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CHBC Comments on CEC's IEPR Workshop on Advancing Energy Equity

Additional submitted attachment is included below.



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CHBC Comments on CEC’s IEPR Workshop on Advancing Energy Equity

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1. Introduction

The California Hydrogen Business Council¹ (CHBC) appreciates the California Energy Commission’s (CEC) work on the Integrated Policy Energy Report (IEPR) related to Energy Equity, and the opportunity to provide comments on the presentations and issues discussed during the July 30 workshop. We offer the following comments:

2. Hydrogen Fuel Cell Technology can Support Disadvantaged Communities (DAC)

- **Hydrogen fuel cell technology is the most promising zero emission solution to fully replace heavy duty diesel vehicles**, including buses, trucks, rail and other transport equipment, without the need to change the behavior or impact operations. Heavy duty diesel engines are among the leading causes of pollution in areas that fail to attain air quality standards and where disadvantaged communities are especially vulnerable to negative health impacts.
- **Hydrogen fuel cell technology has similar or superior performance characteristics** compared to combustion technology, including fast refueling and long range, but allowing for silent operation, which reduces noise pollution in heavy trafficked areas.² This is an advantage for DACs due to the immediate replacement potential for operators, reducing the need for adjustment to a technology that requires behavioral and operational change.

¹ The views expressed in these comments are those of the CHBC, and do not necessarily reflect the views of all of the individual CHBC member companies. CHBC Members are listed here: <https://www.californiahydrogen.org/aboutus/chbc-members/>

² See diesel to FC truck comparison: https://www.youtube.com/watch?v=Od81_2mgIRE

- **Pure hydrogen fuel cell electric vehicles (FCEVs) and plug-in hydrogen FCEVs enable zero emission vehicle (ZEV) access for inner cities, multifamily, and low income dwellings** where dedicated parking and charging, and therefore full reliance on battery plug-in technology, is not viable.
- **Hydrogen fuel cell technology can replace fossil fuels for local and backup generators**, for example at cell towers, where they have been replacing diesel, and eliminating harmful emissions.
- **Hydrogen fuel cell technology can replace fossil fuels for port and warehouses equipment**, with performance superior to batteries and no emission related health impacts on workers. One example is fuel cell forklifts, which are becoming the industry standard for warehouses, distribution centers and factories, with better functionality and lower overall costs than batteries.³
- **Renewable hydrogen is key to replacing fossil fueled electricity generation which disproportionately impacts underserved communities.** Large amounts of intermittent renewable power sources, like solar and wind, on the electric grid pose challenges to reliability. Hydrogen can be generated renewably from both biomethane and electricity. Electrolytic hydrogen (E-hydrogen) can prove instrumental in integrating renewable electricity generation into the electric grid by making use of surplus electricity generation to make hydrogen, providing ancillary services to help stabilize the grid, and supplying flexible energy storage. E-hydrogen is the only available technology solution that can provide terawatt-hour scale storage regardless of geographical conditions, which will be critical for seasonal supplies as we transition to a mostly or all renewable electricity grid. E-hydrogen is also more cost-effective than batteries at long duration and more geographically flexible than bulk storage options like pumped storage and compressed air.
- **All these applications have the potential to create many new green jobs** in the state.
- **Hydrogen fuel cell technology is paid for by the users of the technology**, similar to gasoline and diesel transportation options, and not by all electric utility customers as EV technology is, which includes low-income households, who may not benefit directly from the technology.

3. A Program is Needed to Educate Disadvantaged Community Groups and Policy Makers about Hydrogen Fuel Cell Technology.

- **Hydrogen fuel cell electric vehicles have tremendous potential to reduce air pollution in California, both in terms of climate (GHG emissions) and public health (PM and NOx).**
Given California's move to 100% carbon-free energy, they also present a potential solution to the challenge of overgeneration of energy during peak solar events.
- **Hydrogen fuel cell technology is a misunderstood option to many in the environmental justice communities.**
Most environmental justice advocates, mainstream environmental organizations, policy-makers and cleantech business leaders agree that we need to move away from the diesel and gasoline fueled vehicles. The primary discussion has focused primarily on whether zero-emission battery-electric or "near zero" natural gas engines should displace the diesel market. Zero-emission hydrogen fuel cell technology is not mentioned as an option.
- **The lack of knowledge of the benefits of hydrogen among environmental justice advocates percolates up to policy makers in Sacramento.**

³ See, e.g. <https://www.bloomberg.com/news/articles/2017-07-31/amazon-and-wal-mart-finally-give-hydrogen-power-a-reason-to-be>

Those most effected by air pollution finally have a say in State policy in what to do about it, which is great. However, vocal opposition to hydrogen from well-known mainstream environmental groups like Sierra Club - promoting a singular battery electric technology solution - reinforces policies for State funding battery electric solutions to the detriment of all other technologies that might better benefit disadvantaged communities. While we support the important work of EJ groups, there is a significant misperception of hydrogen technology, which today is 37%-40% renewable, according to ARB.

- **Despite these challenges, there are plenty of reasons to be optimistic about the future role of hydrogen in clean energy.**

In 2018, renewable hydrogen was given capacity credits under California's Low Carbon Fuel Standard. While not enough in itself, these credits are a valuable resource in creating the infrastructure needed to support the deployment of hydrogen refueling stations, as several infrastructure providers have indicated building out the station network in California due to the new credit. Likewise, OEMs like Toyota have invested in developing fuel cell technologies in the heavy-duty transportation space and are demonstrating these technologies at California ports. Port operators like TTSI are running hydrogen fuel cell electric trucks at their facilities. There are now 40 retail hydrogen refueling stations in operation around the State and advertising campaigns by Honda and Toyota focused on the purchase of fuel cell electric vehicles.

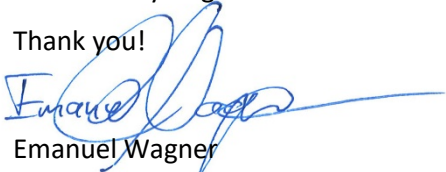
4. Policy Recommendations

- Funding for major education and outreach campaigns promoting all technologies for zero emission transportation and buildings, without bias toward any one technology – specifically including the benefits of zero emission renewable hydrogen technologies. Campaigns should relay the role that hydrogen can play in alleviating pollution, provide storage for the electric grid – thereby creating the opportunity for more solar and wind power development and capacity in California, while creating new green jobs. These campaigns should focus on disadvantaged communities, mainstream environmental groups, policy makers and business leaders and overseen and conducted by personnel with appropriate background in each of the relevant technologies.
- Provide upfront capital cost financing for renewable hydrogen projects in disadvantaged communities. Providing these communities with a renewable hydrogen refueling station creates the opportunity for less affluent people, who typically cannot modify their homes or apartment buildings with charging infrastructure, to drive a ZEV.
- State policy makers and the CEC need to develop policies and promote rate structures for low cost electricity for hydrogen production, processing and distribution across vehicle classes, like they already have for battery electric charging stations, to enable a scaling up hydrogen production to provide low cost fuel.
- Infrastructure is by far the biggest obstacle to FCEV scale-up. Therefore, CHBC recommends the CEC to support the goal of 200 stations by 2025 to initiate the development of a self-sufficient market. CEC should also commit to working with stakeholders to plan for the 2030 industry goal of 1,000 stations, enabling upwards of 1,000,000 FCEVs.
- CEC should also find ways to invest in the expansion of the fueling capacity at existing stations, both in terms of number of dispensers and storage. Expanding existing stations will allow an increase in the density of FCEV adoption in those areas and improve station and fuel cost due to scaling effects.

5. Conclusion

We appreciate the opportunity to offer these comments and stand available to connect CEC with our members and industry to get direct feedback on industry data and analysis.

Thank you!

A handwritten signature in blue ink, appearing to read "Emanuel Wagner", with a long horizontal flourish extending to the right.

Emanuel Wagner
Deputy Director
California Hydrogen Business Council