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Electric Hydrogen (EH2) Comments on Potential Growth of Hydrogen Workshop

Additional submitted attachment is included below.

September 22, 2023

California Energy Commission
Docket No. 23-IEPR-06
715 P Street
Sacramento, California 95814
[submitted electronically]

RE: Electric Hydrogen Comments on September 8, 2023 IEPR Commissioner Workshop on the Potential Growth of Hydrogen

Electric Hydrogen (EH2) appreciates the opportunity to provide feedback to the California Energy Commission (CEC) regarding the Integrated Energy Policy Report (IEPR) Commissioner Workshop on the Potential Growth of Hydrogen held on September 8th. Per Senate Bill (SB) 1075 (Skinner, 2022), the California Energy Commission (CEC) will be evaluating the adoption of hydrogen to help decarbonize the electric generation and transportation sectors. As discussed at the workshop, this evaluation will be ongoing and included in both the 2023 and 2025 IEPR. We appreciate the CEC taking a leadership role on these issues.

California has already recognized the pivotal role that hydrogen will play in the state's decarbonization efforts. As prominently emphasized in CARB's 2022 Scoping Plan, the attainment of carbon neutrality hinges upon the expansion of clean hydrogen to address hard-to-electrify end uses. The IEPR provides a comprehensive overview of California's energy needs and landscapes, and therefore any analysis included in the IEPR will guide the trajectory of the hydrogen economy in the state.

Since California aims to leverage hydrogen for decarbonization, it is imperative that critical policies are instituted to ensure that hydrogen indeed reduces life cycle emissions in comparison to the conventional fuels. With this in mind, EH2 recommends that any emissions analysis for electrolytic hydrogen include both the attributional and consequential emissions impacts of using grid electricity.

About Electric Hydrogen

Electric Hydrogen (EH2) is a deep decarbonization company pioneering low-cost, high-efficiency, fossil-free hydrogen electrolyzer systems. Focusing on industrial applications of hydrogen in steel, ammonia, and freight transport, our goal is to help eliminate more than 30% of global GHG emissions from hard-to-electrify industries.

EH2 is headquartered in San Carlos, CA, and Natick, MA. We recently announced our 1.2 gigawatt per year factory as well as our first public customer of our 100 MW system and will begin scaling our production of PEM electrolyzers later this year.

Any emissions analysis for electrolytic hydrogen should evaluate the use of hourly matching with renewable energy.

As the CEC evaluates the impacts of hydrogen use, analysis for electrolytic hydrogen should include an assessment of the real emissions impacts of utilizing grid electricity.

During the workshop, public commentators voiced apprehensions that hydrogen might not effectively mitigate carbon emissions and that disadvantaged and vulnerable communities (DACs) could continue to bear the brunt of air pollution stemming from hydrogen production and usage. These concerns underscore the necessity for California to establish a hydrogen economy that instills public confidence through substantial emissions reduction.

EH2 maintains a firm belief that hydrogen can be generated and utilized in a manner that demonstrably curtails carbon emissions. We are encouraged by the inclusion of a lifecycle analysis of hydrogen emissions within the SB 1075 Report; however, emissions impacts should also be considered within different IEPR hydrogen deployment scenarios.

For electrolytic hydrogen, the use of exclusively behind-the-meter or "off-grid" renewable energy sources guarantees the utilization of zero-carbon electricity, resulting in minimal to zero emissions during hydrogen production. However, it is unlikely that all electrolytic hydrogen will be produced using 100% onsite generation and California will have to consider the use of grid electricity for hydrogen production. This hydrogen production is likely to be matched with renewable energy using book-and-claim accounting mechanisms with renewable energy credits (RECs) in order to meet clean energy requirements. As highlighted by the Natural Resource Defense Council (NRDC) at the workshop, the emissions impact of electrolytic hydrogen can vary greatly dependending on the policies put in place for clean energy matching.

In their presentation, NRDC shared how hourly matching of renewable electricity production with electrolysis is key to minimizing emissions, a conclusion supported by studies that have analyzed the long-term impacts of grid-based hydrogen production. For example, studies from the Princeton Zero Lab[1] and MIT[2] conclude that matching renewable energy supply with hydrogen production on an annual basis will lead to significant long-run system-level emissions.

[1] Ricks, Wilson, Xu, Qingyu, & Jenkins, Jesse D. (2023). Minimizing emissions from grid-based hydrogen production in the United States. Environmental Research Letters. https://iopscience.iop.org/article/10.1088/1748-9326/acacb5/meta

[2] Zeyen, Elisabeth, Riepin, Iegor, & Brown, Tom. (2022). Hourly versus annually matched renewable supply for electrolytic hydrogen (0.1). Zenodo. https://doi.org/10.5281/zenodo.7457441

The IEPR should explore these findings in the California context. EH2 therefore recommends outlining emissions impacts from grid-powered electrolysis and evaluating emissions reductions from hourly matching with renewable production in the life cycle analysis, either as a sensitivity case or within the primary analysis.

Conclusion

Electric Hydrogen (EH2) remains committed to supporting California's ambitious decarbonization efforts through the responsible and sustainable use of hydrogen. We look forward to continuing to work with the CEC on incorporation of hydrogen into the IEPR.

Sincerely,

/s/ Paul Wilkins
Paul Wilkins
Vice President for Policy and Government Engagement
Electric Hydrogen