DOCKETED	
Docket Number:	21-BUSMTG-01
Project Title:	Business Meeting Agendas, Transcripts, Minutes, and Public Comments
TN #:	236723
Document Title:	February 10, 2021 Business Meeting Presentation
Description:	N/A
Filer:	Dorothy Murimi
Organization:	California Energy Commission
Submitter Role:	Public Advisor
Submission Date:	2/10/2021 9:30:24 AM
Docketed Date:	2/10/2021

California Energy Commission
Business Meeting
February 10, 2021
10:00 a.m.

Pledge of Allegiance

Keep California Healthy

MyTurn.ca.gov

Sign up to get notified when it's your turn to get the COVID-19 vaccine.

Remote Compliance

Business Meeting held remotely, consistent with **Executive Orders N-25-20 and N-29-20** and the recommendations from **California Department of Public Health** to encourage physical distancing to slow spread of COVID-19.

For remote participation instructions go to **CEC's Business Meetings webpage:**

https://www.energy.ca.gov/proceedings/business-meetings

If Zoom's toll-free phone numbers don't work:

- **Call: (669) 900-6833**
- **Meeting ID: 938-6923-0237**

If Zoom shuts down, Business Meeting will continue via Verizon.

- **Call: (888) 823-5065**
- **Passcode: business meeting**

Public Comment Instructions

- Pursuant to **California Code of Regulations Title 20 §1104(e)**, any person may make oral comment on any agenda item.
- Comments may be **limited to 3 minutes or less** per person and **1 person per organization**.
- Any person wishing to comment on information items or reports (non-voting items) shall reserve their comment for the general public comment portion of the meeting agenda.

To provide comment, call (888) 823-5065.
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1) Tell Operator: name, organization and item number.
2) Tell Operator if you represent: federal or state legislature; tribal nation or California tribal government; state agency; or county/city government.
3) Spell your first and last name.
4) Do not use speaker phone when talking.
5) Mute Zoom while calling to comment.

Item 1: Audience Survey

February 10, 2021 Business Meeting

Congratulations Courtney!

Item 2 a. – f.: Consent Calendar

a. AKER OFFSHORE WIND USA LLC/AKER SOLUTIONS, INC. (EPIC funding) Contact: Rizaldo Aldas.

b. U.S. DEPARTMENT OF ENERGY'S (DOE) LAWRENCE BERKELEY NATIONAL LABORATORY (LBNL). Contact: Mike Gravely.

c. THE REGENTS OF THE UNIVERSITY OF CALIFORNIA, SAN DIEGO CAMPUS (UCSD). Contact: Mike Gravely.

d. REDWOOD CITY ELEMENTARY SCHOOL DISTRICT. Contact: Manuel Aguila.

e. DEL NORTE COUNTY UNIFIED SCHOOL DISTRICT. Contact: Manuel Aguila.

f. RESIDENTIAL ENERGY SERVICES NETWORK, INC. (RESNET). Contact: Christine Collopy.

Item 3: Removed from Agenda. Discussion of CEC Progress on Joint Agency Report, Charting a Path to a 100 Percent Clean Electricity Future, Senate Bill 100 (2018).

February 10, 2021 Business Meeting

Item 4: City of Needles

February 10, 2021 Business Meeting

Cheng Moua, PE, Mechanical Engineer
Efficiency Division, Building Standards Office

Benefits to California

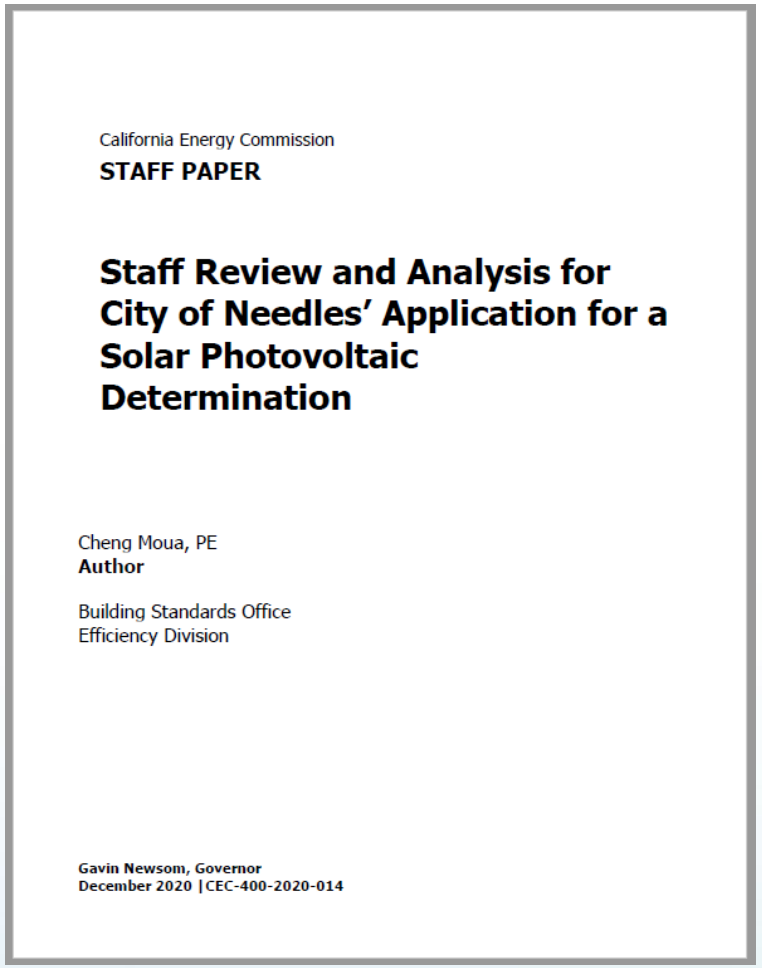
- Protects consumers by:
  - Ensuring PV requirement applies when cost-effective
  - Recognizing low-cost energy rates
  - Helping reduce PV costs

Background

- 2019 Energy Code requires PV on new homes
  - Section 10-109(k) PV requirement does **NOT** apply if not cost-effective due to:
    - Electricity rates
    - Net-energy metering rules
    - Interconnection fees

Photo above shows solar PV on roof.

Overview of Needles Application



California Energy Commission
STAFF PAPER

Staff Review and Analysis for City of Needles' Application for a Solar Photovoltaic Determination

Cheng Moua, PE
Author

Building Standards Office
Efficiency Division

Gavin Newsom, Governor
December 2020 | CEC-400-2020-014

ANALYSIS:

- Electricity rates $0.059 - $0.087/kWh
- NEM compensates at same rates
- Life cycle cost-effectiveness analysis performed
- Benefit-to-cost ratio = 0.83
- NOT cost-effective

Staff Recommendation

Approve resolution determining 2019 Energy Code solar PV requirements do not apply to City of Needles.

Item 5: Town of Truckee Petition

February 10, 2021 Business Meeting

Cheng Moua, PE, Mechanical Engineer
Efficiency Division, Building Standards Office

Benefits to California

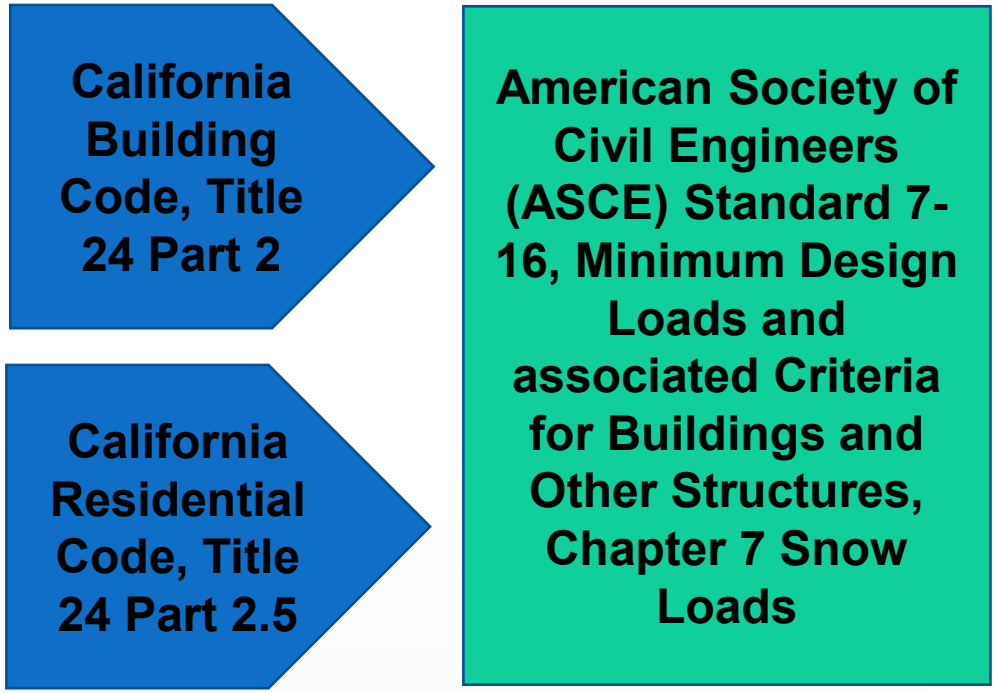
- Applies where it can be safely installed
- Provides clarification for PV requirement
- Promotes successful installations in snow country
- Encourages solar industry to solve challenges

Background of Truckee Petition

- Administrative Regulations allow petition of Title 24
- Seeks exception where design snow loads cannot be met
  - Conflicts with structural codes
  - Snow load can damage systems and void warranties
  - Ground snow load can reach > 500 lbs/ft^2

Photo by Town of Truckee of example snowfall levels

Staff Review



- PV panels currently have a design load rating of 125 lbs/ft^2 or less

Staff Findings

- PV install depend on site-specific conditions
- Builders to address issues to install PV system
- Local agencies ensure practical approaches occur
- Cases exists where it is not possible to meet snow loads

Staff Response

Review and findings documented in:

- Notice of Preliminary Conclusions
  - 12 comments received
- Notice of Final Conclusions
  - Incorporates comments

Staff Recommendation

Approve resolution confirming solar PV requirement does not apply where PV systems cannot comply with snow load structural requirements.

Item 6: Modeling DER Growth for Emerging Market Segments in California

February 10, 2021 Business Meeting

Sudhakar Konala
Energy Assessments Division
Demand Analysis Office

Overview

- Agreement with the National Renewable Energy Laboratory (NREL)
- **Objective**
  - Forecast distributed energy resource (DER)[1] adoption in California for emerging market segments
- DER - device that produces or stores electricity while connected to the distributed system of the electrical grid
  - Includes behind-the-meter (BTM) solar and energy storage
- Modeling DERs is an important component of the CEC's Energy Demand Forecast
  - Used in long-term statewide energy planning

Project Benefits

- **Enhances CEC's ability to more accurately forecast DER adoption.**
- **Leads to:**
  - Long-term electricity system resource planning
  - Assessing progress towards meeting decarbonization goals

Project Objectives

Forecast DER adoption in California for rapidly emerging market segments

- BTM Solar on Multifamily Homes
  - Low adoption rates, but high potential
    - ✓Solar is required on most new residential buildings
- BTM Energy Storage
  - Low adoption rates, but expected to increase rapidly
  - Drivers
    - ✓Increased deployment of Public Safety Power Shutoffs
    - ✓Changes to rate structures and incentives

2. dGen is NREL's distributed generation market penetration model

Project Deliverables

- Forecasts of:
  - **BTM PV** adoption in multifamily / renter-occupied homes
  - **BTM Energy Storage** adoption in all customer segments
- For use in 2022 IEPR update
- An updated version of the California-adapted dGen model[1]
  - Training/support for independent CEC staff model runs

1. dGen is NREL's distributed generation market penetration model

Staff Recommendation

- Approve this agreement with NREL

Item 7: National Technology & Engineering Solutions of Sandia, LLC (Sandia National Laboratories) Memorandum of Understanding

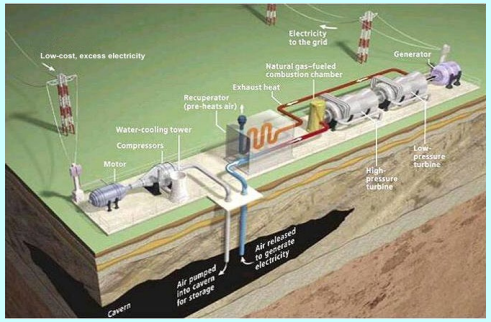
February 10, 2021 Business Meeting

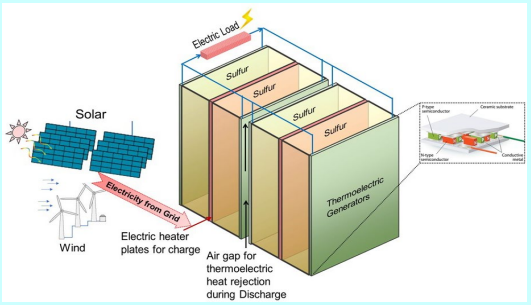
Mike Gravely, Manager
Energy Research and Development Division, Energy Systems Research Office

Benefit to California

- Energy Storage is a Big Part of California's Future:
  - Currently installed energy storage in CA is estimated at less than 2,500 MWs
  - CPUC Integrated Resource Plan projects the need for 9,846 MWs of energy storage by 2030
  - SB 100 planning documents estimate need for between 20,000 MWs and 35,000 MWs of energy storage by 2045

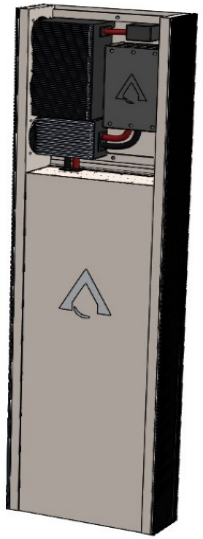
The CEC and DOE have a Long History in Funding Emerging Energy Storage Technologies

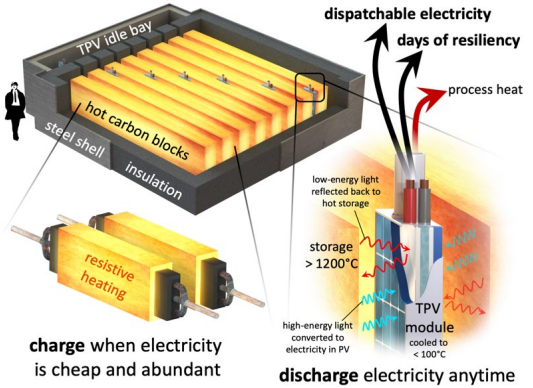


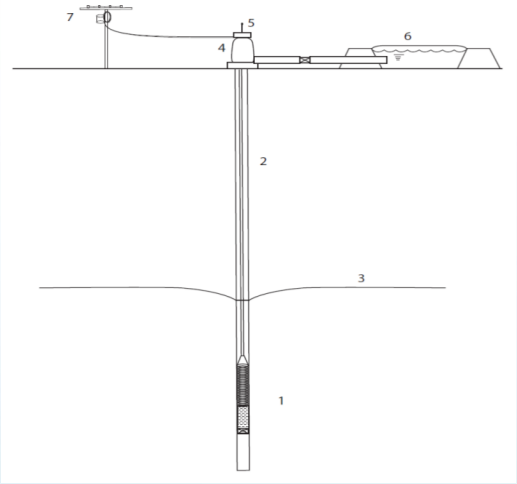


Future Energy Storage Innovation

In 2020 the CEC Awarded 20 New Grants for Innovative Technologies







form energy

Staff Recommendation

- Approve the signing of the MOU

- Support the partnership nurturing the growth of energy storage technologies in California and throughout the Nation

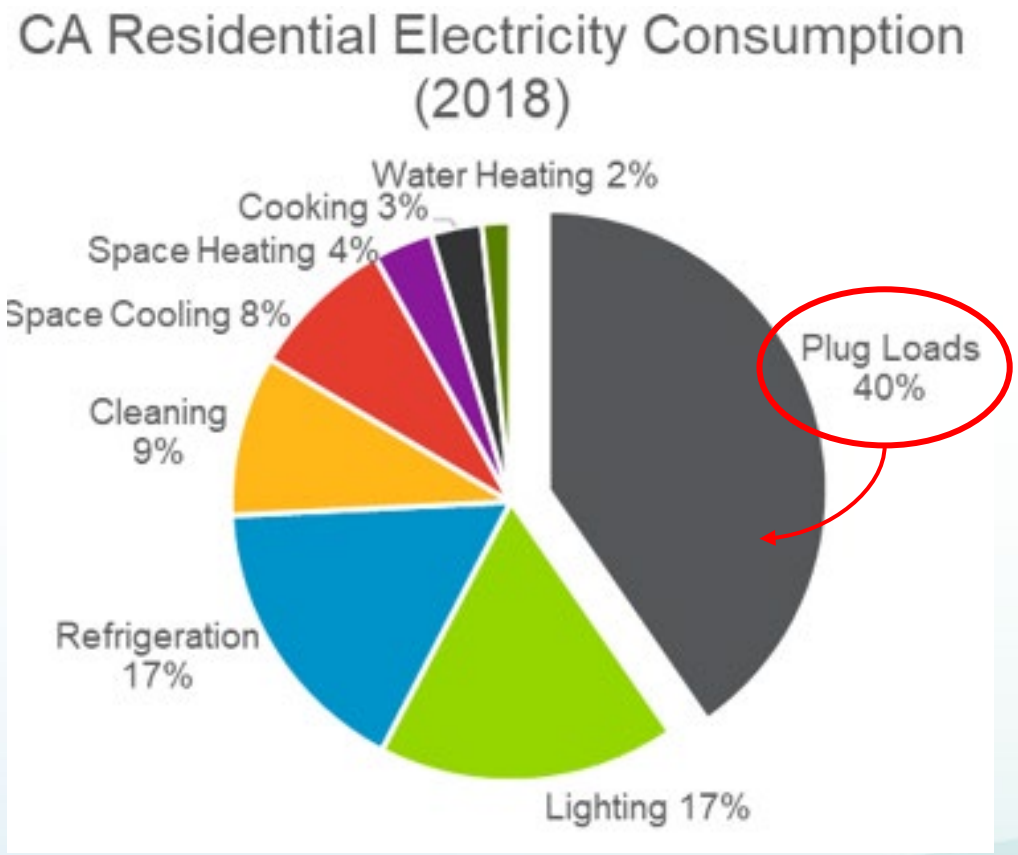
Item 8: Advanced Plug Load and Smart Exterior Lighting Systems (GFO-20-303)

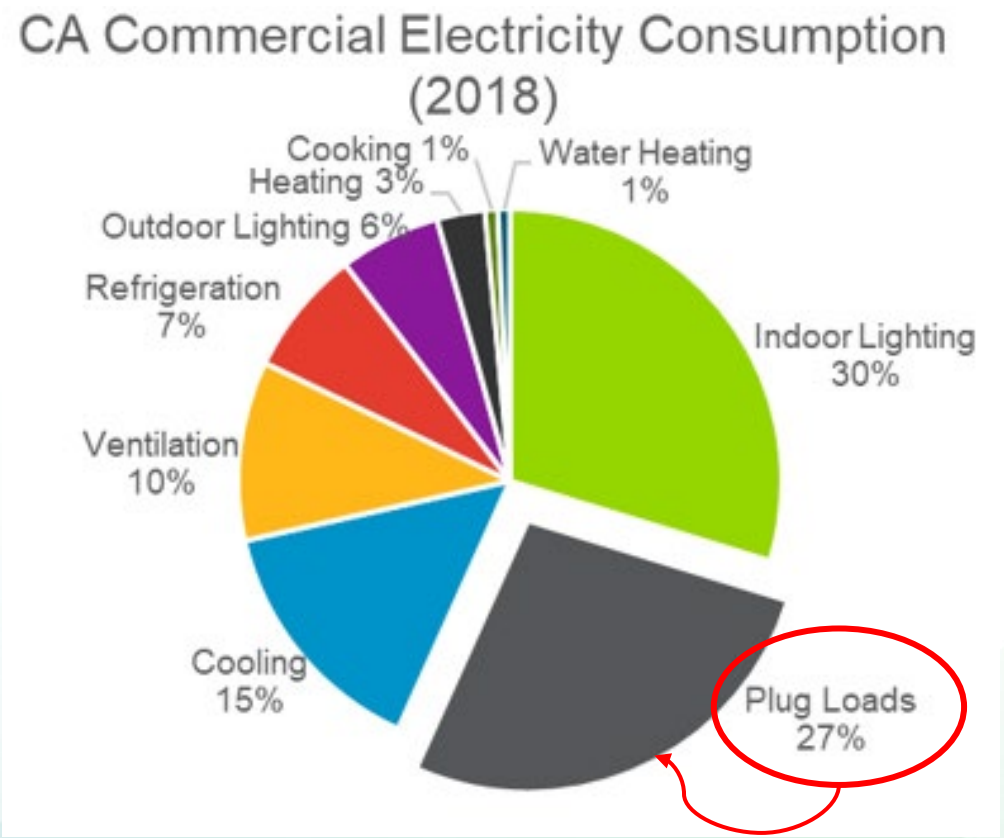
February 10, 2021 Business Meeting

Felix Villanueva, Utility Engineer
Energy Research and Development Division
Energy Efficiency Research Office

Why is controlling plug loads important?

Currently, one of the fastest growing electricity uses in buildings!





Source: Guidehouse,

Project Benefits to California

- Reduce plug load energy use and costs
- Integrate with building energy management systems to automate controls and maximize savings
- Potential for managing electrical loads and providing grid flexibility
- Inform future codes and standards

Item 8a – UC San Diego

Integrate advanced plug load controls and buildings energy management system to automated controls and maximize energy savings

- Install BertBrain plug load controls on large plug-in devices
- Integrate with Johnson Controls Energy Management System
- Demonstrate in 10 buildings at UC San Diego and at office buildings
- Validate performance and benefits and cost effectiveness

Photo Credit: Best Energy Reduction Technologies, LLC

Item 8b – California Energy Alliance

Inform codes and standards of potential plug load opportunities

- Evaluate and test potential equipment not covered by any standards
- Determine specific codes and standards opportunities
- Develop test procedures
- Estimate statewide savings and related impacts

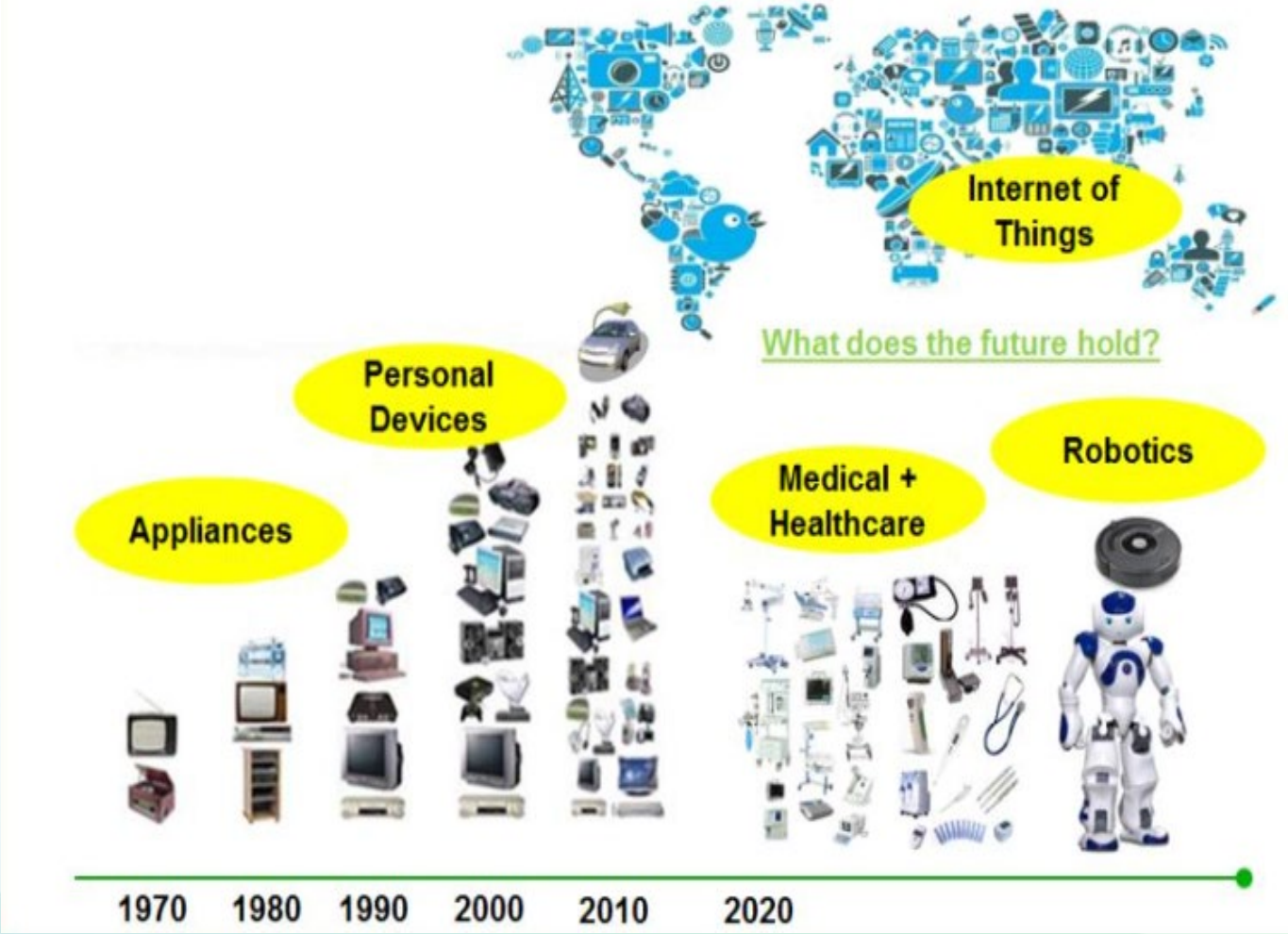


Photo Credit: Calplug

Staff Recommendation

- Approve grant agreements with The Regents of the University of California, on behalf of the San Diego Campus and California Energy Alliance
- Adopt staff's determination that projects are exempt from CEQA

Item 9: California Clean Energy Fund DBA CalCEF Ventures

February 2021 Business Meeting

Eleanor Oliver, Tech-to-Market Unit
Energy Research & Development Division, Energy Deployment & Market Facilitation Office

Impact In Numbers

$65.8 million
raised

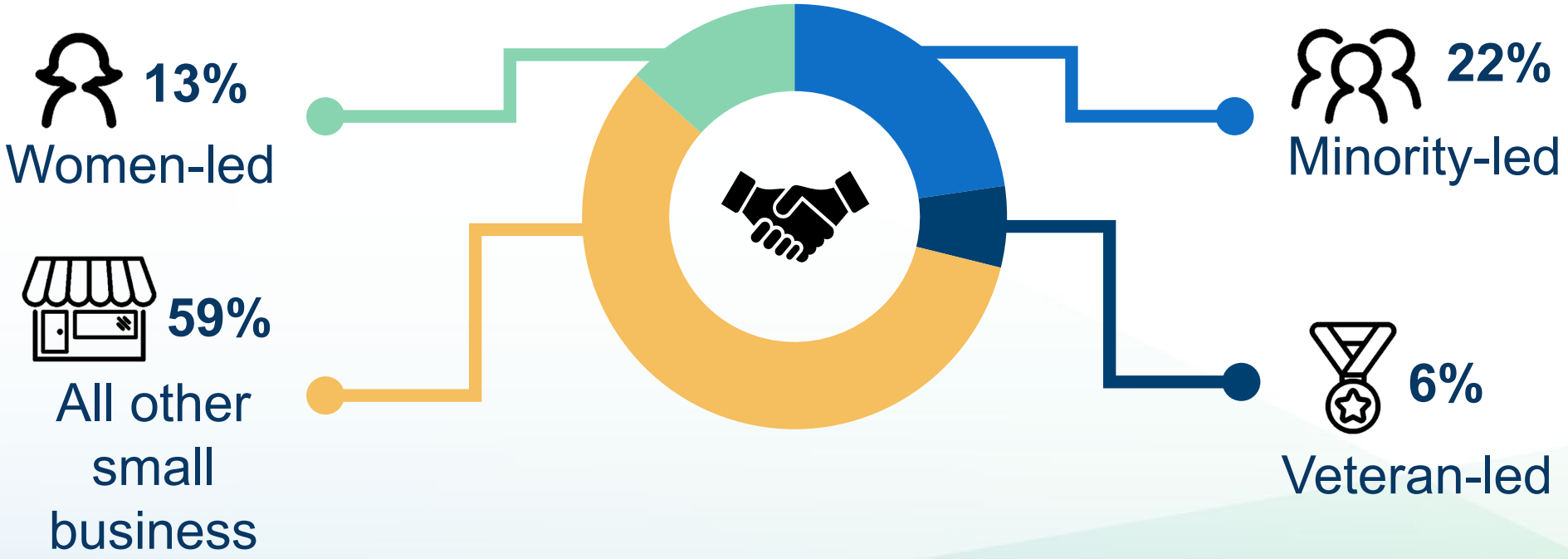
50 patents
registered

52 jobs
created

70 pilot projects
launched

Benefits to California

CEC is committed to advancing supplier diversity and providing opportunities for all Californians to join and benefit from the clean energy revolution.



CalSEED Background

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

Prototype Award Process

3rd Prototype Award competitive solicitation held November 2020.

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

- Business case analysis
- Company pitch session

Companies with top 6 scores are presented here for recommendation for CalSEED Prototype Awards

Prototype Awardees

TAKACHSSR

ICARUS RT™

ReJoule

EnZinc™

Si Li-ION

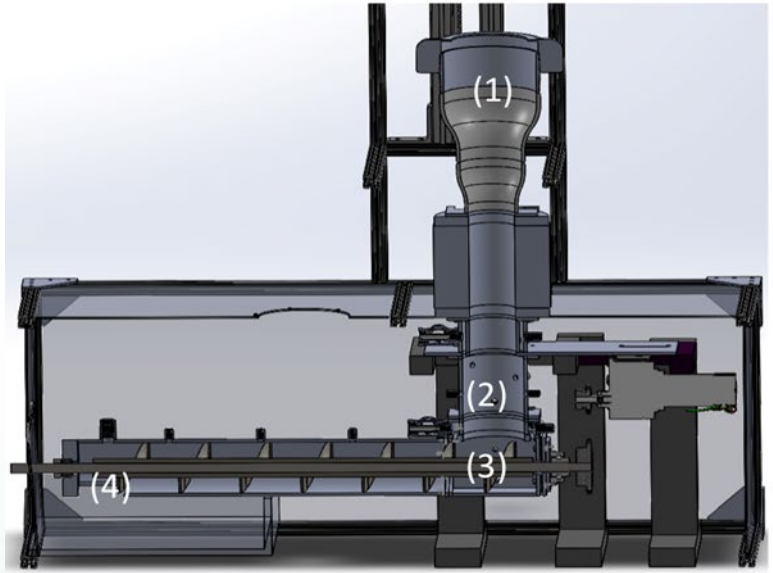
Antora Energy

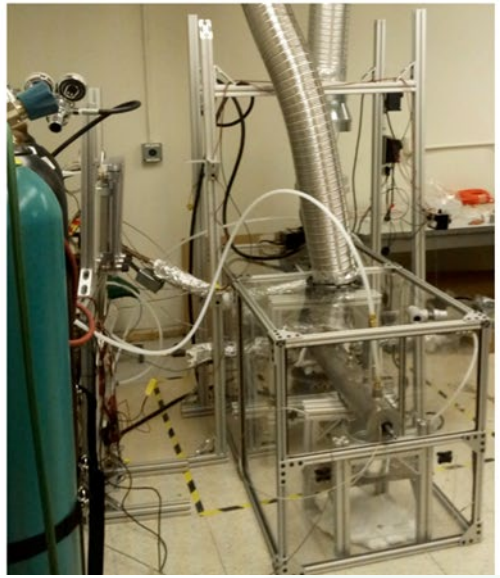
Takachar, Inc.

Decentralized Conversion of Plant-Based Residues into Bioproducts

TAKACHAR

- Portable high-performance biomass conversion
- Decentralized system
- Deployment at 3 different biomass locations





Icarus RT

Hybrid Photovoltaic/Thermal (PVT) Advanced Solar Plus Storage System

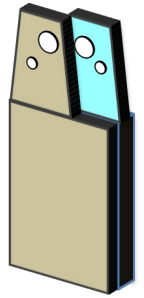
ICARUS RT™

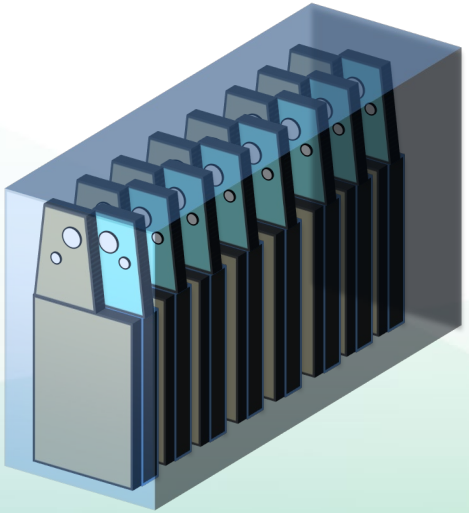
- Plug-and-play design
- Organic Rankine Cycle (ORC) for dispatchable power generation
- Installation at 170-unit multi-family complex

EnZinc

Safe, Low-Cost, Light Energy Storage

- Zinc micro-sponge anode
- Eliminates need for commonly used toxic materials
- Assemble and validate commercial-size cell with key market partner

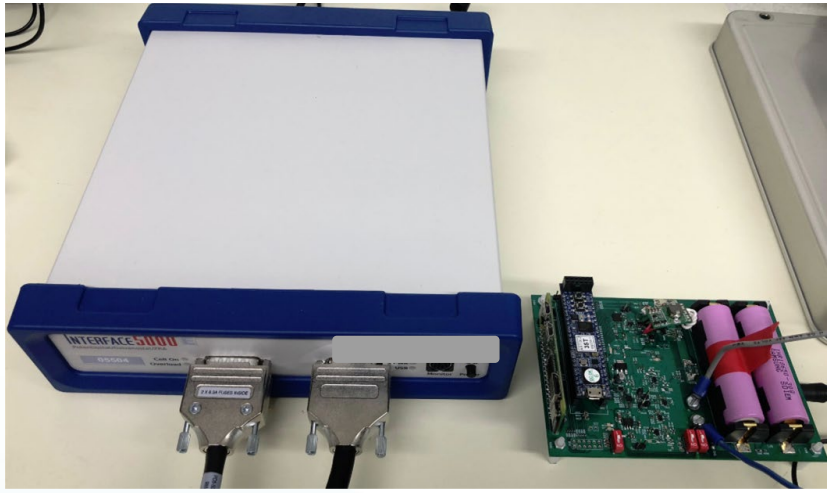




ReJoule

Fast Battery Diagnostic

- Drop-in battery health management
- Reduce battery waste
- Validate performance with battery packs at high voltages



state-of-the-art

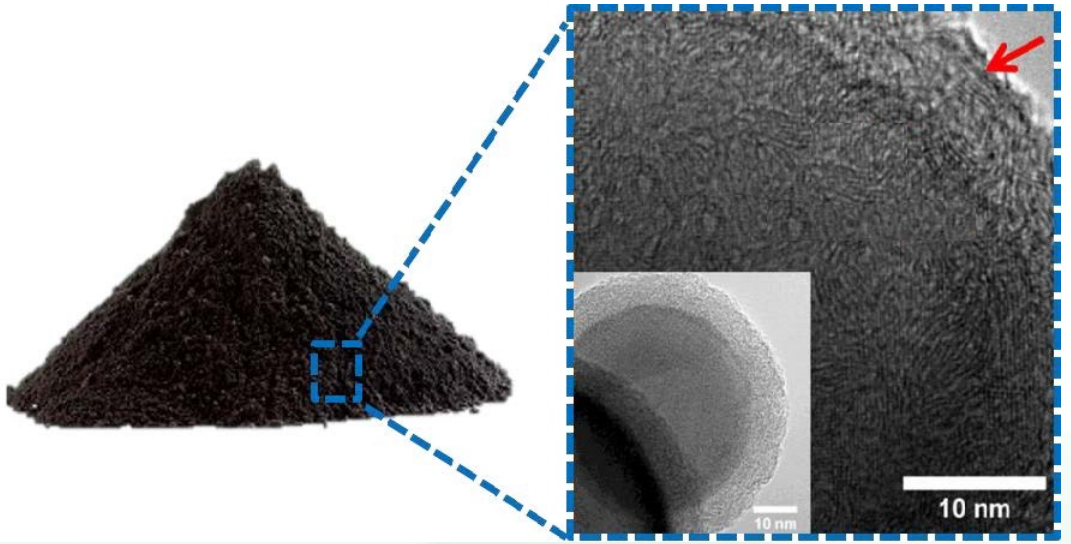
ReJoule prototype

SiLi-ion

Silicon-Carbon Power

- “Drop-in” additive for commercial batteries
- Immediate improvement in battery performance
- Develop a high-capacity battery prototype

Carbon shell

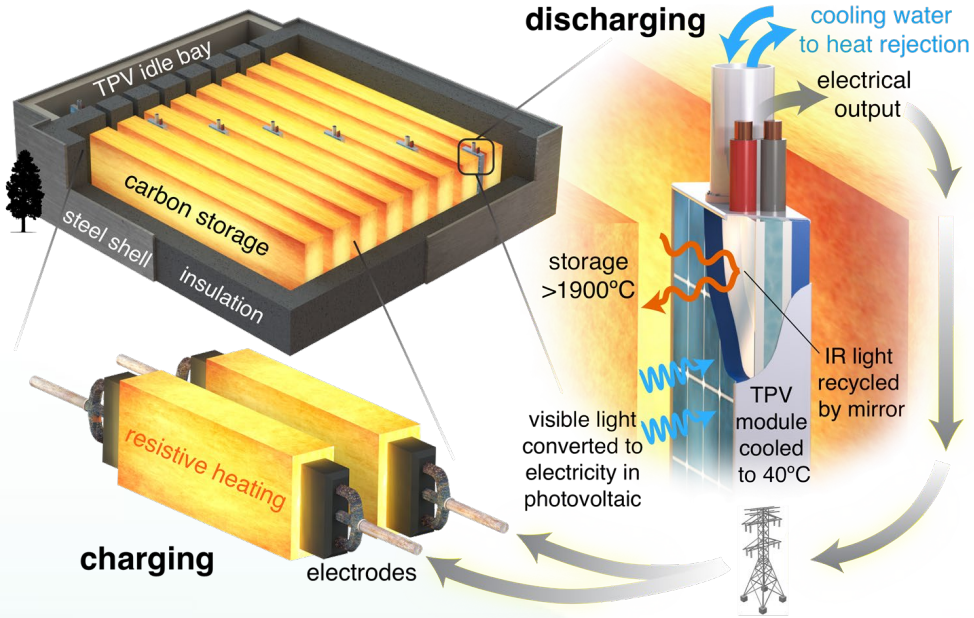


Antora Energy

Inexpensive, Long-Duration Energy Storage

- Thermal battery with a high-efficiency thermophotavoltic heat engine
- Low cost, safe & scalable
- Validated cell reliability under variable harsh environmental conditions

Antora Energy



Staff Recommendation

Adopt staff's findings that projects are exempt from CEQA