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California agrivoltaics resource center EPIC 5 concept proposal

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.

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:

Kathryn Beros
kathryn@kapindustry.com
(510) 473-5277

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

KAP Industry

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?

The California agrivoltaics resource center is a statewide initiative designed to accelerate the adoption of agrivoltaics, the strategic co-location of solar energy generation and storage with active agricultural production. The project will close critical information and resource gaps that currently limit farmers, developers, and policymakers from pursuing agrivoltaics projects at scale within California.

Through the resource center we will:

- Provide a publicly available digital feasibility screening tool that integrates agronomic and technical criteria so farmers can assess project viability quickly and accurately.
- Establish a verified partner network of developers, agronomists, and technical service providers to reduce market fragmentation.
- Develop and operate regional demonstration sites on working farmland to generate performance data, build community acceptance, and showcase successful project models.
- Coordinate statewide research to amplify reach and impact through comparable techniques.

The resource center builds on an earlier feasibility tool created through a Columbia University research project with the City of Bakersfield, and will be expanded through partnerships with researchers within the UC and Cal Poly systems. EPIC funds are essential to establish the statewide platform, deploy demonstration projects, develop community building programs, and deliver the technical guidance needed to advance California's clean energy and climate resilience goals.

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)?

The California agrivoltaics resource center supports SB 96 by directly addressing technical, market, and policy barriers to distributed renewable energy deployment on agricultural land.

Barrier type	**Barrier description**
Technical	Lack of integrated, regionally relevant, site-specific data that combines solar resource assessment with agronomic suitability

Market	High soft costs, fragmented development processes, and limited access to qualified partners
Policy	Uncertainty regarding Williamson Act compatibility and inconsistent local zoning/permitting approaches
Perception	Farmer skepticism and community concerns due to lack of local examples

Barrier	**Response**
Lack of regional data	• Regional research on energy and agricultural production including yield quantity and quality, soil moisture retention, and soil health • Case studies on operational integration best practices
High soft costs (site identification & control, permitting & land use approvals, interconnection studies, community engagement)	• Reduce the need for $10-25k feasibility studies through a public site suitability tool • Reduce the dependence on 3rd party providers through standardized permitting templates for verified agrivoltaics projects
Limited access to qualified partners	• Reduce development timelines by providing immediate access to vetted technical partners
Uncertainty regarding zoning and permitting approaches	• Reduce permitting timeline by providing ready to use permitting materials • Provide data and guidance to inform verified agrivoltaics permitting requirements
Low confidence	• De-risk projects through published research collected from local demonstration sites • Increase community acceptance through demonstration sites and outreach events

The resource center will de-risk projects and reduce costs and timelines for development by providing tool-based site screening, centralized partner connections, and tangible examples for education and training.

Key targets:

- Reduced ratepayer costs
    - Reduced development timelines
    - Reduced development soft costs
- Defined pathways for agrivoltaics deployment
    - Demonstration of integration with key California crops
    - Permitting and zoning guidance

Key beneficiaries:

- Landowning farmers
- Rural communities

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]

If successful the California agrivoltaics resource center will:

- Enable at least three new agrivoltaics demonstration projects within 2 years post launch
- Validate solar and agriculture performance data across at least three climatic zones
- Inform regional and statewide planning efforts with open-source research and modeling
- Foster public acceptance through site tours, educational field days, and stakeholder engagement

Ratepayer benefits:

Reliability & resilience	Expands distributed generation capacity in rural and agricultural regions
Affordability	Lower project costs through reduced soft costs Improved revenue through increased land use efficiencies
Environmental sustainability	Reduces agricultural water demand without fallowing land and supports ecosystem services such as pollinator habitat and aquifer recharge
Equity	Creates new income opportunities for small and mid-scale farmers while maintaining agricultural productivity

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

Quantitative Metrics:

- Number of feasibility tool users and completed site assessments.
- Number and geographic spread of demonstration sites.
- Reduction in average predevelopment costs (target: 30–50%).
- Measured solar output and agricultural yield data from demonstration sites.

Qualitative Metrics:

- Survey results measuring farmer and developer satisfaction.
- Instances of local or state policy adoption informed by resource center research.
- Event attendance and engagement through tours, workshops, and public briefings.

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.

- NREL InSPIRE Project – U.S. DOE initiative on agrivoltaics and land co-benefits: https://openei.org/wiki/InSPIRE
- Colorado Agrivoltaics Learning Center – Regional demonstration and education site: https://www.coagrivoltaic.org
- AgriSolar Clearinghouse (NCAT) – National knowledge hub on agrivoltaics: https://www.agrisolarclearinghouse.org
- University of Arizona Agrivoltaics Research – Barron-Gafford et al. (2019), Nature Sustainability: https://www.nature.com/articles/s41893-019-0364-5
- DOE Solar Futures Study (2021) – U.S. Department of Energy: https://www.energy.gov/sites/default/files/2021-09/Solar%20Futures%20Study.pdf
- Williamson Act Land Conservation Program (CA DOC) – Land use and solar compatibility: https://www.conservation.ca.gov/dlrp/lca
- Market analysis of Agrivoltaics in Kern County – Columbia University study for the City of Bakersfield (2024): https://www.sustainability.ei.columbia.edu/_files/ugd/92e3aa_993501683d0b41b68b9e6545b2d3bf1d.pdf

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.

Amplifying an approach that addresses both energy generation and agricultural productivity, the resource center advances multiple EPIC strategic goals while fostering equitable participation in California's clean energy transition.

Distributed energy resource integration	The resource center enables solar deployment integrated with working farmland, reducing land-use conflicts and promoting community-compatible DER growth. It equips farmers and developers with feasibility data, trusted partners, and demonstrated success cases to scale agrivoltaics.
Climate adaptation	Demonstration sites illustrate agrivoltaics as an agricultural adaptation to increasing heat stress by reducing water demand and diversifying farm income.
Building decarbonization	Supports farm electrification by bringing energy capacity on-site.

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