DOCKETED	
Docket Number:	25-EPIC-01
Project Title:	Electric Program Investment Charge 2026–2030 Investment Plan (EPIC 5)
TN #:	268664
Document Title:	Earthjustice Comments - Earthjustice Comments on EPIC 5 Investment Plan Prioritization
Description:	N/A
Filer:	System
Organization:	Earthjustice
Submitter Role:	Public
Submission Date:	2/17/2026 10:57:23 PM
Docketed Date:	2/18/2026

Comment Received From: Earthjustice
Submitted On: 2/17/2026
Docket Number: 25-EPIC-01

Earthjustice Comments on EPIC 5 Investment Plan Prioritization

Additional submitted attachment is included below.

EARTHJUSTICE

February 17, 2026

California Energy Commission
Docket: 25-EPIC-01
715 P Street
Sacramento, CA 95814

Via Electronic Submittal

Re: Comments on the Proposed Research Concepts for the Electric Program Investment Charge 2026-2030 Investment Plan (EPIC 5)

Dear Commissioners and EPIC Staff,

On behalf of Earthjustice, we submit comments on the proposed research concepts for the Electric Program Investment Charge 2026-2030 Investment Plan (EPIC 5). We acknowledge the critical role EPIC 5 will play in advancing innovative solutions across California, particularly those that address our air quality crisis, accelerate clean energy deployment, and help meet climate goals. To honor its "mandatory guiding principle" of providing ratepayer benefits, EPIC 5 must invest in solutions that provide "equitable access to safe, affordable, reliable, and environmentally sustainable energy."[1] We urge the California Energy Commission (CEC) to prioritize research concepts that catalyze the development of zero-emission technologies and strategies, and to avoid proposals with harmful and costly implications for ratepayers, such as those that extend the State's reliance on polluting fuels.

I. EPIC 5 Investments Must Align with California's Air Quality Requirements.

More than ever, California must make strategic investments to meet health-based air quality standards. Recent federal attacks on programs, funding, and state authority will have significant consequences on California's ability to achieve its climate, air quality, and equity goals. According to the California Air Resources Board (CARB), the federal actions to limit and roll back regulations will result in an increase of 175 tons per day of nitrogen oxides (NOx) across

[1] The Accelerate Group, "EPIC Strategic Objectives Workshop Report EPIC POLICY + INNOVATION COORDINATION GROUP," at 3 (July 2024), https://epicpartnership.org/resources/Strat_Obj_Revision_7_9.pdf.

the state in 2037.[2] Over the lifetime of the impacted regulations, the federal actions will be responsible for more than 14,500 additional cardiopulmonary deaths, 5,000 additional hospitalizations for cardiovascular and respiratory illness, and 6,700 additional emergency room visits.[3] Furthermore, increased diesel particulate emissions will cause millions of additional cancers in environmental justice communities like East Los Angeles, Boyle Heights, South Central Fresno, and West Oakland.[4] Beyond their direct adverse effects on human health, the federal actions undermine CARB's capacity to meet required commitments in the State Implementation Plan (SIP). Failure to meet the National Ambient Air Quality Standards can result in severe sanctions and consequences, including the implementation of contingency measures, revisions to the SIP, increased offset ratios for permitting, and the loss of billions of dollars in federal highway funding.[5]

As the South Coast Air Quality Management District explained in 2022, the only way for California's most polluted air basin to achieve the required emission reductions is "through extensive use of zero-emission technologies across all stationary and mobile sources."[6] Therefore, we urge EPIC 5 to prioritize investments in zero-emission strategies across the State's most polluting sectors (i.e., transportation, industrial, and buildings) to promote measurable emissions reductions. Selected EPIC 5 research concepts should help deliver cleaner air to the millions of ratepayers funding the program. More specifically, as required by the California Public Utilities Commission (CPUC), EPIC 5 innovations must "support, benefit, and engage Disadvantaged Vulnerable Communities," many of which are breathing some of the worst air in the country.[7]

II. The Commission Should Prioritize Research Concepts that Accelerate Electrification while Protecting Ratepayers from Unnecessary Cost Increases.

We support the consideration of research concepts that promote electrification and increase equitable access to clean energy technologies such as electric vehicles and heat pumps. It is important for EPIC 5 to invest in solutions that will facilitate the delivery of affordable electricity during the current affordability and air quality crises. For example, we strongly

[2] California Air Resources Board, "Annual Update on California State Implementation Plans," at 18, (October 2025), https://ww2.arb.ca.gov/sites/default/files/barcu/board/books/2025/102325/25-7-2pres.pdf.
[3] Ibid. at 19.
[4] Ibid. at 20.
[5] Ibid. at 21.
[6] South Coast Air Quality Management District, 2022 Air Quality Management Plan, (December 2022), http://www.aqmd.gov/docs/default-source/clean-air-plans/air-quality-management-plans/2022-air-quality-management-plan/final-2022-aqmp/final-2022-aqmp.pdf?sfvrsn=16.
[7] California Public Utilities Commission, "Energy Division Staff Proposal Identifying Strategic Objectives and Criteria to Guide the Electric Program Investment Charge (EPIC) Program," Appendix-1, at 8, (February 2025), https://docs.cpuc.ca.gov/PublishedDocs/Efile/G000/M558/K340/558340127.PDF.

encourage the Commission to consider the research concept submitted by the Electric Power Research Institute (EPRI) that proposes advancing the design and integration of low-cost, electricity-driven high-temperature heat pumps (≥300 °F) for industrial applications that traditionally rely on fossil-fuel-fired process heating.[8] A development of this kind can not only enable higher-temperature applications but also reduce capital and operating costs associated with switching to electric equipment while simultaneously reducing emissions. Additionally, the successful deployment of these industrial heat pumps can benefit all ratepayers by integrating thermal energy storage and load flexibility, helping manage electricity demand, support grid reliability, and reduce system costs. These attributes align well with EPIC 5's emphasis on solutions that not only reduce emissions but also enhance grid efficiency and affordability. Furthermore, investment in higher-temperature heat pump technologies can position California at the forefront of clean industrial innovation.

Another research concept worth highlighting proposes evaluating non-export, behind-the-meter solar and battery storage systems to avoid costly electrical panel upgrades.[9] Raya Power's concept addresses a practical barrier to residential electrification: the cost and complexity of service panel upgrades, which can delay or prevent adoption of electric vehicles (EVs), heat pumps, and other building electrification measures. The proposal both reduces greenhouse gas and pollutant emissions—by enabling households to draw more energy from renewable sources—and reduces total costs for consumers, particularly for low- and moderate-income households who might otherwise face prohibitive upgrade costs. It is important that EPIC 5 funds projects that generate scalable, replicable solutions that prioritize residential electrification in low-income communities across California.

III. Biomethane Proposals Risk Locking California into Polluting Fuels with Dubious Climate Benefits.

Certain forms of biomethane and hydrogen can be just as polluting, or even more polluting, than fossil fuels. EPIC 5 should avoid locking in additional funding for biomethane and hydrogen derived from methane, given that they emit harmful emissions when produced and combusted as fuel, risk contributing to habitat loss, pollute water resources during production and use, and could divert significant investments from zero-emission solutions across the State.

[8] Electric Power Research Institute, "Industrial Heat Pumps," California Energy Commission, Electric Program Investment Charge 2026–2030 Investment Plan (EPIC 5), Docket No. 25-EPIC-01, TN 265366, (August 2025), https://efiling.energy.ca.gov/GetDocument.aspx?tn=265366&DocumentContentId=102218.

[9] Raya Power Inc., "Avoid Breaker Panel Upgrades with Solar and Storage for Self-Consumption," California Energy Commission, Electric Program Investment Charge 2026–2030 Investment Plan (EPIC 5), Docket No. 25-EPIC-01, TN 265518, (August 2025), https://efiling.energy.ca.gov/GetDocument.aspx?tn=265518&DocumentContentId=102368.

For example, we urge the CEC to reject West Biofuels' proposal to fund biomass conversion technologies that use forest biomass as a feedstock to produce hydrogen and so-called "renewable" natural gas.[10] As the Center for Biological Diversity explains,[11] West Biofuel's research concept submitted for EPIC 5 funding has the same fundamental shortcomings as a previous pilot project denied by the CPUC in 2025.[12] Inconsistent with EPIC's electrification goals and in contrast to previously funded biomass projects that generate electricity, their proposal primarily focuses on methane production.[13] Methane produced from biomass gasification and pyrolysis can be greenhouse-gas positive and will emit pollution throughout the supply chain.[14] We oppose directing EPIC 5 funds to biomass and biomethane projects, particularly West Biofuels' proposed biomass conversion project, given their incompatibility with EPIC Objectives, the associated environmental and public health concerns, and the questionable climate benefits.

IV. Hydrogen Proposals that Fail to Reduce Emissions and that Direct Hydrogen to Inappropriate End Uses Do Not Warrant the Commission's Support.

The Commission should proceed with caution when evaluating hydrogen proposals and reject those of Advanced Combustion Technologies ("ACT") and Greenumerix because they contemplate emitting forms of hydrogen production and propose to direct hydrogen to the

[10] West Biofuels, LLC, " Carbon Negative Pathways for Production of Green Hydrogen and Renewable Natural Gas from Forest Biomass," California Energy Commission, Electric Program Investment Charge 2026–2030 Investment Plan (EPIC 5), Docket No. 25-EPIC-01, TN 265429, (August 2025), https://efiling.energy.ca.gov/GetDocument.aspx?tn=265429&DocumentContentId=102284.

[11] Center for Biological Diversity, "Comment Regarding West Biofuels, LLC EPIC 5 application," California Energy Commission, Electric Program Investment Charge 2026–2030 Investment Plan (EPIC 5), Docket No. 25-EPIC-01, TN 267640, (November 2025), https://efiling.energy.ca.gov/GetDocument.aspx?tn=267640&DocumentContentId=104660.

[12] CPUC Decision 25-05-003 on Application 23-06-023, "DECISION DENYING PG&E'S WOODY BIOMASS PILOT PROJECT APPLICATION," (May 2025), https://apps.cpuc.ca.gov/apex/f?p=401:56::::RP,57,RIR:P5_PROCEEDING_SELECT:A2306023.

[13] Center for Biological Diversity, "Comment Regarding West Biofuels, LLC EPIC 5 application," at 1.

[14] *See* Emily Grubert, At Scale, Renewable Natural Gas Systems Could be Climate Intensive: The Influence of Methane Feedstock and Leakage Rates, Envtl. Research Letters (Aug. 2020), https://doi.org/10.1088/1748-9326/ab9335 (finding that unless total system leakage is zero, methane intentionally produced from biomass when it would not have otherwise existed is always GHG positive, even if the underlying feedstock is presumed to be from climate-neutral CO2 sources.); CPUC, Decision Denying Wood Biomass Application of Pacific Gas & Electric Company, at 13-14 (May 2025), https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M566/K975/566975547.PDF. (summarizing unrefuted record evidence of emissions impacts of woody-biomass-to-methane project proposal); California Public Advocates, Opening Brief on Pacific Gas & Electric Company's Application for Approval of Application for Woody Biomass to Renewable Natural Gas Pilot Project, at 6-11 (May 8, 2024), https://docs.cpuc.ca.gov/PublishedDocs/Efile/G000/M531/K577/531577218.PDF (detailing emissions increases from transportation of biomass to gasification facility and upstream emissions from hydrogen production).

transportation and electric power sectors, which are uneconomic end uses for zero-carbon hydrogen.[15,16]

Producing hydrogen from fossil fuels emits greenhouse gases as well as a wide range of other health-harming pollutants, such as NOx and volatile organic compounds.[17] While hydrogen produced via electrolysis avoids criteria pollutants, it can be even more carbon-intensive than steam methane reformation if the electrolysis is powered by grid-average electricity.[18] Thus, to provide climate benefits and be truly "green," the production of electrolytic hydrogen must include three key requirements (widely referred to as the "three pillars"): (1) electrolysis powered by new renewable resources, (2) electrolyzer loads that match the clean electricity profile every hour; and (3) clean electricity production in the same grid balancing region.[19,20,21] Unfortunately, the ACT proposal lacks these critical features, while incorrectly touting its hydrogen as "green." For its part, Greenumerix fails to specify the method of hydrogen production that would be used to power its proposed fuel cell technology, leaving open the possibility that carbon-intensive hydrogen could be used. On this basis alone, we urge the Commission to reject both proposals and to indicate that all hydrogen proposals should include the three pillars of green hydrogen production.

---

[15] Advanced Combustion Technologies, Inc, "Advanced Combustion Technologies, Inc. Comments - 25-EPIC-01 Application Submission- Advanced Combustion Technologies, inc," California Energy Commission, Electric Program Investment Charge 2026–2030 Investment Plan (EPIC 5), Docket No. 25-EPIC-01, TN 265469 and TN 265470, (August 2025), https://efiling.energy.ca.gov/GetDocument.aspx?tn=265470&DocumentContentId=102318.

[16] Greenumerix, "Greenumerix Comments - Electrifying Transportation with Hydrogen," California Energy Commission, Electric Program Investment Charge 2026–2030 Investment Plan (EPIC 5), Docket No. 25-EPIC-01, TN 265406, (August 2025), https://efiling.energy.ca.gov/GetDocument.aspx?tn=265406&DocumentContentId=102256.

[17] Pingping Sun et al., Criteria Air Pollutants and Greenhouse Gas Emissions from Hydrogen Production in U.S. Steam Methane Reforming Facilities, Environ. Sci. Technol (Apr. 2019) https://doi.org/10.1021/acs.est.8b06197; *see also* Sasan Saadat et al., Reclaiming Hydrogen for a Renewable Future, at 10-11 (Aug. 2021), https://earthjustice.org/wp-content/uploads/hydrogen_earthjustice_2021.pdf (describing the emissions impacts of steam methane reformation).

[18] Earthjustice, "Reclaiming Hydrogen for a Renewable Future," (November 2021), https://earthjustice.org/wp-content/uploads/hydrogen_2_pager_federal_final-1-14-22.pdf (citing California Air Resources Board, *LCFS Life Cycle Analysis Models and Documentation*, https://ww2.arb.ca.gov/resources/documents/lcfs-life-cycle-analysis-models-and-documentation).

[19] Evolved Energy Research, "45V Tax Credit: Three-Pillars Impact Analysis," (June 2023), https://www.evolved.energy/post/45v-three-pillars-impact-analysis.

[20] American Clean Power, "ACP Framework 3 Pillars for Building a Green Hydrogen Industry for Decarbonization," (June 2023), https://cleanpower.org/gateway.php?file=2023/06/ACP_GreenHydrogenFramework_OnePager.pdf.

[21] Wilson Ricks et al., *Minimizing emissions from grid-based hydrogen production in the United States*, Env't Rsch. Letters (Jan. 6, 2023), at 7–8, https://iopscience.iop.org/article/10.1088/1748-9326/acacb5/pdf (finding that an hourly matching requirement is necessary to avoid spiking pollution on the power grid from electrolytic hydrogen production).

The Commission should also reject proposals like Greenumerix's and ACT's because they contemplate hydrogen end uses that are uneconomic and inconsistent with California's decarbonization goals. For instance, Greenumerix's pitch rests on the incorrect assumption that the use of hydrogen fuel cells in trucking is a cost-effective means of achieving California's climate goals.[22] In fact, recent data indicate a smaller economic role for hydrogen than analysts had predicted just a few years ago. For example, independent analysts at Det Norske Veritas (aka DNV) estimated in 2024 that hydrogen would provide just 1% of on-road energy demand by 2050—a dramatic downward revision from its 2023 projection that hydrogen would provide about 3% of on-road energy by midcentury.[23] The UK Climate Change Committee ("UKCCC") also commissioned an economic analysis of competing options for decarbonizing vehicles and concluded that "there will be no hydrogen cars or vans, and very little or potentially even no role for hydrogen in heavier vehicles."[24] California's past modeling efforts have overestimated the potential market for fuel cell vehicles[25] and underestimated the potential for battery electric vehicles.[26] A credible forecast of the role of hydrogen in the transportation sector must compare the total cost of ownership of hydrogen and battery electric vehicles, accounting for fueling, vehicle costs, and maintenance costs. Battery electric vehicles out-compete hydrogen options in

[22] Greenumerix, "Greenumerix Comments - Electrifying Transportation with Hydrogen," California Energy Commission, Electric Program Investment Charge 2026–2030 Investment Plan (EPIC 5), Docket No. 25-EPIC-01, TN 265406, (August 2025), https://efiling.energy.ca.gov/GetDocument.aspx?tn=265406&DocumentContentId=102256.

[23] Leigh Collins, DNV slashes forecast for hydrogen use in road transport amid advances in battery-electric trucks, Hydrogen Insight (Oct. 17, 2024), https://www.hydrogeninsight.com/transport/dnv-slashes-forecast-for-hydrogen-use-in-road-transport-amid-advances-in-battery-electric-trucks/2-1-1725398.

[24] UKCCC Seventh Carbon Budget at 146, https://www.theccc.org.uk/wp-content/uploads/2025/02/The-Seventh-Carbon-Budget.pdf. The supporting documents for this report include ERM, ZEV HDV Uptake Trajectories: Modeling Assumptions (2024), https://www.theccc.org.uk/wp-content/uploads/2025/02/ZEV-HDV-uptake-trajectories-ERM.pdf.

[25] For instance, when CARB adopted the first Advanced Clean Cars rule in 2012, it estimated cumulative sales of light-duty FCEVs to reach 56,844 by 2022. In the 2017 midterm review for the rule, CARB estimated that cumulative sales of light-duty FCEVs would reach 35,083 by 2022. CARB, 2017 ZEV Calculator Tool *available at* https://ww2.arb.ca.gov/resources/documents/2017-midterm-review-report. However, just 11,897 light-duty FCEVs were on the road in California at the end of 2022. CEC, Light-Duty Vehicle Population in California, https://www.energy.ca.gov/data-reports/energy-almanac/zero-emission-vehicle-and-infrastructure-statistics/light-duty-vehicle. In its 2022 Advanced Clean Cars II rulemaking, CARB found that California could achieve 100% sales of zero-emission light-duty vehicles with just 2.8% sales of FCEVs. CARB, Final Statement of Reasons for Rulemaking for the Advanced Clean Cars II Regulations, Appendix F at 7 (August 2022).

[26] In 2019, the International Energy Agency's annual Electric Vehicle Outlook estimated EVs would make up 9% of global car sales by 2025. By 2022, they revised that estimate to 15% by 2025. In April 2023, they announced that EV sales shares are set to reach 18% this year. Hannah Ritche, "Electric Cars are the New Solar: People Will Underestimate How Quickly They Will Take Off" (May 7, 2023) https://www.sustainabilitybynumbers.com/p/ev-iea-projections; IEA, "Demand for electric cars is booming, with sales expected to leap 35% this year after a record-breaking 2022" (Apr. 26, 2023) https://www.iea.org/news/demand-for-electric-cars-is-booming-with-sales-expected-to-leap-35-this-year-after-a-record-breaking-2022.

all of the cost categories.[27] For instance, a recent study by the International Council on Clean Transportation surveyed a body of literature on vehicle price projections and found that battery electric vehicles would maintain a price advantage over hydrogen vehicles.[28] The study also found that battery electric vehicles will beat diesel trucks on price in these categories by 2040, but hydrogen vehicles would not. The sole vehicle category where hydrogen alternatives beat battery electric vehicles on price by 2040 was long-haul class 8 tractor trucks, and even in that category fuel cell vehicles achieved only a slightly advantageous retail price.[29] Given these data, the Commission should not direct scarce research funds to hydrogen fuel cell deployment in the transportation sector.

With respect to the power sector, the Commission should reject proposals like ACT's, which incorrectly states that the use of hydrogen in this sector is a viable path to reducing emissions. The evidence shows that this is not the case. Zero-carbon hydrogen is an expensive source of energy and therefore very unlikely to be a significant source of hydrogen demand, even in the long term, as evidenced by the 2022 Scoping Plan Update projecting **zero** hydrogen combustion in the electricity sector.[30] Burning zero-carbon hydrogen in turbines is an uneconomic strategy for meeting energy needs at scale because it involves inherent inefficiencies that the power sector can avoid by relying on other generation and storage technologies. For instance, producing green hydrogen and using it to power a combined cycle power plant is an energy storage strategy with a roundtrip efficiency of 25-36%, whereas compressed air energy storage has a roundtrip efficiency of 42-67%, vanadium flow batteries have a roundtrip efficiency of 65-80% and pumped hydro has a roundtrip efficiency of 70-85%.[31] As a result of this inefficiency, each megawatt hour ("MWh") of hydrogen is more expensive than a MWh from other energy storage media. A 2024 study estimated that a combined cycle unit operating on hydrogen would have a levelized cost of energy of $380/MWh, assuming hydrogen produced from renewable electricity that cost $30/MWh.[32] The same study estimated that battery storage (with a roundtrip efficiency of 90%) would have a levelized cost of energy of $170/MWh in the same scenario – a levelized

[27] Earthjustice. "Earthjustice Comments on Integrated Energy Policy Report Commissioner Workshop on Firm Zero-Carbon Resources and Hydrogen," (Aug. 19, 2025) at 7-9, https://efiling.energy.ca.gov/GetDocument.aspx?tn=265703&DocumentContentId=102544.
[28] Yihao Xie et al, ICCT, Purchase costs of zero-emission trucks in the United States to meet future Phase 3 GHG standards (March 2023) at 16–20, https://theicct.org/wp-content/uploads/2023/03/cost-zero-emission-trucks-us-phase-3-mar23.pdf.
[29] Ibid. at 22 (Fig. 17).
[30] CARB, AB 32 GHG Inventory Sectors Modeling Data Spreadsheet, "Electric Sector Combusted Fuels" Tab (showing no combustion of hydrogen in any year in the electric sector in either the Scoping Plan Scenario or the BAU Reference Scenario), available at https://ww2.arb.ca.gov/our-work/programs/ab-32-climate-change-scoping-plan/2022-scoping-plan-documents.
[31] Nestor A. Sepulveda et al., The design space for long-duration energy storage in decarbonized power systems, Nature Energy 6 506–16 (Mar. 2021), https://www.nature.com/articles/s41560-021-00796-8.
[32] Ghassam Wakin et al., Clean Air Task Force, Hydrogen in the Power Sector: Limited Prospects in a Decarbonized Electric Grid, at 23 (June 2024), https://cdn.catf.us/wp-content/uploads/2024/05/17132252/hydrogen-power-sector.pdf.

cost of energy less than half of the hydrogen-burning facility.[33] Policies that force utilities into hydrogen procurement would inappropriately spike bills for ratepayers, when California could be deploying more economic, clean, zero-carbon resources.

Costs aside, any investment in hydrogen blending risks increasing public health harms associated with NOx pollution. Studies show that NOx emissions from hydrogen-blended combustion in gas turbines can be significantly higher than those from turbines operating on gas alone. According to a study conducted by General Electric on its combustion turbines, a 50/50 mixture of hydrogen and fossil gas (by volume) increased concentrations of NOx in gas exhaust by 35%.[34] A 2020 report by a gas turbine industry association warned that these higher flame temperatures will produce more health-harming NOx emissions "if no additional measures are undertaken."[35] As the California Public Utilities Commission has observed, any combustion of hydrogen blends, regardless of the NOx control mechanisms employed, will continue to emit NOx pollution and other pollutants.[36] Meeting health-based air quality standards will require a widespread transition to zero-emission equipment for both large and small stationary sources in California's most polluted air basin.[37] Consequently, continuing to rely on fuel combustion for electricity generation is inconsistent with tens of millions of Californians breathing clean air.

Given the glaring problems with hydrogen combustion in the power sector, the Commission should exclusively support hydrogen applications that are zero-emissions to ensure that all investments are consistent with achieving national air quality standards and thus avoid stranded assets and exacerbation of California's air pollution crisis. For instance, companies are competing to offer large-scale fuel cells that can hasten electrification of the transportation sector by enabling high-power charging in remote locations or areas where lengthy grid-upgrades may

---

[33] Ibid.

[34] Jeffrey Goldmeer et al., Hydrogen as a Fuel for Gas Turbines, General Electric, at 3–4 (2021), https://www.ge.com/content/dam/gepower-new/global/en_US/downloads/gas-new-site/future-of-energy/hydrogen-fuel-for-gas-turbines-gea34979.pdf.

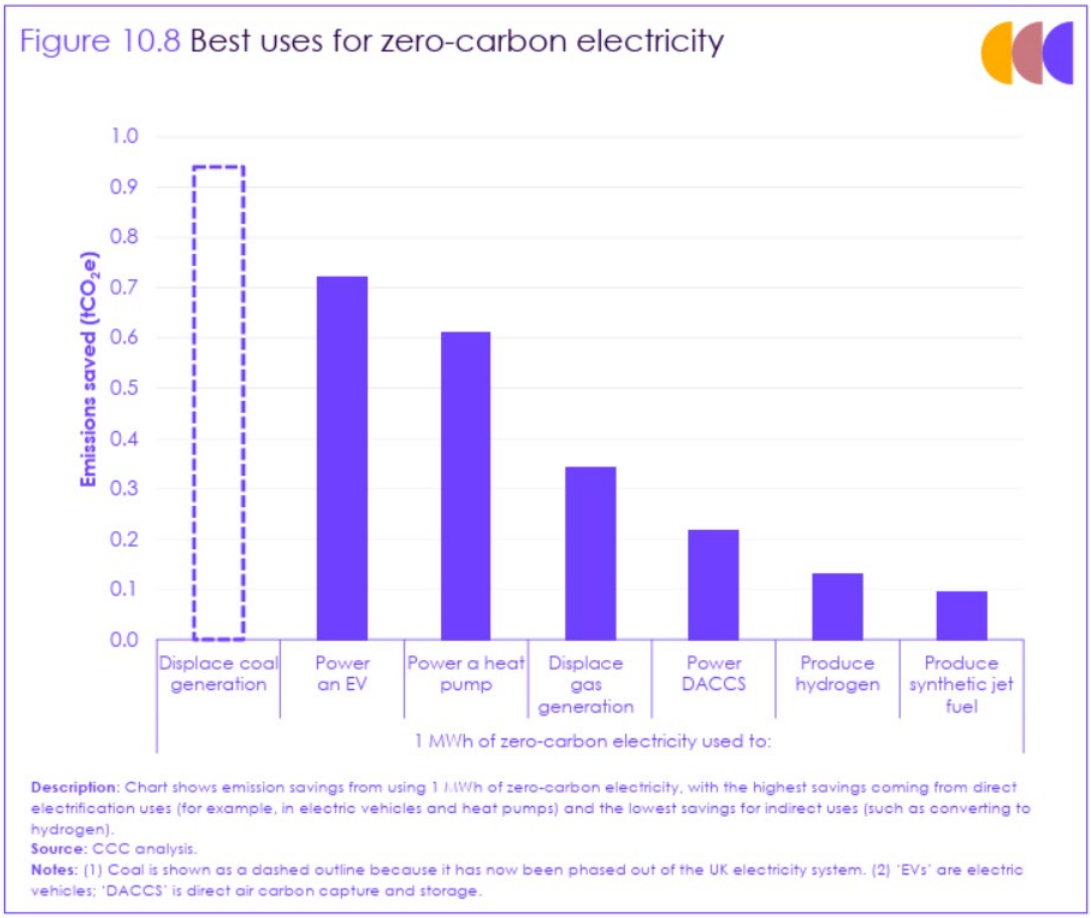
[35] Mirko Bothien et al., *Hydrogen Gas Turbines: The Path Towards a Zero-Carbon Gas Turbine*, European Turbine Network, at 9 (Jan. 2020), https://etn.global/wp-content/uploads/2020/01/ETN-Hydrogen-Gas-Turbines-report.pdf.

[36] California Public Utilities Commission, Inputs and Assumptions, at 99–100 (Oct. 2023), https://www.cpuc.ca.gov/-/media/cpuc-website/divisions/energy-division/documents/integrated-resource-plan-and-long-term-procurement-plan-irp-ltpp/2023-irp-cycle-events-and-materials/inputs-assumptions-2022-2023_final_document_10052023.pdf, ("The disadvantages [of hydrogen combustion for electric power] are that hydrogen combustion turbines produce NOx and other criteria pollutants, and they have not yet been deployed commercially burning pure hydrogen.")

[37] South Coast Air Quality Management District, 2022 Air Quality Management Plan, at ES-5 (Dec. 2022), http://www.aqmd.gov/docs/default-source/clean-air-plans/air-quality-management-plans/2022-air-quality-management-plan/final-2022-aqmp/final-2022-aqmp.pdf?sfvrsn=16.

still be required.[38] Fuel cells can also be incorporated into microgrids to improve reliability and resiliency. In Calistoga, 8 MW of hydrogen fuel cell stationary power will supplement lithium-ion batteries in a microgrid to replace diesel generators and supply the city's electricity needs for at least 48 hours during outages.[39] These power generation technologies could be deployed throughout California because they are zero-NOx.

Finally, one risk of over-reliance on hydrogen in the power sector is that it could divert scarce or low-cost renewable generation that could more efficiently decarbonize other sectors. As illustrated by the following figure from the UKCCC, renewable generation resources can drive more emissions reductions when they power electric vehicles or displace fossil fuels on the electric grid than when they produce hydrogen:[14]



[38] Nora Manthey, "Plug Power Presents Stationary Fuel Cell System to Charge BEVs" (May 2023), https://www.electrive.com/2023/05/03/plug-power-presents-stationary-fuel-cell-system-to-charge-bevs/#:~:text=Plug%20Power%20is%20looking%20to,provides%2060%20MWh%20on%20site.
[39] Kathy Hitchens, "Plug Power to Provide Hydrogen Fuel Cell for Calistoga Microgrid" (June 2023), https://www.microgridknowledge.com/generation-fuels/article/33006510/plug-power-to-provide-hydrogen-fuel-cell-for-calistoga-microgrid.

Deploying the necessary renewables to decarbonize the grid and growing electric demand from vehicles and the building sector is already a challenge,[40] and the Commission should be careful not to exacerbate that challenge by funneling research dollars into uneconomic hydrogen production. We thus urge the Commission to reject the ACT and Greenumerix proposals and to direct scarce research dollars to hydrogen uses that are consistent with California's decarbonization goals and air quality requirements.

Conclusion

We appreciate your consideration of our recommendations for how EPIC 5 can best advance its regulatory mandates. We urge the CEC to prioritize research and demonstration projects that reduce emissions, advance electrification, and deliver demonstrable benefits to California ratepayers. EPIC 5 should fund verifiable technologies that meet the State's air quality, climate, and equity goals, rather than projects that continue to rely on polluting fuels. We appreciate the opportunity to comment on EPIC 5 research concepts and look forward to five more years of critical innovation across the State.

Sincerely,

Vanessa Rivas Villanueva
Nina Robertson
Earthjustice
vrvillanueva@earthjustice.org
nrobertson@eartjustice.org

[40] Nationally, just deploying enough clean energy to eliminate emissions from the electricity sector by 2035 will be a titanic effort, requiring a six-fold increase over historic rates of renewable energy deployment, even if demand for electricity were static. Leah C. Stokes, Cleaning Up the Electricity System, Democracy Journal https://democracyjournal.org/magazine/56/cleaning-up-the-electricity-system/.