California Energy Commission
May 10, 2023 Business Meeting
Backup Materials for Agenda Item No 09a:
American Lithium Energy Corp.

The following backup materials for the above-referenced agenda item are available in this PDF packet as listed below:

1. Proposed Resolution
2. Grant Request Form
3. Scope of Work

RESOLUTION NO: 23-0510-09a

STATE OF CALIFORNIA

STATE ENERGY RESOURCES
CONSERVATION AND DEVELOPMENT COMMISSION

RESOLUTION: American Lithium Energy Corp.

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-22-014 with American Lithium Energy Corp. for a $2,997,617 grant to fund the build-out of a LRIP pilot line for silicon anode prismatic batteries with up to 30 percent greater energy capacity compared to traditional graphite-based technology. During the project, a production line will be built capable of manufacturing 500 cells/day while maintaining a 90 percent yield; and

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

CERTIFICATION

The undersigned Secretariat to the CEC does hereby certify that the foregoing is a full, true, and correct copy of a resolution duly and regularly adopted at a meeting of the CEC held on May 10, 2023.

AYE:
NAY:
ABSENT:
ABSTAIN:

Dated:

_____
Liza Lopez
Secretariat

STATE OF CALIFORNIA
CALIFORNIA ENERGY COMMISSION

CEC-270 (Revised 9/2022)

GRANT REQUEST FORM (GRF)

A. New Agreement Number

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

New Agreement Number: EPC-22-014

B. Division Information

1. Division Name: ERDD
2. Agreement Manager: Joshua Croft
3. MS-:51
4. Phone Number: 925-452-7638

C. Recipient's Information

1. Recipient's Legal Name: American Lithium Energy Corp.
2. Federal ID Number: 94-3439474

D. Title of Project

Title of project: Advanced High Silicone Anode Prismatic Battery Production in California

E. Term and Amount

1. Start Date: 4/24/2023
2. End Date: 3/31/2028
3. Amount: $2,997,617.00

F. Business Meeting Information

1. Are the ARFVTP agreements $75K and under delegated to Executive Director? No
2. The Proposed Business Meeting Date: 5/10/2023 .
3. Consent or Discussion? Discussion
4. Business Meeting Presenter Name: Michael Ferreira
5. Time Needed for Business Meeting: 10 minutes.
6. The email subscription topic is: EPIC (Electric Program Investment Charge).

Agenda Item Subject and Description:

American Lithium Energy Corp. American Lithium Energy Corp. Proposed resolution approving Agreement EPC-22-014 with American Lithium Energy Corp. for a $2,997,617 grant to fund the build-out of a LRIP pilot line for silicon anode prismatic batteries with up to 30 percent greater energy capacity compared to traditional graphite-based technology, and adopting staff's determination that this action is exempt from CEQA. During the project, a production line will be built capable of manufacturing 500 cells/day while maintaining a 90 percent yield. (EPIC Funding) Contact: Michael Ferreira.

G. California Environmental Quality Act (CEQA) Compliance

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

   If yes, skip to question 2.

If no, complete the following (PRC 21065 and 14 CCR 15378) and explain why Agreement is not considered a "Project":

Agreement will not cause direct physical change in the environment or a reasonably foreseeable indirect physical change in the environment because:

2. If Agreement is considered a "Project" under CEQA answer the following questions.

a) Agreement **IS** exempt?

Yes

Statutory Exemption?
No

If yes, list PRC and/or CCR section number(s) and separate each with a comma. If no, enter "None" and go to the next question.

PRC section number: None

CCR section number: None

Categorical Exemption?
Yes

If yes, list CCR section number(s) and separate each with a comma. If no, enter "None" and go to the next question.

CCR section number: Cal. Code Regs., tit. 14, § 15301 ;

Common Sense Exemption? 14 CCR 15061 (b) (3)
No

If yes, explain reason why Agreement is exempt under the above section. If no, enter "Not applicable" and go to the next section.

This project is exempt under CEQA Guidelines section 15301 because it will consist of minor alterations to an existing structure, involving negligible or no expansion of existing or former use. Specifically, this project will use available space in an already existing structure that is zoned for industrial manufacturing, covers 23,000 square feet, and is currently used for prismatic battery cell production. The recipient's facility currently relies on manually operated machines which can produce no more than 50 cells per day. To effectively scale production for LRIP, this project will install additional equipment including an automatic electrode die cuter, electrolyte filling machine and prismatic laser sealer. All installation will be performed within the shell of the existing building. This new equipment will only use approximately 200 square feet of floor space, does not use any water or other liquids as coolers, and will not cause any changes in facility design or operation.

The project will not impact an environmental resource of hazardous or critical concern where designated, precisely mapped, and officially adopted pursuant to law by federal, state, or local agencies; does not involve any cumulative impacts of successive projects of the same type in the same place that might be considered significant; does not involve unusual circumstances that might have a significant effect on the environment; will not result in damage to scenic resources within a highway officially designated as a state scenic highway; the project site is not

included on any list compiled pursuant to Government Code section 65962.5; and the project will not cause a substantial adverse change in the significance of a historical resource. Therefore, none of the exceptions to categorical exemptions listed in CEQA Guidelines section 15300.2 apply to this project, and this project will not have a significant effect on the environment.

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

No

If yes, answer yes or no to all that applies. If no, list all as “no” and “None” as “yes”.

Additional Documents	Applies
Initial Study	No
Negative Declaration	No
Mitigated Negative Declaration	No
Environmental Impact Report	No
Statement of Overriding Considerations	No
None	Yes

H. Subcontractors

List all Subcontractors listed in the Budget (s) (major and minor). Insert additional rows if needed. If no subcontractors to report, enter “No subcontractors to report” and “0” to funds. **Delete** any unused rows from the table.

Subcontractor Legal Company Name	CEC Funds	Match Funds
To Be Determined	$ 130,000	**$**0
Mira Costa College	$ 65,000	**0**
Fleet Science Center	$ 15,000	**0**

I. Vendors and Sellers for Equipment and Materials/Miscellaneous

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

Vendor/Seller Legal Company Name	CEC Funds	Match Funds
No vendors to report	**$**	**$**

J. Key Partners

List all key partner(s). Insert additional rows if needed. If no key partners to report, enter “No key partners to report.” **Delete** any unused rows from the table.

Key Partner Legal Company Name
No key partners to report

K. Budget Information

Include all budget information. Insert additional rows if needed. If no budget information to report, enter "N/A" for "Not Applicable" and "0" to Amount. **Delete** any unused rows from the table.

Funding Source	Funding Year of Appropriation	Budget List Number	Amount
EPIC	21-22	301.001I	$ 2,997,617

TOTAL Amount: $ 2,997,617

R&D Program Area: EDMFB: EDMF

Explanation for "Other" selection Not applicable

Reimbursement Contract #: Not applicable

Federal Agreement #: Not applicable

L. Recipient's Contact Information

1. Recipient's Administrator/Officer

Name: Jignesh Parikh

Address: 2261 Rutherford Rd

City, State, Zip: Carlsbad, CA 92008-8815

Phone: 916-221-2326

E-Mail: Jignesh.parikh@americanlithiumenergy.com

3. Recipient's Project Manager

Name: Jignesh Parikh

Address: 2261 Rutherford Rd

City, State, Zip: Carlsbad, CA 92008-8815

Phone: 916-221-2326

E-Mail: Jignesh.parikh@americanlithiumenergy.com

M. Selection Process Used

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

Selection Process	Additional Information
Competitive Solicitation #	GFO-21-304
First Come First Served Solicitation #	Not applicable
Other	Not applicable

N. Attached Items

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

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

Approved By

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

Agreement Manager: Joshua Croft

Approval Date: 3/13/2023

Branch Manager: Anthony Ng

Approval Date: 3/29/2023

Director: Erik Stokes

Approval Date: 3/29/2023

Exhibit A
Scope of Work
American Lithium Energy Corp. (ALE)

I. TASK ACRONYM/TERM LISTS

A. Task List

Task #	CPR[1]	Task Name
1		General Project Tasks
2		Project Planning and Factory Design
3	X	Construct and Operate Production Facility
4		Battery Production
5		Evaluation of Project Benefits
6		Technology/Knowledge Transfer Activities

B. Acronym/Term List

Acronym/Term	Meaning
ALE	American Lithium Energy
CAM	Commission Agreement Manager
CAO	Commission Agreement Officer
CEC	California Energy Commission
CPR	Critical Project Review
EV	Electric Vehicle
g	gram
kWh	Kilowatt-hour
Li	Lithium
LRIP	Low-Rate Initial Production
mAh	Milli-amp-hour
Recipient	American Lithium Energy Corp.
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 build-out of a Low-Rate Initial Production (LRIP) pilot line for silicon anode prismatic batteries with up to 30% greater energy capacity compared to traditional graphite-based technology. These batteries increase the lithium capacity – and therefore energy density - of the anode by alloying lithium with silicon (Si) while still mitigating lifecycle risks that are found in many Si anode technologies by combining Si with oxygen which minimizes the expansion/contraction at the particle level and optimizing the electrode to accommodate expansion during the charge and discharging processes. This battery also incorporates a patented internal fuse, increasing the safety of the battery during short-circuit events. During the project, a production line will be built capable of manufacturing approximately 500 cells/day while targeting 90% yield.

[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.

B. Problem/ Solution Statement

Problem
Today's Li-ion batteries primarily use graphite anode chemistry which limits the available energy density and safety characteristics. Silicon anodes are known to drastically increase energy density and energy efficiency. However, traditional silicon anode technology has not been widely adopted due to higher costs and volume expansion/contraction issues which lowers the useful life of the battery.

Solution
The Recipient has developed a Li-ion anode based on a silicon composite that provides 30% higher energy density and potentially lower cost compared to conventional graphite-based Li-ion batteries. The batteries also have lower thermal runaway hazards from internal shorts, pass safety nail penetration tests and operate from a wider temperature range. Additionally, the Recipient's internal fuse (SafeCore), allows the battery to be discharged without damage. Additionally, the recipient combines Si with oxygen which helps address the safety and volume expansion challenges common with Si-anode batteries. The Recipient has successfully demonstrated and sent samples to potential customers via a one-off, prototype level production capacity and will build an LRIP line during the project.

C. Goals and Objectives of the Agreement

Agreement Goals
The goals of this Agreement are to:

- Design an LRIP process flow and identify, acquire and install equipment systems.
- Qualify equipment systems and conduct process optimization (coating, electrode laser cutter, stacking, can sealing and electrolyte filling) to maximize both product performance and production yields.
- Establish system(s) and processes to achieve reproducibility, and minimize cost and scrap rate of raw material.
- Demonstrate high safety characteristics of the cells produced via the LRIP line.
- Provide advanced manufacturing jobs in California during, and as a result of, the project.

Ratepayer Benefits:[2] This Agreement will result in the ratepayer benefits of lower energy costs and increased safety.

Silicon is one of the most abundant elements in the earth and, when alloyed with lithium, provides up to 30% higher energy capacity than a standard Li-ion battery. The cost of silicon is

[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).

also comparable to graphite materials at scale. This will lower the overall cost of the battery and, by extension, any applications that require energy storage.

This battery technology also utilizes a patented safety technology that implements an internal fuse which delaminates the electrode from the current collector when the cell voltage or temperature or current exceeds the safety limit.

Technological Advancement and Breakthroughs:[3] This Agreement will lead to technological advancement and breakthroughs to overcome barriers to the achievement of the State of California's statutory energy goals by manufacturing the next generation of Silicon anode lithium-ion prismatic batteries with intrinsic safety features. This advancement will additionally manufacture a silicon-based Li-ion battery that uses oxygen and electrode engineering to address cycle life concerns common for silicon-based batteries.

Agreement Objectives

The objectives of this Agreement are to:

- Design and build an LRIP pilot line capable of producing 500 prismatic silicon anode cells per day at > 90% yield.
- Maintain a battery performance of >300 cycle life at 80%DOD, >260 Wh/kg energy density at C/5 rate, and safety characteristics such as consistently passing nail penetration tests and potential thermal runaway and/or short-circuit events.
- Demonstrate the potential for low costs by providing 1000 samples in total to potential customers.

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 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

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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.

- **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);
  - 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.

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(s)
- 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).
    - 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.

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**)
  - Acknowledgement's 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 Draft Final Report* 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.

- 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 Draft Final Report
- 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.
- 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)*

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)*

Exhibit A
Scope of Work
American Lithium Energy Corp. (ALE)

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.
- 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.

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 finalize key performance targets for the project based on feedback from the TAC and report on final results in achieving those targets. 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 project performance metrics from the *Initial Project Benefits Questionnaire*, developed in the Evaluation of Project Benefits task, to the CAM.
- Present the draft project performance metrics 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:
    - TAC comments the Recipient proposes to incorporate into the *Initial Project Benefits Questionnaire*, developed in the Evaluation of Project Benefits task.
    - TAC comments the Recipient does not propose to incorporate with and explanation why.
- 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 Benefits Questionnaire*, developed in the Evaluation of Project Benefits task.
- Discuss the *Project Performance Metrics Results* at the Final Meeting.

Products:
- TAC Performance Metrics Summary
- Project Performance Metrics Results

IV. TECHNICAL TASKS

TASK 2 PROJECT PLANNING AND FACTORY DESIGN

The goal of this task is to finalize the necessary personnel, equipment, and activities required for the project. The planning and design activities will consider factory layout, including support services, and establish personnel requirements. The fully automated battery cell assembly line will produce approximately 150,000 units per year.

Task 2.1 Project Planning
The goal of this subtask is to identify the necessary personnel, equipment, and facility resources needed to successfully complete the project.

The Recipient shall:
- Identify and acquire any additional personnel necessary for successful project execution.
- Finalize a *Project Work Plan and Work Breakdown Structure* that includes but is not limited to the following:

- High level production flow chart
- Major production processing improvement
- High level quality control: processing validation and machine validation
- This report will be 5-15 pages, will include graphics and figures, and will have an executive summary that is written for a non-technical audience.

- Identify and select an engineering firm or internal resource for production plant layout and fit-up design.

Products:

- Project Work Plan and Work Breakdown Structure

Task 2.2 Factory Design and Layout
The Recipient shall:

- Create a prismatic battery *Manufacturing Process Report* that includes but is not limited to the following:
  - High level production flow chart
  - Production validation and efficiency
  - Quality improvement
  - This report will be 5-15 pages, will include graphics and figures, and will have an executive summary that is written for a non-technical audience.
- Identify tooling requirements, summarized in a *Tooling Requirements Report* for the:
  - Electrode coating system
  - Electrode calendaring system
  - Jellyroll stacking
  - Electrolyte filling and cell sealing
  - Cell formation and grading
- Synchronize and adjust, as necessary, tooling capacities targeting a line capacity of approximately 500 cells per day
- Create an *Incoming Material Inspection Report* that includes but is not limited to the following:
  - High level routine quality check
  - An overview or summary on raw material inspection practices
  - This report will be 5-15 pages, will include graphics and figures, and will have an executive summary that is written for a non-technical audience.
- Specify *Product Testing Requirements Report* that includes but is not limited to the following:
  - Cell charge and discharge capacities and specific energy
  - Cycle life
  - Key safety tests such as nail, impact and crush
  - This report will be 5-15 pages, will include graphics and figures, and will have an executive summary that is written for a non-technical audience.
- Establish verification and testing methods to demonstrate product quality
- Create a *Verification and Testing Plan* that includes but is not limited to an outline of:
  - The tests being conducted such as capacity measurement, abuse tolerance, and cycle life
  - Critical metrics being validated such as nail test and specific energy
  - Measurement tools for verification such as battery tester and nail testing systems
  - Desired certifications such as UN38.3 and AS9100D

    - This report will be 5-15 pages, will include graphics and figures, and will have an executive summary that is written for a non-technical audience.
- Design the factory layout, including facilities for incoming materials inspection and outgoing product testing.
- Determine facilities requirements (including but not limited to requirements for gasses, water, plumbing and electrical).
- Submit a *Production Plant Layout and Design Report* that includes but is not limited to the following:
    - A detailed graphical description of the factory layout with explanations for the major components and requirements
    - Introduction to each step
    - Production capability analysis
    - This report will be 5-15 pages, will include graphics and figures, and will have an executive summary that is written for a non-technical audience.

Products:

- Manufacturing Process Report
- Tooling Requirements Report
- Incoming Material Inspection Report
- Product Testing Requirements Report
- Verification and Testing Plan
- Production Plant Layout and Design Report

Task 2.3 Supply Chain and Vendor Identification

The goal of this subtask is to seek vendors for factory equipment systems, suppliers for the bill of materials, and to procure equipment and materials needed for LRIP.

The Recipient shall:

- Finalize Bill-of-Materials (BOM) and material specifications for Prismatic Battery production
- Identify factory Equipment Vendors, generate RFP's and seek Quotations
- Identify Material Suppliers, generate RFP's and seek Quotations
- Identify supply chain risks and mitigation strategies
- Generate Initial product and manufacturing Cost Model
- Procure equipment and materials needed for this project.
- Create a *Supply Chain and Vendor Identification Report* that includes but is not limited to the following:
    - Introduction to the key vendors
    - Key concerns such as the stability of supplies, cost and our mitigation strategies
    - Domestic vendor's development
    - This report will be 5-15 pages, will include graphics and figures, and will have an executive summary that is written for a non-technical audience.

Products:

- Supply Chain and Vendor Identification Report**TASK 3 CONSTRUCT AND OPERATE PRODUCTION FACILITY**

Task 3.1 Factory Construction

The goal of this subtask is to construct the factory, including incoming material inspection, battery production, training and product testing section.

The Recipient shall:

- Complete factory
  - Complete inspection (on-site or virtually) of new equipment
  - Install equipment systems and conduct individual tooling tests
  - Document installation of new equipment and manufacturing workflow (e.g., photos, diagrams, etc.)
  - Complete permitting process
  - Procure 3-6 mos. of supply chain inventory
  - Conduct all necessary training to for personnel to successfully operate the factory
- Create a *Factory Construction Report* that includes but is not limited to the following:
  - Production line layout
  - Facility improvement
  - Machine installation
  - List of equipment and materials procured for construction, and pictures of new equipment.
  - This report will be 10-25 pages, will include graphics and figures, and will have an executive summary that is written for a non-technical audience.
- Prepare a *CPR Report* in accordance with subtask 1.3 (CPR Meetings).
- Participate in a CPR meeting.

Products:

- Factory Construction Report
- CPR Report

TASK 4 BATTERY PRODUCTION

Task 4.1 Production Trials

The goal of this task is to optimize and freeze the cell production/processing conditions for prismatic batteries.

The Recipient shall:

- Review individual process station specifications prior to testing
- Execute production trials for the following systems:
  - Electrode coating system
  - Electrode calendaring system
  - Jellyroll stacking
  - Electrolyte filling and cell sealing
  - Cell formation and grading
- Produce a *Production Trial Test Report* for the above systems that includes but is not limited to the following:
  - Production capability analysis for key steps
  - Production yield analysis
  - This report will be 10-20 pages, will include graphics and figures, and will have an executive summary that is written for a non-technical audience.

Products:

- Production Trial Test Report

Task 4.2 Production Shake Out

The goal of this task is to conduct full production runs to gather data regarding process takt times and other production line operating parameters.

The Recipient shall:

- Establish an AS 9100 quality system for the electrode coating and cell assembly which includes working instruction, processing specifications, raw material qualification and in-line quality controls
- Produce a *Quality System and Factory Operational Procedures Report* that includes but is not limited to the following:
    - Introduction to AS9100 system
    - Document system establishment
    - Execution
    - This report will be 5-15 pages, will include graphics and figures, and will have an executive summary that is written for a non-technical audience.

Products:

- Quality System and Factory Operational Procedures Report

Task 4.3 Demonstrate Low-Rate Initial Production

The goal of this task is to demonstrate that the five production sub-processes achieve low-rate initial production of 500 prismatic cells per day. During this task a test method will be developed to ensure processing rates of 500 prismatic cells per day are achieved, and product quality is replicable.

The Recipient shall:

- Establish verification and testing methods to demonstrate:
    - Low-rate initial production
    - Product quality including, but not limited to cell specification
- Execute on low-rate initial production
    - Execute supply chain requirement for 90-day operation including but not limited to major raw materials
    - Establish production ramp schedule
    - Operate at LRIP capacity for at least 45 days
    - Conduct statistically significant product testing
    - Modify incoming material, battery production, and testing procedures based on testing results and lessons learned
    - Initiate statistical process control procedures
- Prepare a draft *American Lithium Energy LRIP Verification Report* which includes but not limited to:
    - Tests conducted such as performance and abuse tolerance
    - Critical metrics that were missed (if any) or successfully validated
    - Measurement tools used for verification

- Desired certifications as well as an analysis of meeting those certification requirements
- Process and results of the demonstrated LRIP line
- Testing of the product
- Technical issues and lessons learned for this phase in the project

Products:

- American Lithium Energy LRIP Verification Report

TASK 5: EVALUATION OF PROJECT BENEFITS

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

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 January 31st 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 (www.energizeinnovation.fund), and provide *Documentation of Project Profile on EnergizeInnovation.fund*, including the profile link.
- 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 (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 ensure the learning that resulted from this project is captured and disseminated so that similar efforts build on the lessons learned.

The Recipient shall:

- Develop and submit a *Project Case Study Plan* that outlines how the Recipient will document the planning, establishment, and operation of the project. The *Project Case Study Plan* should include:
  - An outline of the objectives, goals, and activities of the case study.
  - The organization that will be conducting the case study and the plan for conducting it.
  - A list of professions and practitioners involved in the project's development.
  - Specific activities the recipient will take to ensure the learning that results from the project is disseminated to those professions and practitioners.
  - Presentations/webinars/training events to disseminate the results of the case study.
- Present the Draft Project Case Study Plan to the TAC for review and comment.
- Develop and submit a *Summary of TAC Comments* that summarizes comments received from the TAC members on the draft *Project Case Study 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 and explanation why.
- Submit the final *Project Case Study Plan* to the CAM for approval.
- Execute the final *Project Case Study Plan* and develop and submit a *Project Case Study (draft and final)*
- When directed by the CAM, develop presentation materials for a CEC sponsored 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:

- Project Case Study Plan (draft and final)
- Summary of TAC Comments
- Project Case Study (draft and final)
- High-Quality Digital Photographs

V. PROJECT SCHEDULE

Please see the attached Excel spreadsheet.