

**DOCKETED**

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January 19, 2021

Email to: [docket@energy.ca.gov](mailto:docket@energy.ca.gov)

Docket Number: 20-EPIC-01

Subject: GHC's EPIC Interim Plan Workshop Comments

**Re: Comments of the Green Hydrogen Coalition (GHC) following the January 6, 2021 EPIC Interim Investment Plan Workshop**

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### Overview

The Green Hydrogen Coalition (“GHC”)<sup>1</sup> appreciates the opportunity to provide comments on the Staff Workshop on Electric Program Investment Charge (“EPIC”) Interim Investment Plan 2021-2022. GHC seeks to offer insights on the benefits and opportunities green hydrogen represents for California’s state-wide decarbonization efforts and provide actionable recommendations to improve upon the Draft Interim Investment Plan.

GHC is a California educational non-profit organization founded in 2019 to facilitate policies and practices to advance the production and use of green hydrogen at scale in all sectors to accelerate a carbon-free energy future. GHC defines green hydrogen as hydrogen that is not produced from fossil fuel feedstocks. Such pathways can include but are not limited to electrolysis of water, steam methane reforming, autothermal reforming of methane pyrolysis of renewable gas, and thermochemical conversion of biomass. GHC believes that the prioritization of green hydrogen project deployment at scale is fundamental to reduce cost and to meet California's climate and carbon goals. By including green hydrogen as a research priority in the EPIC Interim Investment Plan, California will enable at-scale production, transport, and storage of green hydrogen necessary to benefit the power sector and also to accelerate decarbonization in multiple hard-to-abate sectors such as transportation, heavy industry, and even shipping and aviation.

Accelerated deployment of green hydrogen to achieve carbon goals can be realized through an initial focus on the power sector. Given the size of this sector and the abundance of intermittent renewable power in the State, the power sector offers a significant opportunity to quickly scale green hydrogen. Large-scale green hydrogen production and use opportunities in the power sector today include using curtailed and purpose-built renewable electricity to make hydrogen through electrolysis; as well as using the resulting hydrogen in an existing thermal electricity generation plant to produce dispatchable, carbon-free reliable power. In sum, green hydrogen gives Californians a way to ‘bottle’ zero-carbon resources like sunshine and wind; effectively taking abundant renewable power and making it dispatchable across time.

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<sup>1</sup> <https://www.ghcoalition.org/>

Green hydrogen is the pathway to electrify fuels of all types:

- Production of green hydrogen can leverage abundant low-cost renewable energy to derive a flexible renewable molecule that can displace natural gas, diesel, gasoline, and other fossil fuels.
- Green hydrogen can displace the current global use of gray hydrogen, which is made from fossil fuels – if treated as a country, the GHG emissions from global gray hydrogen production would surpass the emissions of Germany.<sup>2</sup>
- Green hydrogen can be combusted in existing turbines, which can accelerate the achievement of SB 100 goals with the use of existing infrastructure
- Green hydrogen is a carbon-free fuel that can ensure reliability and affordability, particularly for California’s most vulnerable communities.

In these comments, GHC supports the CEC’s consideration and incorporation of the transformative capacity of green hydrogen for the achievement of California’s clean energy goals. GHC recommends the CEC consider the following observations and recommendations as part of its EPIC Interim Investment Plan:

### Recommendations

GHC commends the CEC and staff’s work in developing the Draft EPIC Interim Investment Plan 2021-2022 and strongly supports initiative #5: *The Role of Green Hydrogen in a Decarbonized California – A Roadmap and Strategic Plan*. We recommend this initiative be used to identify and analyze – in detail – optimal scenarios for the role of green hydrogen in supporting cost-effective attainment of California’s carbon targets in the electric and linked sectors to enable informed policymaking and regulation. The resulting research effort should seek to understand the potential applications and scale of green hydrogen for decarbonization of the electric, transport, natural gas, and industrial sectors and analyze the production, storage, and transport of green hydrogen.

1. Research or studies conducted under initiative #5 must be thorough and detailed.

GHC recognizes that studying potential applications and scale of green hydrogen for decarbonization across several sectors is a complex and relatively new undertaking. As such, it is critical that initiative #5 receives the appropriately high level of funding and incorporates a key focus on aggregating demand for green hydrogen across various sectors in strategic locations.

Cost reductions for green hydrogen can be achieved faster through simultaneously scaling up supply and demand. This means any study or research conducted under initiative #5 must address strategies for aggregating demand for green hydrogen across various

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<sup>2</sup> See Wood Mackenzie, “CO2 and other Greenhouse Gas Emissions”, May 2017. Available at <https://ourworldindata.org/co2-and-other-greenhouse-gas-emissions>.

sectors in strategic locations. A focus on strategic locations is important, as it will facilitate targeted repurposing of existing gas infrastructure as well as the development of new, dedicated hydrogen supply infrastructure. Both infrastructure pathways are essential to lowering the delivered cost of green hydrogen.

2. Initiative #5 should incorporate an inclusive and meaningful stakeholder engagement process to support guide data collection, develop scenarios, and interpret results.

The GHC hopes the study can address gaps from other recent decarbonization studies, such as the SB 100 Joint Agency Report, which did not model hydrogen as a drop-in fuel replacement due to inadequate cost and supply data.<sup>3</sup> We acknowledge that these challenges exist, and believe that the CEC and any potential supporting research teams can overcome them by leveraging the collective expertise of the broader green hydrogen community. To do this, any research, study, or action plan developed under initiative #5 should incorporate opportunities for meaningful stakeholder engagement early and often with nonprofits, industry, government agencies, academic and research institutions, and other interested stakeholders. GHC recommends initiative #5 include a focus on an inclusive stakeholder engagement process to guide data collection, develop scenarios, and interpret results, which we believe follows best practices in energy research and planning.

3. The GHC strongly urges the definition of green hydrogen in the Draft Interim Investment Plan be revised to include additional pathways for green hydrogen production, not just electrolytic green hydrogen as defined by SB 1369.

In the Draft Interim Investment Plan, initiative #5 references green electrolytic hydrogen as defined in SB 1369 as “hydrogen gas produced through electrolysis and does not include hydrogen gas manufactured using steam reforming or any other conversion technology that produces hydrogen from a fossil fuel feedstock.”<sup>4</sup> In contrast, GHC defines green hydrogen broadly *as hydrogen that is not produced from fossil fuel feedstocks*. While this may include green electrolytic hydrogen, as noted in the Draft Interim Investment Plan and defined in SB 1369, it also includes hydrogen produced from eligible organic waste feedstocks via steam methane reforming, autothermal reforming, or methane pyrolysis of renewable gas as well as the thermochemical conversion of biomass. As such, the Interim Investment Plan should incorporate GHC’s more inclusive definition of green hydrogen.

As a general recommendation, GHC believes EPIC should include funding for the demonstration of each of the various pathways of producing green hydrogen in California. Research and demonstration needs for biomass-based pathways to producing green hydrogen include: how to leverage existing processing infrastructure, testing facilities for pollution controls, methods for tracking environmental benefits, measuring volatile organic

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<sup>3</sup> See Draft 2021 SB 100 Joint Agency Report at 18.

<sup>4</sup> Draft Interim Investment Plan at A-43.



compounds (“VOC”) emissions from steam reformation of biogas, comparing different biogas conversion technologies, determining optimal scale for biogas-to-hydrogen, and understanding of modular configurations and approaches. GHC recommends these R&D gaps be addressed in this or future EPIC funding cycles.

4. GHC recommends initiative #5 begin immediately to guarantee enough time to solicit the right expert research team and align with pending legislation.

The GHC recommends initiative #5 start as soon as possible to solicit an expert research consultant with experience in holistic energy systems modeling and a strong track record of fair, unbiased assessments, such as the National Renewable Energy Laboratory. Due to the relatively complex nature of a green hydrogen roadmap study, GHC expects the development of the solicitation, responses from qualified experts, and evaluation of bids to take considerable time and resources.

Additionally, SB 18, recently introduced by Senator Skinner, would direct the CEC to submit to the legislature a report on potential green hydrogen applications and scale by June 1, 2022. As such, GHC recommends initiative #5 align with that timeline. GHC believes the anticipated long lead time for initiative #5 combined with the potential statutory directive under SB 18 merit immediate implementation of initiative #5.

### Conclusion

In conclusion, GHC is supportive of the CEC and their work in developing the EPIC Interim Investment Plan 2021-2022. GHC believes that further consideration of the cross-sectoral benefits of green hydrogen through research and studies is warranted and imperative to decarbonization, as it could help regulators identify innovative paths that could lead to deeper and faster decarbonization in California and the rest of the Western grid. Specifically, GHC urges the CEC to recognize that green hydrogen not only includes electrolytic green hydrogen, but also other pathways that can enable the decarbonization of numerous sectors and processes *at scale*. The GHC also respectfully urges the CEC to work quickly to develop and issue solicitation(s) for research, development, and demonstration of green hydrogen to accelerate deep decarbonization.

GHC appreciates the opportunity to provide these comments and feedback and looks forward to collaborating with the CEC and other stakeholders in this initiative.

Sincerely,

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