

GRANT REQUEST FORM (GRF)

CEC-270 (Revised 10/2015)

CALIFORNIA ENERGY COMMISSION

New Agreement EPC-15-077 (To be completed by CGL Office)

Division	Agreement Manager:	MS-	Phone
ERDD	Rachel Salazar	51	916-445-5316

Recipient's Legal Name	Federal ID Number
The Regents of the University of California, Irvine campus	95-2226406

Title of Project
Huntington Beach Advanced Energy Community Blueprint

Term and Amount	Start Date	End Date	Amount
	6/15/2016	3/31/2018	\$ 1,500,000

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

Proposed Business Meeting Date	5/17/2016	<input type="checkbox"/> Consent	<input checked="" type="checkbox"/> Discussion
Business Meeting Presenter	Anthony Ng	Time Needed:	5 minutes

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

Agenda Item Subject and Description

Proposed resolution approving Agreement EPC-15-077 with the Regents of the University of California, on behalf of the Irvine campus's Advanced Power and Energy Program, for a \$1,500,000 grant to plan and design a specific and generic Advanced Energy Community (AEC). Specifically, this project will develop extensible tools, plan, and design the integrated set of energy infrastructure and advanced energy technology approaches to convert the disadvantaged community of Oak View, into an AEC and to provide a template for converting other communities through a general master community design. The project team will collaborate with the City of Huntington Beach and stakeholders to evaluate case studies for energy technologies and business and financial models as well as develop outreach tools. (EPIC funding) Contact: Rachel Salazar (Staff presentation 5 minutes)

California Environmental Quality Act (CEQA) Compliance

- 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: CCR, tit. 14 §15306
 - Common Sense Exemption. 14 CCR 15061 (b) (3)

Explain reason why Agreement is exempt under the above section:
 This project is exempt under 14 CCR 15306 because it will create proposed plans, case studies, and designs that do not disturb an environmental resource and have no legally binding effect on future activities. Specifically, this project consists of the feasibility study and planning of a proposed Advanced Energy Community in the Oak View area of Huntington Beach, CA, and a general master community design. This project does not create or fund implementation of these designs. This project involves paper studies, modeling, preparing reports, holding meetings, research, information gathering, and conducting educational outreach. This work will be done within existing offices and with site visits to the Oak View area of Huntington Beach and with minimal travel between them.
 - 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	

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

Legal Company Name:	Budget
Altura Associates, Inc.	\$ 516,965
DOE- National Renewable Energy Laboratory	\$ 350,000
County of Orange/City of Huntington Beach	\$ 90,000
	\$

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

Budget Information			
Funding Source	Funding Year of Appropriation	Budget List No.	Amount
EPIC	14-15	301.001B	\$1,500,000
			\$
R&D Program Area:	EDMFO: EDMF	TOTAL:	\$1,500,000
Explanation for "Other" selection			
Reimbursement Contract #:		Federal Agreement #:	

Recipient's Administrator/ Officer				Recipient's Project Manager			
Name:	Natalie Nodianos			Name:	Jacob Brouwer		
Address:	Office Of Research Administration 5171 California Ave., Suite 150			Address:	University Of California Irvine Advanced Power And Energy Program		
City, State, Zip:	Irvine, CA 92697-0001			City, State, Zip:	IRVINE, CA 92697-3550		
Phone:	949-824-8109 /	Fax:	- -	Phone:	949-824-7302 /	Fax:	- -
E-Mail:	natalie.nodianos@uci.edu			E-Mail:	jlbrouwer@uci.edu		

Selection Process Used	
<input checked="" type="checkbox"/> Competitive Solicitation	Solicitation #: GFO-15-312
<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

EXHIBIT A Scope of Work

I. TASK ACRONYM/TERM LISTS

A. Task List

Task #	CPR ¹	Task Name
1		General Project Tasks
2		Develop AEC Design and Planning Tool
3		Develop Smart Community Microgrid Energy Management Model
4	X	Develop Case Studies on Various Integration Designs
5		Develop Master Community Design
6		Develop Financial and Business Models
7		Develop Outreach Strategy
8		Evaluation of Project Benefits
9		Technology/Knowledge Transfer Activities

B. Acronym/Term List

Acronym/Term	Meaning
AEC	Advanced Energy Community
CAM	Commission Agreement Manager
CAO	Commission Agreement Officer
CPR	Critical Project Review
TAC	Technical Advisory Committee

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

A. Purpose of Agreement

The purpose of this Agreement is to fund the development of extensible tools and to plan and design the integrated set of energy infrastructure and advanced energy technology approaches for accelerating the deployment of Advanced Energy Communities (AEC).

B. Problem/ Solution Statement

Problem

There is lack of optimal integration approaches of smart grid technologies, combined cooling heating and power generation with high temperature fuel cells, energy storage technologies, and renewable energy utilization, for greater electricity reliability, lower costs, increased safety and Zero Net Energy future in the community level.

Solution

The Regents of the University of California (Recipient), on behalf of the Irvine campus, will develop tools, plan, design, and evaluate integrated sets of advanced energy technologies and

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

solutions at a pilot/community scale and to validate its benefits to California Investor-Owned-Utilities ratepayers and California Independent System Operator in various case studies and designs. To accelerate the deployment of AECs throughout the state, applied research is needed to integrate and optimize the promising new energy innovations into a unified system that efficiently interacts with the existing community electrical grid/infrastructure/buildings, serves various end-uses, obtains performance data for scale-up, and performs cost-benefit analyses for demonstrating economic feasibility. Master community design tools and approaches and integration and control strategies for innovative energy technologies will be advanced in this project, which will accelerate the development of and establish technical and economic readiness for deployment of AECs throughout the State. The tools will be extensible and the AEC designs will be replicable to other communities throughout California with transferable knowledge, technologies, and findings.

C. Goals and Objectives of the Agreement

Agreement Goals

The goal of this Agreement is to: develop extensible tools and to plan and design the integrated set of energy infrastructure and advanced energy technology approaches to convert the community of Oak View into an AEC that can be easily replicable for use in similar communities.

Ratepayer Benefits:² This Agreement will result in the ratepayer benefits of greater electricity reliability, lower costs, and increased safety. The reliability is increased by 1) local renewable energy resources are being utilized in the AEC and could serve the critical loads inside the community without interruption, 2) providing mobility in case of an emergency through electric vehicle charging stations in adjacent communities, 3) the AEC could provide ancillary services to the grid during normal operations, and 4) the AEC could provide black-start capability, (the ability to keep the system running during a power outage). The AEC design will provide lower costs and economic benefit to the ratepayers by 1) reducing the transmission/distribution losses, 2) reducing the need for new transmission infrastructure and 3) providing a less expensive method in achieving the state's 50% renewable goal and environmental goals. Lastly, this replicable AEC design will also significantly reduce greenhouse gas emissions and criteria emissions compared to the grid as a whole, as it incorporates more renewables, leading to increased ratepayer safety and health benefits.

Technological Advancement and Breakthroughs:³ This Agreement will support the development and commercialization of technological advancements and breakthroughs that overcome barriers to the achievement of the State of California's statutory energy goals by: 1) maximize the use of the renewable energy sources in the community, 2) help mitigate the increasing renewable intermittency impact on the local utility grid, 3) reduce the emissions from the community, and 4) improve the grid reliability and resiliency from community level. This Agreement will support development and commercialization of technological advancements that

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.

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overcome barriers to achieving the state's increase use of renewable energy goal. This Agreement will advance the integration of emerging and proven green energy technologies, with various end-uses in the community scale. The knowledge gained from the integration of technologies with the end-uses will be valuable to communities throughout California.

Agreement Objectives

The objectives of this Agreement are to:

- Develop and establish an AEC Design and Planning Tool to provide insights and recommendations on various integration and deployment options for the Oak View community,
- Develop and establish a Smart Community Microgrid Energy Management Model that can simulate and evaluate the impacts and performance characteristics of the suite of clean energy technologies and systems that will be implemented in the AECs,
- Carry out case studies to evaluate various designs and integration strategies; the design effort will include, but not be limited to, combinations of Energy Efficiency Measures, supplemental local renewable energy sources, energy storage systems, novel uses of the natural gas system, clean power generation systems with combined cooling, heating and power, and Smart-grid technologies that will be evaluated for the best value in terms of economic, environmental and technical performance,
- Propose a Master Community Design for the Oak View community from the case studies, and establish a Master Community Design for a generic community,
- Develop financial and business models for AEC design and develop a market facilitation plan,
- Develop an outreach strategy for educating the building industry, utilities, government agencies, communities and other interested parties regarding the benefits of using an integrated set of advanced energy technologies to revitalize and energize a community, make it an AEC, and produce jobs and educational benefits.

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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.

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:

o **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:

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- 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 Word file format, version 2007 or later.
- **Software Application Development**
- Use the following standard Application Architecture components in compatible versions for any software application development required by this Agreement (e.g., databases, models, modeling tools), unless the CAM approves other software applications such as open source programs:
- Microsoft ASP.NET framework (version 3.5 and up). Recommend 4.0.
 - Microsoft Internet Information Services (IIS), (version 6 and up) Recommend 7.5.
 - Visual Studio.NET (version 2008 and up). Recommend 2010.
 - C# Programming Language with Presentation (UI), Business Object and Data Layers.
 - SQL (Structured Query Language).
 - Microsoft SQL Server 2008, Stored Procedures. Recommend 2008 R2.
 - Microsoft SQL Reporting Services. Recommend 2008 R2.
 - XML (external interfaces).

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

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- 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.
- 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.

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- 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.
- 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

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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 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. (See Task 1.1 for requirements for draft and final products.)

Recipient Products:

- Final Report Outline (draft and final)

CAM Product:

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

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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*

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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.

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- 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:

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- 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
- 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

IV. 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 DEVELOP AEC DESIGN AND PLANNING TOOL

The goal of this task is to develop an AEC Design and Planning Tool.

The Recipient shall:

- Conduct site investigations throughout the Oak View community to explore opportunities for multiple energy efficiency, control and generation technologies, analyze site constraints, opportunities and needs, meet and interview stakeholders.
- Identify key building- and community-scale energy systems and strategies that could be employed in the AEC. Potential examples include:
 - Advanced HVAC strategies and controls.
 - Advanced lighting and controls.
 - Zero energy buildings.
 - Recovering waste heat from commercial and industrial buildings for use in residential heating.
 - Waste-to-energy district thermal systems.
 - Rooftop/community solar.
- Develop various *Building Energy Simulation Tools* based on the possible building- and community-scale energy systems and strategies identified earlier in this task and submit to CAM for approval.
- Develop the *AEC Design and Planning Tool* that will provide insights and recommendations on various integration and deployment options for the community.
 - Establish a baseline case from inputs including basic information on the community.
 - Include potential clean energy technology and integration strategy options.
- Develop a draft *System Integration Report* which will include: results from the work performed earlier in this task, concepts for integration of the technologies, results from building and built environment simulations, and an overall draft design of the integrated suite of advanced energy technologies suggested for the community.
- Submit the draft *System Integration Report* to key stakeholders, and CAM for review and feedback.
- Revise the draft report based on feedback from key stakeholders, and CAM and submit a final *System Integration Report* to the CAM for approval.

Products:

- Building Energy Simulation Tools
- AEC Design and Planning Tool
- System Integration Report (draft and final)

TASK 3 DEVELOP SMART COMMUNITY MICROGRID ENERGY MANAGEMENT MODEL

The goal of this task is to simulate and evaluate the impact and performance characteristics of the suite of clean energy technologies and systems that will be implemented in the AEC.

EXHIBIT A

Scope of Work

The Recipient shall:

- Develop the *Smart Community Microgrid Energy Management Model* that will simulate and evaluate the impact and performance characteristics of the set of clean energy technologies that will be implemented in the AEC. The model will also evaluate multiple energy and resources dispatch control approaches and support the development of optimized control strategies in the AEC.
- Using the model developed earlier in the task, conduct building energy modeling and utilities analysis to:
 - Support overall energy needs analysis (current and future)
 - Perform risk/sensitivity analysis for load growth and fluctuations (e.g., weather, building usage changes, technology adoption, etc.)
 - Perform energy efficiency measure optimization, analyzing multiple energy efficiency strategies in concert with production and storage solutions for microgrid optimization from a control and first cost basis.
 - Perform demand management analysis, in concert with the energy efficiency analysis, to support effective active control of the microgrid with usage, production, and storage constraints on multiple time scales.
- Develop and submit to the key stakeholders, TAC, and CAM, a draft *Model Development Report*, including:
 - Discussion of the different modeling and analyses performed earlier in the task, and results from this work.
 - Recommended set of clean energy technologies.
 - Summary of control and management strategies investigated.
 - Optimized control and management strategies being recommended for the AEC.
- Prepare a *Summary of the Draft Model Development Report presentation slide deck* to present to the TAC, key stakeholders, and CAM at a TAC Meeting.
- Revise the report to incorporate feedback from the stakeholders, TAC, and CAM, and submit a final *Model Development Report* to the CAM for approval.

Products:

- Smart Community Microgrid Energy Management Model
- Model Development Report (draft and final)
- Summary of the Draft Model Development Report presentation slide deck

TASK 4 DEVELOP CASE STUDIES ON VARIOUS INTEGRATION DESIGNS

The goal of this task is to develop an optimized roadmap for the AEC, both technically and financially. Case studies will be developed to evaluate various designs and integration strategies for the AEC.

The Recipient shall:

- Develop AEC case studies with a combination of hypothetical energy efficiency measures, supplemental local renewable energy sources, energy storage systems, electric and gas utility systems, clean power generation system with combined heat and power, and smart-grid technologies, based on the recommendations and results gained in Task 3. The case studies will:
 - Quantify the economic and environmental benefits and technical performance.
 - Identify technical challenges encountered in each case.

EXHIBIT A

Scope of Work

- Document any prospective regulatory, administrative, planning and permitting issues during the process.
- Develop a technology and infrastructure plan for the AEC case studies, including: (1) microgrid controls platform, (2) communications infrastructure, (3) building controls integration, and (4) measurement and verification and metering infrastructure.
- Draft an *AEC Case Study Report*, including, but not limited to:
 - A description of each of the case studies performed earlier in this task.
 - Delineation of the benefits and technical performance.
 - Summary of any prospective technical, regulatory, or administrative challenges encountered.
 - Summary of the planning and permitting process for each case study.
 - The technology and infrastructure plan for the AEC case studies.
- Submit the draft *AEC Case Study Report* to the TAC, key stakeholders, and the CAM for review and comment.
- Revise the report based on stakeholder, TAC, and CAM feedback, and submit a final *AEC Case Study Report* to the CAM for approval.
- Prepare a CPR Report in accordance with subtask 1.3 (CPR Meetings).
- Participate in a CPR meeting.

Products:

- AEC Case Study Report (draft and final)
- CPR Report

TASK 5 DEVELOP MASTER COMMUNITY DESIGN

The goal of this task is to develop a master community design for both the Oak View AEC, as well as a more generic design to be used as a model for duplication in other communities.

The Recipient shall:

- Develop a draft *Oak View AEC Master Community Design* report for the community based upon the findings from the case studies. The design shall include, but not be limited to:
 - Descriptions of the proposed location(s) for the development.
 - Tentative maps, engineering designs of proposed buildings, streets, and community spaces.
 - Energy technologies to be deployed, any water conservation features and water saving technologies.
 - Potential interconnection sites and advanced energy infrastructure.
 - Technology deployment and phasing, procurement, funding and operations strategies.
 - How these elements are combined in a systems approach.
- Submit a draft of the *Oak View AEC Master Community Design* report to the key stakeholders, TAC, and CAM for review and comments.
- Prepare a *Summary of the Draft Oak View AEC Master Community Design Report presentation slide deck* to present to the key stakeholders, TAC, and CAM at a TAC Meeting.
- Revise the Oak View AEC Master Community Design report based on stakeholder, TAC, and CAM feedback, and submit a final *Oak View Master Community Design* report to the CAM for approval.

EXHIBIT A

Scope of Work

- Develop a generic *Master Community Design* report to serve as a model for other communities.

Products:

- Oak View AEC Master Community Design report (draft and final)
- Summary of the Draft Oak View AEC Master Community Design presentation slide deck
- Master Community Design report

TASK 6 DEVELOP FINANCIAL AND BUSINESS MODELS

The goal of this task is to develop financial and business model(s) for the Master Community Design that showcases innovative financing strategies that can help make the AEC more financially attractive in comparison with other similar community developments without advanced energy attributes. These models will explore the use of multiple low-interest financing mechanisms that are available to the City, as well as clean energy funding, that the City may garner from the air quality management district.

The Recipient shall:

- Develop financial and business model(s) for the City to consider for implementation of the AEC based on the case studies developed in Task 4, and the master design recommendations provided in Task 5. A combination of structures and finance sources will be examined to appropriately capture the flow of risks and benefits to all stakeholders in the community, including the utilities, local government, residents, business owners, etc. Multiple financial elements that will be assessed shall include, but not be limited to:
 - Private and public debt financing.
 - Equipment leases.
 - Power Purchase Agreements.
 - Property Assessed Clean Energy financing.
 - On-bill repayment mechanisms.
 - Insurance.
- Collaborate with key project stakeholders (including the City), as well as financial institutions, to assess feasibility, risk, and total costs.
- Develop a draft *AEC Financial and Business Model Report* to include, but not be limited to, a discussion on the models developed and results from earlier subtasks, as well as recommendations.
- Submit the draft *AEC Financial and Business Model Report* to key stakeholders (including the City), the TAC, and the CAM for review and feedback. Revise the draft *AEC Financial and Business Model Report* based on feedback from the stakeholders, TAC, and CAM, and submit a final report to the CAM.
- Upon feedback from the City as to which financial and business model they prefer, prepare and submit to the CAM, an *AEC Financial and Business Model*.

Products:

- AEC Financial and Business Model Report (draft and final)
- AEC Financial and Business Model

TASK 7 DEVELOP OUTREACH STRATEGY

EXHIBIT A

Scope of Work

The goal of this task is to educate the building industry, government agencies, other communities and other interested parties on the benefits of using an integrated set of advanced energy technologies in an AEC to revitalize a community and produce educational benefits.

The Recipient shall:

- Develop outreach strategies that produce educational benefits to key stakeholders and interested parties, on implementing an AEC.
- Develop an *Outreach Strategy Report* that provides a plan that is specific to providing educational information about the benefits of an AEC for Huntington Beach and other communities throughout the state, and provide to the CAM for approval.
- Implement the outreach and education in the community, according to the Outreach Strategy Report.
- Summarize the activities conducted in earlier subtasks as part of the Outreach Strategy, in an *Outreach Activity Report* and submit it to the CAM for approval.

Products:

- Outreach Strategy Report
- Outreach Activity 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.
 - 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.

EXHIBIT A

Scope of Work

- 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.

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

EXHIBIT A

Scope of Work

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:

- 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: UNIVERSITY OF CALIFORNIA, IRVINE

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-15-077 from GFO-15-312 with the Regents of the University of California, on behalf of the Irvine campus' Advanced Power and Energy Program, for a \$1,500,000 grant to plan and design a specific and generic Advanced Energy Community (AEC). Specifically, this project will develop extensible tools, plan, and design the integrated set of energy infrastructure and advanced energy technology approaches to convert the disadvantaged community of Oak View into an AEC and to provide a template for converting other communities through a general master community design. The project team will collaborate with the City of Huntington Beach and stakeholders to evaluate case studies for energy technologies and business and financial models, as well as develop outreach tools; 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 May 17, 2016.

AYE: [List of Commissioners]

NAY: [List of Commissioners]

ABSENT: [List of Commissioners]

ABSTAIN: [List of Commissioners]

Cody Goldthrite,
Secretariat