

**DOCKETED**

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California  
Energy Commission

# Investing in California's Energy Future

## Energy Research and Development Division

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# Fostering Innovation Across the Energy Sector

## Energy Research and Development Division (ERDD)

Core Mission: strategically invest funds to catalyze change and accelerate achievement of policy goals



- Electric Program Investment Charge (EPIC), \$133 million annually
- Natural Gas Research, Development and Demonstration Program, \$24 million annually
- Food Production Investment Program, \$124 million biennially
- Low Carbon Fuels R&D Program, \$18 million, one-time general fund expenditure authority



## 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

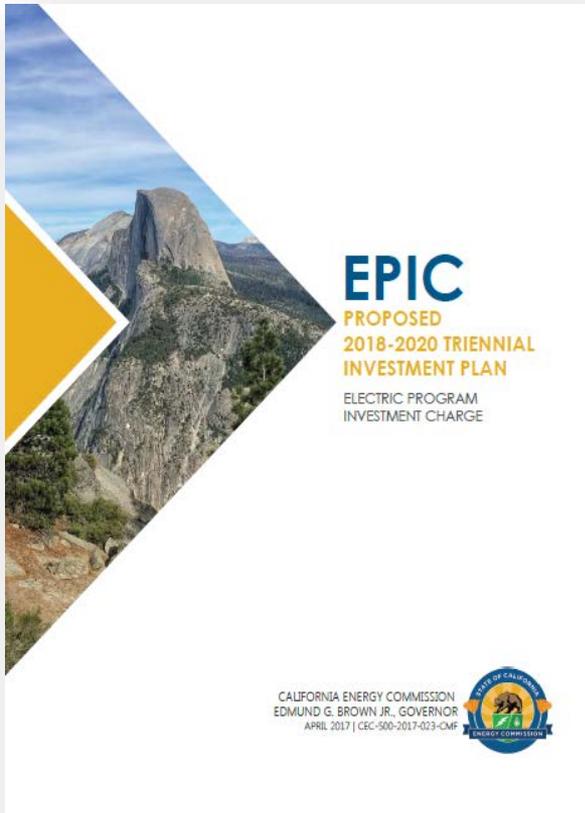
Develop & implement strategic initiatives to increase successful clean energy entrepreneurship across CA

### 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:

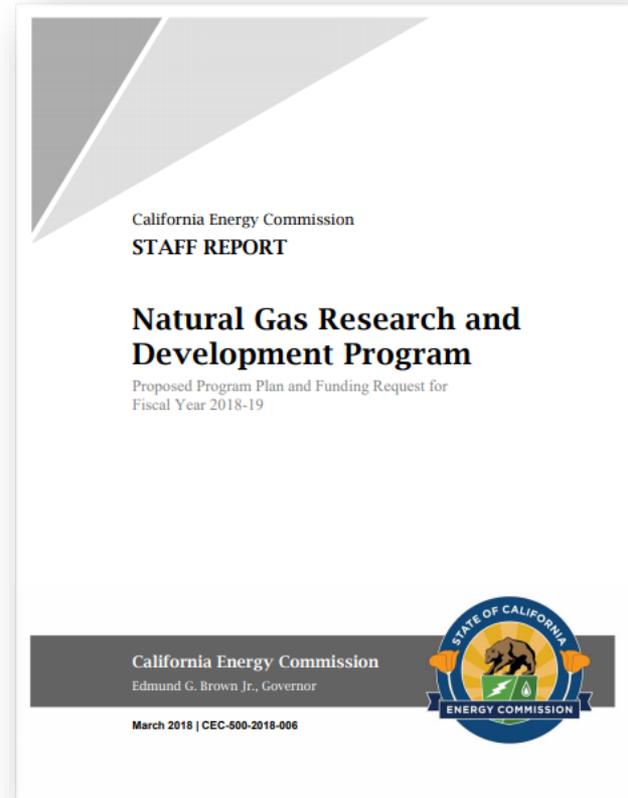
- ▶ Climate science and adaptation
- ▶ Energy efficiency
- ▶ Grid resilience and reliability
- ▶ Renewable generation
- ▶ Creating an Energy Innovation Ecosystem
- ▶ Water-Energy-Food-Nexus



# Natural Gas Research and Development Program

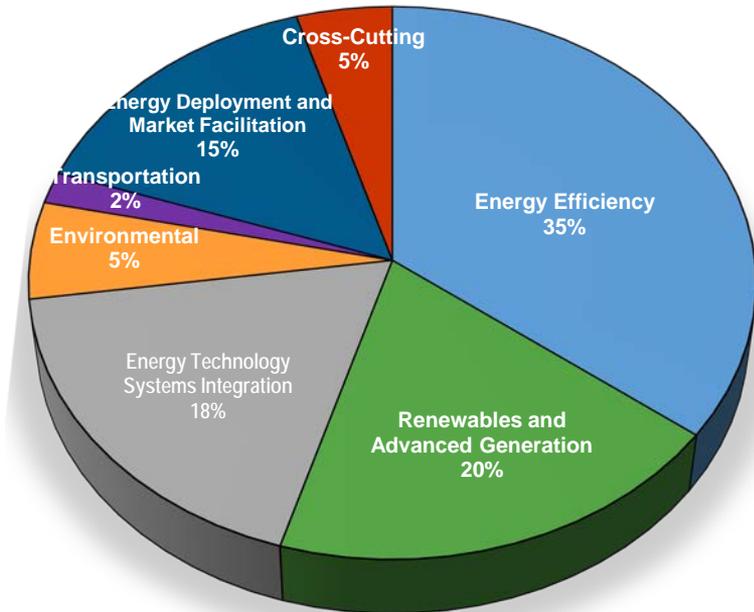
The Natural Gas Research and Development Program invests ~\$20 million annually to:

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

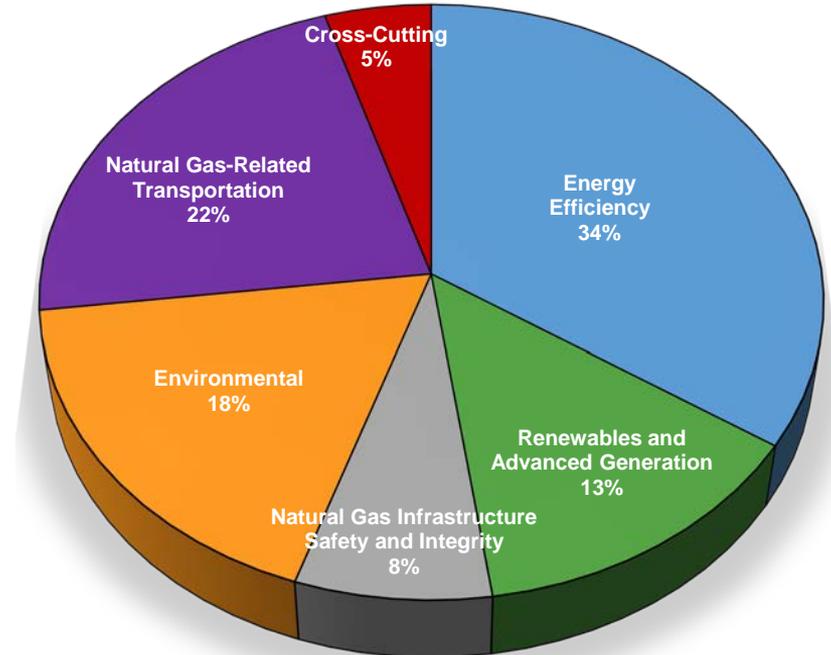


# Funding Allocations

**\$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

- ▶ 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

[innovation.energy.ca.gov](http://innovation.energy.ca.gov)



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