

New Agreement EPC-14-050 (To be completed by CGL Office)

Division	Agreement Manager:	MS-	Phone
ERDD	Consuelo Sichon	43	916-327-2222

Recipient's Legal Name	Federal ID Number
Gridscape Solutions	46-1804754

Title of Project
City of Fremont Fire Stations Microgrid Project

Term and Amount	Start Date	End Date	Amount
	5/8/2015	3/31/2018	\$ 1,817,925

Business Meeting Information

ARFVTP agreements under \$75K delegated to Executive Director.

Proposed Business Meeting Date	4/8/2015	<input type="checkbox"/> Consent	<input checked="" type="checkbox"/> Discussion
Business Meeting Presenter	Consuelo Sichon	Time Needed:	5 minutes

Please select one list serve. Select

Agenda Item Subject and Description

Proposed resolution approving agreement EPC-14-050 with Gridscape Solutions for a \$1,817,925 grant to design and build microgrids at three fire stations within the City of Fremont. These three microgrids will optimally manage local renewable energy resources and provide power to the critical loads during a utility power outage.

California Environmental Quality Act (CEQA) Compliance

1. Is Agreement considered a "Project" under CEQA?
 Yes (skip to question 2) No (complete the following (PRC 21065 and 14 CCR 15378)):
 Explain why Agreement is not considered a "Project":
 Agreement will not cause direct physical change in the environment or a reasonably foreseeable indirect physical change in the environment because

2. 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: 14 CCR 15303
 Common Sense Exemption. 14 CCR 15061 (b) (3)

Explain reason why Agreement is exempt under the above section:

Class 3 - New construction of limited small new facilities; installation of small, new equipment and facilities in small structures; and conversion of the use of small existing structures (e.g., construction of three or fewer single-family homes in urban areas) The proposed project falls within the limits of examples listed in this exemption.

This project involves the design and building of a low carbon-based microgrid at each of three fire stations in Fremont (City of Fremont Fire Stations #1, #6, & #7 at 4200 Mowry Avenue, 4355 Central Avenue, and 43600 South Grimmer Blvd. Fremont, CA 94538).

Each microgrid consists of a microgrid energy management system, 180 kW rooftop and carport canopy photovoltaic system, and battery energy storage. The microgrid will provide at least three hours a day of renewable power to critical loads during a utility power outage.

This project involves the installation of concrete pads at each of the three fire stations. The concrete pads will be about 28' by 48'. The installations will also involve less than 100 feet of trenching for medium and low voltage electrical conduit and involve electrical equipment site work. These installations are at existing, developed urban sites on land that is not environmentally sensitive. No historic resources or buildings will be affected. Noise and odors will not be generated by these installations in excess of existing permitted amounts. The installations will not increase traffic to the sites. The installations will not require permits for air, water, conditional use, building expansion, hazardous waste, or rezoning. The installations will require an electrical inspection.

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

Check all that apply

GRANT REQUEST FORM (GRF)



<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	

List all subcontractors (major and minor) and equipment vendors: (attach additional sheets as necessary)	
Legal Company Name:	Budget
Delta Products Corporation	\$ 356,525
Microgrid Energy	\$ 800,000
	\$ 0
	\$

List all key partners: (attach additional sheets as necessary)
Legal Company Name:
Gridscape Solutions

Budget Information			
Funding Source	Funding Year of Appropriation	Budget List No.	Amount
EPIC	13-14	301.001A	\$1,817,925
			\$
R&D Program Area: ESRO: ETSI		TOTAL:	\$1,817,925
Explanation for "Other" selection			
Reimbursement Contract #:		Federal Agreement #:	

Recipient's Administrator/ Officer		Recipient's Project Manager	
Name:	Bhavesh Gore	Name:	Vipul Gore
Address:	46705 FREMONT BLVD	Address:	46705 FREMONT BLVD
City, State, Zip:	FREMONT, CA 94538-6539	City, State, Zip:	FREMONT, CA 94538-6539
Phone:	510-894-6030 / Fax: - -	Phone:	510-894-6030 / Fax: - -
E-Mail:	bhaveshgore@grid-scape.com	E-Mail:	vipulgore@grid-scape.com

Selection Process Used	
<input checked="" type="checkbox"/> Competitive Solicitation	Solicitation #: PON-14-301
<input type="checkbox"/> First Come First Served Solicitation	

The following items should be attached to this GRF	
1. Exhibit A, Scope of Work	<input checked="" type="checkbox"/> Attached
2. Exhibit B, Budget Detail	<input checked="" type="checkbox"/> Attached
3. CEC 105, Questionnaire for Identifying Conflicts	<input checked="" type="checkbox"/> Attached
4. Recipient Resolution	<input checked="" type="checkbox"/> N/A <input type="checkbox"/> Attached
5. CEQA Documentation	<input type="checkbox"/> N/A <input checked="" type="checkbox"/> Attached

Agreement Manager _____	Date _____	Office Manager _____	Date _____	Deputy Director _____	Date _____
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EXHIBIT A Scope of Work

A. Task List

Task #	CPR ¹	Task Name
1		General Project Tasks
2	X	Technical Project Management
3		Equipment and Services Procurement
4		Installation
5	X	Configuration and Setup
6		Commissioning, Measurement, and Verification (M&V)
7		Evaluation of Project Benefits
8		Technology/Knowledge Transfer Activities
9		Production Readiness Plan

B. Acronym/Term List

Acronym/Term	Meaning
CAM	Commission Agreement Manager
CAO	Commission Agreement Officer
CO ₂	Carbon Dioxide
CPR	Critical Project Review
TAC	Technical Advisory Committee
M&V	Measurement and Verification
PV	Photovoltaic

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

A. Purpose of Agreement

The purpose of this Agreement is to fund microgrid design, development, construction, and infrastructure to provide at least three hours of power for designated facilities of the type used for fire stations in the City of Fremont in the event of a utility outage. The funds will be used to deploy advanced metering, communications, and control coupled with new battery energy storage infrastructure and on-site solar photovoltaic (PV) systems to balance generation and load in real time and improve grid resiliency.

B. Problem/ Solution Statement

Problem

Energy consumers are becoming more concerned about their local power quality and efficiency of the power utility system. Local brownouts are a nuisance and have driven consumers to take greater responsibility for their electricity supply – particularly industries and local government communities with a critical need for reliable power. Critical facilities, such as fire stations and hospitals running highly sensitive processes, simply cannot afford to be without power even for a moment. The funding for critical facilities operation is also shrinking especially for local government agencies and facilities managers are evaluating programs to cut costs. The aging nature of the grid has made the critical facilities more susceptible to outages caused by natural

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

EXHIBIT A

Scope of Work

disasters such as severe weather or earthquakes. Energy distribution centers are also reaching their maximum capacity as demand increases with electrification of new local business and residential communications and applications such as electric vehicle charging station infrastructures.

Advanced microgrid energy management systems coupled with energy storage and renewables show promise in increasing demand-side resiliency, resolving the issues of grid stability, and enabling participation in demand response programs. The everyday value that these systems provide to facilities through optimizing generation and demand levels to meet sustainability goals or to lower the cost of electrical service are not typically enough to justify the investment. The real test of value may become apparent when transmission lines reach maximum capacity, which would require capital intensive improvements to the grid to be passed on to ratepayers.

Solution

This project will implement a low carbon-based microgrid energy management system for fire stations to demonstrate the viability of energy savings, increased electrical infrastructure resiliency, reduction in carbon dioxide (CO₂) emissions and optimized energy use to enable energy-smart critical facilities.

The close proximity of the Hayward Fault line to these fire stations, the maximum load capacity on the transmission line, and the need to reduce dependency from the grid satisfy the four most important project requirements: 1) provide energy savings, 2) increase electrical infrastructure resiliency, 3) reduce CO₂ emissions, and 4) demonstrate islanding from the grid for up to three hours a day. Using the combination of renewable generation and battery technologies, the microgrid project could save the City of Fremont approximately \$10,440 per year for each fire station and reduce CO₂ emissions by 22,176 pounds per year for each fire station.

During a utility power outage, the fire station facility will be disconnected from the utility at the point of service by a microgrid inter-tie protection relay. The battery energy storage system will energize the islanded microgrid and establish the appropriate voltage and frequency, enabling the PV system to reconnect and provide primary power. Using advanced load controls and automation, the fire station's microgrid critical loads will have power for at least three hours a day during a utility power outage. Upon restoration of utility power, the microgrid inter-tie protection relay and microgrid controller will synchronize the microgrid and restore power to utility systems without an additional outage. The microgrid controller will reconnect all essential and non-essential loads to utility power.

The key project activities include: evaluating energy loads, understanding the grid interconnect and transmission line capacities, sizing the solar PV and energy storage systems, modifying the electrical system to island the fire station loads, and designing the software for the microgrid controller and energy data visualization.

C. Goals and Objectives of the Agreement

Agreement Goals

The goals of this Agreement are to:

- Demonstrate the deployment of a low carbon-based microgrid that can operate in an islanded mode for a period of at least three hours at fire stations in the City of Fremont, California, or other sites deemed appropriate in writing by the Commission Agreement Manager (CAM).

EXHIBIT A Scope of Work

- Implement advance energy visualization and load control and management for participation in future demand response programs.
- Produce technical and economic data including documentation of implementation issues, operational constraints, and performance.

Ratepayer Benefits:² This Agreement will result in the ratepayer benefits of greater electricity reliability and lower costs by providing renewable solar PV electric generation at the fire stations and by future participation in demand response programs intended to address peak demand on the utility. The proposed microgrid will also shift the peak loads and peak generation so that net daily load will be leveled off on a day-to-day basis.

Technological Advancement and Breakthroughs:³ This Agreement will lead to technological advancement and breakthroughs to overcome barriers to the achievement of the State of California's statutory energy goals by demonstrating the use of renewable solar PV electric generation to store and offset diesel-based, backup power generation. Additionally, the ability to island the fire stations during a utility outage or natural disaster such as an earthquake for more than three hours purely from solar PV electric generation and battery energy storage will be an important demonstration of technological advancement and breakthroughs available today.

Agreement Objectives

The objectives of this Agreement are to:

- Design, develop, implement, operate, and support an advanced microgrid infrastructure at three fire stations, or other sites deemed appropriate in writing by the CAM.
- Provide more than three hours of electrical power to each fire station during a utility outage.
- Implement an advanced microgrid energy management system with accurate forecasting of renewable energy resources and loads to support both day-to-day energy optimization and islanded operation in the event of the utility outage.
- Prevent excess PV generation from being exported at a loss of reduced rate before being consumed on-site.

II. 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

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

³ 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 product is required. With respect to due dates within this Scope of Work, “**days**” means working days.

The Recipient shall:

For products that require a draft version

- 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.
- Submit the final product to the CAM once agreement has been reached on the draft. The CAM will provide written approval of the final product within 15 days of receipt, unless otherwise specified in the task/subtask for which the product is required.
- If the CAM determines that the final product does not sufficiently incorporate his/her comments, submit the revised product to the CAM within 10 days of notice by the CAM, unless the CAM specifies a longer time period.

For products that require a final version only

- Submit the product to the CAM for approval.
- If the CAM determines that the product requires revision, submit the revised product to the CAM within 10 days of notice by the CAM, unless the CAM specifies a longer time period.

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.

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- **Software Application Development**

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

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

Any exceptions to the Electronic File Format requirements above must be approved in writing by the CAM. The CAM will consult with the 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;

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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.
- 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.

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- 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.
- 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.

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- 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.
- 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 all Agreement activities conducted by the Recipient for the preceding month, including 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.
 - Provide a synopsis of the project progress, including accomplishments, problems, milestones, products, schedule, fiscal status, and any evidence of progress such as photographs.
- Submit a monthly or quarterly *Invoice* that follows the instructions in the "Payment of Funds" section of the terms and conditions. In addition, each invoice must document and verify:
 - Energy Commission funds received by California-based entities;
 - Energy Commission funds spent in California (*if applicable*); and
 - Match fund expenditures.

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Scope of Work

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 and approve 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 a 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.
- Submit a draft of the outline to the CAM for review and comment.
- Once agreement has been reached on the draft, submit the final outline to the CAM. The CAM will provide written approval of the final outline within 10 days of receipt.

Recipient Products:

- Final Report Outline (draft and final)

CAM Products:

- Style Manual
- Comments on Draft Final Report Outline
- Approval 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 and the Style Manual provided by the CAM.
- Submit a draft of the report to the CAM for review and comment. Once agreement on the draft report has been reached, the CAM will forward the electronic version for Energy Commission internal approval. Once the CAM receives approval, he/she will provide written approval to the Recipient.
- Submit one bound copy of the Final Report to the CAM.

Recipient Products:

- Final Report (draft and final)

CAM Product:

- Comments on 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.

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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.
- 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.

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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:

- 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.

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- 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
- Members of relevant technical society committees.

EXHIBIT A

Scope of Work

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

III. TECHNICAL TASKS

*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. **Subtask 1.1 (Products)** describes the procedure for submitting products to the CAM.*

TASK 2 Technical Project Management

The goals of this task are to provide direct management oversight for the design, development, construction, implementation, and operation of the microgrid infrastructure and microgrid energy visualization and management at the fire stations.

The Recipient shall:

- Coordinate and manage all project activities with the project team to procure and implement microgrid infrastructure and energy visualization and management systems.
- Coordinate ongoing facility renovations and construction with subcontractors responsible for executing the microgrid system.
- Review the designs completed by the design subcontractors. Prepare a *Final Engineering Design Report* that includes a description of the design alternatives considered and the final design approach.
- Prepare a *Major Equipment Specification Report* prior to purchasing the equipment.
- Prepare a *CPR Report for Task 2* per Subtask 1.3. The report will provide an overview of the project design and a construction plan prior to beginning site work.
- Participate in a CPR meeting per Subtask 1.3.
- Competitively solicit the construction subcontractors for:
 - Site work
 - Electrical work
 - Mechanical work
 - Other trade-related work
- Coordinate and engage in final inspections. Prepare a *Final Inspection and Test Report* summarizing the results.

Products:

- Final Engineering Design Report
- Major Equipment Specification Report
- CPR Report for Task 2
- Final Inspection and Test Report

TASK 3 Equipment and Services Procurement

The goals of this task are to procure major equipment including solar PV systems, battery energy storage systems, and subcontracted services in accordance with the engineering design to fully implement the advanced microgrid infrastructure at the fire stations.

The Recipient shall:

- Competitively solicit for the most cost-effective solar PV systems for the fire stations.
- Purchase the energy storage and microgrid energy management systems.
- Procure and integrate the energy visualization software and monitor displays.

EXHIBIT A

Scope of Work

- Prepare the *Major Equipment and Services Procurement Report* describing the purchased equipment and services and the associated quality assurance procedures.

Product:

- Major Equipment and Services Procurement Report

TASK 4 Installation

The goal of this task is to oversee the installation of major equipment and solar PV system installation in accordance with the Licensed Engineer's final design drawings and ensure that the installed system meets all federal, state, local, and any applicable code requirements.

The Recipient shall:

- Ensure licensed and reputable contractors are using the latest best practices for installing the solar photovoltaic system and battery energy storage system, metering and control infrastructure, and microgrid inter-tie protection relaying.
- Ensure that the impact of the installation process is communicated to facility staff and occupants to minimize disruption and maximize safety.
- Organize and implement periodic and final walkthroughs to ensure the installation is in accordance with the Licensed Engineer's final design. Prepare a *Final Walkthrough Report* documenting any installation issues and the final outcome.
- Review design and construction exceptions, changes, or deviations per the Engineer of Record's approval. Ensure all changes are incorporated into the As-Built Drawings.
- Ensure the Engineer of Record approves the *Final As-Built Drawings* prior to commissioning.

Products:

- Final Walkthrough Report
- Final As-Built Drawings

TASK 5 Configuration and Setup

The goal of this task is to configure, setup, and test the advanced microgrid with all its components including the solar photovoltaic system, battery management system, and energy management and visualization software.

The Recipient shall:

- Configure and test various microgrid components.
- Prepare a *Microgrid Test Plan* describing the test procedures for the microgrid system.
- Perform final testing of the configured microgrid system.
- Prepare a *CPR Report for Task 5* per Subtask 1.3. The report will provide an overview of the microgrid functionality prior to testing.
- Participate in a CPR meeting per Subtask 1.3.
- Prepare *Microgrid Test Report* describing the microgrid system operation.
- Prepare *Site Report* specific to each fire station for final commissioning.

Products:

- Microgrid Test Plan (draft and final)
- CPR Report for Task 5

EXHIBIT A

Scope of Work

- Microgrid Test Report
- Site Report #1
- Site Report #2
- Site Report #3

TASK 6 Commissioning, Measurement, and Verification (M&V)

The goal of this task is to oversee the commissioning, measurement, and verification (M&V) of the integrated, advanced microgrid energy management system. The commissioning process provides a systematic approach for ensuring that installed building systems perform according to the design intent. A robust M&V process facilitates effective performance and usage monitoring to verify projected efficiency and cost savings.

The Recipient shall:

- Engage contractors and key facility personnel in developing a *Commissioning Test Plan* and reviewing Final As-Built Drawings.
- Develop pre-functional checklists and *Functional Testing Procedures* for major systems or components.
- Schedule pre-functional tests and commissioning test.
- Facilitate a timely final acceptance date. Prepare a *Commissioning Report* detailing the results of the commissioning test.
- Prepare *Operation and Maintenance Manuals* containing relevant information for each microgrid component and the Final As-Built Drawings.
- Develop site-specific *M&V Plans* for the fire stations. The M&V Plans shall include the collection of technical and economic microgrid data for 12 months unless a shorter period is approved in writing by the CAM.
- Allocate M&V responsibilities.
- Establish baseline performance prior to implementing the advanced microgrid energy management system.
- Conduct M&V activities at regular intervals during the period of performance.
- Prepare *M&V Reports* to document the following items:
 - The microgrid's operational performance, including operational constraints, and response to grid emergencies.
 - Barriers and solutions to the deployment of a low carbon-based microgrid for fire stations, including but not limited to technical complications, operational considerations, financing options, permitting requirements, and regulatory activities.
 - Measurements showing achievement of the project goals and objectives.

Products:

- Commissioning Test Plan
- Functional Testing Procedures
- Commissioning Report
- Operation and Maintenance Manuals
- M&V Plans
- M&V Reports

TASK 7 Evaluation of Project Benefits

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

EXHIBIT A Scope of Work

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.
 - 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.

EXHIBIT A

Scope of Work

- 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.

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

Products:

- Kick-off Meeting Benefits Questionnaire
- Mid-term Benefits Questionnaire
- Final Meeting Benefits Questionnaire

TASK 8 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 on the results of the project.

EXHIBIT A

Scope of Work

- Prepare a *Technology/Knowledge Transfer Report* on technology transfer activities conducted during the project.

Products:

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

TASK 9 Production Readiness Plan

The goal of this task is to determine the steps that will lead to the manufacturing of technologies developed in this project or to the commercialization of the project's results.

The Recipient shall:

- Prepare a *Production Readiness Plan*. The degree of detail in the plan should be proportional to the complexity of producing or commercializing the proposed product, and to its state of development. As appropriate, the plan will discuss the following:
 - Critical production processes, equipment, facilities, personnel resources, and support systems needed to produce a commercially viable product.
 - Internal manufacturing facilities, supplier technologies, capacity constraints imposed by the design under consideration, design-critical elements, and the use of hazardous or non-recyclable materials. The product manufacturing effort may include "proof of production processes."
 - The estimated cost of production.
 - The expected investment threshold needed to launch the commercial product.
 - An implementation plan to ramp up to full production.
 - The outcome of product development efforts, such as copyrights and license agreements.
 - Patent numbers and applications, along with dates and brief descriptions.
 - Other areas as determined by the CAM.

Products:

- Production Readiness Plan (draft and final)

IV. PROJECT SCHEDULE

Please see the attached Excel spreadsheet.

STATE OF CALIFORNIA

STATE ENERGY RESOURCES
CONSERVATION AND DEVELOPMENT COMMISSION

RESOLUTION - RE: GRIDSCAPE SOLUTIONS

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

RESOLVED, that the Energy Commission approves Agreement EPC-14-050 from PON-14-301 with **Gridscape Solutions** for a **\$1,817,925** grant to design and build microgrids at three fire stations within the City of Fremont. These three microgrids will optimally manage local renewable energy resources and provide power to the critical loads during a utility power outage; 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 April 8, 2015.

AYE: [List of Commissioners]

NAY: [List of Commissioners]

ABSENT: [List of Commissioners]

ABSTAIN: [List of Commissioners]

Harriet Kallemeyn,
Secretariat