

DOCKETED

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ELECTRIC PROGRAM INVESTMENT CHARGE 2021-2025 (EPIC 4) RESEARCH CONCEPT PROPOSAL FORM

The CEC is currently soliciting research concept ideas and other stakeholder input for the EPIC 4 Investment Plan. For those who would like to submit an idea for consideration, we ask that you complete this form and submit it to the CEC by 5:00 p.m. on **July 2, 2021**.

To submit the form, please visit the e-commenting [link](https://efiling.energy.ca.gov/Ecomment/Ecomment.aspx?docketnumber=20-EPIC-01), <https://efiling.energy.ca.gov/Ecomment/Ecomment.aspx?docketnumber=20-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 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:

Kelly Kissock, jkissock@ucdavis.edu, 937-229-4785

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

Energy and Efficiency Institute, University of California-Davis

3. Please provide a brief description of the proposed concept you would like the CEC to consider as part of the EPIC 4 Investment Plan. What is the purpose of the concept, and what would it seek to do?

CO2 emissions per unit kWh are highly correlated with CAISO wholesale electrical generation costs. Real time pricing rate structures could incentivize industry to modify demand to achieve cost savings and CO2 emission reductions. To unlock this potential, research on industrial demand flexibility in response to real time rates, industrial decision making in response to demand flexibility, and identifying industrial sectors with demand flexibility enabling production capacitance.

4. In accordance with Senate Bill 96, 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 technologies? 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, what

data and information gaps would the proposed concept help fill, what specific stakeholders will use the results, and for what purpose(s)?

The proposed project will lead to technological and behavior breakthroughs that currently limit the state's fulfillment of industrial decarbonization and grid resilience goals. It would do so by helping define the potential for industry to modify demand in response to real time pricing or other price signals. It would identify behavioral barriers to industrial demand flexibility. It would identify key industrial sectors that have the greatest demand flexibility potential based on the capacitance in their manufacturing processes. It would create technology to understand demand flexibility based on manufacturing capacitance.

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 costs and/or increase performance to improve the overall value proposition of the technology? What is the potential of the technology at scale?

Successful completion of this research would help unlock the potential to improve industrial resilience in the face of electrical supply interruptions, improve grid resilience, reduce renewable energy curtailment, improve industrial cost competitiveness, and help the state achieve CO2 emission reduction goals. Because of the magnitude of industrial electrical demand and the inherent manufacturing capacitance of key industrial sectors, this technology has the potential to help achieve large scale impacts on state, industrial and electrical grid goals.

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

Metrics include the magnitude of the potential CO2 emission reductions, magnitude of demand flexibility, identification of key sectors and identification of key behavioral barriers.

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

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