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Wildfire Resiliency

Additional submitted attachment is included below.

CALIFORNIA ENERGY COMMISSION

CALIFORNIA NATURAL RESOURCES AGENCY

Electric Program Investment Charge 2026–2030 (EPIC 5) Research Concept Proposal Form

The California Energy Commission (CEC) is currently soliciting research concept ideas and other input for the Electric Program Investment Charge 2026–2030 (EPIC 5) Investment Plan. For those who would like to submit an idea for consideration, please complete this form and submit it to the CEC by **August 8, 2025**. More information about EPIC 5 is available below.

To submit the form, please visit the e-commenting link: https://efiling.energy.ca.gov/EComment/ECommentSelectProceeding.aspx and select the Docket **25-EPIC-01**. Enter your contact information and then use the "choose file" button at the bottom of the page to upload and submit the completed form. Thank you in advance for your input.

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1. Please provide the name, email, and phone number of the best person to contact should the CEC have additional questions regarding the research concept:

Agatha Kazdan, akazdan@epri.com 415-416-0678

2. Please provide the name of the contact person's organization or affiliation:

Electric Power Research Institute, Inc. (EPRI) in partnership with Kliewer & Associates

3. Please provide a brief description of the proposed concept that you would like the CEC to consider as part of the EPIC 5 Investment Plan. What is the purpose of the concept, and what would it seek to do? Why are EPIC funds needed to support the concept?

Wildfires in California are becoming increasingly more frequent and intense due to climate change, posing escalating threats to energy systems, buildings, and the environment. These events disrupt power supply through outages and grid instability, damage critical infrastructure, and degrade environmental quality by polluting air, water sources, and destroying ecosystems - which further exacerbates impacts of climate change and increases wildfire risk. The consequences are not only costly, but also disproportionately affecting vulnerable communities who often bear the brunt of climate-related events. Proactively mitigating wildfire impacts is essential to protect lives, reduce infrastructure losses,

preserve ecosystem services, and ensure the continuity of clean, reliable, and equitable energy access across the state.

This research concept proposes to develop, test, and validate cost-effective, scalable wildfire-resilient building assemblies, parcel-level interventions, and community-scale strategies in support of California's decarbonization and electrification goals, while addressing the inherent limitations of our existing infrastructure drawing from proven nature- and engineering-based solutions.

The concept will explore:

- *Fire-resistant building envelope designs compatible with electrified systems and distributed energy resources (DERs), which contribute to improved thermal performance and reduced peak demand requirements for heating and cooling to support grid stability and community resilience*
- *Parcel-level fire resilience strategies that integrate DERs to preserve uptime of active firefighting systems and create defensible spaces. Figure 1 depicts the nature-based solution of vegetative buffers and fire-resistant landscaping effectively used to keep ignition at bay.*

Figure 1. Home designed to withstand wildfire damage through wildfire resistant landscaping and engineered building practices. Source: Department of Energy.[1]

- *Community-scale planning tools that incorporate Distributed Water Resources (DWR), microgrid, air quality, weather stations, grid infrastructure, and resilience to proactively address wildfire risk.*

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[1] *Defensible Space for Protection Against Wildfires*. (2022). U.S. Department of Energy (DOE) Office of Energy Efficiency & Renewable Energy, Building America Solution Center. https://basc.pnnl.gov/resource-guides/defensible-space-protection-against-wildfires#edit-group-description.

EPIC funding will enable cross-sector collaboration, field validation, and technology integration – areas that are currently underfunded.

4. In accordance with Senate Bill 96[i], please describe how the proposed concept will "lead to technological advancement and breakthroughs to overcome barriers that prevent the achievement of the state's statutory energy goals." For example, what technical and/or market barriers or customer pain points would the proposed concept address that would lead to increased adoption of clean energy technology or innovation? Where possible, please provide specific cost and performance targets that need to be met for increased industry and consumer acceptance. For scientific analysis and tools, provide more information on what data and information gaps the proposed concept would help fill, and which specific parties or end users would benefit from the results, and for what purpose(s)?

This concept supports technological advancement by:

- *Addressing market barriers to wildfire-resilient retrofits and new construction*
- *Filling data gaps on cost-performance tradeoffs for resilient assemblies, natural environmental processes, and electrified systems under wildfire stress*
- *Supporting breakthroughs in integrated and holistic systems design for electrified buildings and distributed energy resources (DERs) that maintain operability and protect from hazards during wildfire events.*
- *Aligning with California's Senate Bill 901 and Assembly Bill 1054, which prioritize wildfire mitigation through engineered and natural solutions*

Barriers Addressed:

- *High upfront costs and lack of validated performance data*
- *Limited adoption of resilient building technologies and designs in disadvantaged communities*
- *Fragmented standards for integrating DERs with fire-resilient design*
- *natural environment in disadvantaged communities that increase climate risks*

Preliminary Target Metrics:

- *Assemblies that reduce ignition risk by >80% compared to baseline*
- *Cost premium ≤15% over conventional construction*
- *DER integration that maintains >90% uptime during fire-related outages*
- *Community-wide "active" systems that support >90% of first responders efforts to defend properties and communities using Distributed Water Resources (DWR)*

5. Please describe the anticipated outcomes if this research concept is successful, either fully or partially. For example, to what extent would the research reduce technology or ratepayer costs and/or increase performance to improve the overall value proposition of the technology? What is the potential of the innovation at scale? How will the innovation lead to ratepayer benefits in alignment with EPIC's guiding principles to improve safety, [ii] reliability, [iii] affordability, [iv] environmental sustainability, [v] and equity?[vi]

- *Reduced ratepayer costs through avoided fire damage and lower insurance premiums*
- *Improved safety and reliability of electrified buildings and DERs in fire-prone areas*
- *Scalable retrofit packages for utilities and local governments*
- *Validated design templates for community-scale resilience planning*
- *Insights into grid infrastructure upgrades that complement parcel-level resilience*
- *Potential model for Wildfire Hardening Incentive Programs for IOUs that consider the natural and built environment*

Potential at Scale: If successful, this concept could inform building codes, utility programs, and community planning across California's WUI (Wildland-Urban Interface) zones, enabling widespread adoption of resilient electrification.

Principle	*Contribution*
Safety	*Reduces ignition risk and improves survivability of electrified systems*
Reliability	*Supports DERs and microgrids that remain operational during fire events*
Affordability	*Targets cost-effective solutions with scalable deployment*
Environmental Sustainability	*Promotes electrification and reduces emissions from fire-related rebuilding and enhances ecosystem services*
Equity	*Prioritizes solutions for disadvantaged vulnerable communities (DVCs) with adaptable and accessible solutions to mitigate wildfire energy and non-energy risks (i.e., health, energy affordability)*

6. Describe what quantitative or qualitative metrics or indicators would be used to evaluate the impacts of the proposed research concept.

Quantitative:

- *Fire resistance rating (i.e. two-hour fire rating)*
- *Institute Parcel Assessment for Wildfire Hardening (PAWH) forms*
- *Assess PAWH effectiveness community wide*
- *DER uptime during fire events*
- *Cost-benefit ratios*
- *Deployment rates in disadvantaged and vulnerable communities*
- *Live weather data assimilation community wide*
- *Biodiversity Index and Habitat Support Score*

Qualitative:

- *Stakeholder feedback*
- *Community resilience indicators*
- *Utility adoption interest*
- *First responder safety indicators*
- *Community safety indicators*

7. Please provide references to any information provided in the form that supports the research concept's merits. This can include references to cost targets, technical potential, market barriers, equity benefits, etc.

a. ***Southern California Edison Wildfire Resilience Pilots***
SCE has implemented extensive wildfire mitigation strategies including covered conductor installations, undergrounding, and advanced fault detection technologies. These efforts are detailed in their Wildfire Mitigation Plan Fact Sheet and Wildfire Safety Program Overview.

b. ***EPRI Studies on Electrification and Infrastructure Resilience***
EPRI's research portfolio includes assessments of electrification pathways, climate resilience frameworks, and infrastructure readiness. Notable resources include the Climate READi Framework, Energy & Environmental Analysis Research Portal, and Nature-Based Solutions: Enhanced Framework for Ecosystems, Communities, and Buildings.

c. ***CalFire Ignition Data and WUI Risk Maps***
CAL FIRE's Fire and Resource Assessment Program (FRAP) provides

ignition data, fire hazard severity zones, and WUI mapping tools. These are accessible via the GIS Mapping and Data Analytics Portal, Wildfire Resilience Program and the Fire Hazard Severity Zone Viewer.

d. ***CPUC Decision 24-03-007 Strategic Goals***
The CPUC's EPIC 5 guidance outlines five strategic goals including Climate Adaptation and Building Decarbonization. These goals are documented in Decision D.24-03-007 and the EPIC Strategic Objectives Workshop Report

e. ***City of Los Angeles Wildfire Response and Rebuilding Goals***
*Executive Order No. 5 promotes resilient rebuilding of fire-affected communities, fire-resistant construction, LADWP's role in enhancing water and power system resilience, community wildfire preparedness and emergency response, and insurance access for wildfire-resilient homes. Additionally, Project Recovery, led by ULI, UCLA, and USC, proposes long-term strategies for rebuilding after wildfires, including climate-adaptive design, community rebuildin*g authorities, and insurance reform.

8. The EPIC 5 Investment Plan must support at least one of five Strategic Goals:[vii]
    a. Transportation Electrification
    b. Distributed Energy Resource Integration
    c. Building Decarbonization
    d. Achieving 100 Percent Net-Zero Carbon Emissions and the Coordinated Role of Gas
    e. Climate Adaptation

    Please describe in as much detail as possible how your proposed concept would support these goals.

    The proposed concepts supports:

- *Cross Sector collaboration by bridging energy, equity, and environmental sustainability into infrastructure planning – creating synergies across state agencies, utility companies, and local jurisdictions to proactively, instead of reactively, address wildfire risk.*
- *Inform statewide and local building codes, utility incentive and rebate programs, and resilience planning and programming.*
- *Ensure solutions are scalable and accessible across various building types, geographical regions, and demographics.*

The proposed concept aligns with the following goals:

Strategic Goal	*Relevance*
Climate Adaptation	*Core Focus – wildfire resilience as climate adaptation through both the built and natural environment.*
Building Decarbonization	*Electrified buildings with low energy use intensity through efficient envelopes with resilient engineered and natural hardened against wildfire designs*
Distributed Energy Resource Integration	*Supports DERs and microgrids in fire-prone zones*
Transportation Electrification	*Potential extension to EV infrastructure resilience*
Net Zero Carbon Emissions and Role of Gas	*Enables sustained decarbonization in high-risk areas.*

About EPIC

The CEC is one of four EPIC administrators, funding research, development, and demonstrations of clean energy technologies and approaches that will benefit electricity ratepayers of California's three largest investor-owned electric utilities.

EPIC is funded by California utility customers under the auspices of the California Public Utilities Commission.

To learn more about EPIC, visit: https://www.energy.ca.gov/programs-and-topics/programs/electric-program-investment-charge-epic-program

EPIC 5 documents and event notices will be posted to: https://www.energy.ca.gov/proceeding/electric-program-investment-charge-2026-2030-investment-plan-epic-5

Subscribe to the EPIC mailing list to stay informed about future opportunities to inform the development of EPIC 5: https://public.govdelivery.com/accounts/CNRA/signup/31897

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i See section (a) (1) of Public Resources Code 25711.5 at: https://leginfo.legislature.ca.gov/faces/codes_displaySection.xhtml?lawCode=PRC&sectionNum=25711.5.

ii EPIC innovations should improve the safety of operation of California's electric system in the face of climate change, wildfire, and emerging challenges.
iii EPIC innovations should increase the reliability of California's electric system while continuing to decarbonize California's electric power supply.
iv EPIC innovations should fund electric sector technologies and approaches that lower California electric rates and ratepayer costs and help enable the equitable adoption of clean energy technologies.
v EPIC innovations should continue to reduce greenhouse house gas emissions, criteria pollutant emissions, and the overall environmental impacts of California's electric system, including land and water use.
vi EPIC innovations should increasingly support, benefit, and engage disadvantaged vulnerable California communities (DVC). (D.20-08-046, Ordering Paragraph 1.) DVCs consist of communities in the 25 percent highest scoring census tracts according to the most recent version of the California Communities Environmental Health Screening Tool (CalEnviroScreen), as well as all California tribal lands, census tracts with median household incomes less than 60 percent of state median income, and census tracts that score in the highest 5 percent of Pollution Burden within CalEnviroScreen, but do not receive an overall CalEnviroScreen score due to unreliable public health and socioeconomic data.
vii In 2024 the CPUC adopted five Strategic Goals to guide development of the EPIC 5 Investment Plan. A description of the goals can be seen in Appendix A of CPUC Decision 24-03-007 available at:
https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M527/K228/527228647.PDF