California Hydrogen Business Council

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California Air Resources Board
1001 I Street
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Re: SB 1075 Workshop Presentation – California Hydrogen Business Council comments

The California Hydrogen Business Council (CHBC) is writing to comment on the E3 presentation of "Analysis of Hydrogen in California for Senate Bill 1075 Report" made at the Air Resources Board workshop on February 25. We support many areas of analysis that were presented, and we would also like to highlight some issues that merit additional analysis.

## Areas of Support

- The presentation analyzed a wide range of production pathways to make hydrogen, including off-grid electrolysis, on-grid electrolysis, gasification, steam methane reformation with carbon capture, biomass gasification, biomass gasification with carbon capture, and methane pyrolysis. This broad range represents much of the spectrum of technologies that are currently available to make hydrogen, and it is important to start this exercise not excluding any type of production process at the outset. CHBC would applaud widening the range to include biomass pyrolysis, photobiological, and microbial biomass conversion to better represent the possible ways to make hydrogen and emphasize a technology-agnostic approach to doing so.
- The E3 presentation also reviewed dedicated hydrogen pipelines and blending hydrogen into existing pipelines. This too is a positive step toward decarbonization of the gas system. To meet the goals set in the 2022 Scoping Plan, we will need both, and this further highlights the need for the CPUC to advance the Joint IOUs' blending pilot demonstration projects in A.22-09-006. Analysis of pipelines as the most affordable way of transporting hydrogen at scale conforms with global industry practices and trends. CHBC also appreciates the acknowledgement of the importance of blending hydrogen into existing natural gas pipelines, as there are a low number of off-taker agreements for pure hydrogen at present.

- The cost values identified for the production pathways are also significant. If they bear out, they show that hydrogen will be cost competitive with other energy and transportation fuel sources over the long term, which bodes well for the hydrogen sector writ large. Cost-competitive hydrogen can help transition the transportation sector to zero-emission vehicles (ZEVs), providing options for motorists of all types (light-, medium-, and heavy-duty). This would reduce consumer costs for implementing the state's ZEV goals and ensure the health and environmental benefits of these rules are achieved. Cost-competitive hydrogen as an energy source will help decarbonize the gas sector and provide a reliable, dispatchable option that can facilitate achievement of the state's clean energy goals at minimal cost with maximum resiliency.
- The identification of end uses that include industrial applications, as well as residential and commercial applications, is also constructive. CHBC believes there is a role for hydrogen in these areas that can help the state meet its emissions goals. This includes decarbonization of hard-to-electrify sectors such as heavy manufacturing, production of cement, and the making of steel.

**Recommendations for Additional Analysis**

- The water usage assumption in Slide 13 describing how much water is required to produce hydrogen via alkaline electrolysis with solar looks high – CHBC requests clarification on the source of that assumption.
- Slide 17 lists several challenges of lowering the cost of electrolysis with solar to the range of $1-2 a kilogram (water, land, infrastructure and permitting). CHBC would like CARB to include testing of the assumption that this can be achieved, and comparison with other ways of producing hydrogen given these constraints. Absent such comparison, our observation is that the analysis is over reliant on electrolytic hydrogen to meet the state's goals.
- The CHBC recommends that the report include analysis of the benefits that hydrogen can bring to the California grid, with a value assigned to these benefits that include long-duration energy storage, resiliency, and decarbonization.

CHBC appreciates the Air Resources Board's attention to these comments and recommendations.

Sincerely,

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