

DOCKETED	
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TN #:	228333
Document Title:	Presentation - Investing in California's Energy Future - Energy Research and Development Division
Description:	Information on Electric Program Investment Charge and Natural Gas Research and Development Program that was presented at the 5/14 workshop.
Filer:	Jessica Bonitz
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California
Energy Commission

Investing in California's Energy Future

Energy Research and Development Division

Laurie ten Hope, Deputy Director





- **Electric Program Investment Charge (EPIC),**
\$133 million annually

- 2



Energy Efficiency Research Office

Efficiency Integration

Technologies & strategies to integrate EE, load management, storage, & DERs in buildings & IAW sectors to benefit grid and reduce GHG

Buildings

Next generation technologies & solutions to increase efficiency of buildings and reduce their carbon intensity

Industrial, Agriculture, & Water

Advance technologies & strategies to improve efficiency of IAW sectors, reduce GHG & other emissions, and maintain global competitiveness

Food Production Investment Program

Deploying efficiency & electrification technologies to the food industry

Energy Generation Research Office

Renewable Integration

Technologies & strategies to optimize higher penetrations of RE gen; accelerate adoption of intelligently integrated DER & electrification

Renewable & Adv. Generation

Reduce costs, increase performance, & improve commercial deployment of clean, renewable generation technologies

Environmental

Investigate energy sector's environmental & public health impacts; illuminate resilience options to prepare energy system for a changing climate

Transportation

Reduce GHG & air pollution by enabling electrification, advanced technologies & renewable fuel

Energy Systems Research Office

Technology Systems Integration

Integrate advanced energy systems to support a modern grid with 100% zero carbon resources that also enable grid resiliency & flexibility

Natural Gas Safety

Advance technologies that improve the safety of NG pipelines & storage systems while reducing GHG

Program Support Unit

Provide support via budgets, workplans, grant preparation & annual & legislative reports

Energy Development & Market Facilitation Office

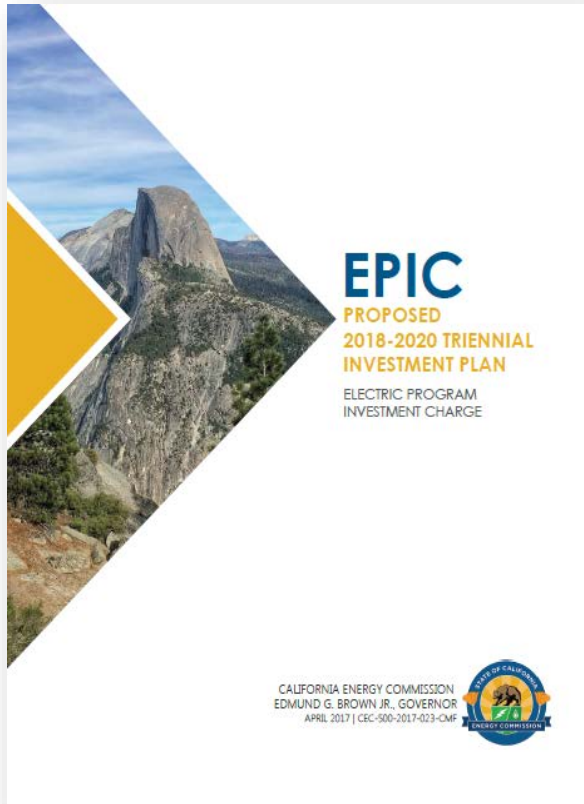
Tech-to-Market

Develop & implement strategic initiatives to increase successful clean energy entrepreneurship across CA

Customer Outreach & Empowerment

Increase the capacity of customers & communities to adopt emerging clean energy technology solutions

Electric Program Investment Charge



EPIC invests ~\$130 million annually in high-impact research areas such as:

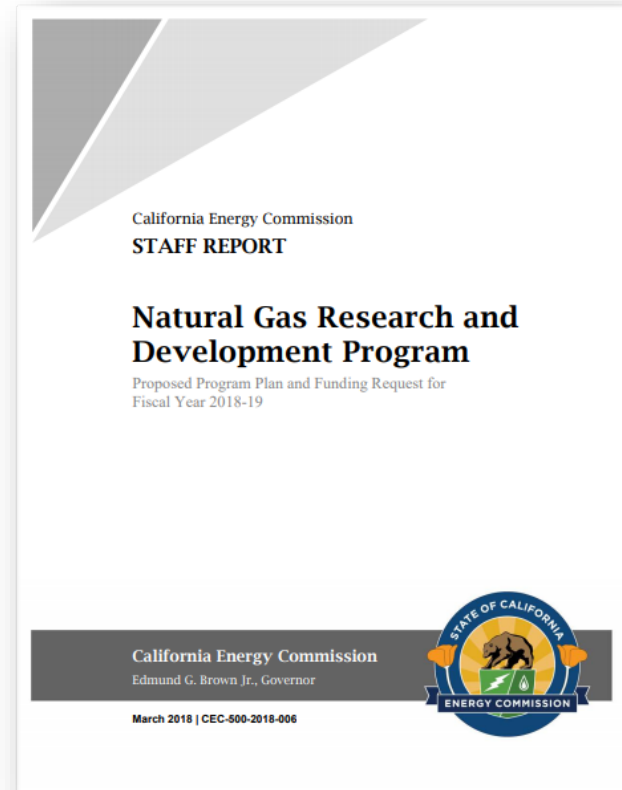
- ▶ Climate science and adaptation
- ▶ Energy efficiency
- ▶ Grid resilience and reliability
- ▶ Renewable generation
- ▶ Creating an Energy Innovation Ecosystem
- ▶ Water-Energy-Food-Nexus



Natural Gas Research and Development Program

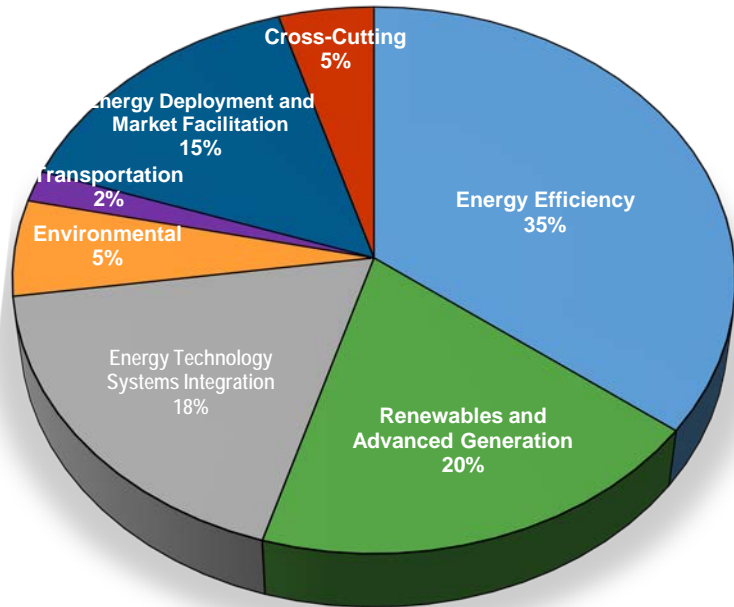
The Natural Gas Research and Development Program invests ~\$20 million annually to:

- ▶ **Assure** system safety, reliability, and integrity
- ▶ **Stimulate** economic growth
- ▶ **Achieve** cleaner, more diverse, and environmentally sound energy options

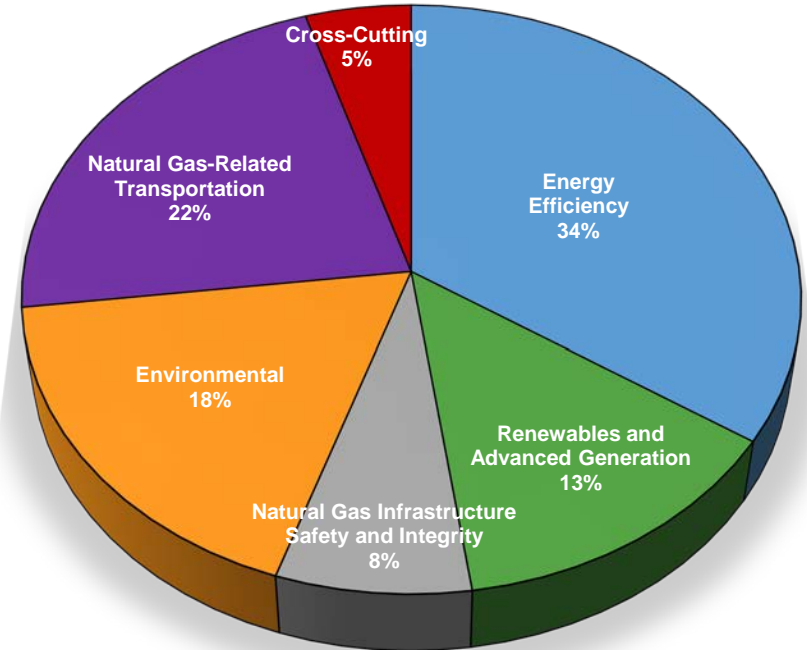


Funding Allocations

\$650 Million EPIC Program Project Awards
2014 through December 2018



\$238 Million Natural Gas R&D Program Project Awards
2004 through December 2018



Blue Lake Rancheria Microgrid



Source: Schatz Energy Research Center

- EPIC funds were used to build and demonstrate a renewable-based microgrid.
- The system:
 - includes 420 kWh of solar photovoltaic generation and 500 kW of storage
 - is designed to 'island' and operate autonomously during outages of the macrogrid
- In 2017 a wildfire caused an outage. The microgrid worked so seamlessly that it went unnoticed.
 - This ensured emergency personnel had uninterrupted energy resources and were unimpeded by the outage.

Blue Lake Rancheria

Solar+Storage in Commercial Buildings



- EPIC funds are being used to install solar plus storage systems at small and medium business.
- These systems will:
 - help establish a model to streamline deployment and lower cost
 - reduce energy costs and offer demand response
 - provide power to critical services, such as fuel dispensation, during electrical outages.
- A successful demonstration will greatly amplify the technology's reputation, driving broader adoption.

Chemehuevi Community Center Community Scale Solar



Source: Primus Power

- EPIC funds are being used to deploy and demonstrate community-scale solar at a tribal community center.
- System includes:
 - Two pre-commercial solar technologies
 - Flow battery energy storage
 - An integrated energy management system
- The system:
 - saves the tribe ~\$2,795 a month in energy costs
 - provides demand response, reducing electrical disruptions to the area
 - Provides emergency power to the center in times of crisis

The Solicitation Process



ERDD awards funds most often through competitive grants.



Potential projects are vetted through a solicitation process assessing rate payer benefits and contributions to the state's energy goals.



Visit ERDD's webpage for a thorough guide on the solicitation process.



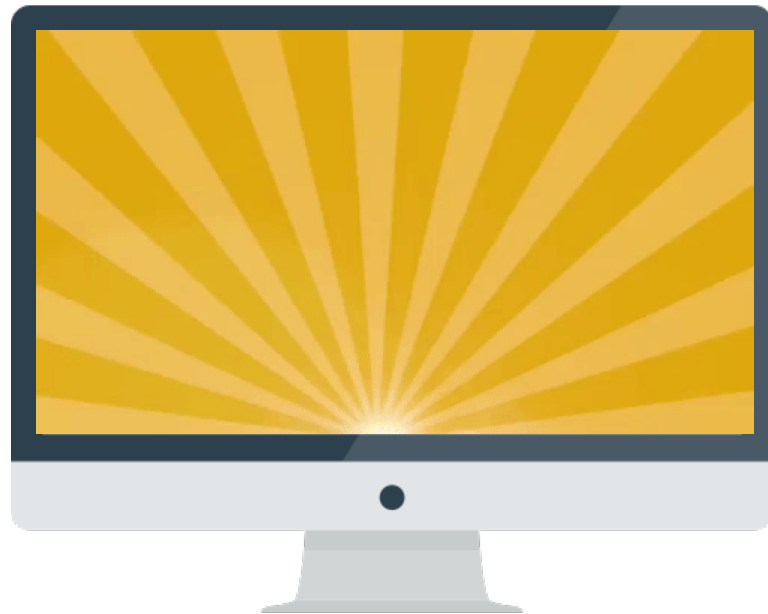
Anticipated Solicitations

Solicitation Title	Release Date	Program Area/Strategic Objective	Estimated Funding Amount
The EPIC Challenge: Accelerating the Deployment of Advanced Energy Communities, Phase II (REISSUE - GROUPS 7 & 8 ONLY)	Mar. 2019 – May 2019	Technology Demonstration and Deployment S2.4.1	\$20 million
Developing Lessons Learned, Best Practices, Training Materials and Guidebooks for Customer Side of the Meter Energy Storage	Mar. 2019 – May 2019	Market Facilitation (S2.3)	\$1 million
Ignition Prevention and Utility System Vegetative Intrusion Detection and Suppression	Jun. 2019 – Aug. 2019	Applied Research and Development (S7.2)	\$3 - \$5 million

Learn More

Visit the ERDD webpage for:

- ▶ A video introduction to Energy Commission research funding
- ▶ In-depth funding program overviews
- ▶ Current and forthcoming solicitations
- ▶ Application guidance
- ▶ Workshop notices and documents
- ▶ Program reports and project status updates



Energy Innovation Showcase



The screenshot shows the homepage of the Energy Innovation Showcase website. At the top, there is a navigation bar with the CA.gov logo, a search bar, and links for HOME and SEARCH. Below the navigation bar, a large banner reads "HIGHLIGHTING ENERGY INNOVATION BY THE NUMBERS". Underneath the banner, three statistics are displayed: "DOLLARS AWARDED \$760 MILLION", "PROJECTS AWARDED 431", and "MATCH FUNDING \$381 MILLION". The main content area is divided into two columns. The left column is titled "FEATURED PROJECTS" and contains six project cards, each with an image, a title, a brief description, and a "READ MORE" link. The right column is titled "TRENDING" and contains six category cards, each with an image and a title: "LIGHTING", "DISADVANTAGED COMMUNITIES", "MICROGRIDS", "WASTEWATER TREATMENT", and "RENEWABLES FORECASTING".

HIGHLIGHTING ENERGY INNOVATION BY THE NUMBERS

DOLLARS AWARDED \$760 MILLION PROJECTS AWARDED 431 MATCH FUNDING \$381 MILLION

FEATURED PROJECTS

- High-Fidelity Solar Power Forecasting Systems for Solar Plants**
This project will focus on the development and validation of tools capable of monitoring ...
[READ MORE](#)
- Demonstrating Energy Efficient Drying for Walnuts**
This project will demonstrate a novel infrared technology for walnut drying at pilot and ...
[READ MORE](#)
- Advance Wastewater Treatment Using Forward Osmosis**
This project will demonstrate an advanced water treatment technology that uses ...
[READ MORE](#)
- Bringing A New Generation of LED Lighting Solutions to Market**
The purpose of this agreement is to design and develop innovative light-emitting diode ...
[READ MORE](#)
- City of Fremont Fire Stations Microgrid Demonstration**
The project will design and build low carbon-based microgrids at three fire stations ...
[READ MORE](#)
- Very Low-cost MEMS-based Ultrasonic Anemometer for Indoor and HVAC Use**
This project will develop low-cost, low-power, accurate, calibration-free, and compact ...
[READ MORE](#)

TRENDING

- LIGHTING
- DISADVANTAGED COMMUNITIES
- MICROGRIDS
- WASTEWATER TREATMENT
- RENEWABLES FORECASTING

- ▶ Discover the CEC's impact with the **Energy Innovation Showcase**
- ▶ Learn about research progress and results in areas such as:
 - ▶ Smart grid technology
 - ▶ Efficient lighting
 - ▶ Renewable generation
 - ▶ Clean transportation
 - ▶ Building efficiency

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