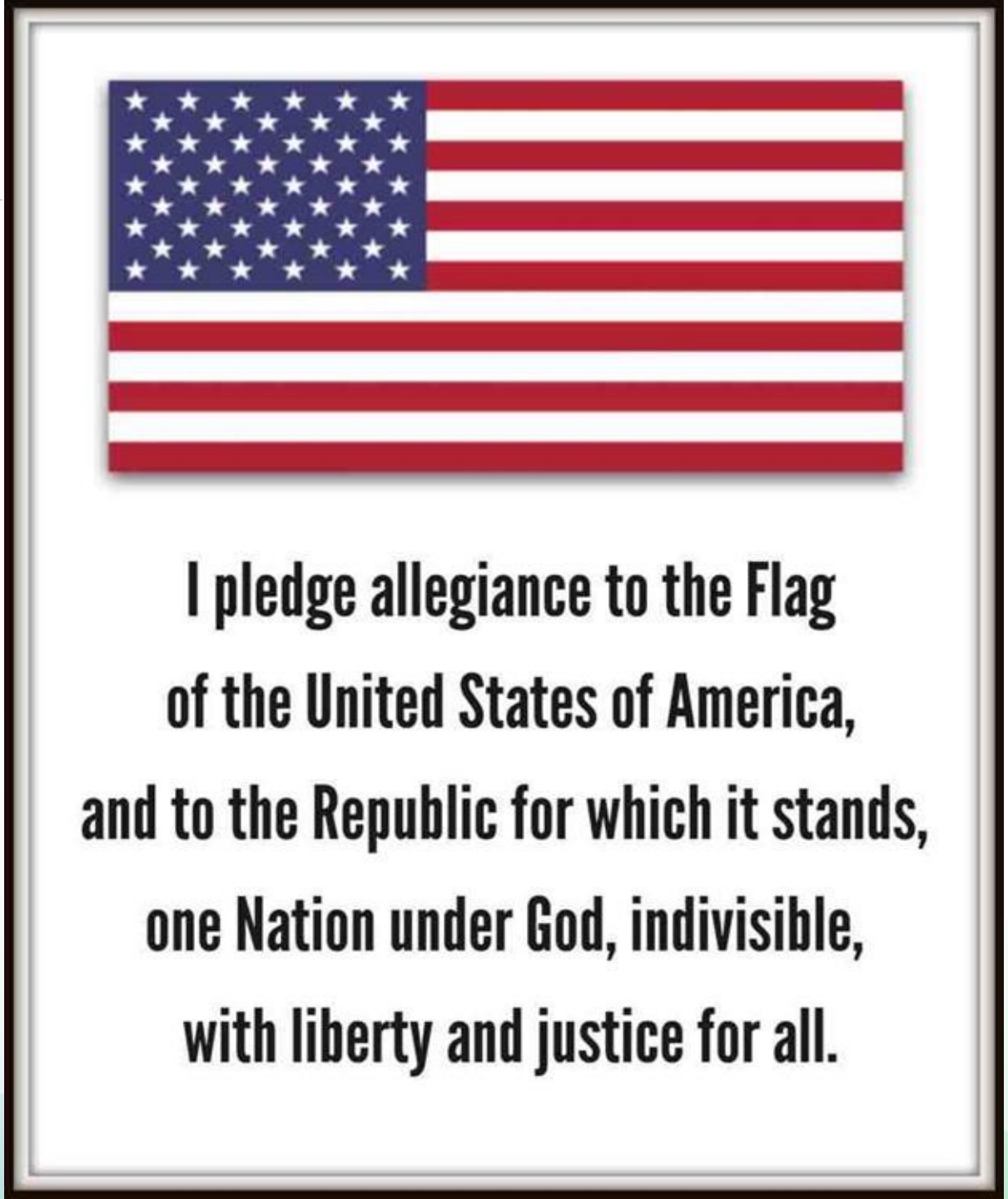
DOCKETED	
Docket Number:	22-BUSMTG-01
Project Title:	Business Meeting Agendas, Transcripts, Minutes, and Public Comments
TN #:	243004
Document Title:	May 20 Business Meeting Presentation
Description:	N/A
Filer:	Dorothy Murimi
Organization:	California Energy Commission
Submitter Role:	Commission Staff
Submission Date:	5/11/2022 8:54:12 AM
Docketed Date:	5/11/2022

California Energy Commission
Business Meeting
May 11, 2022
10:00 a.m.

Pledge of Allegiance



California Energy Commission's

CLEAN ENERGY HALL OF FAME

SAVE THE DATE

December 2022

Nominations due by:

July 1

Consent Calendar: a. – e.

a. Governor's Office of Business and Economic Development (GO-Biz). Contact: Jennifer Masterson

~~b. California Department of Transportation (Caltrans). Contact: Soham Mistry~~

c. Solar Energy Generating System VIII (SEGS VIII) (88-AFC-01C). Contact: Elizabeth Huber

d. Clean Energy States Alliance, Inc. (CESA). Contact: Jim Folkman

e. American Council for an Energy Efficient Economy (ACEEE). Contact: Laura Castaneda

Item 2: Thomas Gates Ph. D.

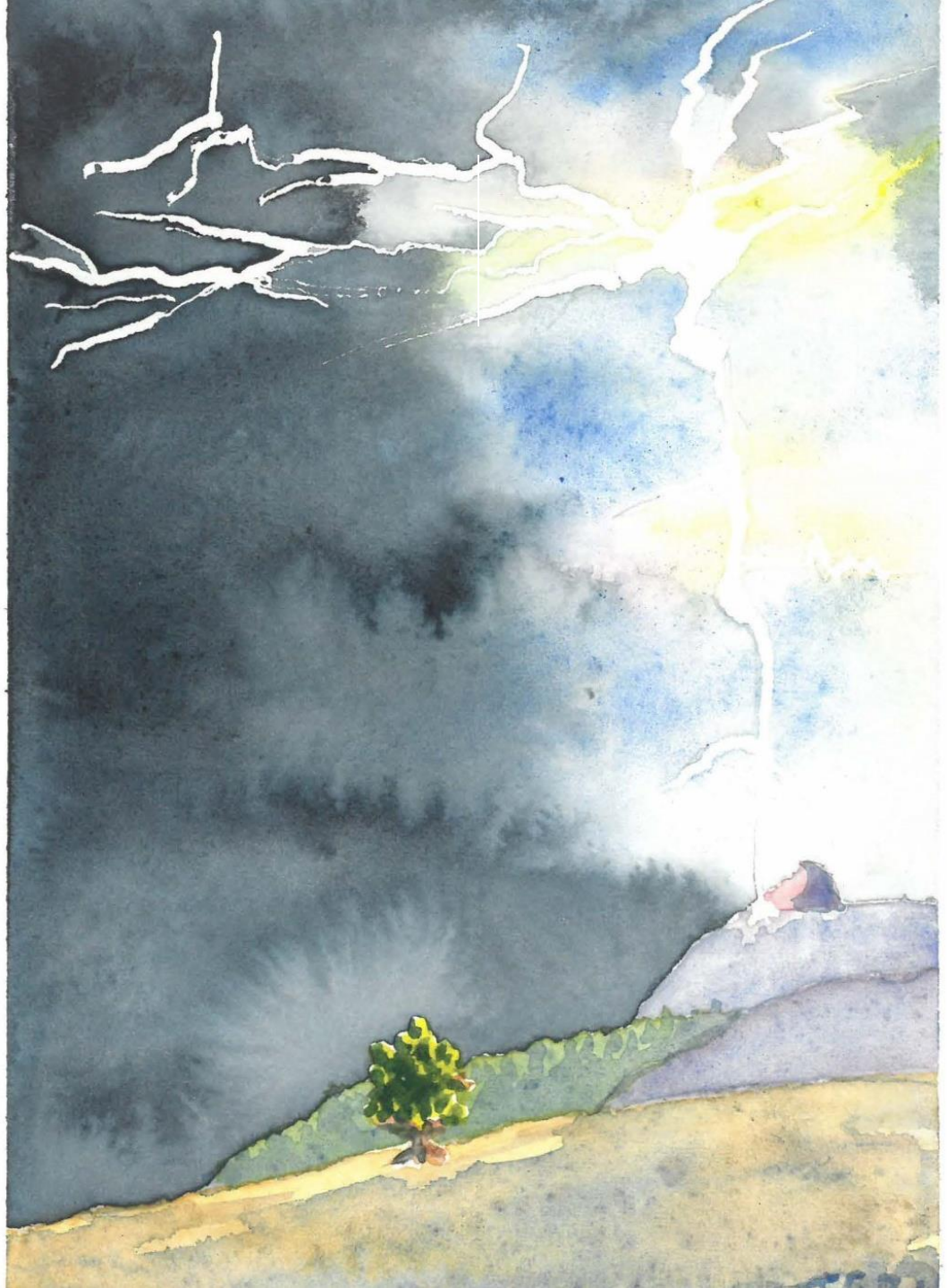
May 11, 2022, Business Meeting

Noemí Gallardo, Chief of Staff
Chair Hochschild's Office

Acknowledging the Contribution of Thomas Gates

May 11, 2022


STATE OF CALIFORNIA




Zoinks!!!
THE MYSTERY MACHINE
15

Your family, friends, and colleagues wish you all the best in retirement

Resolution Acknowledging the Contributions of Thomas Gates

Co-authored by

Jenni Gates, Yurok Tribe, Kourtney Vaccaro, Eli Harland, Eric Knight + STEP, Geneva Thompson, Janet Eidsness, Richard Arnold, Gary Owens, Quechan Culture Committee, Noemi Gallardo, Katrina Leni-Konig

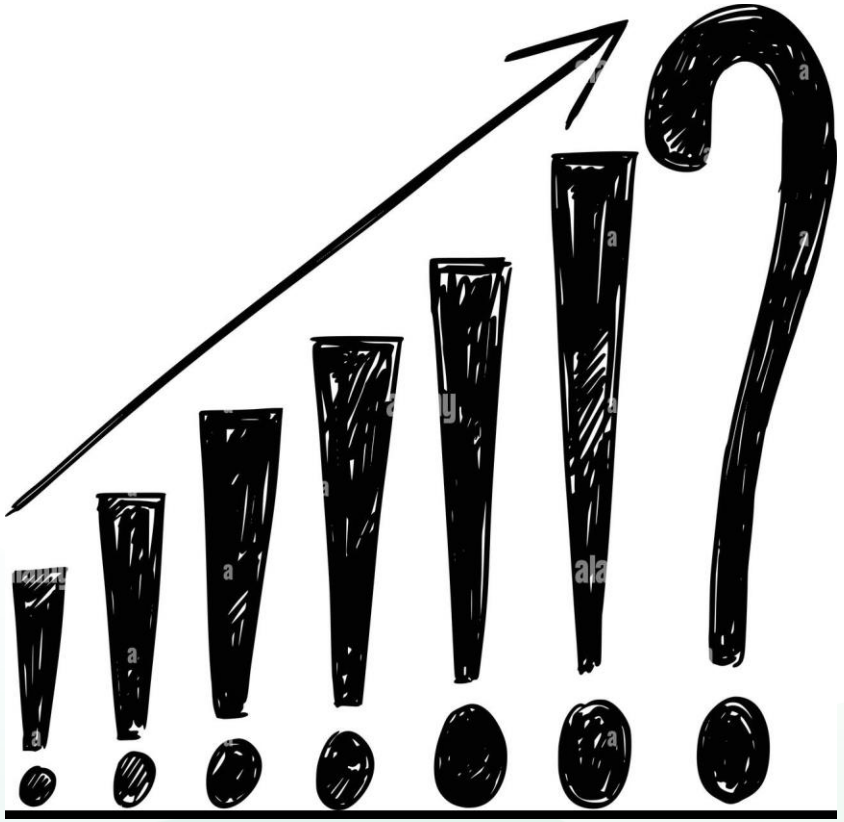
Item 3: Reliability Update

May 11 Business Meeting

David Erne
Energy Assessments Division

2020 Reliability Impacts

- Multi-day extreme heat outages
- CAISO/CPUC/CEC conducted a root cause analysis
  - Demand/supply estimates rely on historic performance
  - Not adequately accounting for climate change

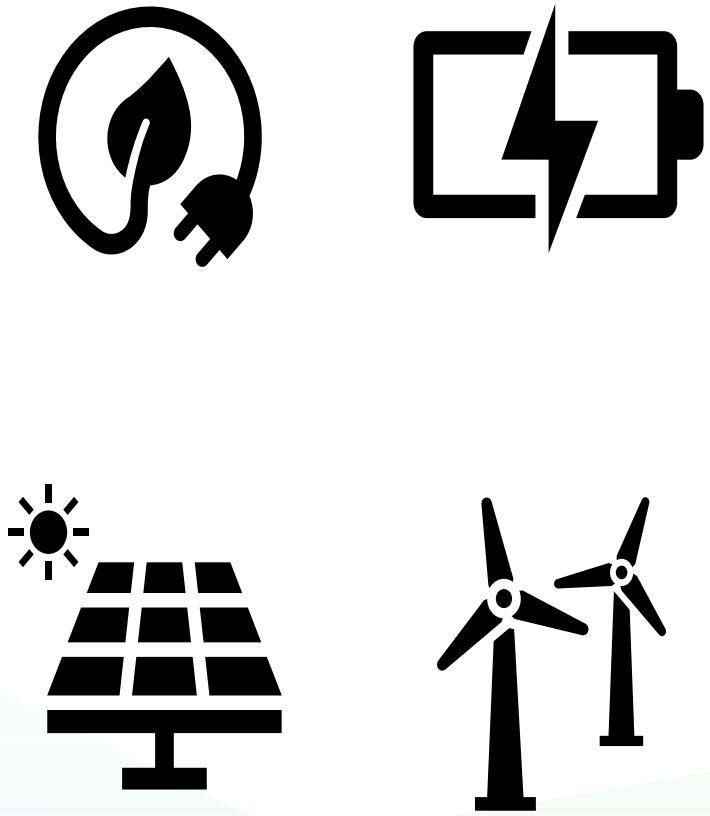


Continuing Reliability Challenges

- 2021 – another hot and dry summer
  - Oroville's Hyatt Powerplant was shut down for the first time ever
  - Oregon Bootleg fire cut off 4,000 MW of energy imports
  - COVID-19 supply chain challenges
- Moving forward
  - Tariff issues potentially impacting new projects
  - 6,000 MW of planned retirements by 2025

California Actions

- Revised forecasts to better reflect climate impacts
- Mandated an unprecedented amount of energy procurement
- Maximized demand response
- Accelerated projects
- Installed emergency generators
- Delayed planned retirement dates for existing power plants
- Tracking Energy Development Task Force



May 20 Reliability Workshop

- CEC and CAISO Summer Stack Analyses
- TED Task Force Overview
- Supply Chain Panel
- Interconnection Panel

Questions?

Item 4: STACK Trade Zone Park (21-SPPE-02)

May 11, 2022, Business Meeting

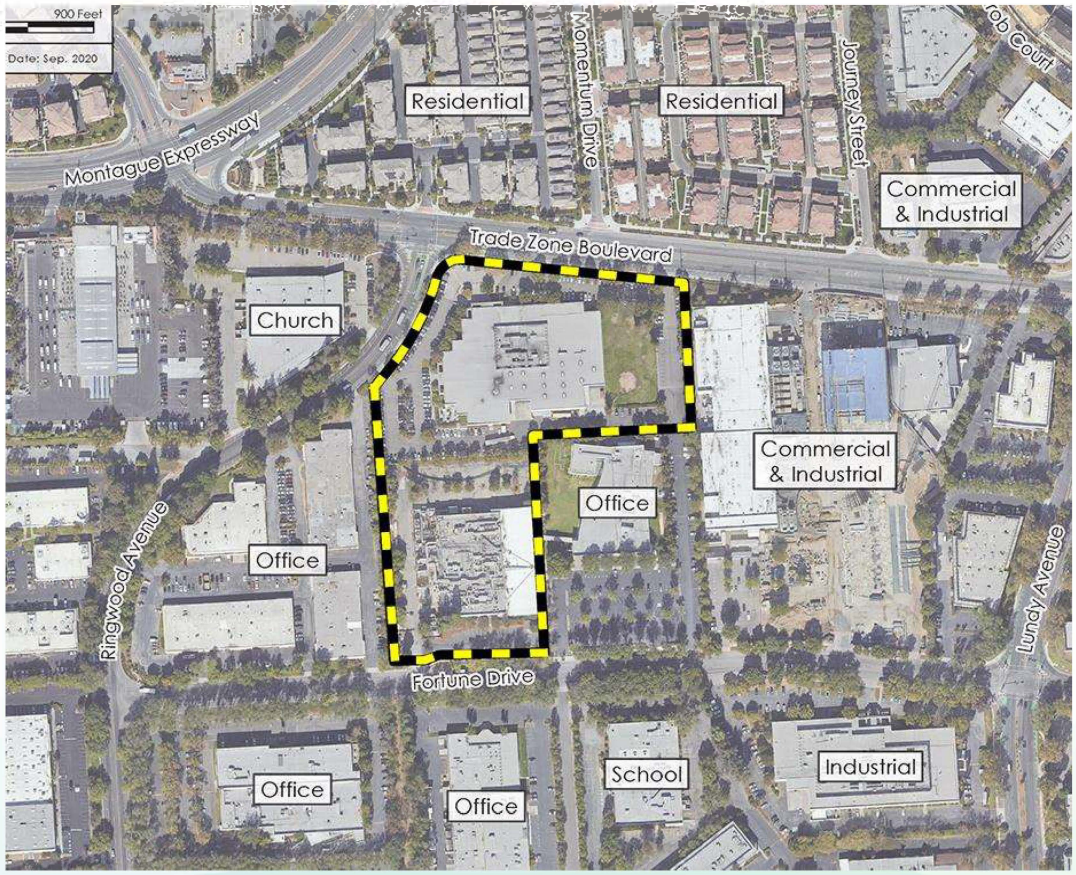
Eric Knight, Manager
STEP, Siting & Environmental Office

STACK Trade Zone Park SPPE

Project Details

- Advanced manufacturing building
- Data center (2 buildings)
- Backup generating facility (90 megawatts)
- Electrical substation
- Parking garage

Located in San Jose:
- 2400 Ringwood Avenue
- 1849 Fortune Drive



SPPE Process

- CEC staff reviews SPPE application and conducts discovery
- Staff prepares environmental assessment document
- Committee conducts hearings and prepares Proposed Decision
- If CEC exempts, applicant may seek project approval and permits

Staff Recommendation

- Adopt Order No. 22-0511-4 appointing committee to preside over proceeding 21-SPPE-02.

Item 5: LA PALOMA GENERATING PLANT (98-AFC-02C)

May 11, 2022, Business Meeting

Presented by Elizabeth Huber, Safety and Reliability Office Manager
Mary Dyas, lead Compliance Project Manager
Jennifer Baldwin, lead Counsel
Siting, Transmission and Environmental Protection Division

Benefits to Californians

Summer Reliability

- Summer 2022: Goal 0 derates/unplanned outages
- Summer 2021: 13 derates/unplanned outages

Overview

Date	Action
10/06/1999	CEC approves license
3/7/2003	Facility came online
5/28/2013	Installation of inlet foggers
2/8/2022	Project modification petition filed
4/15/2022	Staff's analysis is filed
5/3/2022	Project submits comment on Staff's Analysis

La Paloma Generating Plant

New San Joaquin Air Pollution Control District conditions for the emergency backup generator

Staff Recommendation

- Adopt Order to add conditions of certification specifically for AQ-EG1 through AQ-EG16 to conform with the new air district conditions for the emergency backup generator.

Item 6: Delegation of Geothermal Certification Authority Regulations (Docket No. 21-OIR-02)

May 11, 2022 Business Meeting

Reneé Webster-Hawkins
Chief Counsel's Office

Benefits to Californians

- Streamline and accelerate development of geothermal electric generation
- Accelerate CA's transition to carbon-free energy
- Contribute to state directive for 11,500 megawatts in new electricity resources by 2026

Photo: California Energy Commission geothermal webpage

Existing Law and Regulations

- Warren-Alquist Act authorizes delegation of the certification of geothermal powerplants to counties with a geothermal element.
- Current regulations:
  - Date back to the 1970s
  - Include unnecessary administrative procedures
  - Have not been used by any county

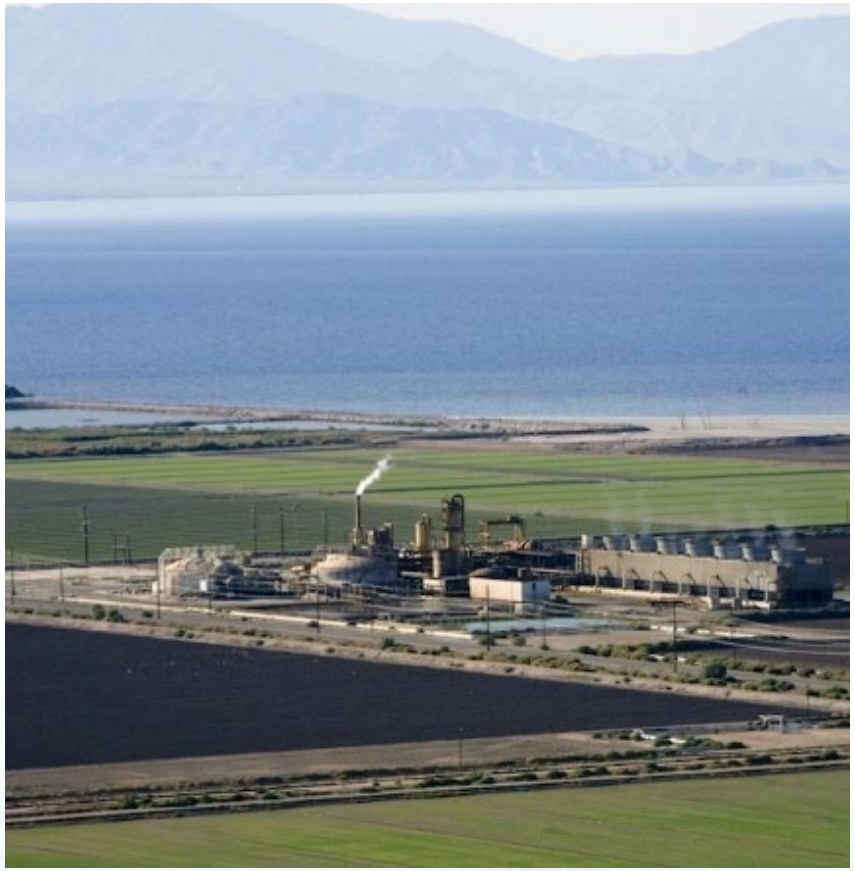


Photo: BHE Renewables

Proposed Regulations

- Proposed amendments
  - Eliminate unnecessary procedures
  - Clarify needed information
  - Preserves robust environmental review and public participation

- Key dates from proceeding
  - 45-day public comment period ended April 11th
  - Public hearing April 14th
  - All public comments were supportive.

Photo: Think GeoEnergy.com

Proposed Action

- Find that proposed regulations in 21-OIR-02 are exempt from CEQA under the common sense exemption, and
- Approve the resolution adopting amendments to Sections 1802 and 1860-1870 of Title 20 of the California Code of Regulations.

Item 7: Order Instituting a Rulemaking Proceeding for Amendments to Field Verification and Diagnostic Testing Requirements

May 11, 2022, Business Meeting

Ronnie Raxter, Supervisor
Efficiency Division, Standards Compliance Office

Benefits to Californians

- **Simplify Energy Code Compliance**
  Relocate Field Verification & Diagnostic Testing requirements to Energy Code to align verification of installation with code requirement

- **Improve** program performance, **enhance** compliance, **increase** energy savings

Purpose of Rulemaking Proceedings

OIR includes **two related proceedings**:

1. **Sunset** Field Verification & Diagnostic Testing **requirements [in the HERS regulations located in CCR Title 20]**
2. **Add** Field Verification & Diagnostic Testing **requirements to Energy Code [in CCR Title 24]**

Purpose:

- **Program improvements** and **clarity**
- Consider changes to progressive discipline, QA, conflict of interest, training, other requirements

Staff Recommendation

Approve OIR granting staff authority to undertake two proceedings related to Field Verification & Diagnostic Testing program

Item 8: Certification of the 2022 Energy Code Compliance Manuals

May 11, 2022, Business Meeting

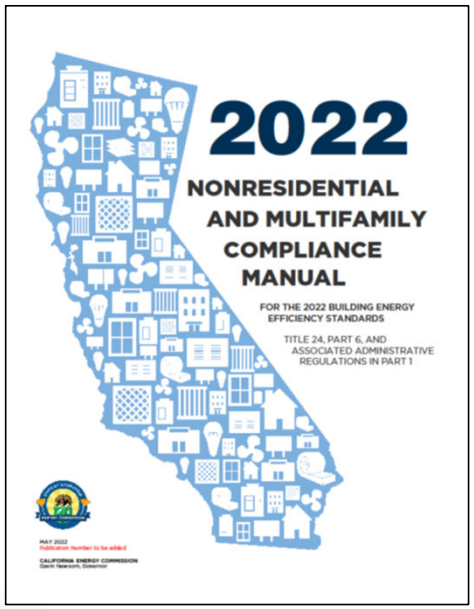
Bach Tsan, Senior Engineer
Efficiency Division, Building Standards Office

Benefits to Californians

- Helps building industry understand and comply with Energy Code
- Helps regulators understand and enforce Energy Code

Overview

- 2022 Energy Code adopted August 11, 2021
- CEC required to certify updated manual no later than 180 days after adoption
- Compliance Manuals
  - Vetted with stakeholders
  - Posted for public comment
    - 107 comments received
    - Suggestions incorporated



Staff Recommendation

- Certify the 2022 Compliance Manuals for 2022 Energy Code
- Adopt staff's finding that Compliance Manuals are exempt from CEQA

Thank You

Efficiency Division

Haider Alhabibi
Ronald Balneg
Amber Beck
Payam Bozorgchami
Amie Brousseau
Haile Bucaneg
Sam Cantrell
Thao Chau
Christine Collopy
Maxwell Crosby
Danuta Drozdowicz
Hilary Fiese
Corrine Fishman
Javier Flores
Tajanee Ford-Whelan
Che Geiser
Matthew Haro
Erik Jensen
Simon Lee
Joe Loyer
Kenzo Minami
Angel Moreno
Elmer Mortel
Cheng Moua
Chris Olvera
Charles Opferman
Bill Pennington
Javier Perez
Armando Ramirez
Gagandeep Randhawa
Ronnie Raxter
Judy Roberson
Muhammad Saeed
Michael Shewmaker
Mazi Shirakh
Michael Sidhu
Michael J. Sokol
Peter Strait
Danny Tam
Elizabeth Thomsen
Bach Tsan
Will Vicent
Lorraine White
RJ Wichert
Allen Wong
Daniel Wong

Office Of Chief Counsel

Linda Barrera
Matt Chalmers
Josephine Crosby
Justin Delacruz
Chester Hong
Michael Murza
James Qaqundah

Media & Public Communications

Carol Robinson
Rick Macias
Lana McAllister

Item 9: National Lighting Contractors Association of America (NLCAA) Amendment to Provider Application

May 11, 2022 Business Meeting

Daniel Wong, Senior Electrical Engineer
Efficiency Division, Standards Compliance Office

Benefits to Californians

- Ensures technicians receive adequate oversight
- Receive benefits of code compliant lighting controls

Source: California Energy Commission

Source: California Energy Commission

Overview

- The proposed amendment:
  - Alters quality assurance on-site audit procedures
  - Resolves barriers preventing completion of on-site audits

- On-site audits continue to meet Energy Code requirements

Source: California Energy Commission

Staff Recommendation

- Approve NLCAA application amendment

Item 10: U.S. Department of Energy

May 11, 2022 Business Meeting

Jeffrey Lu, Air Pollution Specialist
Fuels and Transportation Division

Benefits to Californians

- Customer bill savings
- Energy resiliency
- Support for grid reliability

Source: Lucid

Overview

- Memorandum of understanding establishing the Vehicle-to-Everything (V2X) Collaboration led by U.S. Department of Energy
- Accelerate development and commercialization of V2X
- Includes automakers, charging providers, public agencies, labor

Signing ceremony in Commerce, California
Credit: Harvey Farr

Next Steps

- Explore data sharing and technology demonstrations with participants
- Anticipate kickoff meeting and roadmapping activities soon
- Will coordinate closely with Public Utilities Commission

Staff Recommendation

Staff recommends:

- Approve resolution ratifying the memorandum of understanding and adding CEC as a participant
- Adopt staff determination that agreement is not a project under CEQA

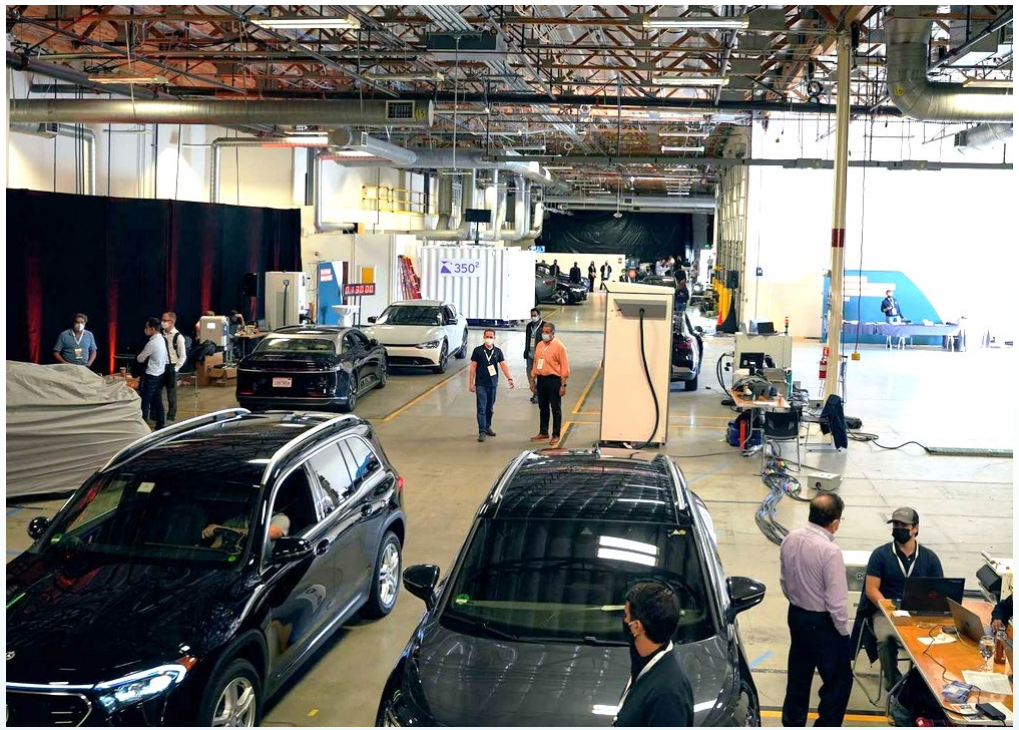
Item 11: innos Incorporation

May 11, 2022 Business Meeting

Jeffrey Lu, Air Pollution Specialist
Fuels and Transportation Division

Benefits to Californians

Improved communication interoperability → Easier, more reliable charging experience



Source: CharIN

Overview

- $910,000 contract with **innos Incorporation** to plan and host a Vehicle Interoperability Testing Symposium (VOLTS) in California
- VOLTS will gather automakers, charging providers, and other charging stakeholders for multi-day interoperability testing
- VOLTS will also include a conference component and “roadshow” to demonstrate real world benefits of communication interoperability

Staff Recommendation

Staff recommends:

- Approve contract agreement
- Adopt staff determination that project is CEQA exempt

Item 12: GFO-21-601: Charging Access for Reliable On-Demand Transportation Services (CARTS)

May 11, 2022, Business Meeting

David Wensil, Energy Analyst
Fuels and Transportation Division
Medium- and Heavy-Duty Zero Emission Technologies Office

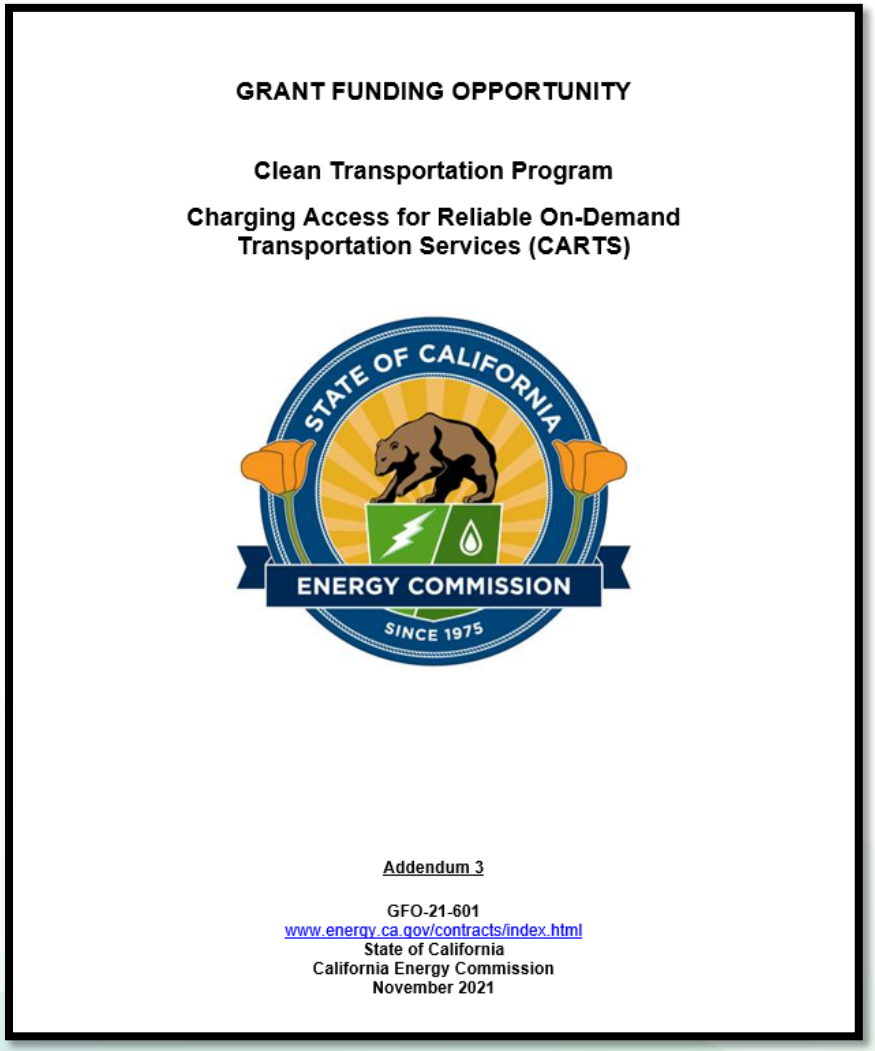
Benefits to Californians

- Replicable solutions
- Increased resiliency
- Scalable models
- Reduced emissions
- Job creation

Photo credit: San Francisco Chronicle

Solicitation Overview

- On-Demand Transportation Services
  - Ride-hailing
  - Taxis
  - Meal and grocery delivery
- Chargers may be publicly or privately available


GRANT FUNDING OPPORTUNITY

Clean Transportation Program

Charging Access for Reliable On-Demand Transportation Services (CARTS)

Addendum 3

GFO-21-601
www.energy.ca.gov/contracts/index.html
State of California
California Energy Commission
November 2021

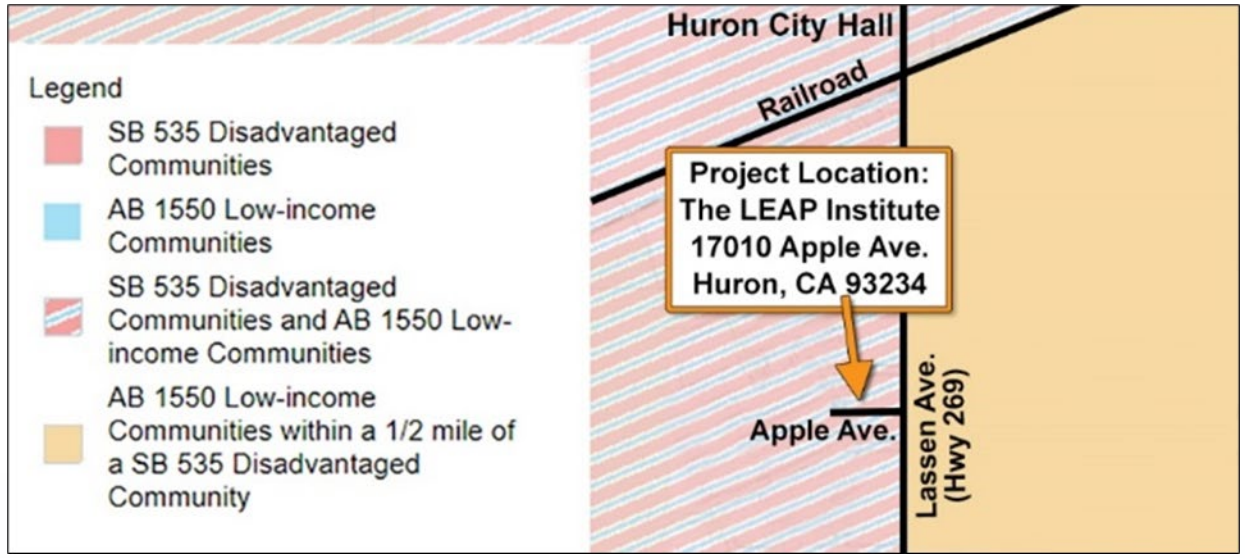
California Market Potential

Photo credit: CARB

≈ 642,000
TNC vehicles in California

≈ 30%
share of market for DCFC

Project Overview for the LEAP Institute (12a)



Low-Income/Disadvantaged Map

Source: LEAP Institute Project Narrative

Green Raiteros Meeting at LEAP Shop in Huron

Source: LEAP Institute Project Narrative

- Green Raiteros ride share program
- 4 fast chargers
- Located in Central Valley in Huron, CA

Project Overview of TeraWatt Infrastructure (12b)

Source: TeraWatt Infrastructure Project Narrative

- 12 Level 2 chargers
- 7 dual port fast chargers
- Located in Santa Ana, CA

Project Overview of KIGT (12c)

- The eStation Model:
  - ~170 Level 2 chargers
  - 10 fast chargers
  - AI-driven “smart” EV charging
  - Onsite solar + storage
- Workforce training
- Located in Ontario, CA

Source: KIGT

Project Overview of EVgo Services (12d)

San Francisco Hub:

- 26 fast chargers

Source: Cruise

Source: EVgo

Oak Hub:

- 4 fast chargers

Source: Uber

Staff Recommendation

- The LEAP Institute (12a)
  - Approve grant agreement for $415,288.
  - Adopt Staff CEQA findings.

- TeraWatt Infrastructure, LLC (12b)
  - Approve grant agreement for $1,996,481.
  - Adopt Staff CEQA findings

- KIGT, Inc. (12c)
  - Approve grant agreement for $1,999,425.
  - Adopt Staff CEQA findings

- EVgo Services, LLC (12d)
  - Approve grant agreement for $1,698,515.
  - Adopt Staff CEQA findings

Item 13: San Diego Community College District

May 11, 2022 Business Meeting

Larry Rillera, Air Pollution Specialist
Fuels and Transportation Division
Transportation Integration and Production Office

Benefits to Californians

- **Reduce** pollution immediately in communities
- **Develop** ZEV and infrastructure career pathways
- **Create** jobs
- **Support** the ZEV industry and supply chains
- **Support** priority communities and skills development

Source: San Diego CCD

Overview of San Diego Community College District

- Augment existing agreement by $1,800,000
- Extend agreement by 24 months
- Establish new Medium- and Heavy-Duty ZEV Programs at 6 colleges
- Training for fleet technicians
- Certificates and degrees upon completion

Source: San Diego CCD

Source: Atleducation.org

Staff Recommendation

- Approve San Diego Community College District contract amendment

Item 14: IDEAL ZEV Workforce Pilot Project (GFO-21-602)

May 11, 2022 Business Meeting

Larry Rillera, Air Pollution Specialist
Fuels and Transportation Division
Transportation Integration and Production Office

Benefits to Californians

- **Develop** ZEV and infrastructure career pathways
- **Create** jobs including XX for this item
- **Support** the ZEV industry and supply chains
- **Support** priority communities and skills development
- **Partner** with California Air Resources Board

Source: cafcp.org

KIGT

Source: kigtinc.com

Source: California Community Colleges

a. Fresno City College

- Proposed agreement of $500,000
- Automotive training and internships at:
  - Clovis High School
  - Central High School
  - Kerman High School
- Dual Enrollment Program
- Leverage existing Advisory Committee
- Approximately 100 trainees and trainers during the project
- Project will continue after the project period

Source: Fresno City College

b. Housing Authority of the County of San Joaquin

- Proposed agreement of $500,000
- Priority communities, workforce, and training solutions
- Training for introductory ZEV careers and skills development
- Approximately 75 trainees during the project
- Approximately 70 jobs after project period

Source: HACSJ.org

Source: deltacollege.edu

c. County of Los Angeles

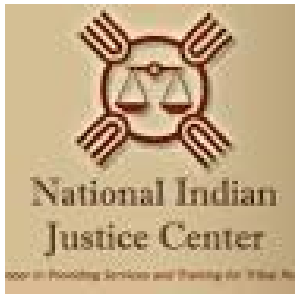
- Proposed agreement of $499,530
- Municipal electricians
- Training EV charger installation, operation, and service
- Electric Vehicle Infrastructure Training Program (EVITP) Training and Certification
- Approximately 100 trainees during the project term
- Project will continue after the project period

Source: lacounty.gov

Source: greenenergyconsumers.org

d. National Indian Justice Center, Inc.

- Proposed agreement of $500,000
- Tribal ZEV Training Project
- Partnership with 23 California Native American Tribes in Humboldt and San Diego Counties
- Provide over 9,000 training hours on ZEVs and ZEV infrastructure
- Approximately 80 jobs after the project



Source: nijc.org

Source: evitp.org

e. Cal State University Long Beach Research Foundation

- Proposed agreement - $499,908
- ZEV Engineering Training Program
- Academic and laboratory training
- Tuition assistance and support
- Approximately 40 trainees during the project
- Facilitate job placement
- Project will continue after the project period

Source: CSULB

Source: CSULB

f. Los Angeles Pierce College

- Proposed agreement of $500,000
- ZEV Training Program across 3 programs:
  - Automotive
  - Electronics
  - Environmental
- Tuition assistance and support
- Leverage existing Advisory Committee
- Approximately 130 jobs after the project period
- Project will continue after the project period

Source: piercecollege.edu

g. Cal State Los Angeles University Auxiliary Services

- Proposed agreement of $499,994
- California ZEV Engineering Workforce Pilot
- Hydrogen Refueling Station design, instruction, and hands-on training
- Light-, medium-, and heavy-duty vehicle fuel cell technology
- Tuition assistance and internships
- Approximately 40 students/trainees
- Project will continue after the project period

Source: calstatela.edu

h. Green Paradigm Consulting, Inc.

- Proposed agreement - $250,000
- EV Military Service Pilot Project (Online)
- Trainees focused on California Veterans, disabled veterans, and military personnel as qualified EV Charging Technicians
- Prominent California and national project partners
- Approximately 50 trainees during the project
- Project will continue after the project period

GREEN PARADIGM CONSULTING

Source: Provided by Green Paradigm Consulting

Source: jobs.vetjobs.org

i. West Oakland Job Resource Center

- Proposed agreement of $350,000
- Greening the Transportation/Distribution/Logistics Industry
- Partnership with the Northern California Teamsters Apprenticeship Training
- High Road Training for on-/off-road ZEV technologies in freight sector
- Approximately 100 trainees during the project

West Oakland Job Resource Center

Source: worjc.org

NORTHERN CALIFORNIA TEAMSTERS APPRENTICE TRAINING

Source: nctat.org

PORT OF OAKLAND

Source: portofoakland.org

Staff Recommendation

- Approve agreements and adopt staff's determination that these actions are exempt from CEQA for:
  - Fresno City College
  - Housing Authority of the County of San Joaquin
  - County of Los Angeles
  - National Indian Justice Center
  - California State University Long Beach
  - Los Angeles Pierce College
  - California State Los Angeles University Auxiliary Services
  - Green Paradigm Consulting
  - West Oakland Job Resource Center

Item 15: NORESCO, LLC

May 11, 2022 Business Meeting

Elizabeth Thomsen, Contract and Grant Analyst
Efficiency Division, Administrative Office

Benefits to Californians

- Provide technical support for developing, updating, maintaining Energy Code
- Advance 2 state energy efficiency goals:
  1) Building decarbonization
  2) Decreasing energy consumption

Agreement Overview

- Focuses on Energy Code updates:
  - Development and implementation (2022 and 2025)
  - Maintenance and enhancements (2019)
  - Preliminary future work (2028 and beyond)

Proposed Scope of Work

Residential Update Measure Identification and Analysis

Nonresidential Update Measure Identification and Analysis

Energy and Climate Accounting Methodologies

Staff Recommendation

- Approve NORESCO, LLC agreement

Item 16: Bruce A. Wilcox, P.E. Inc.

May 11, 2022 Business Meeting

Elizabeth Thomsen, Contract and Grant Analyst
Efficiency Division, Administrative Office

Benefits to Californians

- Provide technical support for developing, updating, maintaining CBECC software
- Advance 2 state energy efficiency goals:
  1) Building decarbonization
  2) Decreasing energy consumption

Agreement Overview

- Helps fulfill regulatory requirements:
  - Free public domain software certified for compliance
  - Supporting documents such as compliance manuals, reference manuals, and compliance forms
  - Tools that provide compliance flexibility, data collection, and field verification

Proposed Scope of Work

Enhancing and Supporting Data Exchange Infrastructure

Standards Software Tools Development and Maintenance

Software Tools Documentation and Deployment

Staff Recommendation

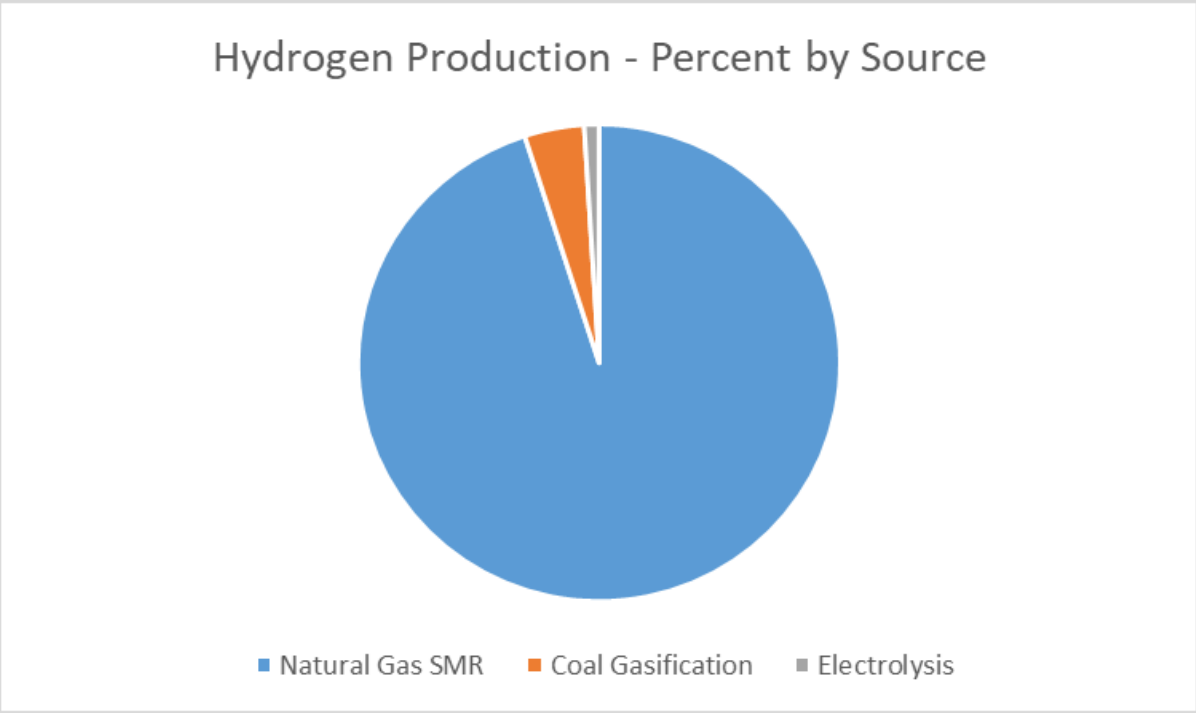
- Approve Bruce A. Wilcox, P.E. Inc. agreement

Item 17: Advancing Cost and Efficiency Improvements for Low Carbon Hydrogen Production (GFO-21-502)

May 11, 2022 Business Meeting

Baldomero Lasam, Mechanical Engineer
Energy Research and Development Division
Energy Generation Research Office

Benefits to Californians



Source: U.S. Department of Energy. 2020.

https://www.energy.gov/fecm/downloads/hydrogen-strategy-enabling-low-carbon-economy

- Reduce GHG emissions.
- Improve economics and increase adoption.
- Inform future deployment strategies.

The Regents of the University of California - Los Angeles Campus

Direct Solar Conversion of Biogas to Hydrogen and Solid Carbon: A Novel, Zero Carbon Process

- Develop a technology that uses solar energy to convert low carbon hydrogen gas.
- Reduces complexity, costs and durability limits.
- Produce zero GHG emissions.

Technology and Investment Solutions, LLC.

Catalytic Dry Reforming of Biogas to High Purity Hydrogen Using Waste Heat

- Develop and deploy a pilot-scale low carbon hydrogen production system.
- Integrate proven process components for hydrogen production.
- Significant CO2 emission reductions compared to steam methane reforming.
- Increase hydrogen production, achieve high hydrogen purity, and allow pipeline injection or local distribution.

Figure: Catalytic Reformer System

Staff Recommendation

- Approve grant agreement with The Regents of the University of California - Los Angeles Campus and Technology and Investment Solutions, LLC.

- Adopt staff's determination that projects are exempt from CEQA.

Item 18: The Next EPIC Challenge: Reimagining Affordable Mixed-Use Development in a Carbon-Constrained Future

May 11, 2022 Business Meeting

Rachel Salazar
Energy Deployment and Market Facilitation Office
Energy Research and Development Division

Benefits to Californians

General benefits provide replicable designs and plans for affordable zero-emission mixed-use developments that:

- Improves grid reliability.
- Increases the value proposition of grid interactive technologies.
- Establishes economical pathways to further deployment of decarbonized high-density mixed-use developments.

The Next EPIC Challenge

Two-phase, design-build competition for mixed-use developments that:

- Addresses climate change and affordable housing issues.
- Incorporates:
  - Cutting-edge clean energy technologies.
  - Innovative tools for planning, design, and construction practices.
  - Affordability and equity.
  - Resistance to climate change impacts and extreme weather.

Minimum Requirements

Site	Design
Mixed-use includes residential	All electric building end-uses
20%+ affordable housing units	Ability to island from the main grid
10%+ lower income units	Peak demand for residential load is met with onsite generation, storage, and load management
50+ housing units	DERs are interoperable with aggregation platforms (e.g., Virtual Power Plants)
Density of 30+ residential units per acre	Parking space includes: • EV-charging for 20% of spots that can respond to grid/building-signals • Remainder is “EV-ready”

Funding Allocation

Project Group	Number of Awards - Design Phase	Number of Awards – Build Phase
Group 1: Bay Area Region	3	1
Group 2: Central Valley/Northern California	3	1
Group 3: Los Angeles Region	3	1
Group 4: Imperial Valley, Inland Empire, and San Diego County	3	1
Total Number of Awards	12	4
Total Amount of Funding	$12 million	$36 million

Harmonized Resilience at Roosevelt Village: A Zero-Emissions Model for Supportive Housing

San Jose, CA

- Five times the solicitation's housing density.
- Unique approaches to generation for dense, urban developments.
- Solutions for the challenges of smaller dwellings.
- Approachable and customizable guide for future affordable, developments.

Colegio ZNE Village

Visalia, CA

- 120-unit, affordable housing complex with a cooling center.
- Plans for on-site health and wellness education, workforce development, and job training.
- Aims to provide affordable “PassiveHaus” design with innovative landscaping to conserve water.
- Establishes a new prototype for future affordable housing projects in Central Valley.

Making Green Accessible

Compton, CA

SoLa Impact Opportunity Zone Fund

- Church-owned property with community support facilities.
- 75 units for low-income affordability levels.
- Facilities include a childcare center, cooperative kitchen space, and social gathering areas.
- Microgrid to act as a local community “resilience hub”.

Staff Recommendation

Approve and adopt staff's findings that these projects are exempt from CEQA.

Thank you!

Item 19: Cooking Electrification and Ventilation Improvements for Children's Asthma (CEVICA) Study (Agreement EPC-21-033, LBNL)

May 11, 2022 Business Meeting

Dr. Maninder Thind, Air Resources Engineer
Energy Research and Development Division
Energy Generation Research Office

Benefits to Californians

- IAQ and health impacts
- Help guide policies
  - Building electrification
  - Investments in low-income housing retrofits
  - Mitigate health impacts of energy end uses in CA
- Healthcare savings
- Equitable energy transition

Picture credits: RMI Health Effects from Gas Stove Pollution (Link), The City: Reporting for New Yorkers (Link)

CEVICA Objectives

- Quantify separate and synergistic impacts of multiple kitchen electrification interventions.
- Quantify exposure and asthma control changes.
- Develop recommendations for residential kitchen electrification.

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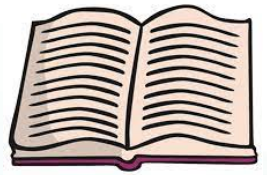

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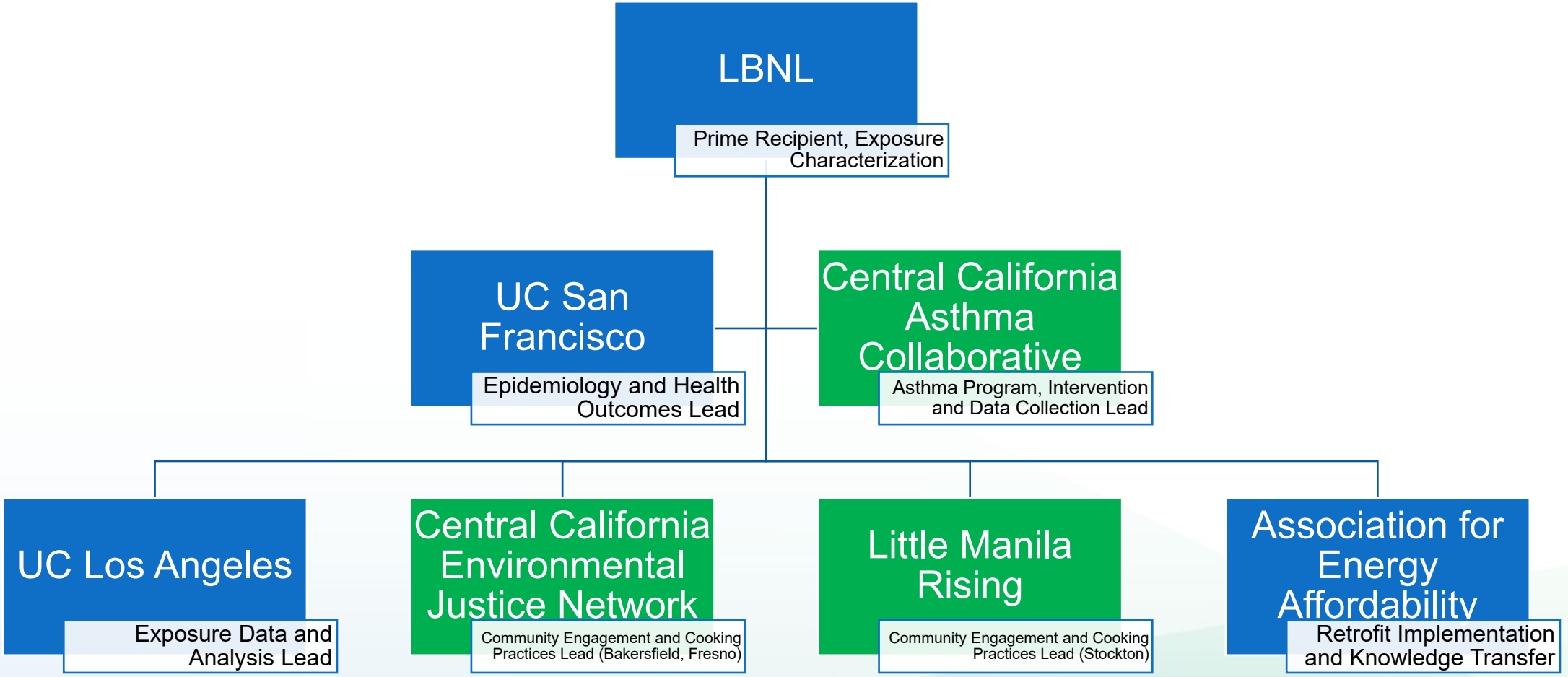
Picture credits: The City: Reporting for New Yorkers (Link), Ventilation (Link)

CEVICA Study Team



Staff Recommendation

- Approve **grant** agreement with **Lawrence Berkeley National Laboratory**.
- Adopt staff's determination that this item is exempt from CEQA.

Extra Slides

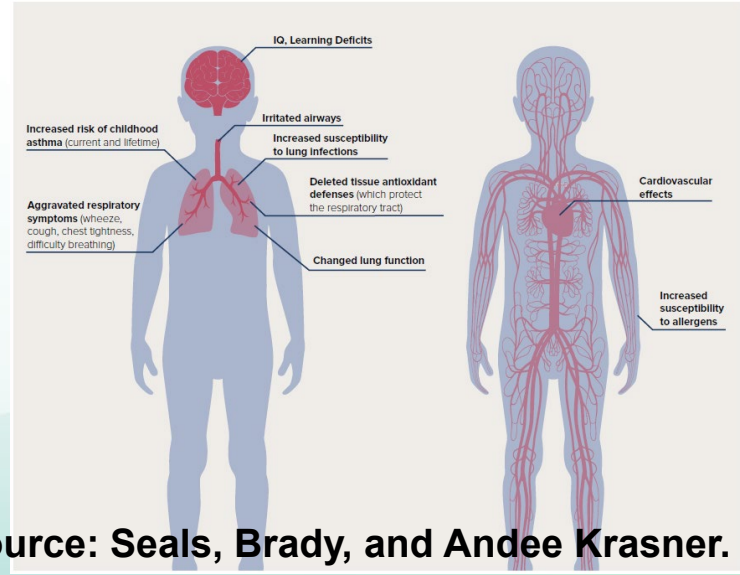
Motivation

- Indoor air pollution is public health issue as indoor air is largely **unregulated** in the U.S.
- Natural gas combustion for household cooking is a large source of **health-damaging pollutants** including NO_2 and $PM_{2.5}$.
- Children are at higher risk of developing childhood respiratory illnesses such as **asthma** due to air pollution exposures.
  - 1 in 8 Californians have asthma (California Department of Public Health)
- Asthmatic children living in **DAC and lower-income communities** are disproportionately impacted.

Natural gas combustion in gas stoves can produce elevated levels of NO_2, a criteria pollutant

Source: GV Wire

Health effects of NO_2 in Children may include:

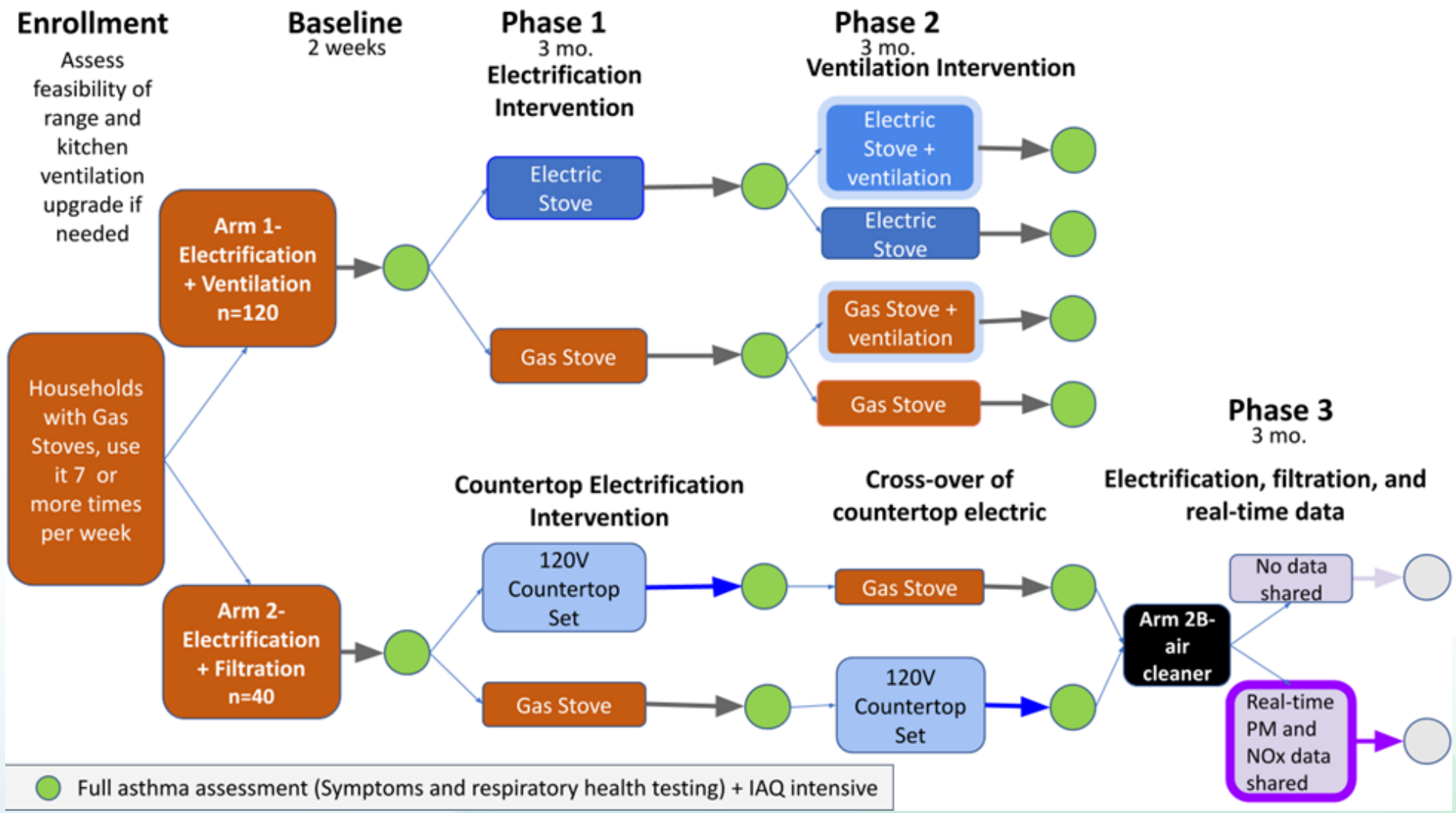


Source: Seals, Brady, and Andee Krasner. 2020

Progress and action in California

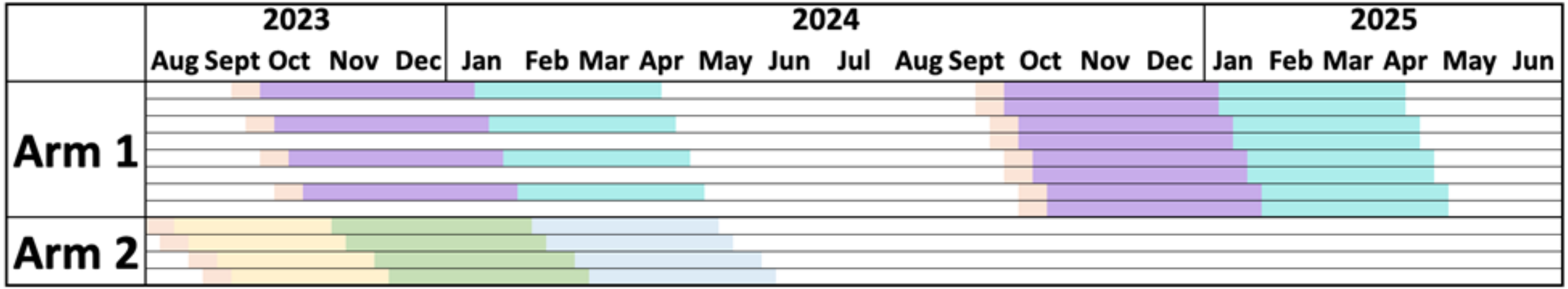
- California has made substantial progress toward reducing indoor air pollution, through efforts such as:
  - **Improved ventilation**
  - **Building electrification**
- **Electrification** has been identified as a clean, low-cost strategy for decarbonizing buildings and contributes to improving indoor air quality.
- To appropriately incentivize efforts and support policies that maximize health co-benefits of energy policies, systematic measurement of health impacts of gas stove interventions is needed.
- CEC aims for **equitable energy transitions** in California.

CEVICA study design



Source: GFO-21-301 LBNL proposal

Timeline of Study Data Collection



Legend

Arm 1
- Baseline
- Phase 1 (Half of the households get electric range)
- Phase 2 (Half of the households get ventilation)

Arm 2
- Baseline
- Phase 1 (Half of participants get 120V countertop electric)
- Phase 2 (Other half of participants get 120V countertop electric)
- Phase 3 (air cleaner in all + IAQ monitoring in half)

*Each row represents 10 participants

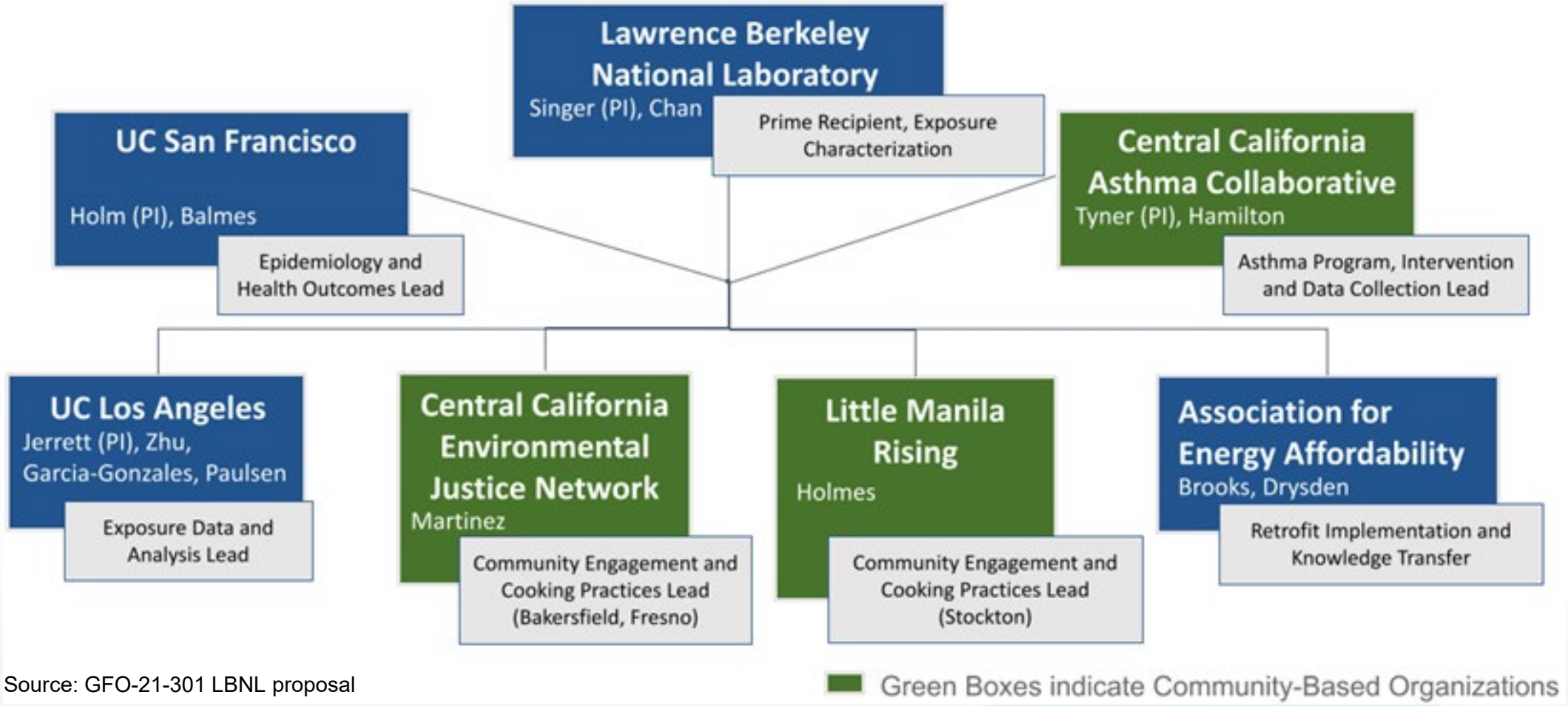
Source: GFO-21-301 LBNL proposal

Market Potential

- Cooking stove electrification

Picture credits: The City: Reporting for New Yorkers (Link), RMI, the economics of electrifying building (Link)

CEVICA Study Team (with lead names)



Source: GFO-21-301 LBNL proposal

Item 20: CalSEED Concept and Prototype Small Grant Awards 2022

May 11, 2022 Business Meeting

Joshua Croft and Anthony Ng
Energy Deployment and Market Facilitation Office
Energy Research and Development Division

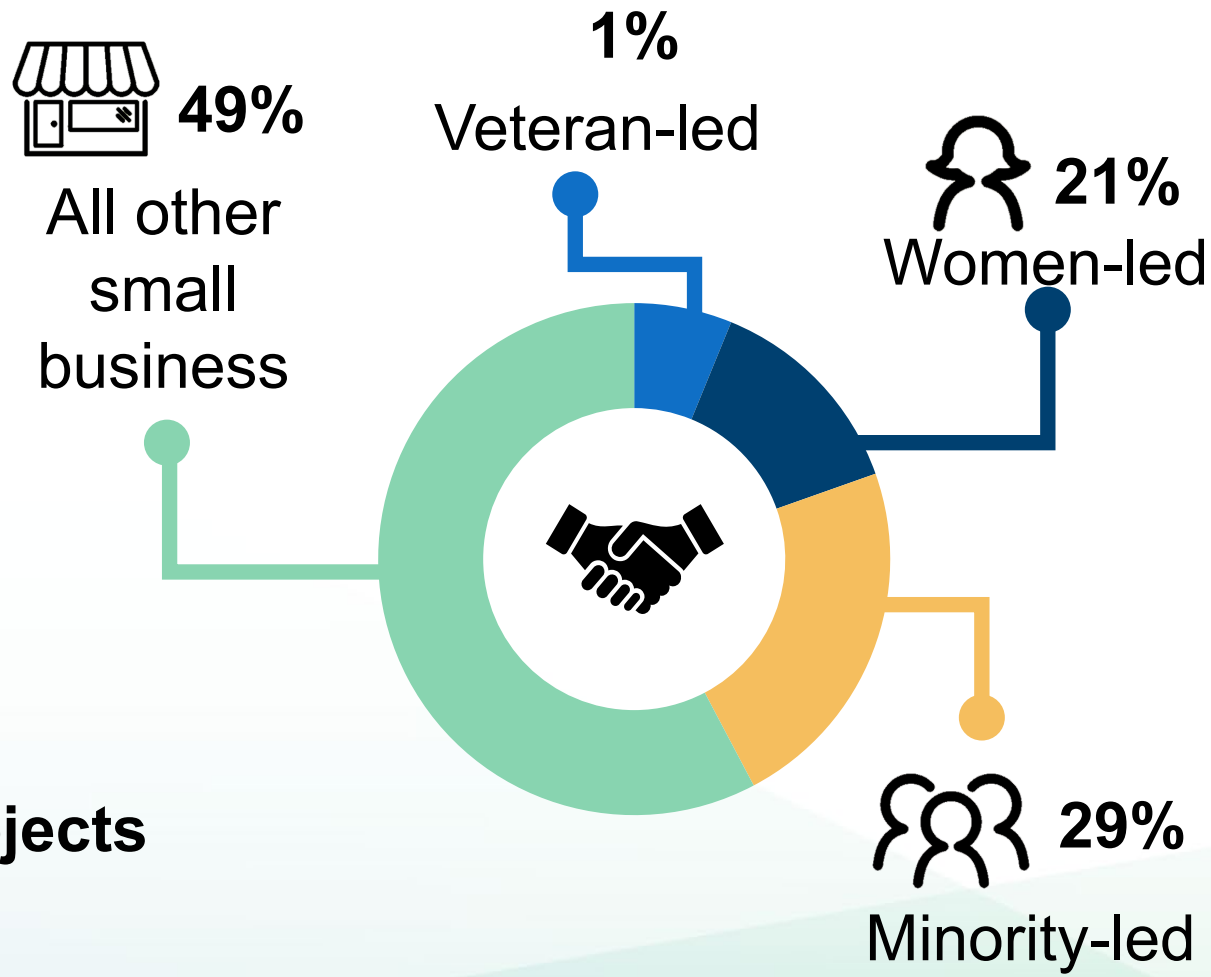
Benefits to Californians

$138 million
raised

383 jobs
created

133 patents
registered

141 pilot projects
launched



CalSEED Background

The California Sustainable Energy Entrepreneur Development Initiative (CalSEED) provides small-scale funding for early-stage clean energy concepts.

Two stages of funding:

Concept Award

$150,000

- Concept development & assistance
- Mentorship from industry leaders
- Introduction to resources to advance the concept

Prototype Award

$450,000

- Successful Concept Awardees prepare for commercialization
- Business Plan Competition to push awardees to think about commercialization

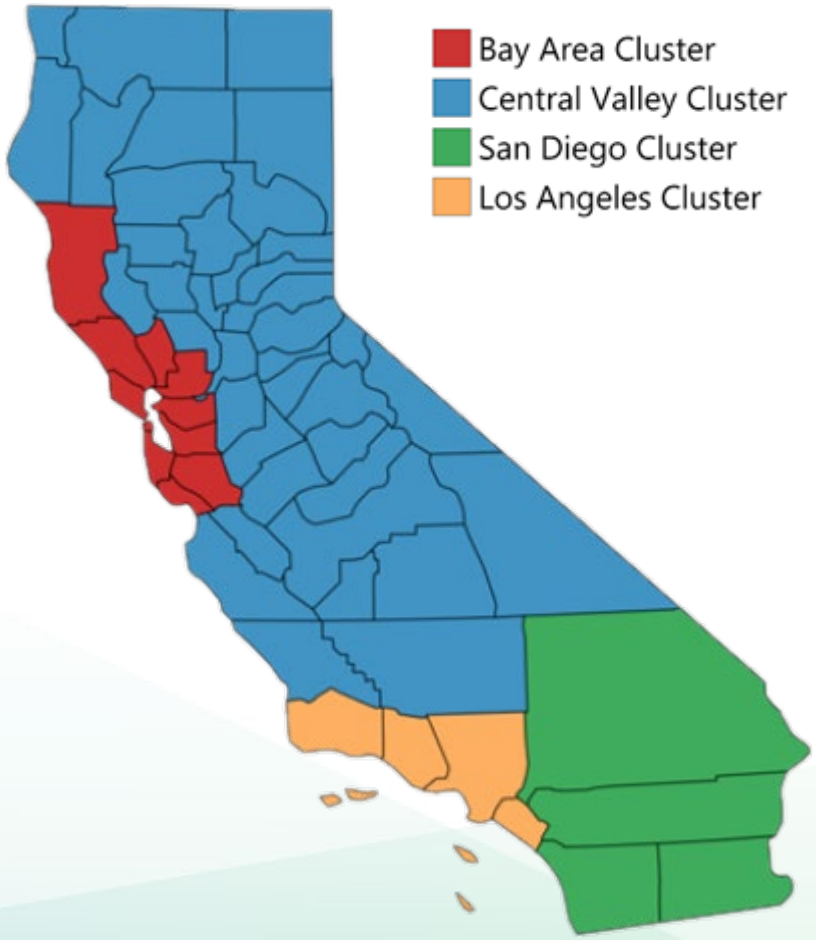
Concept Award Process

5th Concept Award competitive solicitation held during Q4 2021.

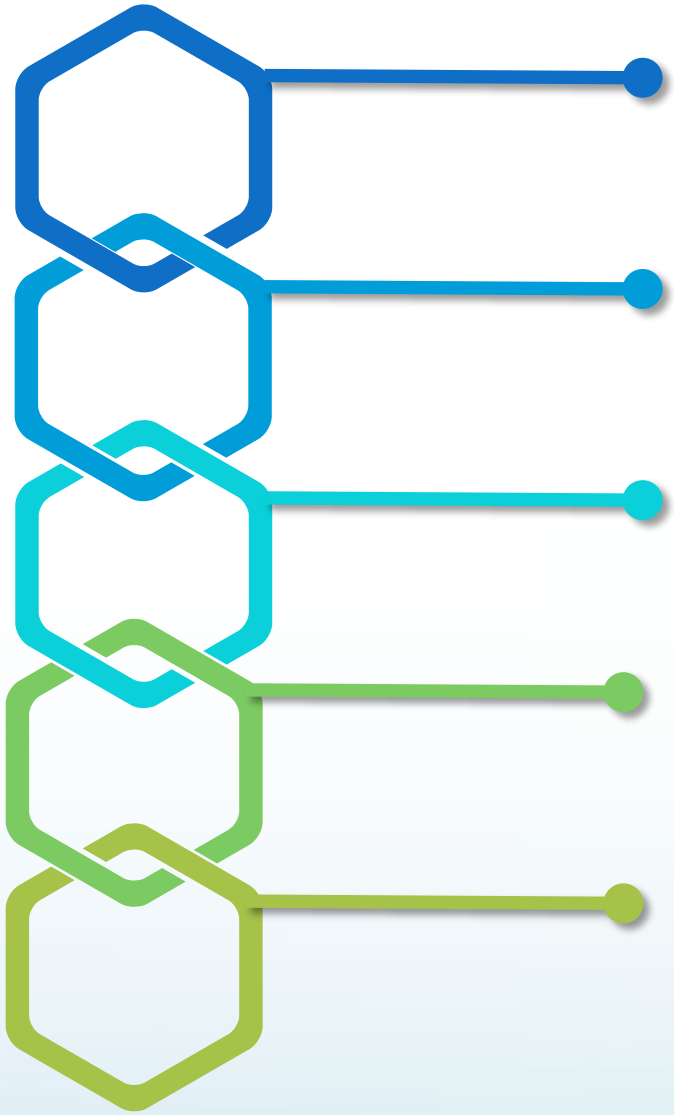
Companies were judged on their technology's technical and commercial potential.

- Initial screening mechanism
- Written technology proposal

Companies with the top 5 to 6 scores per region are presented here for recommendation for CalSEED Concept Awards

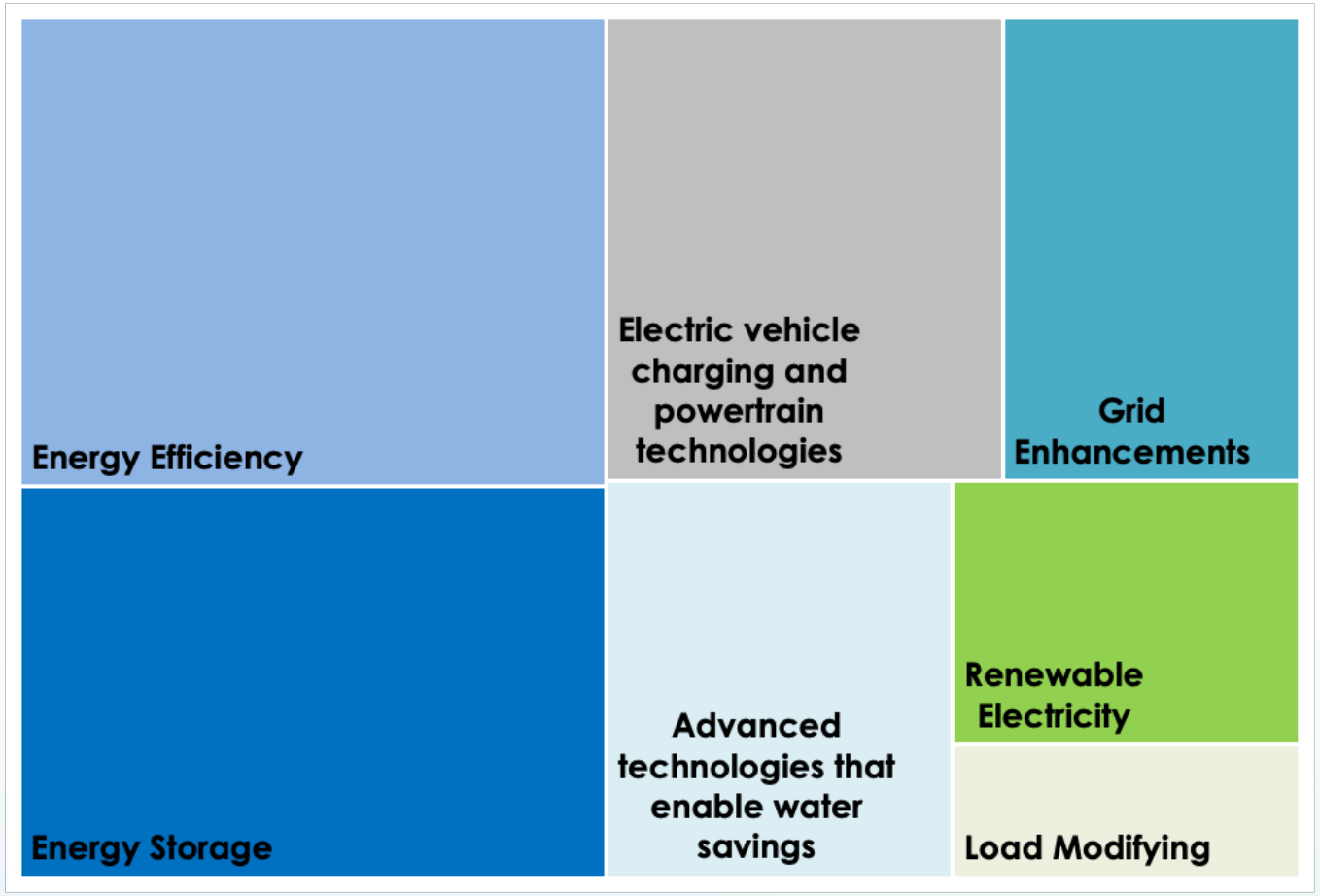


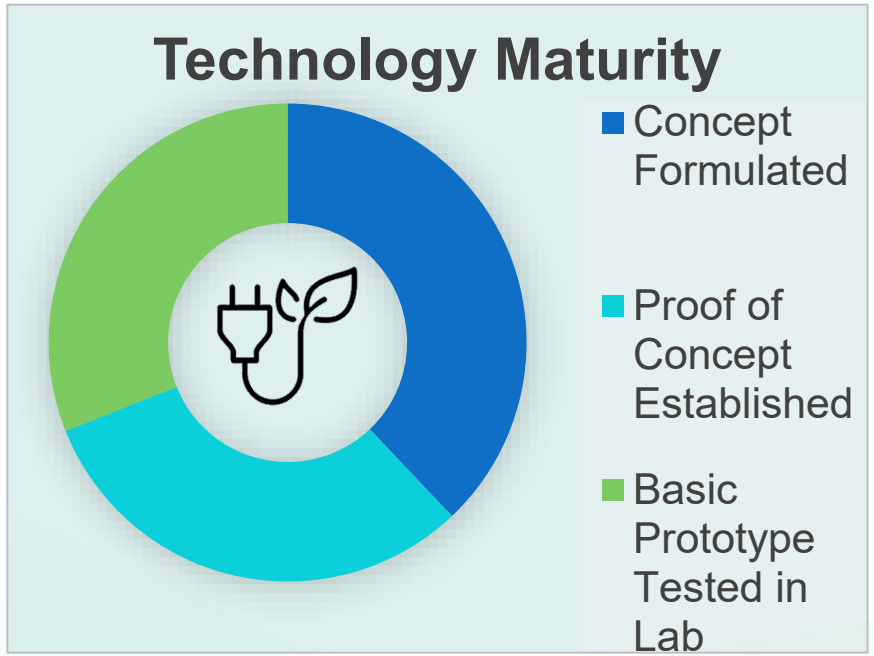
Technology Areas



- Renewable Electricity and Grid Enhancements
- Energy Storage
- Energy Efficiency and Load Modifying
- Advanced Water Savings Technologies
- Electric Vehicle Charging and Powertrain

Cohort 5 At a Glance





Energy Storage

Kepler Energy Systems, Inc.
Compressed Air Energy Storage with Machine Learning

HyVerde LLC
EV Energy Storage with Multi-Chemistry Batteries and Supercapacitors

Ariya LLC dba Ariya Energy
Solid-state Electrolyte for Low-Cost Sodium Batteries

RCAM Technologies, Inc.
Offshore Wind Energy Storage via Water Pumping in Concrete Spheres

Tyfast Energy Corp
Solid-state Battery with Higher Li-transport Anode

DarmokTech
Improving Cycle Life and Recyclability of Solid-State Batteries via a New Cell Packaging Design

HyVerde LLC

KEPLER ENERGY SYSTEMS

ARIYA ENERGY

RCAM TECHNOLOGIES

TYFAST

DarmokTech
Sustainable battery innovations

Electric Vehicle Charging and Powertrain Technologies

kWh Bot

Autonomous, Robotic Electric Vehicle Chargers

Aeromutable Corporation

Increased EV Trucking Range using Dynamic Air Injection for Streamlining

ElectricFish Energy, Inc.

High-voltage, multi-EV-brand Charging without grid infrastructure upgrades.

Water-Energy Nexus

OmniFlow Inc.

Self-cleaning Irrigation Pipes for Low-pressure Water Distribution

Solarflux Energy Technologies, Inc.

Turnkey, Manufacturing-ready Solar Thermal Water Desalination at Low Cost

Benchmark Labs, Inc.

Agricultural Water Savings through Better Forecasting and Modeling of Water Needs

SOLARFLUX

BENCHMARK LABS

Renewable Energy and Grid Enhancements

Summation Lab
Biomass Gasification without Screening, Drying, or Incineration

Perch Sensing Inc.
Low-cost, Distributed, Real-time Grid Monitoring

Horizon PV Inc.
Flexible, Transparent PV for Windows and Car Roofs

Aepnus Technology Inc.
Lithium Salts from Brine using Renewable Energy

TECSI Solar
Simplified Solar Panel Installation for Asphalt Shingle Roofs

Climformatics Inc.
Near-term, Localized Fire Risk Prediction

Energy Efficiency

Modulium Inc
Modular and Efficient Thermo-electric Refrigeration

Discrete Lattice Industries, LLC
Modular “Meta-materials” for Building Construction

Rivieh, Inc.
Millimeter-wave radar for cheaper, integrated occupancy sensing.

Community Energy Labs, Inc.
Dynamic Building Control for Municipal and School Buildings

Korganotech Inc
Improved HVAC Efficiency and Cost via Bio-Active Nanowire Mesh Filters

Prototype Award Process

4th Prototype Award competitive solicitation held in Q4 2021.

Companies were judged on their technology's technical and commercial potential.

- Business case analysis
- Company pitch session

Companies with the top seven scores are presented here for recommendation for CalSEED Prototype Awards

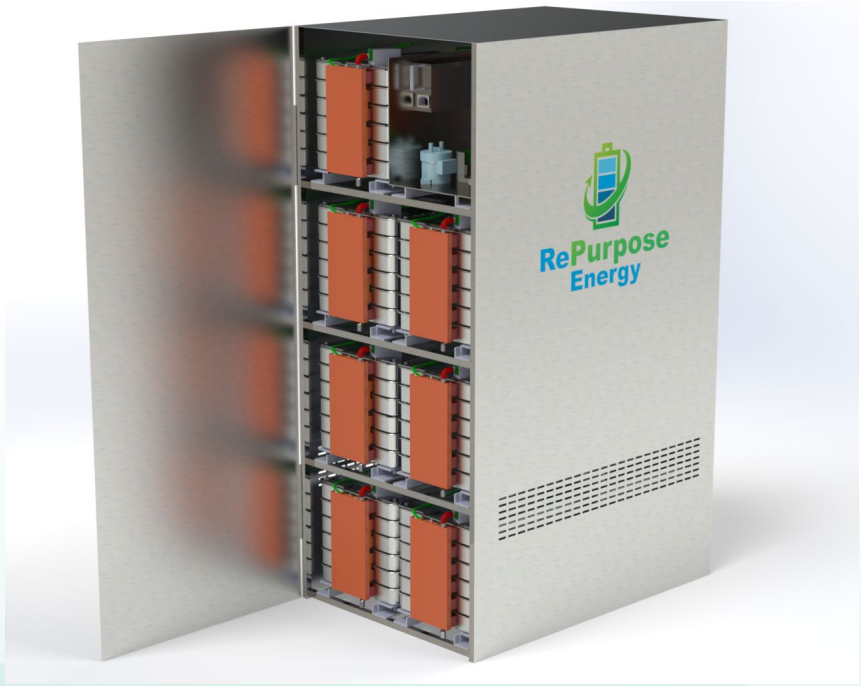
Tolo

- Remote inspection platform for utility infrastructure
- Combines photogrammetric imagery with UAV
- Allows for more accurate, shareable inspections to drive maintenance decisions
- Project will manufacture and field test a minimal viable product

tolo

RePurpose Energy

- Test, reassemble, redeploy used EV batteries for stationary storage
- Measure EV battery health in 90 seconds
- Reassembly optimized into new circuits and BMS
- Project will focus on achieving necessary UL certifications



ALD Technical Solutions

- Lightweight, long-lasting structural composite wrapped around transmission lines
- Decrease sag, increase power capacity, extend lifespan
- Fabricate composite wrap robotic installer and perform pilot testing

ALD TECHNICAL SOLUTIONS LLC

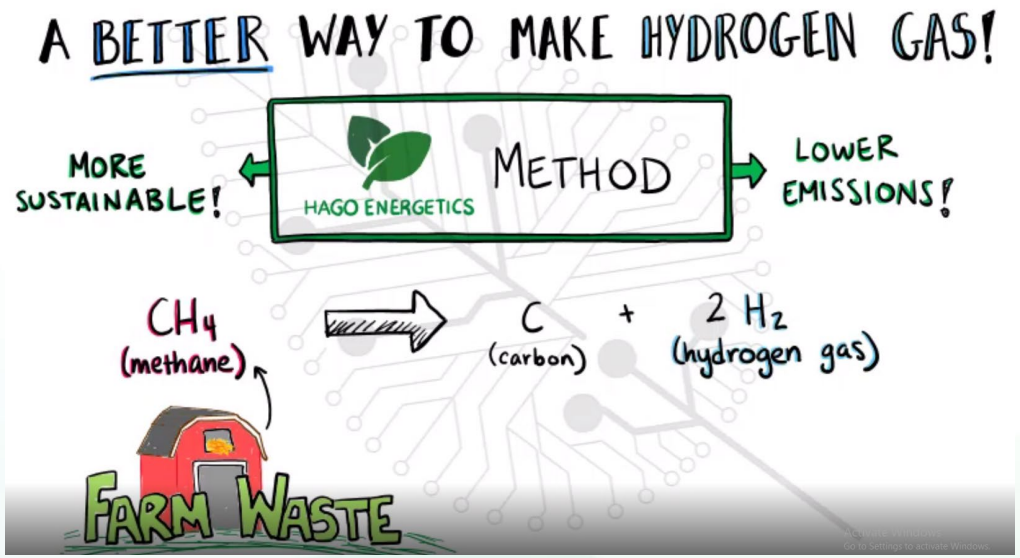
Innovative Composite Materials and Solutions

Hago Energetics

- Convert agricultural waste to green hydrogen using renewable energy
- Processing biogas from manure into a novel chemical reactor that produces hydrogen
- Project will demonstrate technology at a farm

HAGO ENERGETICS

FOR AN ABUNDANT FUTURE



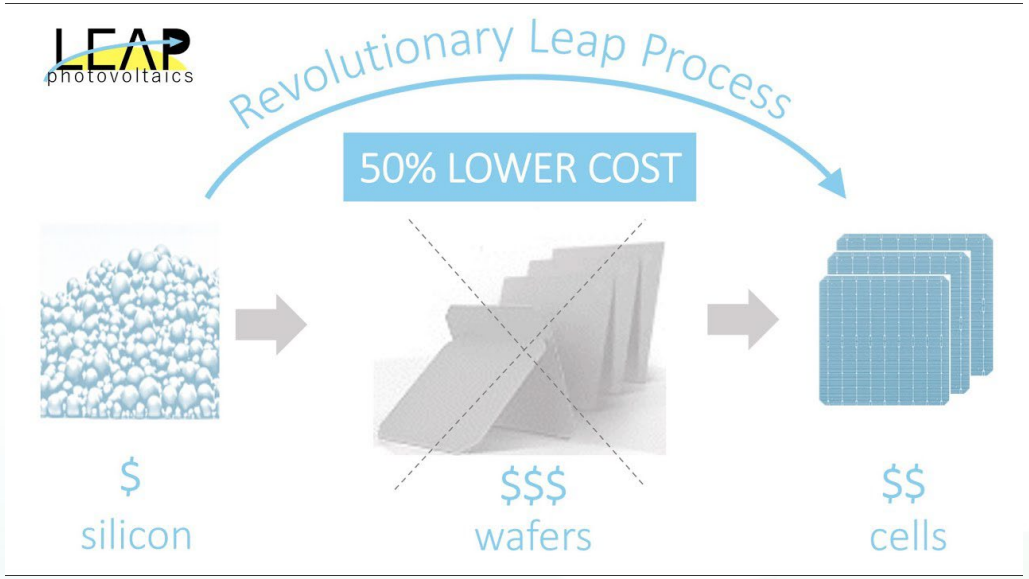
Parthian Energy

- Electromagnetic sensor that detects internal defects in lithium-ion batteries
- Reduce waste, enhance safety
- Project will develop a prototype and test it on a battery cell manufacturing line

Parthian Energy

Leap Photovoltaics

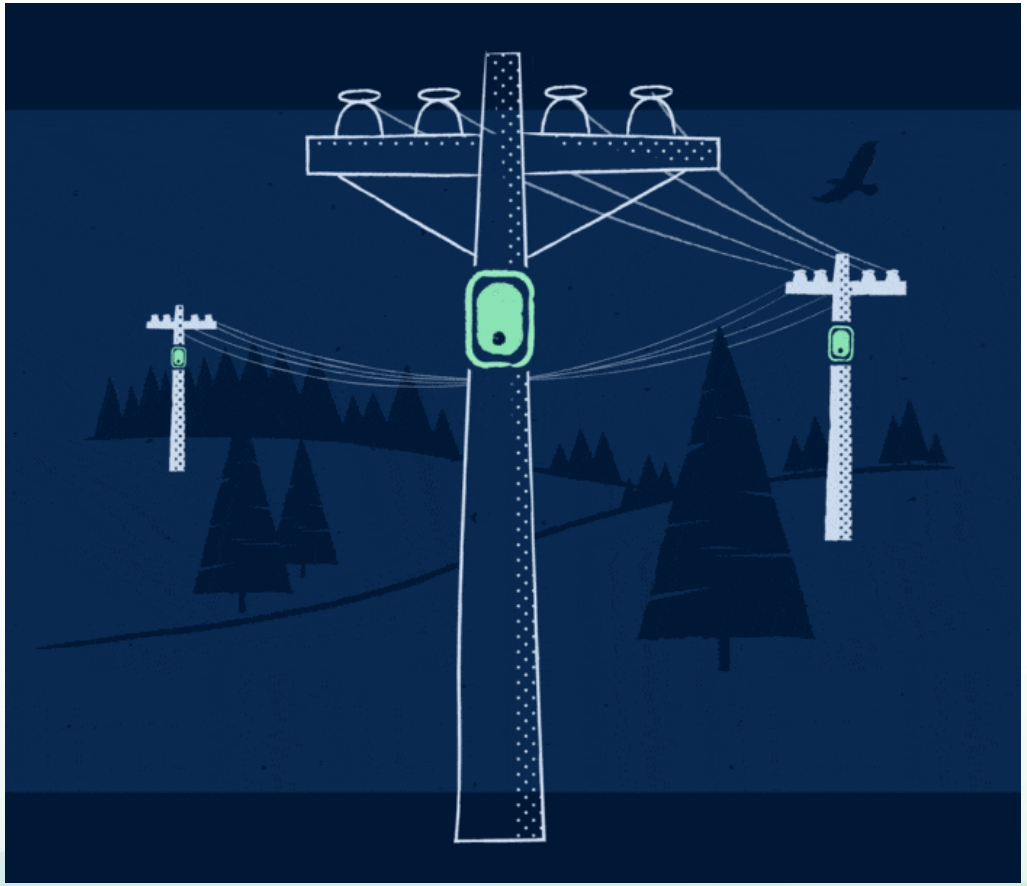
- Additive manufacturing process for crystalline silicon solar cells without wafers
- Utilizes layer of single-crystalline silicon microparticles
- Reduce PV cost and supply chain risk
- Project will demonstrate performance and build first prototype



Gridware

- Low-cost sensor platform providing real-time grid monitoring
- Mechanically based sensors can reveal weakening of system as it ages
- Support improved grid management and fault detection
- Project will work to advance analytical tool development

Gridware®



Staff Recommendation

- Approve the 30 small grant awards and staff's recommendation that this action is exempt from CEQA
- Staff and CalSEED representative available on the line for questions