STATE OF CALIFORNIA

GRANT REQUEST FORM (GRF)

CEC-270 (Revised 12/2019) CALIFORNIA ENERGY COMMISSION

A) New Agreement # EPC-20-024 (to be completed by CGL office)

B) Division	Agreement Manager:	MS-	Phone
ERDD	Pam Doughman	43	916-776-0750

C) Recipient's Legal Name	Federal ID Number
Clark Pacific Technology, LLC.	68-0262848

D) Title of Project
Zero-Cost Thermal Storage through Prefabricated Radiant Buildings

E) Term and Amount

Start Date	End Date	Amount
5/17/2021	3/31/2025	$ 3,000,000

F) Business Meeting Information

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

Proposed Business Meeting Date 4/14/2021 ☐ Consent ☒ Discussion

Business Meeting Presenter Benson Gilbert Time Needed: 5 minutes

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

Agenda Item Subject and Description:

CLARK PACIFIC TECHNOLOGY, LLC. Proposed resolution approving Agreement EPC-20-024 with Clark Pacific Technology, LLC for a $3,000,000 grant to fund the design and build-out of a pilot manufacturing line for a novel space conditioning system that integrates radiant heating and cooling and enabling control systems with concrete slabs to create a high thermal mass radiant system using a prefabricated production process; and adopting staff's determination that this project is exempt from CEQA. The prefabrication method can help overcome market barriers to radiant heating and cooling systems by enabling the manufacturing of a product that is less labor intensive and higher quality while providing greater schedule certainty. (EPIC funding) Contact: Benson Gilbert.

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 Cal. Code Regs., tit. 14, § 15304
      ☐ Common Sense Exemption. 14 CCR 15061 (b) (3)

Explain reason why Agreement is exempt under the above section: The proposed project falls under Cal. Code Regs., tit. 14, sect. 15301 because it involves an existing facility and no expansion of the existing use. This project will install, troubleshoot, and demonstrate a pilot manufacturing line for the manufacture of multifunctional prefabricated concrete structural building systems with an integrated thermally activated building radiant heating and cooling system. The concrete mix includes slag, a byproduct of steel production. The manufacturing line will be installed in existing environment-controlled facilities. It will include concrete casting, radiant tubing, and hydronic piping sub-processes. This project involves footing excavation, paving, trenching for new power lines, and adding a new electric pipeline to bring electricity to heat generation for forms at an outdoor form casting facility in an existing yard operation. Trenching will be limited to the existing precast gravel storage yard. Therefore, the project falls within section 15301 and will not have a significant effect on the environment.

Cal. Code Regs., tit. 14, sect. 15304 provides that projects which consist of minor public or private alterations in the condition of land, water, and/or vegetation which do not involve removal of healthy, mature, scenic trees except for forestry and agricultural purposes are categorically exempt from the provisions of CEQA. In this project, minor trenching may be necessary to connect the proposed new form heating plant to an electrical supply. Specifically, approximately 1,200 feet of trenching approximately 12 inches wide by 36 inches deep may need to be dug in a currently asphalt-covered or gravel covered area, with no removal of trees. The trenching would house electrical conduit, approximately three inches in diameter with wire. Additionally, approximately 1200 feet of trenching roughly 18” x 30” may be required to house hydronic water piping from the heating plant to the casting beds. This is also in an existing asphalt covered area, with no removal of trees. Therefore, the project falls within section 15304 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**
Regents of the University of California, on behalf of the Berkeley Campus (Center for the Built Environment)	$ 300,000
Integral Group, Inc.	$ 299,694
TBD - Electrical Contractor	$ 99,000
TBD - Excavation/Grading	$ 99,000
TBD - Form Heating Infrastructure Contractor	$ 99,000
TBD - Fabrication Engineering	$ 99,000

Legal Company Name:	**Budget**
TBD – Technical Graphic Designer	$ 99,000
TBD – PR Writer	$ 99,000
TBD - Comparative Cost Consultant	$ 70,000
TBD - Marketing	$ 45,464
TBD - Concrete	$ 0 (match only)
TBD - Testing and Certification	$ 0 (match only)

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

Legal Company Name:

STATE OF CALIFORNIA
GRANT REQUEST FORM (GRF)
CEC-270 (Revised 12/2019) CALIFORNIA ENERGY COMMISSION

J) Budget Information

Funding Source	Funding Year of Appropriation	Budget List Number	Amount
EPIC	FY 2019-20	301.001G	$ 3,000,000

R&D Program Area: EDMFO: EDMF TOTAL: $ 3,000,000

Explanation for "Other" selection

Reimbursement Contract #: Federal Agreement #:

K) Recipient's Contact Information

1. Recipient's Administrator/Officer

Name: Steve Voss

Address: 710 Riverpoint Ct Ste 100

City, State, Zip: West Sacramento, CA 95605-1690

Phone: 916-371-0305

E-Mail: svoss@clarkpacific.com

2. Recipient's Project Manager

Name: Jon Mohle

Address: 710 Riverpoint Ct Ste 100

City, State, Zip: West Sacramento, CA 95605-1690

Phone: 916-371-0305

E-Mail: Jmohle@clarkpacific.com

L) Selection Process Used

☒ Competitive Solicitation Solicitation #: GFO-20-302

☐ First Come First Served Solicitation Solicitation #:

M) The following items should be attached to this GRF

1.	Exhibit A, Scope of Work		☒ Attached
2.	Exhibit B, Budget Detail		☒ Attached
3.	CEC 105, Questionnaire for Identifying Conflicts		☒ Attached
4.	Recipient Resolution	☒ N/A	☐ Attached
5.	CEQA Documentation	☐ N/A	☒ Attached

Agreement Manager **Date**

Office Manager **Date**

Deputy Director **Date**

Exhibit A
Scope of Work
Clark Pacific Technology, LLC

I. TASK ACRONYM/TERM LISTS

A. Task List

Task #	CPR[1]	Task Name
1		General Project Tasks
2		Design and Construct Low-Rate Initial Production Pilot Line
3	x	Demonstration of Pilot Line Production
4		Commercialization Pathways
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
CBE	Center for the Built Environment
CEC	California Energy Commission
CP	Clark Pacific Technology, LLC
CPR	Critical Project Review
GEB	Grid-Interactive Efficient Buildings
GHGe	Greenhouse Gas Emissions
HTMR	High Thermal Mass Radiant System
HVAC	Heating, ventilation, and air-conditioning
IG	Integral Group
LRIP	Low-Rate Initial Production
MS	Microsoft
TABS	Thermally Activated Building System
TAC	Technical Advisory Committee
ZNE	Zero Net Energy

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

A. Purpose of Agreement

The purpose of this Agreement is to fund the design and build-out of a Low-Rate Initial Production (LRIP) pilot line for the manufacture of multi-functional pre-cast structural building systems with integrated thermally activated building (TABS) radiant heating and cooling system. TABS is a high thermal mass radiant system (HTMR) that provides substantial thermal energy

[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.

storage at a fraction of the cost of other thermal energy storage solutions or grid-scale battery energy storage solutions offering a comparable capacity.

B. Problem/ Solution Statement

Problem

HTMR are heating, ventilation, and air-conditioning (HVAC) systems that can facilitate many of the demand-side management measures necessary for grid-interactive efficient buildings (GEB) at a fraction of the cost of other thermal energy storage or grid-scale battery energy storage solutions. HTMR use embedded tubing in a large percentage of structural floor or ceiling slabs to heat and cool the building and its occupants. Though current market penetration for HTMR is low, it is growing, with over half of net zero energy buildings using radiant HVAC systems. HTMR have limited market penetration because of the lack of familiarity in the construction industry and prevailing construction methods can make these systems more expensive than traditional HVAC systems depending on the design.

The prevailing cast-in-place construction method for building HTMR involves the coordination of various trades at the construction site to lay and secure the tubing with the steel rebar before the concrete is poured, without causing damages to the crossed-linked polyethylene tubing. A comparison between a conventional all-air HVAC design (offering little to no thermal energy storage capability) and HTMR shows a $\$9/ft^2$ premium mainly due to the labor in laying the tubing and cost of radiant equipment. Long time-horizon load shifting is essential to the California grid today and the need will only grow in years to come. New buildings should be designed with as much inherent ability to shift loads as possible to create a network of GEB to achieve the significant reductions in building energy use and greenhouse gas emissions (GHGe) by 2030 proposed by California Public Utilities Commission's Energy Efficiency Strategic Plan and Senate Bill 32, as well as the requirements to transition to a zero-carbon electric system established by Senate Bill 100.

Solution

The Recipient has developed a multi-functional pre-cast structural building system with integrated HTMR. The multi-functional building system with HTMR is pre-fabricated offsite. The prefabrication method allows the manufacture of a product that is less labor intensive, higher quality, and with greater schedule certainty. The advantages of pre-cast product directly translate to lower costs, reduced construction times, lower operational and embodied carbon, and cleaner and safer jobsites for the client.

Table 1: Challenges and Solutions

Barriers/Challenges	Path to Achieving California's Energy and GHGe Reduction Goals
Buildings are not inherently designed to connect to electrical grid systems	Provide a multi-functional structural building system with integrated HTMR that enables many features for GEB (primarily load shifting using thermal energy storage) while maintaining price points at or below the current market price for traditional building structures.

Barriers/Challenges	Path to Achieving California's Energy and GHGe Reduction Goals
Lack of guidance on how HTMR can shift and shed building loads	The project team proposes to develop market transformation tools such as a design guide that explains and addresses the technical, market, and occupant factors for HTMR designs and its controls for GEB and provide outreach to drive market penetration of HTMR.
Cost effective solution to implement energy storage in buildings	The proposed multi-functional structural building system with integrated HTMR is prefabricated offsite inside environment-controlled facilities that enable cost reductions, higher quality products, and higher production rates.
Zero Net Energy (ZNE) ready and ultra-efficient buildings are constructed at a premium to conventional building solutions	Provide a multi-functional structural building system with integrated HTMR that leverages inherent strengths of the system to drastically lower the energy consumption of the HVAC system at or below the current market cost for traditional construction.
ZNE ready and ultra-efficient buildings require a design team with a great deal of experience and expertise. This is a growing field and expertise is not widely available in today's market.	The proposed multi-functional structural building system with integrated HTMR is prefabricated and delivered as a system. This provides a designer inexperienced in ultra-efficient construction a turn-key system with which to achieve their energy goals. Market transformation tools such as the design guide will help educate design teams on the proper design and implementation of the system (including all-electric mechanical system design) in order to achieve the desired low energy performance.
Building with low embodied carbon materials can be challenging. Often, they require departures from construction methods or conventional materials that drive additional cost in a project.	The proposed building system utilizes a ribbed deck profile that has been optimized to minimize the volume of concrete consumed by the structure for a given span. In addition, we have developed a concrete mix design that eliminates 70 percent of the Portland cement used in the mix and replaces it with slag, a byproduct of steel production. The reason that we can leverage this reduced carbon approach, where cast-in-place cannot, is because we can heat our casting beds to accelerate the hydration reaction of the mix. This level of heating is impractical to use on cast in place construction and high replacement mixes such as this would extend construction schedules well beyond what's reasonable.

C. Goals and Objectives of the Agreement

Agreement Goals

The goals of this Agreement are to:

- Design and construct a LRIP pilot line capable of producing 900,000 ft^2 per year of multi-functional building system with integrated HTMR.
- Publish market transformation tools such as a design guide, video, technical guides, and webpages that will describe the benefits, limitations, capabilities, and sizing of the multi-functional building system with integrated HTMR.

Ratepayer Benefits:[2] This Agreement will result in the ratepayer benefits of greater electricity reliability, lower costs, and increased safety by leveraging the thermal energy storage inherent in buildings' mass at no additional cost using a prefabricated multi-functional building system with integrated HTMR. Our proposed Net Zero Building Platform benefits ratepayers by enabling and controlling buildings' thermal energy storage to reduce and shift electricity use during unfavorable conditions (e.g., high electricity prices, high GHGe electricity generation, and/or low HVAC efficiency), increasing overall HVAC energy efficiency, and reducing GHGe by minimizing operational and embodied carbon.

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 leveraging proven best-in-class TABS together with premium low embodied carbon building envelope solutions, into a cost-effective product. The precast radiant solution cuts the cost of a radiant installation by removing the radiant piping field assembly and moving the work to a safe and efficient factory-controlled environment.

Agreement Objectives

The objectives of this Agreement are to:

- Develop a LRIP pilot line
- Identify and address market barriers to wider acceptance and adoption
- Develop a design guide, cost comparisons, and independent white papers on the thermal storage capacity and performance of the system

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.

[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 California Public Utilities Commission "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
Clark Pacific Technology, LLC

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.

- **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
- 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 **quarterly** *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 quarter, 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**)
    - 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* 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
- 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)*

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

*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: DESIGN AND CONSTRUCT LRIP PILOT LINE

The goals of this subtask are to design and construct a fully functional LRIP pilot line to manufacture prefabricated HTMR floor planks that can be used in the construction of our Net-Zero Building platform and provide a facility tour of the completed LRIP pilot line.

Subtask 2.1 Design LRIP Pilot Line

The goal of this subtask is to design the LRIP line. This work will involve studying the fabrication process weighing tradeoffs between capital investment and manufacturing efficiency. Through this process we will define the manufacturing method, layout the pilot line, generate a complete equipment list and cost estimate and draw up plans necessary for permit application.

The Recipient shall:

- Evaluate several process flow alternatives to weigh the advantages of the various site configurations.
- Evaluate several all-electric methods for heating the forms and select the heating system that provides cost effective installation and operation consistent with the products embodied carbon goals.
- Produce *LRIP Pilot Line Design Development Drawings and Cost Estimate* identifying key equipment, site layout and site utility upgrades.
- Produce *LRIP Pilot Line Final Drawings and Cost Estimate* identifying key equipment, site layout and site utility upgrades.
- Produce the *Permit Submittal Package* for the LRIP pilot line and file for a building permit.
- Evaluate the product fabrication method consistent with the designed LRIP pilot line and produce a *Summary of Expected High Level Performance Targets*.

Products:

- LRIP Pilot Line Design Development Drawings and Cost Estimate (draft and final)
- LRIP Pilot Line Final Drawings and Cost Estimate (draft and final)
- Permit Submittal Package
- Summary of Expected High Level Performance Targets (draft and final)

Subtask 2.2 Product Formwork

The goal of this subtask is to design the concrete formwork to support the LRIP pilot line design. This will include means by which the product is assembled in the form, how the form is stressed and how the product is released from the form.

The Recipient shall:

- Perform internal form design coordination to identify the features of the formwork consistent with the LRIP pilot line fabrication methodology identified in subtask 2.1.

- Coordinate with form manufacturer to ensure functional design of the formwork is consistent with the desired fabrication method.
- Ensure that the formwork design accommodates the selected heating system.
- Release *Formwork Design Drawings* for fabrication.

Products:
- Formwork Design Drawings (draft and final)

Subtask 2.3 Install Site Improvements
The goal of this subtask is to install the infrastructure necessary for the support of LRIP product line. This includes all underground utility work, foundations, and site grading and paving.

The Recipient shall:
- Install electrical service upgrades necessary to power the LRIP pilot line. This new LRIP pilot line will require power upgrades to run production equipment such as form heating, compressors, vibrators, hydraulics and hand tools.
- Install the conduit, wire or piping necessary to supply heat to the forms. This is necessary to supply the forms with heat and the associated sensors and controls required by the heating control system.
- Install foundations for any equipment, structures or other improvements necessary to support the LRIP pilot line.
- Perform site grading and paving around the LRIP pilot line.
- Prepare:
    - *Memo of Completion for Electrical Service Upgrades.*
    - *Memo of Completion for Site Foundations, Grading and Paving.*
    - *Memo of Completion for Form Heating Infrastructure.*

Products:
- Memo of Completion for Electrical Service Upgrades (draft and final)
- Memo of Completion for Site Foundations, Grading and Paving (draft and final)
- Memo of Completion for Form Heating Infrastructure (draft and final)

Subtask 2.4 Install LRIP Pilot Line
The goal of this subtask is to install the formwork, product conveyance and any templates, jigs, temporary supports or any other equipment necessary for the pilot line.

The Recipient shall:
- Install and level formwork and form heating for the LRIP pilot line and complete a *Memo of Completion for Formwork and Heating*.
- Install fabrication templates, jigs, working supports, benches or other specialty items in support of the LRIP pilot line and complete a *Memo of Completion for Fabrication Work Area*.

Products:
- Memo of Completion for Formwork and Heating (draft and final)
- Memo of Completion for Fabrication Work Area (draft and final)

Subtask 2.5 Conduct Facility Tour
The goal of this subtask is to conduct a facility tour of the completed LRIP pilot line.

The Recipient shall:
- Prepare and submit a draft *Factory Tour Itinerary* to the CAM for feedback and incorporate changes as requested in the final *Factory Tour Itinerary*.
- Host a Facility Tour of the completed LRIP pilot line.
- Prepare and submit a draft *Facility Tour Summary Report with Photos* to the CAM for feedback and incorporate changes as requested in the final *Facility Tour Summary Report with Photos*.

Products:
- Facility Tour Itinerary (draft and final)
- Facility Tour Summary Report with Photos (draft and final)

TASK 3 DEMONSTRATION OF PILOT LINE PRODUCTION
The goal of this task is to troubleshoot and demonstrate that the concrete casting, radiant tubing and hydronic piping sub-processes were integrated properly, and all achieve low-rate initial production. During this task a test method will be developed to ensure processing rates are acceptable and product quality is replicable.

The Recipient shall:
- Establish verification and testing methods to demonstrate:
  - Low-rate initial production.
  - Product quality.
- Create a *Verification Plan* that includes but is not limited to an outline of:
  - The tests being conducted.
  - Critical metrics being validated.
  - Measurement tools for verification.
- Conduct demonstration of pilot line production as specified in the *Verification Plan.*
- Prepare a draft *Verification Report* which includes but not limited to:
  - High-level executive summary discussing:
    - Process and results of the final demonstration.
    - Testing of the product.
    - Technical issues.
    - Lessons learned for this phase in the project.
- Submit the draft *Verification Report* to the CAM for feedback and incorporate changes as requested in the final *Verification Report*.
- Prepare a *CPR Report* in accordance with subtask 1.3 (CPR Meetings).
- Participate in a CPR meeting.

Products:
- Verification Plan (draft and final)
- Verification Report (draft and final)
- CPR Report (draft and final)

Exhibit A
Scope of Work
Clark Pacific Technology, LLC

TASK 4: COMMERCIALIZATION PATHWAY
The goal of this task is to develop tools and provide outreach that drive market penetration of HTMR in California's new commercial buildings.

Subtask 4.1 Update Market Analysis
The goal of this subtask is to review market size and trends used in the development of our building system. This information will help guide our messaging as we interact with the market.

The Recipient shall:
- Confirm market size estimate for commercial sector opportunity.
- Estimate current and forecasted market penetration.
- Develop a *Commercialization Pathway in California Report*, summarizing the findings of above two subtasks.
- Submit the draft *Commercialization Pathway in California Report* to the CAM for feedback and incorporate changes as requested in the final *Commercialization Pathway in California Report*.

Products:
- Commercialization Pathway in California Report (draft and final)

Subtask 4.2 Technical Content Generation
A building system is complex and involves multiple technical trades that require detailed design information related to the system. The purpose of this subtask is to develop the technical information necessary to design buildings using this prefabricated HTMR system.

The Recipient shall:
- Develop a *Design Guide for the Construction of Grid-Interactive Efficient Buildings Using Inherent Thermal Storage* that explains and addresses the technical, market, and occupant factors for buildings with HTMR HVAC design, its controls, operation and maintenance to achieve California's aggressive energy and GHGe reductions.
- Develop a *Thermal Storage with Building's Thermal Mass 101 Video Transcript.*
- Develop a *Thermal Storage with Building's Thermal Mass 101 Video* that provides an overview of the benefits of activating the building's thermal mass with HTMR.
- Develop *Slide Deck for Building Stakeholders* that compares the thermal storage potential and cost-effectiveness of pre-cast building systems with integrated HTMR with other thermal storage solutions, such as battery energy storage, ice and hot water thermal storage, and phase change materials.
- Organize conference meetings every 6 months with attendees from companies representing a diverse group of building industry stakeholders to obtain feedback.
- Generate Revit families / computer aided design exports published to Clark Pacific Technology LLC's (Clark Pacific) Web Site.
- Technical data sheets for building stakeholders published to Clark Pacific's Web Site.
- Prepare *Documentation of Technical Content Generated in Subtask 4.2,* including but not limited to:
    - Agendas of conferences.
    - Screenshot with link to Clark Pacific web page showing Revit families / computer aided design exports.

- Screenshot with link to Clark Pacific web page showing technical data sheets for building stakeholders.

Products:

- Design Guide for the Construction of Grid-Interactive Efficient Buildings Using Inherent Thermal Storage (draft and final)
- Thermal Storage with Building's Thermal Mass 101 Video Transcript
- Thermal Storage with Building's Thermal Mass 101 Video
- Slide Deck for Building Stakeholders (draft and final)
- Documentation of Technical Content Generated in Subtask 4.2

Subtask 4.3 Market Education and Awareness

This system is almost completely new to the California construction market, with only two – albeit large – similar deployments to date in the Fortinet and Apple HQ projects. Introducing the system will require a significant amount of awareness and education on what the product is and how to use it as well as how it can be executed within the existing design and construction ecosystem.

The Recipient shall:

- Create *HTMR Building System Strategic Marketing Plan* covering 1 year and 3 year strategy
- Submit the draft *HTMR Building System Strategic Marketing Plan* to the CAM for feedback and incorporate changes as requested in the final *HTMR Building System Strategic Marketing Plan*.
- Perform a Market Education and Awareness campaign that will include:
  - An interactive website
  - Webinars
  - Print and digital media
  - Trade publication articles
  - Lunch and learn presentations
- Engage in speaking opportunities to promote thought leadership within our market including:
  - Trade shows
  - Conferences
  - Virtual events
  - Sponsorships
- Develop marketing documentation to support all levels of the sales cycle. This will include:
  - High level product briefs
  - Project Biographies
  - Internal product training and education
- Provide regular updates in the form of quarterly progress reports to the CAM
- Prepare an *HTMR Building System Strategic Marketing Report* summarizing events, digital media, articles published, speaking opportunities completed, and marketing documentation completed according to the *HTMR Building System Strategic Marketing Plan*.

- Submit the draft *HTMR Building System Strategic Marketing Report* to the CAM for feedback and incorporate changes as requested in the final *HTMR Building System Strategic Marketing Report*.

Products:

- HTMR Building System Strategic Marketing Plan (draft and final)
- HTMR Building System Strategic Marketing Report (draft and final)

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 December 15 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: 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 (Draft/Final)* that outlines how the Recipient will document the planning, construction, commissioning, and operation of the technology or system being demonstrated. The *Project Case Study Plan* should include:
  - An outline of the objectives, goals, and activities of the case study.
  - The expected impact if that learning is applied to future deployments.
  - The organization that will be conducting the case study and the plan for conducting it.
  - A list of professions and practitioners involved in the technology's deployment.
  - 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 with 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/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.

RESOLUTION NO: 21-04-14-20a

STATE OF CALIFORNIA

STATE ENERGY RESOURCES
CONSERVATION AND DEVELOPMENT COMMISSION

RESOLUTION - RE: CLARK PACIFIC TECHNOLOGY, LLC

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-20-024 with Clark Pacific Technology, LLC for a $3,000,000 grant to fund the design and buildout of a pilot manufacturing line for a novel space conditioning system that integrates radiant heating and cooling and enables control systems with concrete slabs to create a high thermal mass radiant system using a prefabricated production process. The prefabrication method can help overcome market barriers to radiant heating and cooling systems by enabling the manufacturing of a product that is less labor intensive and higher quality while providing greater schedule certainty; 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 April 14, 2021.

AYE:
NAY:
ABSENT:
ABSTAIN:

_____
Patricia Carlos
Secretariat