

DOCKETED

Docket Number:	25-EPIC-01
Project Title:	Electric Program Investment Charge 2026–2030 Investment Plan (EPIC 5)
TN #:	265367
Document Title:	Electric Power Research Institute, Inc. (EPRI) Comments - Rate Design Concepts to Advance Electrification and Demand Flexibility
Description:	N/A
Filer:	System
Organization:	Electric Power Research Institute, Inc. (EPRI)
Submitter Role:	Public
Submission Date:	8/7/2025 11:40:25 AM
Docketed Date:	8/7/2025

Comment Received From: Electric Power Research Institute, Inc. (EPRI)
Submitted On: 8/7/2025
Docket Number: 25-EPIC-01

Rate Design Concepts to Advance Electrification and Demand Flexibility

Additional submitted attachment is included below.



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:

Omar Siddiqui, osiddiqui@epri.com, 650-575-2156

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

Electric Power Research Institute, Inc. (EPRI)

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?

“Rate Design Concepts to Advance Electrification and Demand Flexibility”

The structure of retail electricity pricing plans, including the relative contributions of fixed- and variable- charge components on the customer electricity bill, can profoundly impact California societal objectives such as decarbonization and grid reliability. For example, higher relative fixed charges coupled with lower volumetric energy charges theoretically incentivize electrification while disincentivize

investments in energy efficiency and renewable energy technologies. Conversely, lower fixed charges coupled with higher volumetric charges can have the opposite effect.

Moreover, time-varying rate structures such as time-of-use (TOU) pricing or varieties of dynamic pricing such as real time pricing (RTP) incentivize customers shift electricity usage from peak periods to off-peak periods to reduce grid congestion. This demand flexibility, in turn, can enhance grid reliability.

Objectives such as decarbonization and improved reliability are not mutually exclusive outcomes with respect to pricing design. For example, time-varying pricing structures can be designed not only to incentivize shifting customer load shifting to avoid grid congestion but also to periods when carbon-free supply is more available on the system to avoid curtailment and advance decarbonization.

This proposed concept would assess load shape impacts of pricing design choices. This would include how the design of time-varying rates, including such factors as the ratio of on-peak and off-peak pricing and temporal granularity of pricing tiers, corresponds to various load shaping impacts (e.g. peak load reduction, load shifting, valley filling, flexibility, etc.). The concept would also analyze the optimal balance of structural components bill components – e.g., fixed charges, energy charges, demand charges) – with respect to decarbonization based on impacts on the relative economics of electrification, energy efficiency, and behind-the-meter DER measures. Inherent in this concept is examining tradeoffs in the economics of customer adoption of end-use technologies and unintended consequences thereof.

4. In accordance with Senate Bill 96ⁱ, 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)?

We expect this proposed concept will lead to advancement to overcome barriers that are inhibiting the state from achieving its statutory energy goals by providing

pricing signals to more strongly align customer behavior with objectives of decarbonization, affordability, and reliability. Through a pilot that includes highly detailed customer surveys, the study would test multiple pricing structures to assess the optimal balance of fixed charges and time-varying volumetric energy and demand charge components on the customer bill, segmented by multiple customer classes.

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}

The anticipated direct outcome of this research concept is to influence the design of rates and pricing options available to customers of California's investor-owned utilities (IOUs) and other load serving entities in the state. Customer adoption of a greater variety of electricity pricing options tailored to motivate behavior changes can advance the objectives of: (a) improved affordability through customer bill savings, (b) enhanced reliability through induced load shifting, and (c) environmental sustainability through induced adoption of electrification and load shifting to periods of more abundant zero-carbon generation.

This research concept would inform IOU designs for a next generation of pricing offerings tailored to specific customer classes and segments to provide greater customers with more robust choices while advancing EPIC's statutory objectives for the state. An EPIC-funded pilot that studies customer preferences and uptake of multiple pricing designs tests the resultant impacts on customer bills and load profiles can mitigate uncertainty risks for IOUs in their design and rollouts of new pricing offerings to customers.

Rate options that include dispensations for low-income households, through mechanisms such as bill credits or income-graduated fixed charges, are aligned with the EPIC guiding principle of equity.

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

Metrics of evaluation for this proposed research project include:

- Customer adoption of rates and pricing options evidenced through surveys administered to pilot participants through proposed concept
- Load shaping impacts of pilot participants through meter data analysis and associated peak demand reduction, demand shifting, and marginal time-dependent decarbonization
- Impact on stated interest in adopting electrification, energy efficiency, and DER technologies and measures

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.

Publicly available references include:

- "Benchmarking Study of U.S. Regulated Utility Real Time Pricing Programs, Architecture and Design: Final Report". EPRI. 3002021204. March 2021.
- "Customer Perception of Real-Time Pricing: Survey Findings from Southern California Edison Residential Customers". EPRI. 3002022337. May 2021.
- "Customer Perception of Real-Time Pricing: Survey Findings from Southern California Edison Small Business Customers". EPRI. 3002022338. May 2021.

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.

This proposed concept would support the goals of Transportation Electrification, DER Integration, and Building Decarbonization. Optimized design of electricity rates and pricing structures can provide economic signals and incentives to

motivate customer behavior with respect to technology adoption and energy usage.

Electricity pricing structures that feature lower energy charges (compared to baseline rates) incentivize electrification in both the Transportation and Buildings segments. Adding a time-varying element to these energy charges, whether in block TOU structures or more temporally granular and dynamic structures (such as hourly real-time pricing) coupled with advanced notification and automation technology can enable customers to optimize their electricity usage for economic savings. This is particularly compelling for end-uses applications like electric vehicle (EV) charging, for which the customer can exercise discretion in when to charge based on convenience and economic benefit. Technology that enables automated managed EV charging can help customers take advantage of lower pricing during periods of reduced grid congestion and/or higher availability of zero-carbon generation.

This concept aims to not only test multiple designs of the time-varying energy charges but also optimize the relative contribution of fixed- and variable components on the customer electricity bill to ensure equitable cost recovery for utilities.

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>

i See section (a) (1) of Public Resources Code 25711.5 at:

https://leginfo.legislature.ca.gov/faces/codes_displaySection.xhtml?lawCode=PRC§ionNum=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>