fleet. A VGI service is defined herein as “The act of influencing the timing, rate and direction of the power and energy exchanged between the EV battery and the grid to yield maximum benefits for user, system and society.” This task will focus on the following well understood and proven system-wide VGI services of: 1-- Frequency Regulation (V2G), 2--Adaptive Power (Smart Charging (SC) – V1G, Smart Charging/Discharging - V2G), and 3--peak-shaving services (V2B). Task 2 has five subtasks: (1) produce a description of each service; (2) adapt or develop services to California and project requirements; (3) document each service functionality; (4) perform functional service tests; and (5) analyze and evaluate field test data.

#### **Subtask 2.1 Services Descriptions**

##### **The Recipient shall:**

- Produce a concise, short description of each of the following VGI services: Frequency Regulation (V2G), Adaptive Power (Smart Charging (SC) – V1G, Smart Charging/Discharging - V2G), and peak-shaving services (V2B) (“Services” when used collectively) in a *Services Description Summary*
  - Describe each service from the following 5 aspects:
    - Technical
    - Markets
    - Economics
    - Regulation (including standards)
    - PEV user
  - Describe for each service enhanced functionality, resilience and potential cost savings
  - Describe how to utilize the University of California San Diego’s (UCSD) advanced solar forecasting system to achieve rapid ramp-up or ramp-down using V2G aggregated vehicles

##### **Products:**

- Services Description Summary

#### **Subtask 2.2 Services Adaption / Development**

##### **The Recipient shall:**

- Adapt Frequency Regulation (V2G), Adaptive Power (Smart Charging (SC) – V1G and Smart Charging/Discharging - V2G), (program code) to interface with project specific requirements at UCSD (such as interface to local solar forecasting system (Skyimager), AGC signals and other campus specific inputs like voltage and current in the local grid)
- Develop peak shaving service (V2B) (program code) for demonstration in the project.
- Produce a summary of the activities of this subtask for the Services of Frequency Regulation (V2G), Adaptive Power (Smart Charging (SC) – V1G, Smart Charging/Discharging - V2G), and peak-shaving (V2B) in a *Services Adaption /Development Description Summary*

## **EXHIBIT A**

### **Scope of Work**

- **Products:**

*Services Adaption /Development Description Summary*

#### **Subtask 2.3 Services Documentation**

**The Recipient shall:**

- Document the functionality of each of the services identified in Subtask 2.1 in a *Services Functional Description Report*
  - Describe the major functions of the service
  - Describe the user interface to the service
  - Describe how functionality will be tested in Subtask 2.4.

**Products:**

- Services Functional Description Report

#### **Subtask 2.4 Services Functional Tests**

**The Recipient shall:**

- Perform functionality tests of each service identified in Subtask 2.3 and document findings in a *Services Functional Test Report*
- Test each major function in the service to ensure full functionality

**Products:**

- Services Functional Test Report

#### **Subtask 2.5 Evaluate Field Test Data**

**The Recipient shall:**

- Analyze and document results of tests and data analysis in a *Services Test Evaluation Report*
- Use advanced System View (SYSVIEW) evaluation and simulation tool for evaluation

**Products:**

- Services Test Evaluation Report

### **TASK 3 TESTING & DATA COLLECTION**

The goals of this task are to: (1) define a test plan for Frequency Regulation (V2G), Adaptive Power (Smart Charging (SC) – V1G, Smart Charging/Discharging - V2G), and peak-shaving services (V2B) based on the *Service Description Report* in Subtask 2.1; and (2) conduct field tests and collect data.

## **EXHIBIT A Scope of Work**

### **Subtask 3.1 Test Plans**

#### **The Recipient shall:**

- Produce an overall test plan for the Intelligent Electric Vehicle Integration (INVENT) project
- Produce an individual test plan for Frequency Regulation (V2G), Adaptive Power (Smart Charging (SC) – V1G, Smart Charging/Discharging - V2G), and peak-shaving services (V2B) including among others:
  - Purpose of test
  - Service to be tested
  - Expected results
  - Configuration
  - Data to collect
- Establish test standards to measure enhanced functionality, resilience, and cost savings
- Document the overall test plan and the individual test plan for each service in a *Services Test Plan Report (STPR)*

#### **Products:**

- Services Test Plan Report

### **Subtask 3.2 Conduct Field Tests and Collect Data**

#### **The Recipient shall:**

- Conduct tests according to the STPR and collect data in a *Services Test Report*
  - Collect data using the recipient's aggregator, a data logger and the UCSD solar forecasting system
  - Fleet data will be collected per Task 5
  - Data will be analyzed per Subtask 2.5.
  - Document the results of the field tests in a *Services Test Report*

#### **Products:**

- Services Test Report

### **TASK 4 ENABLING TECHNOLOGIES**

The goals of this task are to: (1) procure EVSEs, EVs and aggregator and software components like the Vehicle System Link (VSL) and the aggregator software; (2) commission the system by making sure that each component (hardware/software) works as expected and that the overall system works as expected; (3) test performance of the system (response time, accuracy, precision); (4) investigate, document and test interfaces to external signals; and (5) interface with IOU labs for interconnect certification of EVSEs.

### **Subtask 4.1 Procure & Install Hardware/Software**

#### **The Recipient shall:**

- Procure EVSE for PEVs and install EVSEs for each project phase including aggregator/service platform hardware and software

## **EXHIBIT A**

### **Scope of Work**

- Document the Interconnect Certification in an *Interconnect Completed Report* Document the installation of approximately 20 PEV chargers including GIVE (this is referred to as the base configuration). Phase 1-(Start July 2017 - UCSD Micro Grid site. - *Procurement & Installation Report*
- Document the installation of an additional approximately 30 PEV chargers in Phase 2 - Start July 2018 – Site UCSD Micro Grid. Base Configuration + evolving technology<sup>4</sup>- *Procurement & Installation Report*
- Document the full-scale demonstration configuration in Phase 3- Start July 2019 - Full scale demonstration + evolving technology- *Configuration Report*

#### **Products:**

- Phase 1 - Procurement & Installation Report
- Interconnect Completed Report
- Phase 2 - Procurement & Installation Report
- Phase 3 - Configuration Report

#### **Subtask 4.2 Commission Enabling Technology**

##### **The Recipient shall:**

- Conduct interoperability tests and adaptation against existing test plans<sup>5</sup> and standards communication compliant protocol specifications for all resources to function in concert and document findings in an *Interoperability Report*
- Prepare a *CPR Report #1* in accordance with subtask 1.3 (CPR Meetings)
- Participate in a CPR meeting

#### **Products:**

- Interoperability Report
- CPR Report #1

#### **Subtask 4.3 Test Performance of Enabling Technology**

##### **The Recipient shall:**

- Conduct test to evaluate system performance against existing test plans
- Collect data to evaluate response times, energy loss, battery wear, and communication overhead

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<sup>4</sup> Evolving technology – It is the latest version of chargers, which may include new functionality/technology that has been implemented in the chargers since start of Phase 1. Same applies for the cars.

<sup>5</sup> Test plans defines in detail how to test the interworking between the system components (aggregator, charger, EV) as well as the communication protocol between these. In addition the test plans contain specifications of how to test the performance (delay, accuracy, precision) as well as stress testing the system with high load for a long duration (15-24 hours). Existing test plans exist. They have been extensively developed and used over the last 2 years in the Nikola/Parker projects in Denmark and in implementations at PJM (US), Energinet.dk (Denmark), National Grid (UK) and Tennet (NL). They may have to be slightly modified for this project.

## EXHIBIT A Scope of Work

- Prepare a *Performance Report* documenting system response times, accuracy, precision, battery wear, energy loss and communication overhead.

### Products:

- Performance Report

### Subtask 4.4 Interface to External Signals

#### The Recipient shall:

- Investigate, document and test interfaces to external signal sources<sup>6</sup>:
  - California ISO open-access same-time information system (OASIS) data
  - Wholesale tariff forecast and auction data
  - Retail pricing across CA IOU service territories and rate structures
  - UCSD's advanced solar forecasting system

The timeline is shown in Figure 2 (in red)

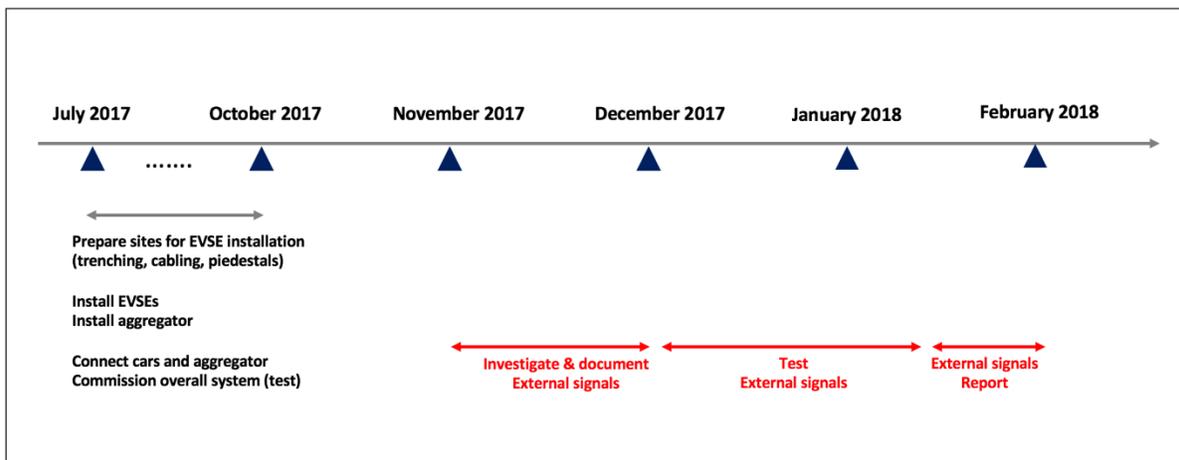


Figure 2 – Timeline for External Signals investigation, documentation and test

- Document findings in an *External Signals Report*

### Products:

- External Signals Report

### Subtask 4.5 Interface with IOU/ Nationally Recognized Testing Laboratory (NRTL) for Interconnect Certification.

#### The Recipient shall:

- Serve as point-of-contact to the CA IOU stakeholders conducting the interconnection review process
- Serve as point-of-contact to the 3<sup>rd</sup> party NRTL who will conduct the tests

<sup>6</sup> This is mainly for documenting external signals from existing documentation (CAISO OASIS – Interface specifications, UCSD Solar Interface specifications.....). The tests are primarily tests against simulators to verify the functionality. We already have existing test suites and test plans for real live interfacing with TSOs - Energinet.dk (Denmark), Tennet (Netherlands), PJM (USA). These elaborate test plans will be adapted for CAISO.

## **EXHIBIT A**

### **Scope of Work**

- Document results in an *Interconnection Certificate Report*.

#### **Products:**

- Interconnection Certificate Report

#### **TASK 5 FLEET MANAGEMENT**

The goals of this task are to: (1) establish, plan and manage demonstration scenarios for the individual categories of fleets; (2) define and implement data management and logistics, and associated data collection bins and archiving, for each demonstration scenario and for each demonstration fleet; (3) publish operational plans/protocols for fleet management stakeholders and validate associated logistics for data collection; (4) collect, validate and archive fleet usage data. Show the recipient the Information Practices Act (IPA) exhibit to make sure the individual consents to the data collection.

#### **Subtask 5.1 Plan/Manage/Support UCSD Site/Fleets and Use Cases**

##### **The Recipient shall:**

- Define user engagement, demonstration scenarios and use cases for the UCSD site
- Engage a commercial fleet in SCE area
- Engage a commercial fleet in PG&E area
- Prepare a *Fleet Scenarios and Use Case Report* which will include description of fleet configuration and location of EVSEs as well as description of use cases for the individual fleets

##### **Products:**

- Fleet Scenarios and Use Case Report

#### **Subtask 5.2 Plan/Manage the Data Collection Processes for Fleets**

##### **The Recipient shall:**

- Prepare *Data Collection Protocol* which will document the process for assuring that methods of data collection for each demonstration scenario are supportive of all use cases and categories of fleets

##### **Products:**

- Data Collection Protocol

#### **Subtask 5.3 Prepare/Publish Operational use Case Logistics for Data Collection**

##### **The Recipient shall:**

- Coordinate *Operational Logistics Report* for tests with fleet owner and provide a report

##### **Products:**

- Operational Logistics Report

#### **Subtask 5.4 Collect Fleet Usage Data**

## **EXHIBIT A Scope of Work**

### **The Recipient shall:**

- Collect, validate, and archive fleet data
- Perform analysis and compile results in a *Fleet Evaluation Report*

### **Products:**

- Fleet Evaluation Report

### **TASK 6 ECONOMICS, MARKETS, REGULATIONS**

The goals of this task are to: (1) evaluate the economic benefits; (2) evaluate market potential and access; and (3) identify and propose how overcome regulatory barriers. These activities will be conducted for VGI Services.

#### **Subtask 6.1 Economic Benefits**

##### **The Recipient shall:**

- Evaluate stakeholder economic benefits of each service:
  - Business model
  - Sharing of revenues with stake-holders
- Use advanced SYSVIEW evaluation and simulation tool for evaluation of benefits
- Document evaluation in a *Services Economic Benefits Report*

##### **Products:**

- Services Economic Benefits Report

#### **Subtask 6.2 Market Analysis**

##### **The Recipient shall:**

- Investigate if markets already exist or need to developed and if so propose actions for how to develop the market in a *Services Market Report*

##### **Products:**

- Services Market Report

#### **Subtask 6.3 Regulatory Barriers**

##### **The Recipient shall:**

- Investigate potential regulatory barriers such as:
  - IOU net metering protocols
  - Accuracy, availability and connection of prevailing commercial electric meter and sub-meter products
  - Interconnection and communications requirements of EVSEs
  - Certification protocols an acceptance criteria for adopting methods for testing of advanced function EVSEs
- Clarify, assess and recommend solutions which mitigate current regulatory barriers
- Document findings in a *Regulation Framework Report*

## **EXHIBIT A Scope of Work**

### **Products:**

- Regulation Framework Report

### **TASK 7 STANDARDS**

The goals of this task are to: (1) identify enhancements to existing standards; and (2) participate in standards meetings and submit proposals for enhancements. These activities will be conducted for VGI Services.

Task 7 will be composed of 2 subtasks.

#### **Subtask 7.1 Enhancements to Standards**

##### **The Recipient shall:**

- Analyze existing standards and identify changes needed to support the use cases for the services demonstrated
- Propose an action plan for recommended protocol updates into the standards bodies
- Document findings in a *Services Standards Report*

### **Products:**

- Services Standards Report

#### **Subtask 7.2 Submit Standards Proposals**

##### **The Recipient shall:**

- Submit contributions to standards bodies and document changes in a *Services Standards Submission Report*

### **Products:**

- Services Standards Submission Report

### **TASK 8 EVALUATION OF PROJECT BENEFITS**

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

##### **The Recipient shall:**

- Complete three Project Benefits Questionnaires that correspond to three main intervals in the Agreement: (1) *Kick-off Meeting Benefits Questionnaire*; (2) *Mid-term Benefits Questionnaire*; and (3) *Final Meeting Benefits Questionnaire*.
- Provide all key assumptions used to estimate projected benefits, including targeted market sector (e.g., population and geographic location), projected market penetration, baseline and projected energy use and cost, operating conditions, and emission reduction calculations. Examples of information that may be requested in the questionnaires include:
  - For Product Development Projects and Project Demonstrations:
    - Published documents, including date, title, and periodical name.
    - Estimated or actual energy and cost savings, and estimated statewide energy savings once market potential has been realized. Identify all assumptions used in the estimates.
    - Greenhouse gas and criteria emissions reductions.

## EXHIBIT A Scope of Work

- Other non-energy benefits such as reliability, public safety, lower operational cost, environmental improvement, indoor environmental quality, and societal benefits.
- Data on potential job creation, market potential, economic development, and increased state revenue as a result of the project.
- A discussion of project product downloads from websites, and publications in technical journals.
- A comparison of project expectations and performance. Discuss whether the goals and objectives of the Agreement have been met and what improvements are needed, if any.
- Additional Information for Product Development Projects:
  - Outcome of product development efforts, such copyrights and license agreements.
  - Units sold or projected to be sold in California and outside of California.
  - Total annual sales or projected annual sales (in dollars) of products developed under the Agreement.
  - Investment dollars/follow-on private funding as a result of Energy Commission funding.
  - Patent numbers and applications, along with dates and brief descriptions.
- Additional Information for Product Demonstrations:
  - Outcome of demonstrations and status of technology.
  - Number of similar installations.
  - Jobs created/retained as a result of the Agreement.
- For Information/Tools and Other Research Studies:
  - Outcome of project.
  - Published documents, including date, title, and periodical name.
  - A discussion of policy development. State if the project has been cited in government policy publications or technical journals, or has been used to inform regulatory bodies.
  - The number of website downloads.
  - An estimate of how the project information has affected energy use and cost, or have resulted in other non-energy benefits.
  - An estimate of energy and non-energy benefits.
  - Data on potential job creation, market potential, economic development, and increased state revenue as a result of project.
  - A discussion of project product downloads from websites, and publications in technical journals.
  - A comparison of project expectations and performance. Discuss whether the goals and objectives of the Agreement have been met and what improvements are needed, if any.
- Respond to CAM questions regarding responses to the questionnaires.
- Within the first 3 months of the project, create a project survey entry responding to the California Public Utilities Commission's "Electric Vehicle Pilot Survey" related to Proceeding R.13-11-007, "Alternative Fueled Vehicles Rulemaking" (2013). The survey entry should contain the most complete project information available.
  - Resources for completing the Electric Vehicle Pilot Survey can be found at the following links:
    - [http://www.energy.ca.gov/research/notices/2015-12-14\\_workshop/presentations/05a\\_CPUC\\_Electric\\_Vehicle\\_Pilot\\_Survey-Read\\_Me.docx](http://www.energy.ca.gov/research/notices/2015-12-14_workshop/presentations/05a_CPUC_Electric_Vehicle_Pilot_Survey-Read_Me.docx)

## EXHIBIT A Scope of Work

- [http://www.energy.ca.gov/research/notices/2015-12-14\\_workshop/presentations/](http://www.energy.ca.gov/research/notices/2015-12-14_workshop/presentations/)

The Energy Commission may send the Recipient similar questionnaires after the Agreement term ends. Responses to these questionnaires will be voluntary.

### Products:

- Electric Vehicle Pilot Survey Response
- Kick-off Meeting Benefits Questionnaire
- Mid-term Benefits Questionnaire
- Final Meeting Benefits Questionnaire

### TASK 9 TECHNOLOGY/KNOWLEDGE TRANSFER ACTIVITIES

The goal of this task is to develop a plan to make the knowledge gained, experimental results, and lessons learned available to the public and key decision makers.

#### The Recipient shall:

- Prepare an *Initial Fact Sheet* at start of the project that describes the project. Use the format provided by the CAM.
- Prepare a *Final Project Fact Sheet* at the project's conclusion that discusses results. Use the format provided by the CAM.
- Prepare a *Technology/Knowledge Transfer Plan* that includes:
  - An explanation of how the knowledge gained from the project will be made available to the public, including the targeted market sector and potential outreach to end users, utilities, regulatory agencies, and others.
  - A description of the intended use(s) for and users of the project results.
  - Published documents, including date, title, and periodical name.
  - Copies of documents, fact sheets, journal articles, press releases, and other documents prepared for public dissemination. These documents must include the Legal Notice required in the terms and conditions. Indicate where and when the documents were disseminated.
  - A discussion of policy development. State if project has been or will be cited in government policy publications, or used to inform regulatory bodies.
  - The number of website downloads or public requests for project results.
  - Additional areas as determined by the CAM.
- Conduct technology transfer activities in accordance with the Technology/Knowledge Transfer Plan. These activities will be reported in the Progress Reports.
- When directed by the CAM, develop *Presentation Materials* for an Energy Commission-sponsored conference/workshop(s) on the project.
- When directed by the CAM, participate in annual EPIC symposium(s) sponsored by the California Energy Commission.
- 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.
- Prepare a *Technology/Knowledge Transfer Report* on technology transfer activities conducted during the project.

### Products:

## **EXHIBIT A**

### **Scope of Work**

- Initial Fact Sheet (draft and final)
- Final Project Fact Sheet (draft and final)
- Presentation Materials (draft and final)
- High Quality Digital Photographs
- Technology/Knowledge Transfer Plan (draft and final)
- Technology/Knowledge Transfer Report (draft and final)

#### **V. PROJECT SCHEDULE**

Please see the attached Excel spreadsheet.

STATE OF CALIFORNIA

STATE ENERGY RESOURCES  
CONSERVATION AND DEVELOPMENT COMMISSION

RESOLUTION - RE: NUVVE CORPORATION

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

**RESOLVED**, that the Energy Commission approves Agreement EPC-16-061 with Nuvve Corporation for a \$4,200,000 grant to demonstrate large scale electric vehicle fleet integration impacts on the grid, as well as to assess and provide quantification of potential benefits of plug-in electric vehicle's as grid assets amid a suitable population of vehicle users in concentrated and distributed areas; and

**FURTHER BE IT RESOLVED**, that the Executive Director or his/her designee shall execute the same on behalf of the Energy Commission.

**CERTIFICATION**

The undersigned Secretariat to the Commission 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 California Energy Commission held on June 14, 2017.

AYE: [List of Commissioners]

NAY: [List of Commissioners]

ABSENT: [List of Commissioners]

ABSTAIN: [List of Commissioners]

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Cody Goldthrite,  
Secretariat