

DOCKETED

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Impact of accelerated energy tax credit phase out on offshore wind power purchase agreement pricing

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:

Daniel Mulas Hernando, Daniel.MulasHernando@nrel.gov, 720-829-0629

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

National Renewable Energy Laboratory (NREL)

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?

California’s ability to deploy offshore wind (OSW) at scale—and meet its 2045 net-zero target—is at risk due to the accelerated federal energy tax credit phase-out under the One Big Beautiful Bill Act (OBBBA), signed July 4, 2025. This policy change could significantly increase project uncertainty, raise PPA prices, and slow market momentum at a critical stage of industry development.

We propose to develop and apply advanced, California OSW-specific financial models to quantify the impact of the tax credit phase-out on offshore wind project viability, financing terms, and PPA pricing. The analysis will integrate common financing structures, investor return requirements, debt service requirements, and market revenue scenarios—including wholesale, capacity, and value from two-sided Contract for Difference (CfD) arrangements—using open-source tools tailored to a representative California floating offshore wind site and project.

EPIC funding is essential because this work requires an independent, state-focused, and publicly accessible framework that is not tied to a single project developer. The resulting models and datasets will be reusable across other clean energy technologies facing tax credit sunsets, ensuring a long-term public benefit and providing state agencies, developers, and financiers with actionable insights to safeguard offshore wind competitiveness.

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)?

This research directly addresses a critical market barrier: uncertainty about how evolving federal tax policy interacts with financing structures, investor return thresholds, and California's offshore wind market design. Without this clarity, project sponsors face higher perceived risk, which can lead to increased financing costs, delayed projects, or even auction failures.

By creating a set of enhanced financial and revenue modeling tools—incorporating factors such as tax equity internal rate of return targets, sponsor cost of equity, debt service coverage and sensitivity to auction mechanisms—the project will fill major data and analysis gaps. Stakeholders will gain visibility into:

- The revenue stability of offshore wind projects under different incentive and market designs.
- The investor return and cost thresholds that enable sustainable development despite federal tax credit phase-outs.
- The relative effectiveness of policy and market interventions in mitigating risk.

The outputs will be usable by California Energy Commission staff, CPUC planners, developers, lenders, and policymakers to design strategies that keep offshore wind economically viable while maintaining affordability for ratepayers. By making the models open-source, the approach will also be transferable to other technologies such as solar, geothermal, and storage—extending the value of EPIC investment beyond offshore wind.

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, this research will deliver:

- **Lower risk premiums and financing costs** for offshore wind projects by providing clarity on revenue and policy impacts.
- **Actionable policy insights** that enable California to adjust auction design, contracting mechanisms, or state-level incentives to counteract federal tax credit phase-out effects.
- **Ratepayer savings** from avoided cost increases—potentially hundreds of millions of dollars over the lifetime of the state’s offshore wind buildout—by sustaining competitive PPA pricing.
- **Replicable analytical frameworks** that can guide other clean energy sectors through similar policy transitions.

These outcomes will help ensure that offshore wind contributes reliably to California’s clean energy mix, bolsters grid reliability, and advances equitable access to zero-carbon power—all in alignment with EPIC’s strategic goals.

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

The impacts of the proposed research will be assessed using a combination of quantitative and qualitative metrics, including:

- Change in PPA pricing under different tax credit policy and financing scenarios.
- Modeled capital structures and under multiple thresholds like returns for developers and/or tax equity investors.
- Distribution of revenues across wholesale and capacity markets, and the value of the contractual mechanism, and tax credits (when applicable).
- Benchmarking of capital and operating cost assumptions against industry data for California floating offshore wind.
- Direct stakeholder feedback on the utility of the models and findings.
- Evidence of uptake in policy design and procurement strategies.

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.

- Beiter, P., et al. (2021). “*Levelized Revenue and Value of Electricity (LRVE): A metric for assessing renewable energy project revenue streams*”.
- National Renewable Energy Laboratory (NREL). *System Advisor Model (SAM)*.
- International Energy Agency Wind Technology Collaboration Program Task 49 on Integrated Design on Floating wind Arrays.
- International Energy Agency Wind Technology Collaboration Program Task 53 on Wind Energy Economics.
- National Renewable Energy Laboratory (NREL). *ORBIT: Offshore Renewables Balance-of-System Tool*.
- National Renewable Energy Laboratory (NREL). *WOMBAT: Windfarm Operations and Maintenance cost-Benefit Analysis Tool*.

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 concept primarily supports (d) Achieving 100 Percent Net-Zero Carbon Emissions and the Coordinated Role of Gas. Offshore wind is a critical renewable resource to meet California's ambitious net-zero carbon goals. This concept directly facilitates OSW deployment by clarifying the financial impacts of tax credit phase-out and identifying pathways to maintain project competitiveness. This supports the broader energy transition by reducing reliance on fossil fuels and coordinating renewable integration with gas infrastructure.

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>