



STATE OF CALIFORNIA

GRANT REQUEST FORM (GRF)

CEC-270 (Revised 12/2019)

CALIFORNIA ENERGY COMMISSION

A) New Agreement # EPC-21-001 (to be completed by CGL office)

B) Division	Agreement Manager:	MS-	Phone
ERDD	Quenby Lum	43	916-776-0789

C) Recipient's Legal Name	Federal ID Number
GRID Alternatives	26-0043353

D) Title of Project
Enabling California's Resilient Tribal Communities with Mobile Renewable Power

E) Term and Amount

Start Date	End Date	Amount
7/15/2021	3/31/2025	\$ 1,000,000

F) Business Meeting Information

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

Proposed Business Meeting Date 7/15/2021 ☐ Consent ☒ Discussion

Business Meeting Presenter Jackson Thach Time Needed: 5 minutes

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

Agenda Item Subject and Description:

GRID ALTERNATIVES. Proposed resolution approving Agreement EPC-21-001 with GRID Alternatives for a \$1,000,000 grant to deploy fully operable, grid-independent, rapidly deployable, modular scalable generation systems to enable California's tribal communities to provide critical electric resources when the grid is down, and adopting staff's determination that this action is exempt from CEQA. (EPIC funding). Contact: Quenby Lum. Staff presentation: 5 minutes.

G) California Environmental Quality Act (CEQA) Compliance

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

☒ Yes (skip to question 2)

☐ No (complete the following (PRC 21065 and 14 CCR 15378)):

Explain why Agreement is not considered a "Project":

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

a) ☒ Agreement **IS** exempt.

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

☒ Categorical Exemption. List CCR section number:

Cal. Code Regs., tit. 14, § 15301, and tit. 14, § 15303

☐ Common Sense Exemption. 14 CCR 15061 (b) (3)

**GRANT REQUEST FORM (GRF)**

Explain reason why Agreement is exempt under the above section:

- Cal. Code Regs., tit. 14, sec. 15301 provides that projects which consist of the operation, repair, maintenance, permitting, leasing, licensing, or minor alteration of existing public or private structures, facilities, mechanical equipment, or topographical features, and which involve negligible or no expansion of use beyond that existing at the time of the lead agency's determination, are categorically exempt from the provisions of CEQA. This project involves the development and demonstrating of a mobile renewable generation for backup power at existing facilities. Therefore, the project falls within section 15301 and will not have a significant effect on the environment.
- Cal. Code Regs., tit. 14, sec. 15303 provides that projects which consist of construction and location of limited numbers of new, small facilities or structures; installation of small new equipment and facilities in small structures; and the conversion of existing small structures from one use to another where only minor modifications are made in the exterior of the structure, are categorically exempt from the provisions of CEQA. This project involves the development and demonstrating of a mobile renewable generation for backup power at three different communities. The products being deployed and demonstrated are fully self-contained, mobile and independently operable with no physical moderations or changes to the ground or environment in any way. The units do not contain any fuels, liquids or other contaminants that can leak or cause any effect on the environment, and any modifications to building structures to facilitate the battery systems would be limited to the addition of transfer switches and load panels affixed to the side of a residence or community building. Therefore, the project falls within section 15303 and will not have a significant effect on the environment.

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

Check all that apply

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

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

Legal Company Name:	Budget
The Regents of the University of California, on behalf of the Riverside Campus	\$ 224,969 (match \$45,004)
	\$

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

Legal Company Name:



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J) Budget Information

Funding Source	Funding Year of Appropriation	Budget List Number	Amount
EPIC	20-21	301.001H	\$1,000,000
			\$

R&D Program Area: ESRO: ETSI

TOTAL: \$ 1,000,000

Explanation for “Other” selection

Reimbursement Contract #: Federal Agreement #:



GRANT REQUEST FORM (GRF)

K) Recipient's Contact Information

1. Recipient's Administrator/Officer

Name: Stan Greschner
Address: 1171 Ocean Ave., Suite 200
City, State, Zip: Oakland, CA 94608-1147
Phone: 510-731-1322
E-Mail: sgreschner@gridalternatives.org

2. Recipient's Project Manager

Name: Daniel Dumovich
Address: 1171 Ocean Ave., Suite 200
City, State, Zip: Oakland, CA 94608-1147
Phone: 510-338-9546
E-Mail: ddumovich@gridalternatives.org

L) Selection Process Used

- ☒ Competitive Solicitation #: GFO-20-310-10
- ☐ First Come First Served Solicitation #:
- ☐ Non-Competitive Bid Follow-on Funding (SB 115)

M) 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 GRID Alternatives

I. TASK ACRONYM/TERM LISTS

A. Task List

Task #	CPR ¹	Task Name
1		General Project Tasks
2		Community Engagement
3	X	System Deployment
4		Measurement and Verification
5		Evaluation of Project Benefits
6		Technology/Knowledge Transfer Activities

B. Acronym/Term List

Acronym/Term	Meaning
CAM	Commission Agreement Manager
CAO	Commission Agreement Officer
CEC	California Energy Commission
CO ₂ e	Carbon Dioxide Equivalent
CPR	Critical Project Review
GHG	Greenhouse Gas
HC	Hydrocarbons
kWh	Kilowatt Hour
M&V	Measurement and Verification
NO _x	Nitrous Oxides
PM	Particulate Matter
PV	Photovoltaic
TAC	Technical Advisory Committee

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 GRID Alternatives

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

A. Purpose of Agreement

The purpose of this Agreement is to deploy fully operable, grid-independent, and modular generation systems to enable California's tribal and disadvantaged communities to provide both critical electric resources when the grid is down, as well as reliable, highly mobile off-grid resources for facilities and services throughout the year. The modular, mobile, critical-resilience generator will not only provide the functionality to study multiple use cases and advance mobile generation technology throughout California, it also provides immediate, flexible and scalable relief to families who are suffering the most from the effects of wildfires and grid outages.

B. Problem/ Solution Statement

Problem

California's tribal communities are highly impacted by planned and unplanned public safety power shut offs and grid outages. Entire communities are often left without power, and many critical facilities are left inoperable or dependent on expensive, noisy, polluting gas-powered generators, which can greatly limit the ability to provide critical resources and timely responses to an emergency or disaster. Tribal communities are often very rural, which leads to longer distances traveled to reach necessary resources, and rarely have the ability to quickly mobilize electric power to where it's needed most.

Solution

The Project will use a technology and deployment approach to solve critical reliability issues in Tribal communities, demonstrate multiple use cases for grid outages, emergencies, and year-round off-grid applications, and provide replicable and scalable solutions to the gap between small gas/diesel generators and grid-tied home battery systems. The Rhino™ technology used in this project will solve for the shortcomings of both small generators as well as grid-tied home batteries, because it is quiet, emissions-free, can be deployed in real-time, can expand in energy capacity, requires no lead time nor permitting, can power a home through a transfer switch like a generator, and the batteries and inverter can be replaced or upgraded in the future.

C. Goals and Objectives of the Agreement

Agreement Goals

The goals of this project are to:

- Deploy at least 32 Rhino™ units with a fully self-sufficient, mobile, renewable energy storage and generation system to California tribal communities prone to grid outages and power shut offs.
- Increase resiliency and emergency response capacity for California's tribal communities by providing backup power to critical facilities, residents, and other off-grid and emergency assembly locations.
- Demonstrate the value of the ability to easily deploy, set up, and operate a renewable energy system in fifteen minutes or less for multiple applications.
- Demonstrate the benefits of integrating solar and other renewable assets with critical infrastructure and mobile generation.

Exhibit A Scope of Work GRID Alternatives

- Strengthen the tribes' emergency plans and resources by providing education and awareness to each test site's community on a centralized location, with rapidly deployable electricity, to convene during an emergency that causes hours of grid outage, such as an earthquake or fire.
- Study and test the best use cases and application of mobile generators with each community at each test site, including, but not limited to:
 - Critical resilience deployed at key facilities, community centers and other daily non-emergency applications
 - Individual home back-up, using transfer switch to power critical loads
 - Tribal mobile electric power services and uses in off-grid applications.
- Collect and analyze key operating data on the systems performance in different operating conditions, including climate, load levels, generation levels, system response to varying conditions, and maintenance logs.
- Provide cost savings by offsetting travel, gas consumption, and other costs associated with residents procuring or searching for electric power during an outage or emergency
- Empower tribal communities with hands-on education and job training and access to the growing clean energy economy through the manufacturing, operations & maintenance, and deployment of the product enhancing their resilience.
- Train at least six tribal members to install and operate a variety of the systems components, starting in 2022.
- Contribute to the growing body of research for mobile, renewable generation in California.
- Qualify the significant reduction in greenhouse gasses (GHGs) and criteria air pollutants attributed to the use of gas-powered generators.
- Increase the technology readiness level of the mobile generation product from TRL 7 to TRL 8.

Ratepayer Benefits:² This Project will result in considerable ratepayer benefits including:

- Greenhouse gas emission reductions, air emission reductions (e.g. nitrous oxides (NOx), water savings and cost reduction, and/or increased safety.
- Each Rhino system will reduce annual GHG emissions by approximately 0.504 kg hydrocarbons (HC), 0.133 kg NOx, 0.066 kg particulate matter (PM), and 180.1 kg carbon dioxide equivalent (CO₂e), normally resulting from the use of portable backup generators during power blackouts, using a total of 20.5 gallons of gasoline fuel. In addition, the Rhino equipped with solar photovoltaic (PV) can further reduced annual GHG emissions by approximately 1,174 kg CO₂e, related to avoided grid electricity use, assuming 3,548 kilowatt hours (kWh) generated and 0.331 kg CO₂e/kWh GHG emission factor.
- The total GHG emissions reduction per Rhino over a 20-year period is estimated at 10.08 kg HC, 2.66 kg NOx, 1.32 kg PM, 27,082 kg CO₂e.
- The Rhino can provide an estimated total of 3,548 kWh energy per year. Using the fixed electricity value of \$0.1698 per kWh, the annual electricity savings are \$602.48.

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).

Exhibit A Scope of Work GRID Alternatives

- The combined above benefits amount to \$14,580 over a 20 year period, which is the useful life of the system.

The benefit of using the Rhino system to provide backup power to critical loads for a residential utility customer was estimated using the Interruption Cost Estimate Calculator. The System Average Interruption Duration Index and System Average Interruption Frequency Index indices of 4,800 and 4, respectively, are estimated based on the number of interruptions and their duration experienced in 2019, by some of the selected demonstration sites. Based on an annual electric load of 7,200 kWh and annual household income of \$56,862, the annual cost of sustained interruptions is estimated at \$126.53 per customer.

Technological Advancement and Breakthroughs: This Project will lead to technological advancement and breakthroughs to aid in the achievement of the State of California's statutory energy goals by supporting the development of energy dense, high capacity, mobile renewable generation systems that are capable of charging critical facilities, households and devices without connection to the grid. The proposed project will demonstrate a highly scalable, replicable technology and deployment model that can be used in multiple types of emergencies and all grid outages and public safety power shutoff events. The durable, weatherproof system will also be able to support day-to-day operations, including off-grid and remote applications where there is no grid access, in all of California's climate zones.

Agreement Objectives

The key objectives of this project are to:

- Provide tribes with backup power and emergency services during a major grid outage event;
- Add to the body of research by testing multiple use cases, including community-lead applications and preferences;
- Reduce costs to tribes resulting from emergency travel and gas generator deployment related to grid outages starting in 2022;
- Train at least six tribal members to install and operate a variety of the systems components, starting in 2022;
- Quantify the reduction of GHGs and localized particulate pollution starting in 2022;
- Quantify all cost and time savings by avoiding refueling a gas generator and locating energy power within the community;
- Increase the technology readiness level of the mobile generation product from TRL 7 to TRL 8.

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)**. All products submitted which will be viewed by the public, must comply with the accessibility requirements of Section 508 of the federal Rehabilitation Act of 1973, as amended (29 U.S.C. Sec. 794d), and regulations implementing that act as set forth in Part 1194 of Title 36 of the Federal Code of Regulations. All

Exhibit A Scope of Work GRID Alternatives

technical tasks should include product(s). 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:

○ **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 California Energy Commission’s (CEC) 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.

The following describes the accepted formats for electronic data and documents provided to the CEC 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.
- 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 CEC'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 CEC 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;
- Invoicing and auditing procedures;
- Administrative products (subtask 1.1);
- CPR meetings (subtask 1.3);
- Match fund documentation (subtask 1.7);
- Permit documentation (subtask 1.8);
- Subcontracts (subtask 1.9); and
- Any other relevant topics.

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

- The CAM's expectations for accomplishing tasks described in the Scope of Work;
- An updated Project Schedule;
- Technical products (subtask 1.1);

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- Progress reports (subtask 1.5);
- Final Report (subtask 1.6);
- Technical Advisory Committee meetings (subtasks 1.10 and 1.11); and
- Any other relevant topics.
- Provide *Kick-off Meeting Presentation* to include but not limited to:
 - Project overview (i.e. project description, goals and objectives, technical tasks, expected benefits, etc.)
 - Project schedule that identifies milestones
 - List of potential risk factors and hurdles, and mitigation strategy
- Provide an *Updated Project Schedule*, *Match Funds Status Letter*, and *Permit Status Letter*, 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:

- Kick-off Meeting Presentation
- Updated Project Schedule (*if applicable*)
- Match Funds Status Letter (subtask 1.7) (*if applicable*)
- Permit Status Letter (subtask 1.8) (*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 CEC 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 CEC 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 CEC.

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 CEC, but they may take place at another location, or may be conducted via electronic conferencing (e.g., WebEx) as determined by the CAM.

Exhibit A

Scope of Work

GRID Alternatives

The Recipient shall:

- Prepare and submit 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.
- 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* with 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)

CAM Products:

- CPR Agenda
- 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 CEC 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 procured equipment.
 - The CEC's request for specific "generated" data (not already provided in Agreement products).

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- 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 copies of *All Final Products* on a USB memory stick, organized by the tasks in the Agreement.

Products:

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

REPORTS AND INVOICES

Subtask 1.5 Progress Reports and Invoices

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

The Recipient shall:

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

Exhibit A Scope of Work GRID Alternatives

Subtask 1.6.1 Final Report Outline

The Recipient shall:

- Prepare a *Final Report Outline* in accordance with the *Energy Commission Style Manual* provided by the CAM.

Recipient Products:

- Final Report Outline (draft and final)

CAM Product:

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

Subtask 1.6.2 Final Report

The Recipient shall:

- Prepare a *Final Report* for this Agreement in accordance with the approved Final Report Outline, Energy Commission 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)
- Submit a draft of the Executive Summary to the TAC for review and comment.
- Develop and submit a *Summary of TAC Comments on Executive Summary* received on the Executive Summary. For each comment received, the recipient will identify in the summary the following:
 - Comments the recipient proposes to incorporate.
 - Comments the recipient does propose to incorporate and an explanation for why.
- 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.
- Incorporate all CAM comments into the *Final Report*. If the Recipient disagrees with any comment, provide a *Written Responses to Comments* explaining why the comments were not incorporated into the final product.

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- Submit the revised *Final Report* electronically with any Written Responses to Comments within 10 days of receipt of CAM's Written Comments on the Draft Final Report, unless the CAM specifies a longer time period or approves a request for additional time.

Products:

- Summary of TAC Comments on Executive Summary
- Draft Final Report
- Written Responses to Comments (*if applicable*)
- 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 CEC 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 CEC 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 CEC 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.
 - If different from the solicitation application, provide 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.

Exhibit A Scope of Work GRID Alternatives

- 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. 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*)

Exhibit A Scope of Work GRID Alternatives

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 each 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.
- Help set the project team's goals and contribute to the development and evaluation of its statement of proposed objectives as the project evolves.
- Provide a credible and objective sounding board on the wide range of technical and financial barriers and opportunities.
- Help identify key areas where the project has a competitive advantage, value proposition, or strength upon which to build.

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- Advocate, to the extent the TAC members feel is appropriate, on behalf of the project in its effort to build partnerships, governmental support and relationships with a national spectrum of influential leaders.
- Ask probing questions that insure a long-term perspective on decision-making and progress toward the project's strategic goals.

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.

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.

Exhibit A

Scope of Work

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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.

The TAC shall:

- Help set the project team's goals and contribute to the development and evaluation of its statement of proposed objectives as the project evolves.
- Provide a credible and objective sounding board on the wide range of technical and financial barriers and opportunities.
- Help identify key areas where the project has a competitive advantage, value proposition, or strength upon which to build.
- Advocate on behalf of the project in its effort to build partnerships, governmental support and relationships with a national spectrum of influential leaders.
- Ask probing questions that insure a long-term perspective on decision-making and progress toward the project's strategic goals.
- Review and provide comments to proposed project performance metrics.
- Review and provide comments to proposed project Draft Technology Transfer Plan.

Products:

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

Subtask 1.12 Project Performance Metrics

The goal of this subtask is to identify key performance targets for the project. The performance targets should be a combination of scientific, engineering, techno-economic, and/or programmatic metrics that provide the most significant indicator of the research or technology's potential success.

The Recipient shall:

- Complete and submit the draft *Project Performance Metrics Questionnaire* to the CAM prior to the Kick-off Meeting.
- Present the draft *Project Performance Metrics Questionnaire* at the first TAC meeting to solicit input and comments from the TAC members.
- Develop and submit a *TAC Performance Metrics Summary* that summarizes comments received from the TAC members on the proposed project performance metrics. The *TAC Performance Metrics Summary* will identify:

Exhibit A Scope of Work GRID Alternatives

- TAC comments the recipient proposes to incorporate into the final *Project Performance Metrics Questionnaire*.
- TAC comments the recipient does not propose to incorporate with and explanation why.
- Submit a final *Project Performance Metrics Questionnaire* with incorporated TAC feedback.
- Develop and submit a *Project Performance Metrics Results* document describing the extent to which the recipient met each of the performance metrics in the final *Project Performance Metrics Questionnaire*.
- Discuss the final *Project Performance Metrics Questionnaire* and *Project Performance Metrics Results* at the Final Meeting.

Products:

- Project Performance Metrics Questionnaire (draft and final)
- TAC Performance Metrics Summary
- Project Performance Metrics Results

Exhibit A Scope of Work GRID Alternatives

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: COMMUNITY ENGAGEMENT

The goal of this task is to develop an actionable plan and approach to engaging community members so that they can learn about the technology, innovation, and applications for the mobile renewable generation system. Community engagement will focus on opportunities for broad public education and workforce training. Additionally, the community engagement activities will identify local resiliency needs to evaluate how the proposed technology can support the community in the event of power outages.

The Recipient shall:

- Prepare and implement a *Community Engagement Plan* that includes:
 - A description of target community stakeholders
 - Description about how the proposed technology can support community resiliency
 - A plan to engage these target community stakeholders
 - Description of engagement activities which may include, but is not limited to:
 - Workforce training programs
 - K-14 classroom education
 - Workshops and webinars
 - Job fairs
 - Industry events
 - Justification for the proposed approach based on outreach to target community stakeholders and incorporation of feedback received
 - A draft schedule of engagement events.
- Provide periodic updates as part of regular progress reporting of outreach events with photographs and videos.
- Provide, if necessary, an updated schedule of engagement events as part of regular progress reporting.
- Prepare a *Community Engagement Report* that includes:
 - A list of events conducted with relevant information about attendees
 - Documentation of the events, including videos and photographs
 - Assessment of how community members responded to discussions around community resilience, including identification of priority services
 - Documentation of any additional use cases identified or derived from community discussions
 - Summary of feedback, including lessons learned from community engagement events.

Products:

- Community Engagement Plan (draft and final)
- Community Engagement Report (draft and final)

TASK 3: SYSTEM DEPLOYMENT

Exhibit A

Scope of Work

GRID Alternatives

The goal of this task is to deploy the systems in multiple tribal communities across the state to test the equipment with different prospective partners in different use cases, including different climate zones and weather conditions.

The Recipient shall:

- Prepare a *Deployment Plan* including:
 - Proposed deployment sites information:
 - California climate zone (minimum of three unique zones)
 - Tribal Community or Disadvantaged area and low-income status
 - Description of potential non-emergency applications
 - Description of deployment testing and verification that will occur, including, but not limited to:
 - Duration
 - Power output
 - Use case and application
 - Planned weather conditions.
 - Planned deployment schedule.
- Confirm deployment site hosts ability to host and the preferred schedule.
- Document site deployment with photographs and videos.
- Prepare a *Deployment Report* upon the completion of each site deployment documenting the testing, performance, community feedback and additional community lead applications for each system:
 - Proposed use case for the deployment
 - Non-emergency applications, including off-grid uses throughout the year, special events, vehicle charging, electric equipment operation, and others
 - Emergency applications consistent with the findings from the Task 2 *Community Engagement Plan* in the unforeseen event of a local emergency
 - Renewable energy connectivity and ability to leverage existing renewable assets in the community during outages and emergencies.
 - Methodology for documenting use by application/use case.
 - Analysis of use cases for the equipment.
 - Documentation of all community feedback on the use and impact of the systems.
 - Summary of all job training and workforce development activities and impacts related to the project.
 - Summary of any modifications to the controls or system needed to meet demand and adapt to all use cases.
 - Plan for demonstration of connecting multiple systems to increase capabilities, including battery storage and PV generation.
- Prepare a CPR Report and participate in CPR meeting per subtask 1.3.

Products:

- Deployment Plan (draft and final)
- Deployment Report (draft and final)
- CPR Report

TASK 4 MEASUREMENT & VERIFICATION

Exhibit A

Scope of Work

GRID Alternatives

The goal of this task is to conduct measurement and verification (M&V) of system performance against the established performance metrics.

The Recipient shall:

- Compose a *M&V Plan* containing:
 - A list of key metrics, including, but not limited to:
 - Electricity production
 - Electricity storage
 - Electricity discharge
 - Electricity production
 - GHG reductions
 - Capacity factor
 - Weather conditions.
 - For each metric detail:
 - Measurement systems and sensors
 - Accuracy specifications (required and actual)
 - Measurement frequency
 - Measurement time period.
 - Equations and procedures for calculating each metric.
- Conduct measurements for at least eight two-day tests in at least three climate zones. and continuous tests for one year at a single site location.
- Compose a *M&V Report* to present the measurement results and compares measured results against the performance benchmarks.
-

Products:

- M&V Plan (draft and final)
- M&V Report (draft and final)

TASK 5: EVALUATION OF PROJECT BENEFITS

The Recipient shall:

- Complete the *Initial Project Benefits Questionnaire*. The Initial Project Benefits Questionnaire shall be initially completed by the Recipient with 'Kick-off' selected for the 'Relevant data collection period' and submitted to the CAM for review and approval.
- Complete the *Annual Survey* by December 15th of each year. The Annual Survey includes but is not limited to the following information:
 - Technology commercialization progress
 - New media and publications
 - Company growth
 - Follow-on funding and awards received
- Complete the *Final Project Benefits Questionnaire*. The Final Project Benefits Questionnaire shall be completed by the Recipient with 'Final' selected for the 'Relevant data collection period' and submitted to the CAM for review and approval.
- Respond to CAM questions regarding the questionnaire drafts.
- Complete and update the project profile on the CEC's public online project and recipient directory on the [Energize Innovation website](http://www.energizeinnovation.fund) (www.energizeinnovation.fund), and provide *Documentation of Project Profile on EnergizeInnovation.fund*, including the profile link.

Exhibit A Scope of Work GRID Alternatives

- If the Prime Recipient is an Innovation Partner on the project, complete and update the organizational profile on the CEC's public online project and recipient directory on the [Energize Innovation website](http://www.energizeinnovation.fund) (www.energizeinnovation.fund), and provide *Documentation of Organization Profile on EnergizeInnovation.fund*, including the profile link.

Products:

- Initial Project Benefits Questionnaire
- Annual Survey(s)
- Final Project Benefits Questionnaire
- Documentation of Project Profile on EnergizeInnovation.fund
- Documentation of Organization Profile on EnergizeInnovation.fund

TASK 6: TECHNOLOGY/KNOWLEDGE TRANSFER ACTIVITIES

The goal of this task is to conduct activities that will accelerate the commercial adoption of the technology being supported under this agreement. Eligible activities include, but are not limited to, the following:

- Scale-up analysis including manufacturing analysis, independent design verification, and process improvement efforts.
- Technology verification testing, or application to a test bed program located in California.
- Legal services or licensing to secure necessary intellectual property to further develop the technology
- Market research, business plan development, and cost-performance modeling.

The Recipient Shall:

- Develop and submit a *Technology Transfer Plan (Draft/Final)* that identifies the proposed activities the recipient will conduct to accelerate the successful commercial adoption of the technology.
- Present the *Draft Technology Transfer Plan* to the TAC for feedback and comments.
- Develop and submit a *Summary of TAC Comments on Draft Technology Transfer Plan* that summarizes comments received from the TAC members on the *Draft Technology Transfer Plan*. This document will identify:
 - TAC comments the recipient proposes to incorporate into the *Final Technology Transfer Plan*.
 - TAC comments the recipient does not propose to incorporate with and explanation why.
- Submit the *Final Technology Transfer Plan* to the CAM for approval.
- Implement activities identified in *Final Technology Transfer Plan*.
- Develop and submit a *Technology Transfer Summary Report (Draft/Final)* that includes high level summaries of the activities, results, and lessons learned of tasks performed relating to implementing the *Final Technology Transfer Plan*. This report should not include any proprietary information.
- When directed by the CAM, develop presentation materials for an CEC- sponsored

Exhibit A Scope of Work GRID Alternatives

- conference/workshop(s) on the project.
- When directed by the CAM, participate in annual EPIC symposium(s) sponsored by the CEC.
- Provide at least (6) six *High Quality Digital Photographs* (minimum resolution of 1300x500 pixels in landscape ratio) of pre and post technology installation at the project sites or related project photographs.

Products:

- Technology Transfer Plan (Draft/Final)
- Summary of TAC Comments on Draft Technology Transfer Plan
- Technology Transfer Summary Report (Draft/Final)
- High Quality Digital Photographs

IV. PROJECT SCHEDULE

Please see the attachment "06 Project Schedule" Excel spreadsheet.

STATE OF CALIFORNIA

STATE ENERGY RESOURCES
CONSERVATION AND DEVELOPMENT COMMISSION

RESOLUTION - RE: GRID ALTERNATIVES

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

RESOLVED, that the CEC approves Agreement EPC-21-001 with GRID Alternatives for a \$1,000,000 grant to deploy fully operable, grid-independent, rapidly deployable, modular scalable generation systems to enable California's tribal communities to provide critical electric resources when the grid is down; and

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

CERTIFICATION

The undersigned Secretariat to the CEC does hereby certify that the foregoing is a full, true, and correct copy of a Resolution duly and regularly adopted at a meeting of the CEC held on July 15, 2021.

AYE:

NAY:

ABSENT:

ABSTAIN:

Liza Lopez
Secretariat