

Advancing the Clean Energy Transition While Protecting Communities and Ecosystems

Impacts Research for New Generation and Storage

INITIATIVE DESCRIPTION

Pages 113-114

- Develop siting and mitigation strategies informed by environmental impacts of clean energy to support accelerating the clean energy transition while reducing costs.
- Evaluate benefits and trade-offs of building/transportation electrification on air quality, health, equity, and economy to improve ratepayer decision-making and clean technology adoption.
- Target research on ecosystem and community clean energy outcomes to improve cost-effectiveness and reduce environmental impacts over the technology lifecycle.
- Develop a scientific basis for minimizing environmental impacts through mitigation and reducing health costs through electrification to reduce adverse impacts to ratepayers while promoting equitable outcomes.

PROPOSED INITIATIVE BUDGET	\$38M
% OF TOTAL BUDGET (excl. admin & overhead)	5%
# OF RESEARCH TOPIC AREAS	2

ALIGNMENT SUMMARY

STRATEGIC OBJECTIVE ALIGNMENT

Pages 107

“...EPIC Program funds results in new lifecycle and techno-economic analysis, as needed, to identify the emerging zero-carbon technologies with the lowest adverse and highest beneficial economic, land, air, water, net energy, health, and safety impacts on California communities, including DVCs....EPIC funds to invest in innovation that will improve cost-effectiveness and reduce environmental impacts to ratepayers over the long lifetime of electricity technology...”

Research would provide lifecycle and techno-economic perspectives to reduce environmental impacts of clean energy development and reduce adverse health effects through electrification. Initiative responds to the priority of improving environmental, health, and economic outcomes for ratepayers through responsible deployment of clean energy generation and storage while minimizing risks.

CPUC ALIGNMENT

Pages 115, 116

- Supports cost-effective integration of high-penetration distributed energy resources and helps ensure reliable electricity while reducing GHGs.
- Supports accelerating, expanding, and derisking clean energy development to reduce energy-related costs for ratepayers.
- Develops evidence on air quality, health, and related costs of electrification to inform ratepayer decisions, program design, and clean technology adoption.
- Benefit ratepayers directly through lower costs for clean energy, improved health outcomes, and preservation of environmental resources.

Innovation in Clean Energy Environmental Impact Assessment and Mitigation

Impacts Research for New Generation and Storage

Advancing the Clean Energy Transition While Protecting Communities and Ecosystems

WHAT PROBLEM ARE WE SOLVING? Pages 115, 119

Solutions to clean energy developmental, operational delays and associated costs, as well as environmental risks, are currently insufficient to address the significant increase in generation that will be necessary to meet SB 100 goals. Implementing California’s clean energy transition will require further investigation and innovations to ensure lowest adverse ecological impacts and highest beneficial economic outcomes towards achieving sustainable and lower-cost clean energy for ratepayers.

START	2028
OUTPUTS	2032
MARKET READY	2033 – 2034

ALIGNMENT SUMMARY

WHAT IS THE DISTINCT RESEARCH APPROACH?	HOW WILL YOU KNOW YOU ARE SUCCESSFUL?	HOW WILL YOU COORDINATE?
• Advance novel science and technology towards cost-effective methods for siting, permitting, construction, and environmental protection. (p. 119; p. 121) • Develop innovative approaches, e.g., machine learning, AI, networked sensors, autonomous vehicles, and visual/acoustic devices. (p. 119) • Advance dual-use clean energy production, e.g., agrivoltaics, solar canals, and floating solar. (p. 121) • Synthesize disparate datasets, such as solar insolation, flood risk, and cultural sites, to streamline reviews and expedite project planning. (p. 119)	• Clean energy development and operation risks and costs are reduced. (p. 121) • Energization timelines are shortened. (p. 121) • Tribal concerns and environmental resources and risks associated with clean energy development are minimized. (p. 121) • Reduced clean energy development cost and time; number of environmental risks assessed; number of environmental mitigation solutions developed. (p. 121)	• Offer research outcome updates to IOU Administrators and key stakeholders to foster collaboration and ensure complementary efforts. (p. 121) • Build on environmental cost benefit of solar over water (EPC-25-004) and non-traditional PV (GFO-25-306) to expand dual-use innovations optimizing generation and land-use constraints. (p. 120) • Build on mitigation for special status species impacted by PV (EPC-16-038 & EPC-25-006) by developing new solutions supporting streamlined and lower cost clean energy development. (p. 120)

Advancing Health and Air Quality Research to Inform Building and Transportation Electrification in California

Impacts Research for New Generation and Storage

Advancing the Clean Energy Transition While Protecting Communities and Ecosystems

WHAT PROBLEM ARE WE SOLVING?

Pages 122-124

California lacks standardized, real-world evidence and trusted information on air quality, health, affordability, and broader ratepayer impacts of building and transportation electrification, particularly for DVCs. These gaps limit ratepayers’ ability to make informed decisions and realize potential health and economic benefits, hinder clean electric technology adoption, and constrain effective program evaluation and planning.

START	2028
OUTPUTS	2033
MARKET READY	2034 – 2036

ALIGNMENT SUMMARY

WHAT IS THE DISTINCT RESEARCH APPROACH?

- Generate California-specific, real-world evidence clearly linking building and transportation electrification with air quality, health, and affordability outcomes important to ratepayers, emphasizing DVCs. (pp. 123 – 124; p. 127)
- Integrate air quality, health, and cost data using standardized methods to quantify and monetize non-energy impacts for ratepayers. (pp. 124 – 125; p. 127)
- Translate research into trusted decision-support tools and pilots for ratepayers, policymakers, utilities, and program administrators. (pp. 123 – 124; p. 127; p. 129)

HOW WILL YOU KNOW YOU ARE SUCCESSFUL?

- Validated datasets and methods quantify electrification-related air quality, health, and cost impacts. (p. 127)
- Real-world pilots demonstrate measurable air quality and health impacts, with a focus on DVCs. (pp. 127 – 128)
- Trusted decision-support tools improve ratepayer awareness and confidence and inform clean electric technology adoption, programs, or investments. (p. 127; p. 129)
- Validated methods and tools, measured NO₂ and PM_{2.5} reductions, and avoided healthcare costs for California ratepayers. (p. 127)

HOW WILL YOU COORDINATE?

- Coordinate with CARB, CDPH, IOUs, and CEC's HEET Working Group to align research priorities, avoid duplication, and translate findings into policy and programs. (p. 126)
- Leverage CPUC-supported ESA Non-Energy Impacts, CalMTA induction cooking, and San Joaquin Valley electrification research to address remaining evidence and implementation gaps. (p. 123; pp. 125 – 126)
- Build on prior EPIC/CEC research on cooking electrification, ventilation, building electrification, and community health, including EPC-21-033, EPC-24-042. (p. 125)