



# **Item 10: Electric Program Investment Charge (EPIC) 2023 Annual Report**

April 10, 2024 Business Meeting

Rachel Salazar, Electric Generation System Specialist  
Energy Research & Development Division, Strategic Analysis and  
Engagement Section



# EPIC Overview

- Established in 2011 by the California Public Utilities Commission (CPUC).
- Funded by California utility customers under the auspices of the CPUC.
- Funds clean energy innovation at all stages of research, development, and commercialization.
- Projects must benefit the program's ratepayers.
- Administered by:



## ***Mission Statement:***

***EPIC shall invest in “innovation to ensure equitable access to safe, affordable, reliable, and environmentally sustainable energy for electricity ratepayers.”***





# 2023 Report Focus

- Progress toward strategic goals and initiatives
- Success stories
- Impediments and setbacks
- Coordination activities





# EPIC Funding Cycles

Investment Cycle	Period	Funding Amount
EPIC 1	2012 – 2014	\$369 million
EPIC 2	2015 – 2017	\$406 million
EPIC 3	2018 – 2020	\$442 million
EPIC 4	2021 – 2025	\$736 million



# EPIC by the Numbers (through 2023)

**~\$1.2 BILLION**

EPIC FUNDS INVESTED

**500+**

PROJECTS AWARDED

**\$10.1 BILLION**

PRIVATE INVESTMENT,  
AFTER RECEIVING EPIC  
SUPPORT

**40+**

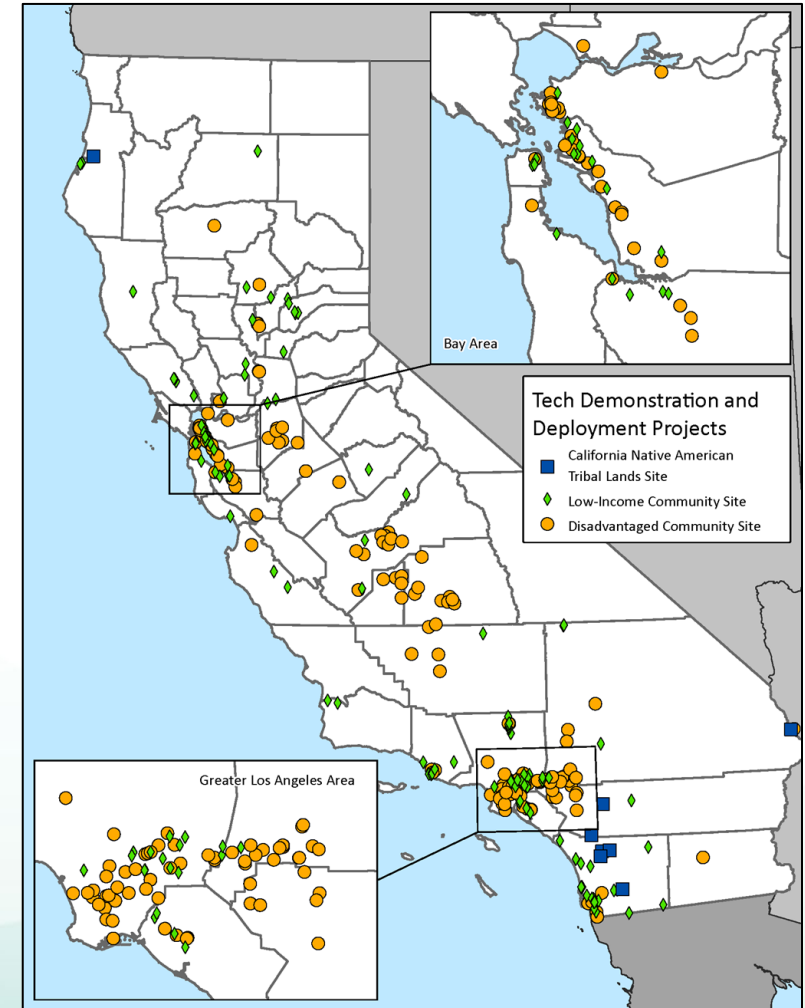
COMPANIES PERFORMED  
SUCCESSFUL EXITS, AFTER  
RECEIVING EPIC SUPPORT



# 2023 Achievements

- **\$89+ million** awarded to 28 new agreements
- **\$463 million** in follow-on funding
- **~60%** cumulative technology development and deployment (TD&D) funds to projects located in and benefitting under-resourced communities\*
- **\$21+ million** TD&D funds to projects located on tribal lands

\*Excludes combustion projects



Source: California Energy Commission



# Examples of Benefits for Californians (through 2023)

**~50%**

EPIC FUNDS INVESTED IN  
SMALL-, MEDIUM  
BUSINESSES

**50+**

PROJECTS AWARDED INCLUDE A  
WOMAN-, MINORITY-, OR LGBTQ-LED  
BUSINESS

**\$1.5 MILLION**

ESTIMATED ON-BILL ENERGY  
COST SAVINGS GENERATED BY  
18 PROJECTS

**17,000 TONS**

AVOIDED CO2 FROM 18 PROJECTS



# #1: Advance Renewable Generation Technologies

Focus on solar photovoltaics (PV), offshore wind, and geothermal energy generation.

## Examples of 2023 key successes:

- **Floating Offshore Wind** – \$21 million to 7 new agreements advancing environmental monitoring technologies and floating-related components.
- **Lithium Recovery** – Pilot scale demonstration of an innovation that can more effectively recover lithium from geothermal brine.



3D-printed floating offshore wind system components.

Source: RCAM Technologies



Geothermal plants near Salton Sea.

Source: The Center for Land Use Interpretation





## #2: Create a Nimble Grid to Maintain Reliability



Zinc Powered Battery Storage.  
Source: Power Engineering



Polaris software is used to increase demand flexibility in agricultural loads.  
Source: Polaris Energy Services

Focus on maintaining a flexible, reliable grid through zero-carbon firm resources, increased load flexibility, grid modernization, and cybersecurity risk mitigation.

### Examples of 2023 key successes:

- **Long Duration Energy Storage** – Three projects selected for EPIC awards over \$26 million, leveraging >\$12 million in match funds.
- **Demand Flexibility** - Three projects collectively contributed ~56 MW of additional load reduction during the grid stress events of summer 2023.



## #3: Increase Distributed Energy Resource Value

Focused on increasing the affordability and reliability of the electricity supply.

### Examples of 2023 key successes:

- **Next EPIC Challenge** (4 selected winners):
  - New, mixed-use, zero-carbon, all electric, resilient, and grid-responsive buildings
  - Includes 733 affordable housing units serving low-income households with up to 100% electricity bill savings.
- **Redwood Coast Airport Microgrid:** First fully renewable, multi-customer, front-of-the-meter microgrid. Islanded during 8 separate power disruptions for up to 17 hours at a time.



Rendered image of next EPIC challenge housing development.  
Source: ArchNexus



## #4: Improve Value Proposition of Efficiency and Electrification Technologies



Magnetic refrigeration prototype device.  
Source: General Engineering & Research

Focus on advancing lower emission solutions for hard-to-decarbonize industrial processes or components in buildings.

### Examples of 2023 key successes:

- **General Engineering & Research:** finalized a prototype for magnetic refrigeration that aims to reduce energy consumption by up to 50 percent.
- **University of California, Davis:** demonstrating award-winning affordable low- and ultra-low global warming potential (GWP) heat pumps at various technology readiness levels.

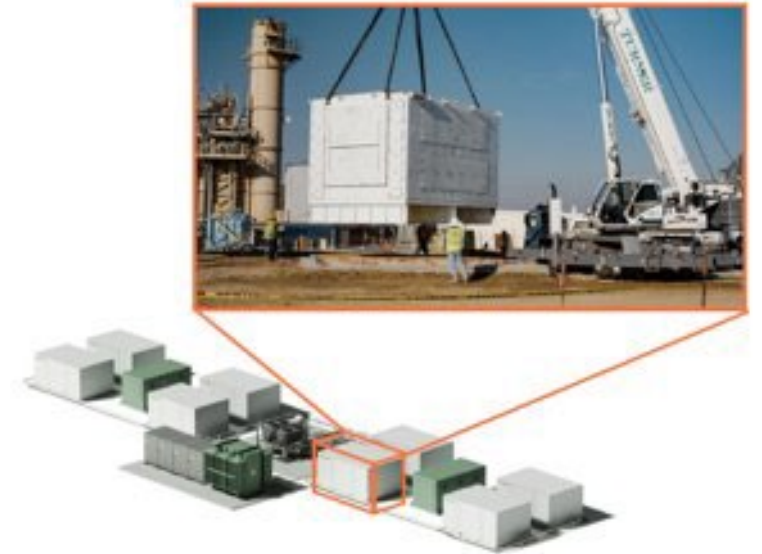


## #5: Enable CA Clean Energy Entrepreneurship

Focus on supporting clean energy entrepreneurs to take their inventions from idea to market.

### Examples of 2023 key successes:

- **Realizing Advanced Manufacturing and Production for Clean Energy Technologies (RAMP):** awarded nearly \$20 million to advance diverse clean energy technologies.
- **Antora Energy:** developed a zero-carbon, flexible, combined heat and power (CHP) system that can support industrial decarbonization.

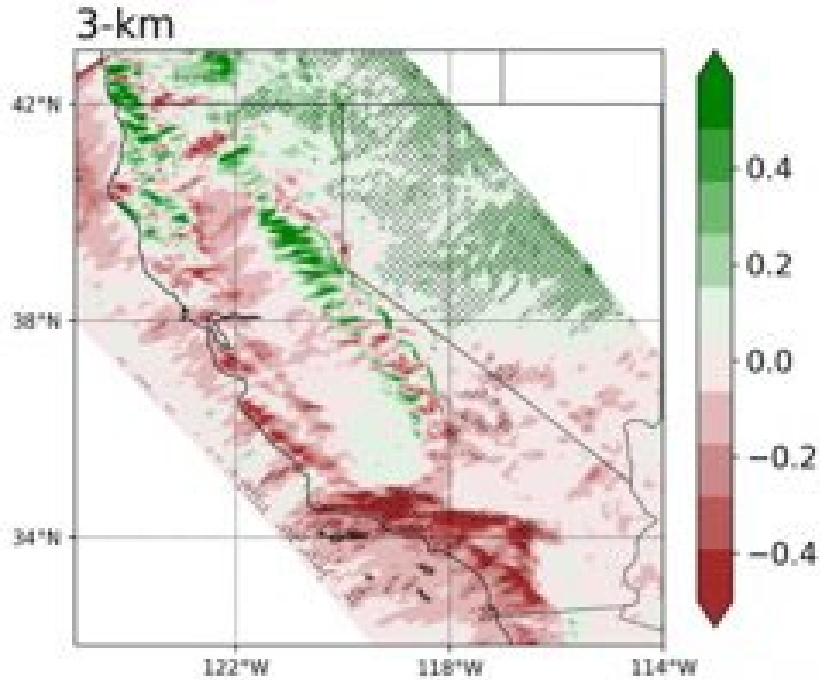


Installation of pilot scale system and rendering of full storage plant.  
Source: Antora Energy





## #6: Inform an Equitable, Zero-Carbon Energy Transition



Eagle Rock Analytics' Cal-Adapt web platform maps projected changes in average precipitation by 2100. Source: Eagle Rock Analytics

Focused on climate resilience and environmental sustainability.

### Examples of 2023 key successes:

- **Lumen Energy Strategy:** conducted a series of workshops hosted by CPUC to identify, analyze, and integrate resiliency needs within electric grid planning process.
- **Eagle Rock Analytics:** worked with PG&E to identify gaps in the utility's weather station network used for risk management.



# Coordination

## Summary of EPIC Staff Engagement Activities in 2023

Type of Engagement	Number of Efforts in 2023
Knowledge Sharing	39
Scoping Efforts for Research Roadmaps or Solicitations	29
Interagency Coordination with Local, State, and Federal Agencies	16
EPIC Administrator, CPUC, Policy + Innovation Coordination Group	11
Pre-application Workshops	6
Tribal Engagement	6
Community Engagement	2
Disadvantaged Community Advisory Group Presentations and Discussions	2
<b>Total</b>	<b>111</b>



# Next Steps

---

- **EPIC 4 Solicitations:** 17 planned to be issued through 2024
- **EPIC 5 Development Process:**
  - Strategic Goals - Adopted March 2024
  - CPUC-Proposed Objectives & Impact Analysis Framework - Expected late summer/early fall
  - Proposed CPUC decision - Expected winter 2024
  - CEC development of EPIC 2026-2030 Investment Plan - Begins upon CPUC decision; submitted for CPUC approval Oct. 2025



# Staff Recommendation

---

- Approve the *2023 EPIC Annual Report*
- Staff to submit Annual Report to the legislature and CPUC on April 30