



GRANT REQUEST FORM (GRF)

A) New Agreement # EPC-21-029 (to be completed by CGL office)

B) Division	Agreement Manager:	MS-	Phone
ERDD	Molly O'Hagan	51	916-776-0799

C) Recipient's Legal Name	Federal ID Number
Northern California Land Trust, Inc.	23-7380534

D) Title of Project
Berkeley Efficient & Resilient Mixed-Use Showcase (BERMUS)

E) Term and Amount

Start Date	End Date	Amount
5/16/2022	6/30/2024	\$ 999,595

F) Business Meeting Information

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

Proposed Business Meeting Date 4/26/2022 Consent Discussion

Business Meeting Presenter Anthony Ng Time Needed: 5 minutes

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

Agenda Item Subject and Description:

NORTHERN CALIFORNIA LAND TRUST, INC.. Proposed resolution approving agreement EPC-21-029 with Northern California Land Trust, Inc. for a \$999,595 grant to to fund the design of the Berkeley Efficient and Resilient Mixed-Use Showcase. The design is envisioned as a 6-story all-electric, zero net energy (ZNE) building comprised of 50 housing units, permanently affordable for low income households. The design will incorporate a solar microgrid to support extended grid outage resilience while also supporting the grid during peak hours. The project seeks to validate scalability and replicability of architectural and mechanical systems in the building design to advance California's decarbonization goals. (EPIC funding) Contact: Anthony Ng.

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:

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

Explain reason why Agreement is exempt under the above section: The grant agreement will fund feasibility, design, and planning studies for an all electric, mixed-use development, which has not been approved, adopted, or funded by the CEC, and which will not result in the adoption of a plan



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that will have a legally binding effect on later activities. This falls within title 14, Cal. Code Regs. tit. 14, § 15262, Feasibility and Planning Studies: The CEC has considered environmental factors.

The grant agreement will fund the design of a mixed-use development project and the improvement of methods for possible use in advanced energy development efforts (e.g., planning, architectural, and engineering work). Activities will include information collection, research, design, and energy and emissions analyses. Activities will also include economic analysis, preparation of conceptual drawings and design plans, performance modeling, and construction feasibility analysis.

No construction or changes to the physical environment will be funded by the grant or occur during the design and analysis work. The design activities will take place in existing office buildings, and professionals will visit the proposed development site. Therefore, there is no possibility that the activities may have a significant effect on the environment.

The grant agreement is covered by the common sense exemption that CEQA applies only to projects which have the potential for causing a significant effect on the environment. Where it can be seen with certainty that there is no possibility that the activity in question may have a significant effect on the environment, the activity is not subject to CEQA. This falls within title 14, Cal. Code Regs. tit. 14, § 15061(b)(3), Common Sense Exemption.

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
Natural Capitalism Solutions, Inc. dba Clean Coalition	\$ 204,552
Indigo/Hammond + Playle Architects, LLP	\$ 424,195 (\$157,308 match)
Rhoades Planning Group \$0 (\$32,500 match)	\$ 0 (\$32,500 match)
BBI-CON, Inc.	\$ 0 (\$40,000 match)
Richard Bourne, PE	\$ 0 (\$81,650 match)
TBD - Community Advisory Committee	\$ 11,500 (\$11,500 match)
BKF Engineers	\$ 26,751 (\$2,849 match)
(For additional subcontractors, please see attachment 270)	\$
	\$
	\$



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

Legal Company Name:

J) Budget Information

Funding Source	Funding Year of Appropriation	Budget List Number	Amount
EPIC	18-19	301.001F	\$469,998
EPIC	20-21	301.001H	\$529,597

R&D Program Area: EDMFO: EDMF

TOTAL: \$ 999,595

Explanation for "Other" selection

Reimbursement Contract #: Federal Agreement #:

K) Recipient's Contact Information

1. Recipient's Administrator/Officer

Name: Diana Sacks
 Address: 3120 Shattuck Ave
 City, State, Zip: Berkeley, CA
 94705-1823
 Phone: 15105487878345
 E-Mail: diana.sacks@nclt.org

2. Recipient's Project Manager

Name: Diana Sacks
 Address: 3120 Shattuck Ave
 City, State, Zip: Berkeley, CA
 94705-1823
 Phone: 15105487878345
 E-Mail: diana.sacks@nclt.org

L) Selection Process Used

- Competitive Solicitation Solicitation #: GFO-20-305
- First Come First Served Solicitation Solicitation #:
- Non-Competitive Bid Follow-on Funding (SB 115)

M) The following items should be attached to this GRF

- | | | |
|-----------------------------------------------------|-----------------------------------------|----------------------------------------------|
| 1. Exhibit A, Scope of Work | <input checked="" type="checkbox"/> | Attached |
| 2. Exhibit B, Budget Detail | <input checked="" type="checkbox"/> | Attached |
| 3. CEC 105, Questionnaire for Identifying Conflicts | <input checked="" type="checkbox"/> | Attached |
| 4. Recipient Resolution | <input checked="" type="checkbox"/> N/A | <input type="checkbox"/> Attached |
| 5. CEQA Documentation | <input type="checkbox"/> N/A | <input checked="" type="checkbox"/> Attached |

Agreement Manager

Date

Office Manager

Date

Deputy Director

Date

Additional subcontractors

TBD - Legal Services	\$0 (\$148,000 match)
TBD - Finance	\$47,500 (\$5,000 match)
TBD - Contract Construction Management- Owners Rep	\$80,223 (\$18,777 match)
Interface Engineering, Inc. dba Interface Engineering, Inc., Consulting Engineers	\$55,000
Western Cooling Efficiency Center	\$66,699
Buehler Engineering	\$25,000
Groundworks Office, Inc.	\$23,250
Thornton Tomasetti	\$5,000

EXHIBIT A
Scope of Work
Northern California Land Trust (NCLT)

I. TASK ACRONYM/TERM LISTS

A. Task List

Task #	CPR¹	Task Name
1		General Project Tasks
2		Community Outreach
3		City Entitlements Preparation and Planning
4		Financial and Legal Structuring
5	X	Conceptual Architectural Engineering Model-Based Development and Systems Due Diligence
6		Value of Resilience (VOR123) Analysis
7	X	Building Performance Evaluation
8		Evaluation of Project Benefits
9		Technology/Knowledge Transfer Activities
10		Build Phase Selection

B. Acronym/Term List

Acronym/Term	Meaning
3D	Three Dimensional
AEDT	Architectural Engineering Design Team
AMI	Area Median Income
APE	Areas of Potential Effect
BART	Bay Area Rapid Transit
BERMUS	Berkeley Efficient and Resilient Mixed-Use Showcase
BMS	Building Management Systems
BIM	Building Information Modeling
CAM	Commission Agreement Manager
CAO	Commission Agreement Officer
CBA	Conduct Choosing by Advantage
CCRs	Conditions, Covenants, and Restrictions
CEC	California Energy Commission
CEQA	California Environmental Quality Act
CLT	Community Land Trust
CLT	Cross-laminated Timber
CPR	Critical Project Review
DHW	Domestic Hot Water
DRE	Department of Real Estate

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.

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Acronym/Term	Meaning
EUI	Energy Usage Intensity
EV	Electric Vehicle
GHG	Greenhouse Gas
HOA	Homeowner's Association
HVAC	Heating, Ventilation, and Air Conditioning
IFC	Industry Foundation Classes
ITC	Incentive Tax Credit
kWh	Kilo-watt hour
LCA	Life Cycle Analysis
LEED	Leadership in Energy & Environmental Design
LEHC	Limited Equity Housing Cooperative
LLC	Limited Liability Company
M&V	Measurement & Verification
NCLT/ Recipient	Northern California Land Trust
OA	Occupancy Agreement
PV	Solar Photovoltaic
RHNA	Regional Housing Needs Assessment
RPG	Rhoades Planning Group
SB	Senate Bill
SOCr	State of Charge for resilience
SRO	Single Room Occupancy
TAC	Technical Advisory Committee
TOU	Time-of-Use
USGBC	U.S. Green Building Council
VOR	Value of Resilience
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 of the Berkeley Efficient and Resilient Mixed-Use Showcase (BERMUS), a 6-story (plus functional roof green space), 50 housing units permanently affordable for low income households, all-electric, zero net energy (ZNE) building capable of: (a) achieving ZNE status with a Solar Microgrid and renewable energy generation exclusively from rooftop solar panels (b) incorporating a comprehensive Solar Microgrid for extended grid outage resilience, including indefinite resilience for the most critical loads, (c) delivering electricity to the grid during peak consumption hours between 4pm and 9pm, and (d) creating pathways to community ownership through below market rate condominiums and limited equity housing cooperative (LEHC) units. The BERMUS development will use a combination of low-carbon intensity design strategies including multiple high efficiency mechanical systems and will incorporate materials and techniques detailed in the Carbon

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Storing Building Prototype developed by StopWaste, Arup, and The California Straw Building Association. The BERMUS project site at is owned by the Recipient and will be developed using a project-specific limited liability company (LLC) controlled by the Recipient as is typical for affordable housing developments.

B. Problem/ Solution Statement

Problem

Statewide, there is a 1.5 million unit shortage of homes for low-income and extremely low-income households exacerbated by very few of those units providing ownership or wealth building opportunities. The City of Berkeley is a critical example of a large metropolitan region that has only produced a small fraction of affordable, low and moderate income housing resulting in plummeting home ownership rates, widespread displacement of vulnerable populations and loss of generational wealth.

To quantify this: the City of Berkeley's goal for total approved building permits for low and very low income units from 2014-2022 identified by The Regional Housing Needs Allocation (RHNA)² is 1,074 units. According to the most recent Annual Housing Pipeline Report prepared by the planning and Development Department for the City of Berkeley, only 129 new units dedicated to low-income and very low-income residents were approved in the years between 2014 and 2020, resulting in a shortage of 845 units in an area where the median rent is almost double to the national average³. During this same time period, building permits for 1,790 units for above moderate income housing were approved, however, the RHNA identified a need for only 1,401 units. The problem of affordability in the City of Berkeley has been exacerbated by building units for higher income residents and neglecting low - moderate income households. In addition, there has been a large shift in the demographics of the South Berkeley community due to the gentrification and displacement beginning with "red-lining" of the neighborhood by the Homeowners Loan Corporation in the 1940's, continuing with the mass displacement caused by construction of the 1973 Ashby Bay Area Rapid Transit (BART) Station and accelerating in recent decades due to rising costs and loss of generational wealth. Berkeley underresourced and vulnerable populations have been displaced due to increasing housing costs. It is now essentially restricted to families that can afford \$1.6 million homes⁴, the typical home value in the City of Berkeley.

Low-income households tend to spend a larger portion of their income on home energy costs. This is typically referred to as a household's "energy burden." High energy burdens can force tough choices between paying energy bills and buying other household essentials. Along with high energy burdens, low-income Californians have disproportionately higher rates of asthma

² Timothy Burroughs (July 2020). Annual Housing Pipeline Report. City of Berkeley Planning Department. https://www.cityofberkeley.info/Clerk/City_Council/2020/07_Jul/Documents/2020-07-28_Item_45_Annual_Housing_Pipeline_Report.aspx

³ Nicole Montojo, Stephen Barton, and Eli Moore (2018). Opening the Door for Rent Control: Toward a Comprehensive Approach to Protecting California's Renters. Haas Institute for a Fair and Inclusive Society at UC Berkeley.

⁴ <https://www.zillow.com/berkeley-ca/home-values/>

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and other respiratory illnesses due to poor air quality⁵. Within this community, these rates are even higher among children and the elderly, as well as other vulnerable populations. Low-income Californians are more likely to live in substandard housing where asthma triggers such as mold and pests are more prevalent; these triggers are further exacerbated by particulates released during heating and cooling. New, well-maintained buildings with electric appliances combined with solar energy production and storage can reduce both asthma triggers and utility burdens. However, energy codes don't yet require electrification in existing buildings, and energy efficiency rebate programs are not sufficient to incentivize full electrification. With the rising cost of living, low-income households should be able to prioritize basic needs over the cost of utilities and medical bills associated with poor air quality. Additionally, increased resilience offered through battery storage and microgrids is needed for impending utility shutoffs due to aging utility infrastructure.

Natural gas lines are especially vulnerable to climate threats and natural disasters and are at heightened risk for dangerous leaks and explosions during these events. The increased necessity for infrastructure maintenance and decrease in demand from building electrification efforts create volatile rate schedules for residents in buildings that cannot afford to fully electrify. These issues are exemplified by the fact that Pacific Gas & Electric is requesting a 15 percent increase to its gas rates by 2022 to cover necessary safety upgrades to its aging gas infrastructure⁶. New natural gas connections are now barred in the City of Berkeley, and they are making extensive efforts to decommission existing natural gas lines, however, this problem continues to persist statewide.

Solution

Solving California's 1.5 million-unit shortage of homes⁷ for low-income and extremely low-income households is a critical challenge, exacerbated by the utility burdens of many existing affordable homes. Additionally, very few of the new affordable units provide ownership or wealth building opportunities. This 100% affordable project will serve a range of families and economic brackets including extremely affordable cooperative single room occupancy (SRO) units. With the unsheltered population in California accounting for more than half of all unsheltered people in the country, these unit types and a pathway to ownership through the cooperative ownership model are essential for increasing access to safe, affordable housing and life-changing stability. BERMUS will increase new low-income affordable housing built in the City of Berkeley in the preceding 5 years by 39%. Furthermore, the proposed ownership models for the BERMUS units will contribute to ownership and wealth building opportunities in Berkeley's low-income communities.

This project will also ensure equitable access to opportunities for its residents in the revitalization efforts of the Adeline Corridor Specific Plan⁸. The recently approved Adeline Corridor Plan has 5 main objectives:⁹

⁵ Wolstein J, Meng YY and Babey SH. *Income Disparities in Asthma Burden and Care in California*. Los Angeles, CA: UCLA Center for Health Policy Research, 2010.

⁶ Equitable Building Electrification: A Framework for Powering Resilient Communities

⁷ California Department of Housing and Community Development (February 2018). *California's Housing Future: Challenges and Opportunities*.

⁸ City of Berkeley (2019). *Adeline Corridor Specific Plan Public Review Draft*

⁹ <https://www.cityofberkeley.info/council3/adeline/>

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1. Affordable Housing with at least 50% of all new housing units built in the next 20 years to remain affordable for those with the lowest incomes and highest needs.
2. Redevelopment of the area surrounding the Ashby BART Station to create a vibrant neighborhood center.
3. Create a Business Improvement District serving the Adeline Corridor, with fees from business and/or property owners used to support physical improvements, special events, public safety, street cleanliness/maintenance, and programming.
4. Redesign Adeline Street, creating more public open spaces out of paved space, reducing crossing distances, and making the street more comfortable for pedestrians and cyclists.
5. Support capital improvements that strengthen existing institutions such as the Berkeley Flea Market, the South Berkeley Farmers Market, and the annual Juneteenth Festival, as well as future institutions such as the African American Holistic Resource Center.

The BERMUS project's proximity to the Adeline Corridor and its anchor at the Ashby BART Station expand the radius of accessible community resources and job opportunities available to residents, without the added economic burdens of owning a private vehicle. A significant portion of BERMUS residents will be low-income or extremely low-income, possibly transitioning from inadequate access to housing; the proximity of their housing to transportation and community resources is essential for stability and growth. Vocal community groups like the Friends of Adeline will coordinate with the City to ensure equitable growth. The BERMUS development will provide residents access to the opportunities offered by the Adeline Corridor redevelopment plans.

To reduce utility costs for residents, The BERMUS development will use a combination of low-carbon intensity design strategies including multiple high efficiency mechanical systems:

- Heating, Ventilation, Air Conditioning (HVAC) and Building Management Systems (BMS) controls will be integrated with passive features to minimize energy use
- The heat pump-based HVAC and Domestic Hot Water (DHW) systems are projected to consume 70% less energy than newly constructed code compliant systems.

The design team aims to reduce the Energy Usage Intensity (EUI) even further, with a goal to achieve an EUI of 2.2 kWh/yr-sf or less. The all-electric building design will protect residents from the volatility of gas utility rates, and resilience will be incorporated through a Solar Microgrid that provides unparalleled resilience from grid outages.

The Solar Microgrid will implement the Clean Coalition's VOR123¹⁰ methodology, which ensures indefinite resilience to the most critical loads, while provisioning significant resilience to the rest of the loads for substantial percentages of time. Of course, all loads will be online during normal operations, even during the 4-9pm period, a time window during which no electricity will ever be drawn from the grid.

C. Goals and Objectives of the Agreement

Agreement Goals

The goals of this Agreement are to:

¹⁰ Clean Coalition Value of Resilience (VOR123) [The elusive value-of-resilience has been successfully quantified - Clean Coalition \(clean-coalition.org\)](https://www.clean-coalition.org/insights/the-elusive-value-of-resilience-has-been-successfully-quantified/)

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- Increase housing supply, affordability, and access to onsite community green space for Berkeley’s low income residents and commercial tenants through the community land trust (CLT) ownership model and publicly accessible rooftop green space with rentable micro-workshops for local entrepreneurs and artisans.
- Ensure indefinite resilience to the most critical loads, during grid outages of any duration, while provisioning resilience to the rest of the loads for significant percentages of the time.
- Validate scalability and replicability of architectural and mechanical systems in the building design to advance California’s decarbonization and renewable energy production goals.
- Relieve utility burdens of low-income households and community agencies through affordable renewable energy and a ZNE usage building.
- Develop a community advisory board to inform design and policy decisions, and advocate for sustainable, community led energy decisions in low-income communities using the BERMUS project as a community led model.
- Follow community preference policy models per the City of Berkeley to prioritize affordable housing applicants with a connection to the BERMUS location.

Ratepayer Benefits:¹¹ This Agreement will result in the ratepayer benefits of lower electrical costs, greater electricity resilience, and reduced impact to the electricity grid. BERMUS will incorporate a Solar Microgrid which includes innovative Load Management solutions and will apply VOR123 to ensure indefinite resilience to the most critical loads, during grid outages of any duration, while provisioning resilience to the rest of the loads for significant percentages of the time. While all loads will be online during normal operations, including the required daily 4-9pm period when no electricity will be drawn from the grid, the resilience provided during grid outages will be substantial.

Technological Advancement and Breakthroughs:¹² 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 decarbonizing building stock using a combination of low-carbon intensity design strategies including multiple high efficiency mechanical systems and materials and techniques detailed in the Carbon Storing Building Prototype¹³ developed by StopWaste, Arup, and The California Straw Building Association. BERMUS will also incorporate the following additional architectural and mechanism strategies that have been successfully used by the design team:

- Passive and building-integrated architectural strategies such as “sawtooth facade” window orientation.

¹¹ 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).

¹² 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).

¹³ Carbon Storing Building Prototype Preliminary Report: <https://www.clf-sfbayarea.org/east-bay-carbon-storing-challenge>

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- Integration of HVAC BMS and DHW controls.
- Ground-coupled heat pumps with multiple geo-loops.
- Hydronic radiant systems.
- Membrane- lined insulated water storage.
- Phase change thermal mass wall and ceiling inserts.
- Solar photovoltaic (PV).
- Battery energy storage.
- PV-washing systems that deliver cooling and heating benefits
- Smart EV infrastructure.

Agreement Objectives

The objectives of this Agreement are to:

- Provide design for 50 units of new permanently affordable housing for households at range of incomes from exiting homelessness to 80% of area median income (AMI).
- Provide a mix of ownership structures to BERMUS residents and commercial tenants, including permanently affordable limited equity housing cooperatives (LEHC) where residents own a share of the cooperative housing building, allowing affordable ownership to extremely low-income households, and nonprofit commercial and rental units owned by the Recipient for long term affordable stewardship.
- Design building systems that can temporarily manage or curtail at least 20% of the building's peak load and capable of:
 - Delivering electricity to the grid during peak consumption hours between 4pm and 9pm using a combination of onsite renewables, storage, and load management;
 - Incorporating a comprehensive Solar Microgrid that is sized to be capable of supporting all building loads during grid outages and ensuring energy availability for the most critical loads (which are estimated to be 10% of the peak load) 24 hours a day, 7 days a week, and 365 days a year;
 - EV charging for all parking spaces that can respond to signals from the grid and from the Solar Microgrid controller.
- Design building with an EUI goal of 2.2 kWh (kilo-watt hour)/year-square foot (yr-sf).
- Incorporate dual use solar panel structures that will provide shading for the roof-top green space and generate enough energy to achieve at least ZNE, including all EV charging.
- Solicit input and incorporate feedback from the community advisory board into the design, ensuring that the project aligns with the needs and vision of the community.
- Prioritize applicants who have been displaced from Berkeley due to adverse governmental action, including redlining by the Homeowners' Loan Corporation, and gentrification and displacement caused by City-funded developments.

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

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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 the draft product within 15 days of receipt, unless otherwise specified in the task/subtask for which the product is required.
- Consider incorporating all CAM comments into the final product. If the Recipient disagrees with any comment, provide a written response explaining why the comment was not incorporated into the final product.
- Submit the revised product and responses to comments within 10 days of notice by the CAM, unless the CAM specifies a longer time period, or approves a request for additional time.

For products that require a final version only

- Submit the product to the CAM for acceptance. The CAM may request minor revisions or explanations prior to acceptance.

For all products

- Submit all data and documents required as products in accordance with the following:

Instructions for Submitting Electronic Files and Developing Software:

- **Electronic File Format**
 - Submit all data and documents required as products under this Agreement in an electronic file format that is fully editable and compatible with the California Energy Commission’s (CEC) software and Microsoft (MS)-operating computing platforms, or with any other format approved by the CAM. Deliver an electronic copy of the full text of any Agreement data and documents in a format specified by the CAM, such as memory stick.

The following describes the accepted formats for electronic data and documents provided to the CEC as products under this Agreement, and establishes the software versions that will be required to review and approve all software products:

- Data sets will be in MS Access or MS Excel file format (version 2007 or later), or any other format approved by the CAM.
- Text documents will be in MS Word file format, version 2007 or later.
- Project management documents will be in Microsoft Project file format, version 2007 or later.

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○ **Software Application Development**

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

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

Any exceptions to the Electronic File Format requirements above must be approved in writing by the CAM. The CAM will consult with the CEC's Information Technology Services Branch to determine whether the exceptions are allowable.

MEETINGS

Subtask 1.2 Kick-off Meeting

The goal of this subtask is to establish the lines of communication and procedures for implementing this Agreement.

The Recipient shall:

- Attend a "Kick-off" meeting with the CAM, the Commission Agreement Officer (CAO), and any other CEC staff relevant to the Agreement. The Recipient will bring its Project Manager and any other individuals designated by the CAM to this meeting. The administrative and technical aspects of the Agreement will be discussed at the meeting. Prior to the meeting, the CAM will provide an agenda to all potential meeting participants. The meeting may take place in person or by electronic conferencing (e.g., WebEx), with approval of the CAM.

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

- Terms and conditions of the Agreement;
- Invoicing and auditing procedures;
- Administrative products (subtask 1.1);
- CPR meetings (subtask 1.3);
- Match fund documentation (subtask 1.7);
- Permit documentation (subtask 1.8);
- Subcontracts (subtask 1.9); and
- Any other relevant topics.

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

- The CAM's expectations for accomplishing tasks described in the Scope of Work;
- An updated Project Schedule;

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- 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:

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- 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.

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- “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)

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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:

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- 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)*

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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.

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- 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;

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- 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.

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- 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 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

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IV. TECHNICAL TASKS

TASK 2 COMMUNITY OUTREACH

The goals of this task are to inform property owners, residents, and neighborhood organizations of the planned development, and to develop a Community Advisory Committee composed of local Lorin District and South Berkeley stakeholders to help inform the community of the equity, community design, and ZNE goals of the BERMUS project during the design and development phase. The Community Advisory Committee will function as a subcommittee to the TAC.

The Recipient shall:

- Ensure its employees, consultants, subcontractors and project partners comply with Exhibit D, Special Terms and Conditions for the Information Practices Act.
- Assemble the BERMUS Community Advisory Board consisting of neighborhood stakeholders and residents that can provide perspectives within the following categories:
 - Community based organization leaders and members;
 - Community land trust residents with experience in cooperative living structures;
 - Local business owners;
 - Industry professionals with experience in real estate development, architecture, and/or construction.
- Collect *Executed BERMUS Community Advisory Board Acceptance Letters* from confirmed Community Advisory Board members.
- Organize and facilitate quarterly feedback sessions with the Community Advisory Board to develop *Community Advisory Committee Quarterly Reports* which will include feedback from the prospective meetings, including feedback on the project design, which can be shared with the *BERMUS Neighbors Group List* described below, or other interested parties.
- Compile a list of property owners, occupants, residents, and neighborhood organizations within 300 feet of the project site to form the *BERMUS Neighbors Group List* and invite them to a Neighborhood Meeting to review the project plans and discuss any questions or concerns.
- Develop the *BERMUS Neighborhood Meeting Presentation*.
- Conduct Neighborhood Meeting.
- Distribute meeting minutes and schedule follow-up meetings as appropriate.

Products:

- Executed BERMUS Community Advisory Board Acceptance Letters
- BERMUS Neighbors Group List
- BERMUS Neighborhood Meeting Presentation
- Community Advisory Committee Quarterly Reports

TASK 3 CITY ENTITLEMENTS PREPARATION AND PLANNING

The goals of this task are to secure the required planning entitlements (permissions) from the City of Berkeley to build the project. The project will use the Senate Bill 330 (SB 330) and Senate Bill 35 (SB 35) process which provides a streamlined and expedited entitlements timeline and development incentives for affordable housing projects. Major steps include preparation of both Preliminary and final Development Application, submission to the City of

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Berkeley the Applications, and updating of project technical and economic design documents once entitlements are approved by the City.

The Recipient shall:

- Develop a draft *Project Program* document, identifying building occupancies, unit types and space standards, including the low-income housing determination:
 - Begin development of the 3D project building information modeling (BIM) model from which the Project Program's spatial validation will derive. By validating the spatial program using BIM, the architectural, engineering, and design team (AEDT) aims to efficiently assess the project's space area calculations. These calculations are used for draft occupancy agreements (OAs) throughout the design and construction process. This can enable the AEDT to track and reconcile different requirements and to calculate the appropriate square footage at any point in the process -- a capability needed to calculate OAs and tenant rent bills and to help ensure NCLT is meeting the programming and gross square footage mandates set by the CEC and City of Berkeley.
- Conduct pre-development and pre-design due diligence, including a site survey, updated phase 1, soils and geological report and other reports as required for the SB 330 and SB 35 applications to the City.
- Prepare and submit the *Preliminary Development Project Application Packet* to the Planning and Development Department, Land Use Division; the City of Berkeley uses the preliminary development project application for SB 330¹⁴ as the notice of intent to later submit an SB 35 Application¹⁵. The application packet will include the following:
 - Preliminary Zoning Project Application Form;
 - Payment of Application Fees;
 - Applicant Contact Information;
 - Site Location Information;
 - Proposed Land Uses;
 - Existing Uses;
 - Existing Residential Uses and Proposed Demolition;
 - Below Market Rate Units;
 - Density Bonus Units and Waivers/ Concessions;
 - Proposed Parking Quantities;
 - Project Plans (i.e.: site plan showing the location on the property, elevations showing design, color, and material, and the massing, height, and approximate square footage of all spaces);
 - Special Site Characteristics;
 - Subdivision Map Act;
 - Historic or Cultural Resources;
 - Easements, Water Lines, Public Rights of Way;
 - Pollutants;
 - Species of Concern.

¹⁴ City of Berkeley Preliminary Development Project Application (SB 330) Submittal Requirements: https://www.cityofberkeley.info/uploadedFiles/Planning_and_Development/Level_3_-_Land_Use_Division/Preliminary%20Development%20Project%20Application%20-%20Submittal%20Requirements.pdf

¹⁵ City of Berkeley Development Application Submittal Requirements: https://www.cityofberkeley.info/uploadedFiles/Planning_and_Development/Level_3_-_Land_Use_Division/SB%2035%20Project%20Application_Submittal%20Requirements.pdf

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- Prepare the *SB 35 Development Application Packet* to the Planning and Development Department, Land Use Division, including the following supporting documentation:
 - General Application Materials:
 - Completed SB 35 development application;
 - Applicant statement with detailed project description;
 - SB 35 eligibility criteria compliance documentation;
 - Objective zoning and plan standards compliance;
 - SB 35 Application Fees.
 - Entitlement Plan Set:
 - Site plan;
 - Plot plan illustrating lot coverage and usable open spaces;
 - Building elevations;
 - Street strip elevation;
 - Grading plan;
 - Boundary and/or topographic survey;
 - Development Documentation:
 - Planning tabulation form;
 - Site photographs;
 - Photo simulations;
 - Traffic, transit, and parking analysis;
 - Documentation of gas prohibition compliance;
 - Documentation of Berkeley energy code compliance.
 - Affordable Housing Documentation:
 - Housing affordability statement;
 - Anti-discrimination housing policies;
 - Density Bonus Eligibility Statement;
 - Area of potential effects (APE) statement.
 - Landscape Documentation:
 - Planting, grading, and irrigation plans.
- The AEDT team will review and discuss the plans with NCLT and Rhoades Planning Group (RPG); revise as necessary prior to submitting the SB 35 Development Application Packet to the City.
- Upon receipt of SB 35 approval from the City, prepare the *Final Entitlements Plan Set* and the BERMUS Preliminary Total Project Cost Estimate.
- Upon receipt of SB 35 approval from the City, prepare an *Updated Preliminary Total Project Cost Estimate*.

Products:

- Project Program
- Preliminary Development Project Application Packet
- SB 35 Development Application Packet
- Final Entitlements Plan Set
- Draft(s) and Updated Total Project Cost Estimate

TASK 4 FINANCIAL AND LEGAL STRUCTURING

The goals of this task are to develop the financial structure and sources of financing for the BERMUS project, concurrent with the development of the condominium and cooperative legal structures, and to produce governance documents for each residential and commercial

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ownership structure. The BERMUS project site at 3120-3130 Shattuck Ave. is owned by the Recipient and will be developed using a project-specific limited liability company (LLC) controlled by The Recipient as is typical for affordable housing developments.

The Recipient shall:

- Develop the project financial structure by:
 - Identifying capital sources and uses in the BERMUS development, including methods to monetize the anticipated tax and investment benefits from greenhouse gas(GHG) reductions and the Investment Tax Credit (ITC) to support permanent affordability;
 - Researching market viability of the BERMUS project by producing affordability, rental, and sales projections for the project unit mix including:
 - Limited equity condominium and limited LEHC units;
 - Non-profit community facilities;
 - Affordable rental units.
- Develop the *BERMUS Draft Total Project Cost Estimate* based on the feedback from the City and SB 35 approval; updated project cost estimates will include the following additional cost components:
 - Estimated direct construction costs for materials, labor, and general conditions, including Contractor's overhead and profit, bonds, contingencies, and escalation;
 - Estimated indirect construction costs not covered by the Contractor's general contract for construction, including:
 - NCLT-provided fixtures, furnishings, & equipment;
 - Permitting and other entitlement fees;
 - Utility connection fees;
 - Engineering and design fees;
 - Surveys, testing, and special inspection.
 - Administrative and construction management fees.
- Develop the *BERMUS Development and Operating Pro Forma* including projections of operating income from rental and condo units, and building operations costs including utilities, operation, management, repairs, and reserves.
- Engage consultant team for creating legal and financial structure for the sales of CLT condo units and development of the LEHC.
- Establish the *BERMUS Preliminary Permanent Ownership Structure Document* that outlines the permanently affordable ownership structure of the BERMUS development, including the following:
 - A permanently affordable LEHC (or coop) where residents own a share of the cooperative housing floor, allowing affordable ownership control for extremely low-income households;
 - Limited equity condominium units targeted at low to moderate income households;
 - Nonprofit commercial and rental units owned by NCLT for long term affordable stewardship.
- Enlist the services of a subdivision and legal consultant to process the Department of Real Estate (DRE) preliminary public report application.
- Enlist the services of the legal consultant, a surveyor, and a financial consultant to create the *Preliminary Homeowners Association (HOA) Governance and Operating Documents* to include:
 - Tentative and final parcel maps;
 - Bylaws and Articles of Incorporation;

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- Conditions, covenants, and restrictions (CC&Rs), Purchase agreements, HOA budget including fees and utility cost and utility usage allocations;
- Community Land Trust (CLT) land leases guaranteeing affordability.
- Enlist the services of a legal consultant to create and process the DRE exemption for the LEHC units and create *Preliminary LEHC Governance and Operating Documents* to include:
 - Articles, bylaws, and membership agreements;
 - Proprietary lease/ occupancy agreement including utility cost and utility usage allocations;
 - CLT land lease.

Products:

- BERMUS Draft Total Project Cost Estimate
- BERMUS Development and Operating Pro Forma
- BERMUS Preliminary Permanent Ownership Structure Document
- Preliminary HOA Governance and Operating Documents
- Preliminary LEHC Governance and Operating Documents

TASK 5 CONCEPTUAL ARCHITECTURAL ENGINEERING MODEL-BASED DEVELOPMENT AND SYSTEMS DUE DILIGENCE

The goals of this task are to: (1) complete the BERMUS conceptual three dimensional (3D) building information model (BIM) that includes all critical architectural and engineering systems developed to a level of detail necessary for preliminary evaluation and comparison, and systems due diligence as required by the GFO-20-305, and (2) Design a proposed 6-story (plus a functional roof green space) mixed-use building which will have an exceptionally low energy use intensity (EUI) of 3.3 – 2.2 kWh/ft²/year, so that it can achieve ZNE, including power to 20 electric vehicle (EV) charging stations, utilizing only a rooftop canopy for PV.

The Recipient shall:

- Conduct an integrated design meeting with the Recipient, the builder, and the AEDT. The purpose of this meeting is to discuss the conceptual design of the BERMUS project and to solicit input regarding the integration of all building systems.
- Complete the development of the 3D project BIM model from which the *Draft Architectural and Engineering Conceptual Plans*, including floor plans, sections, and elevations, will derive. The 3D project BIM model will be shared via standard open-source BIM data exchange – known as industry foundation classes (IFC) -- with the engineering consultants, forming the basis for collaborative 3D BIM modeling iterations.
- Each engineering discipline will prepare draft schematics of each building system. Selection of system components will be based on the evaluation work listed in the Task 7 Building Performance Evaluation subsection.
- The architect and engineers will refine and coordinate all design elements, producing the *Final Architectural and Engineering Conceptual Plans* based on feedback from AEDT, NCLT, and contractors.
- The builder will prepare a total project building cost estimate.
- Develop coordinated *Draft BERMUS Technical & Economic Feasibility Assessment* with supporting design documentation; incorporate the following:
 - Final Architectural and Engineering Conceptual Plans, including system diagrams;

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- Updated project development and operating pro forma with the Contractor's conceptual cost estimate and schedule of values.
- Submit the *Draft Feasibility Assessment* with a copy of the *Final Architectural and Engineering Conceptual Plans* to the CEC for review.
- Prepare a *CPR Report #1* in accordance with subtask 1.3 (CPR Meetings):
 - Participate in a CPR meeting #1.

Products:

- Architectural and Engineering Conceptual Plans (draft/final)
- Draft BERMUS Technical & Economic Feasibility Assessment
- CPR Report #1

TASK 6 VALUE-OF-RESILIENCE (VOR123) ANALYSIS

The goal of this task is to utilize the Clean Coalition's VOR123 methodology to size the solar and storage needed to achieve resilience at the site. This includes obtaining the site's total load data, identifying the Tier 1, Tier 2, and Tier 3 loads, and developing a load management plan that ensures no utilization of grid data during 4-9pm timeframes, indefinite power backup for critical loads, and thermal and battery storage performance that optimizes overall economics and resilience.

The Recipient shall:

- Calculate all unit and site loads, including EV charging.
- Size the solar and battery storage to ensure the building is able to power itself daily during 4-9pm timeframes, provide indefinite backup power for Tier 1 critical loads (which are at most 10% of peak loads) during grid outages while supporting the rest of the loads for significant portions of time, and comply with GFO-20-305 requirements that reference the VOR123 methodology. The system sizing will conform with the operational design requirements in GFO-20-305 including:
 - No grid usage between 4pm and 9pm;
 - Tier 1 loads will be provided with 100% resilience:
 - Other loads are supported for significant percentages of time, based on energy availability.
- Include enough onsite solar to at least achieve ZNE.
- Develop the *BERMUS VOR123 Technical & Economic Analyses & Specifications* which will help inform the AEDT, key project decision-makers, and other key BERMUS stakeholders to ensure VOR123 is properly reflected in the BERMUS design.

Products:

- BERMUS VOR123 Technical & Economic Analyses & Specifications

TASK 7 BUILDING PERFORMANCE EVALUATION

The goal of this task is to model the performance of the whole building and to validate each subsystem's technical functionality, level of energy efficiency, economic feasibility, and marketability. Performance models of discrete subsystems will be evaluated; the results of the evaluations will inform architectural and engineering conceptual plan development.

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The Recipient shall:

- Validate the technical functionality, level of energy efficiency, economic feasibility, and marketability on each of the discrete systems listed below. Validation tools shall include US Green Building Council (USGBC) Leadership in Energy & Environmental Design (LEED) compliance in addition to AEDT developed analyses. Tools such as WattTime¹⁶ will be used to predict real-time BERMUS carbon emissions. These reports shall be consolidated into a *BERMUS Performance Energy Model Report*, including performance analyses of the following:
 - Innovative heating, cooling, and domestic hot water systems:
 - Geo-loop ground-coupled water-to-water heat pump system;
 - Hydronic radiant system;
 - Heat recovery ventilator and filtration system;
 - Greywater-sourced domestic hot water heat pump system;
 - PV Wash spray system for cooling, recharging ground source system, and cleaning PV solar panels.
 - Passive design features:
 - Membrane-lined thermally insulated water storage;
 - Phase-change thermal mass in walls and ceilings;
 - Window orientation and shading;
 - Natural lighting;
 - Natural ventilation.
 - Occupant managed systems:
 - High efficiency lighting and appliances (e.g.: refrigerator, cooktop & hood, dishwasher, etc.);
 - Shared laundry and private laundry facilities with time-of-use (TOU) pricing options to shift power consumption away from 4-9pm timeframes;
 - EV charging system with TOU pricing to shift power consumption away from 4-9pm timeframes;
 - Building Management Systems (BMS);
 - Load Management Systems;
 - Evaluation of “Prosumer” encouragement strategies and systems.
 - Whole building thermal and energy performance modeling to validate ZNE performance including EV charging:
 - Whole building thermal performance based on above discrete system performance evaluations and critical summer and winter benchmarks;
 - Whole building thermal performance of critical Summer day and critical Winter day in addition to yearly performance.
 - *BERMUS Solar Microgrid Technical and Economic Modeling*; tools including:
 - Energy Toolbase for economic assessment;
 - The Clean Coalition’s VOR123 methodology and State of Charge for resilience (SOCr) Calculator for ensuring resilience performance;
 - Measurement & Verification (M&V) analyses to ensure that no grid electricity is ever used during the 4-9pm timeframe.
- Conduct Choosing by Advantage (CBA) to help determine the best combination of systems for the overall building performance; assembly options identified by the structural engineer includes the following:

¹⁶ <https://www.watttime.org/>

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- Light-frame wood over one level of post-tensioned concrete structure. Concrete basement and matt foundations are anticipated;
- Light-frame wood walls and cross-laminated timber (CLT) floors over one level of post-tensioned concrete structure. Concrete shear walls will extend up one level to increase the lateral capacity. Concrete basement and matt foundations are anticipated;
- CLT and/or light-frame wood walls with structural topping slabs on CLT floors over one level of post-tensioned concrete structure with concrete shear walls extending the full building height. Concrete basement and matt foundations are anticipated.
- Provide *Structural System Life Cycle Analysis (LCA)* and *Embodied Carbon Impact Analysis* to evaluate the total environmental impact of the materials used in each structural system option including the construction impact and operational impact:
 - Evaluation Tool: Athena LCA software tools for sustainable designers.
- Perform *Structural Optimization Analysis* to determine the best overall structural system in terms of sustainability and strength of the following:
 - Evaluation Tools which may be used include:
 - ADAPT-PT/RC¹⁷ Streamlined Design of Post-Tensioned Beams and Slabs;
 - SAFE Analysis and Design of Floor Systems¹⁸;
 - Extended 3D Analysis of Building Systems (ETABS) Analysis and Design of Building Systems.
- Incorporate the performance modeling data into the *BERMUS Technical & Economic Feasibility Assessment (final)*;
- Prepare a *CPR Report #2* in accordance with subtask 1.3 (CPR Meetings);
- Participate in a CPR meeting #2.

Products:

- BERMUS Performance Model Report
- BERMUS Solar Microgrid Technical & Economic Modeling Report
- Structural System Life Cycle Analysis and Embodied Carbon Impact Analysis
- Structural Optimization Analysis
- BERMUS Technical & Economic Feasibility Assessment (final)
- CPR Report #2

TASK 8 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* each year as of January 31st. The Annual Survey includes but is not limited to the following information:

¹⁷ Actual name of the software product found here: <https://risa.com/products/adapt-pt-rc>

¹⁸ Actual name of a software product found here: <https://www.csiamerica.com/products/safe>

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- 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 at least once a year at a minimum by January 31st every year on the CEC's public online project and recipient directory on the [Energize Innovation website \(www.energizeinnovation.fund\)](http://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 \(www.energizeinnovation.fund\)](http://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 9 TECHNOLOGY/KNOWLEDGE TRANSFER ACTIVITIES

The goal of this task is to ensure the technological learning that resulted from the project is captured and disseminated to the range of professions that will be responsible for future deployments of this technology or similar technologies.

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 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.

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- 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 an CEC-sponsored conference/workshop(s) on the project.
- When directed by the CAM, participate in annual EPIC symposium(s) sponsored by the California 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/Final)
- Summary of TAC Comments
- Project Case Study (Draft/Final)
- High Quality Digital Photographs

TASK 10 BUILD PHASE SELECTION

The goal of this task is to conduct activities and prepare deliverables for the selection process for the Build Phase. These deliverables will be used to select which Design Phase projects will receive funding for the Build Phase. In addition, deliverables developed under this task will be used to amend the agreement for those projects chosen to move onto Build Phase.

The Recipient shall:

- Develop and prepare *Conceptual Design and Engineering Report*, describing drawings, design plans, and photos of an architectural-scale model of the project. At least photos from each perimeter side of the model shall be included in the report (e.g., north, east, south, and west views). The actual architectural-scale models will be on display during the team's project presentation at the event, as well as during a model showcase networking session
- Develop and submit an *Energy and Emissions Performance Model Report*, detailing the plan for software modeling of the development's expected energy and emissions performance and impacts on tenants' energy bills.
- Prepare and submit an *Emerging Technologies and Strategies Report*, describing the emerging technologies and strategies proposed to be used in the Build Phase and why they were chosen.

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- Prepare and submit a *Zero-Emission Cost-Benefit Analysis Report* detailing the estimated cost difference between the zero-emission build-out compared to standard building design, construction and operations.
- Prepare and submit a *Community Engagement Plan* documenting the strategy for soliciting and incorporating input from the community throughout the design process.
- Create and submit a two-minute *Concept Video* that will air at the Zero-Emission Building Forum (i.e., Showcase Event).
- Develop and submit additional *Presentation Materials* for the Zero-Emission Building Forum, as determined and requested by the CAM.
- Provide a presentation to the Build Phase Evaluation Committee.
- Develop and submit a Build *Phase Amendment Package* that includes revisions as necessary to all of the Design Phase “full application” attachments:
 - Attachment 4 -EPIC Application Form (i.e., Design Phase application, confirmed and/or amended, as necessary, for the Build Phase)
 - Attachment 5 -EPIC Executive Summary (i.e., Design Phase application, confirmed and/or amended, as necessary, for the Build Phase)
 - Attachment 6 -EPIC Project Narrative (i.e., Design Phase application, confirmed and/or amended, as necessary, for the Build Phase)
 - Attachment 7 – Project Team Form
 - Attachment 8 – Scope of Work
 - Attachment 9 – Project Schedule
 - Attachment 10 – Budget
 - Attachment 11 – CEQA Compliance Form (Must be filled out again, to reflect at a minimum: (a) changes in the proposed project and (b) any changed external circumstances that are relevant to the prior environmental impact analysis.) (Applicant must confer with Lead Agency, if proposed project has increased in magnitude or changed in a way that is relevant to the prior environmental impact analysis.)
 - Attachment 12 – References and Work Product Form
 - Attachment 13 – Commitment and Support Letters
 - Attachment 14 – Project Performance Metrics
 - Attachment 15 --Applicant Declaration (must be filled out again)

Products:

- Conceptual Design and Engineering Report
- Energy and Emissions Performance Model Report
- Emerging Technologies and Strategies Report
- Zero-Emission Cost-Benefit Analysis Report
- Community Engagement Plan
- Concept Video
- Presentation Materials
- Build Phase Amendment Package that includes revisions to the following Design Phase attachments:
 - Attachment 4 -EPIC Application Form
 - Attachment 5 -EPIC Executive Summary
 - Attachment 6 -EPIC Project Narrative
 - Attachment 7 – Project Team Form

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- Attachment 8 – Scope of Work
- Attachment 9 – Project Schedule
- Attachment 10 – Budget
- Attachment 11 – CEQA Compliance Form
- Attachment 12 – References and Work Product Form
- Attachment 13 – Commitment and Support Letters
- Attachment 14 – Project Performance Metrics
- Attachment 15 --Applicant Declaration

V. PROJECT SCHEDULE

Please see the attached Excel spreadsheet.

STATE OF CALIFORNIA

STATE ENERGY RESOURCES
CONSERVATION AND DEVELOPMENT COMMISSION

RESOLUTION: Northern California Land Trust, Inc.

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

RESOLVED, that the CEC approves Agreement EPC-21-029 with Northern California Land Trust, Inc. for a \$999,595 grant to fund the design of the Berkeley Efficient and Resilient Mixed-Use Showcase. The design is envisioned as a six-story all-electric, zero-net energy (ZNE) building comprised of 50 housing units, permanently affordable for low-income households. The design will incorporate a solar microgrid to support extended grid outage resilience while supporting the grid during peak hours. The project seeks to validate the scalability and replicability of architectural and mechanical systems in the building design to advance California's decarbonization goals; 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 April 26, 2022.

AYE:

NAY:

ABSENT:

ABSTAIN:

Liza Lopez
Secretariat