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CHBC Comments Regarding SB 100 Workshop and Report

Additional submitted attachment is included below.

CALIFORNIA HYDROGEN BUSINESS COUNCIL

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CHBC Comments Regarding SB 100 Workshop and Report

The California Hydrogen Business Council[1] (CHBC) appreciates the opportunity to comment on the Joint Agency Workshop on the Senate Bill 100 Report, held on September 5, 2019. The CHBC is comprised of over 100 companies and agencies involved in the business of hydrogen. Our mission is to advance the commercialization of hydrogen in the energy sector, including transportation, goods movement, and stationary power systems to reduce emissions and dependence on oil.

This is an important process that will guide California's continued transition to clean energy. We encourage you to use this as a collaborative opportunity to accelerate the transition to clean energy economy-wide, and not just minimally deliver on statutory requirements. You can do so by clearly identifying hydrogen produced by renewable and zero carbon sources ("zero carbon hydrogen") as a critical piece of the state's clean energy portfolio and committing to take near-term steps to unlock its vast potential to decarbonize the California and global economies.

Zero carbon hydrogen is the only clean energy source that can decarbonize any and all sectors at scale – power, buildings, industry, as well as light-duty, heavy-duty and off-road transportation, shipping, and aviation. It holds tremendous potential to see cost reductions over the next decade like solar and batteries have done over the last decade, and could do more to decarbonize the global economy than any other technology to date. Bloomberg New Energy Finance recently highlighted the potential for significant near-term and ongoing costs reductions, stating "Hydrogen's plunging price boosts role as climate solution."[2] The report also called out the need for political support for renewable hydrogen to spur technological advances and market growth for electrolyzers.

[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. Members are listed here: www.californiahydrogen.org/aboutus/chbc-members/

[2] https://www.bloomberg.com/news/articles/2019-08-21/cost-of-hydrogen-from-renewables-to-plummet-next-decade-bnef

Other recent reports have similarly suggested that zero carbon hydrogen could be at a tipping point, only in need of near-term support from governments to enable it to scale and meet global greenhouse gas reduction requirements.

The Energy Futures Initiative identifies electrolytic hydrogen as a "breakthrough technology" and a "major potential contributor to California's deep decarbonization," but notes that work must pick up today and be sustained to support development.[3] The International Energy Agency recently completed a thorough analysis of the global market and found that "clean hydrogen is currently enjoying unprecedented political and business momentum, with the number of policies and projects around the world expanding rapidly… now is the time to scale up technologies and bring down costs to allow hydrogen to become widely used."[4] Among the report's findings and recommendations:

- Hydrogen can enable renewables to provide and even greater contribution
- Hydrogen looks to be a lowest-cost option for storing electricity over days, weeks, or even months, and can be used to transport renewable energy thousands of miles away
- Hydrogen needs to be adopted and enabled in all sectors, including transportation, buildings, and power generation
- Regulations currently limit the development of a clean hydrogen industry
- Governments should establish a role for hydrogen in long-term energy strategies and in all sectors
- Use existing gas infrastructure to spur innovation and drive down costs

Dozens of projects are operating or under development around the world to fuel and decarbonize the transportation, building, energy and industrial sectors. Governments around the world – including Australia, Canada, China, Europe, Japan and New Zealand – are racing to capture competitive advantage and economic opportunities from hydrogen.

Now is the time for California to re-engage as a leader on hydrogen and help enable this key technology while capturing air quality, equity, economic, climate, and resiliency benefits in the state. The Joint Agencies can take an important step in doing so by highlighting zero carbon hydrogen as a key and strategic technology in its report for meeting the goals of SB 100.

Zero carbon hydrogen can contribute to the goals of SB 100 in a number of ways. In addition to existing hydropower and additional intermittent renewables, success in transitioning to 100 percent clean energy is likely to include the following strategies:

- Long duration and seasonal energy storage at scale and with flexible siting
- Zero-emission fuel cell or thermal power plants for grid connected power
- Electrolyzers and zero-emission fuel cells for microgrids and onsite backup generation

[3] https://static1.squarespace.com/static/58ec123cb3db2bd94e057628/t/5cadebd04cd61c00017a563b/1554901977873/EFI+California+Summary+DE+PM.pdf
[4] https://webstore.iea.org/download/summary/2803%3FfileName=English-Future-Hydrogen-ES.pdf

- Renewable overgeneration, which can and should be put to beneficial use, including by producing hydrogen to decarbonize other sectors of the economy
- Carbon capture and utilization, where captured carbon can be combined with hydrogen to create low carbon fuels, materials, or other products with an estimated $1 trillion market potential in the U.S. and $6 trillion globally.[5]

Hydrogen will be an important element of any of these strategies to meet the goals of SB 100, both in the power sector, as well as other sectors.

State law already clearly identifies zero carbon hydrogen as part of the state's clean energy future. SB 1369 (Skinner), which preceded and helped set the stage for passage of SB 100, defines zero carbon hydrogen made from renewable electricity as an eligible energy storage resource and part of the state's clean energy portfolio and directs the joint agencies to consider a broad role for it in decarbonizing the California's economy. SB 1505 calls for at least a third of hydrogen for transportation to come from renewable sources, a target the hydrogen industry has already surpassed and has collectively called for extending to 100% by 2030, with a view toward expanding that vision to other sectors.[6] Furthermore, SB 100 specifically directs agencies to plan for equitable emissions reductions in all sectors, not just the power sector. Zero carbon hydrogen presents a unique opportunity to transition the gas sector to entirely greenhouse gas free fuel.

In the SB 100 report, the joint agencies should:

(1) clearly identify zero carbon hydrogen as a key technology for meeting the state's goals and as defined in statute,
(2) consider inter-sectoral opportunities and needs, including opportunities to utilize zero carbon hydrogen to not only meet the power sector goals of SB 100, but also to help achieve equitable reductions in all other sectors, and
(3) commit to collective and agency-specific actions to accelerate development of this key technology. These actions should include:

- Implement SB 1369 by opening a proceeding/rulemaking at the CPUC to establish green electrolytic hydrogen as storage and consider other benefits (e.g. ancillary services), and by including it in planning and programmatic efforts at each of the joint agencies.
- Establish proceedings to create markets for renewable gases, including hydrogen, beyond the transportation sector, such as what SB 1440 and other statutes are doing for biomethane.
- Enable hydrogen to decarbonize the economy by allowing producers to utilize renewable power that otherwise would be curtailed.
- Include hydrogen as a key element in agency planning documents, including the SB 100 Report, IRP, IEPR, and Scoping Plan.
- Support research, innovation, and market development to rapidly bring down production costs of renewable hydrogen, on a path similar to solar and batteries

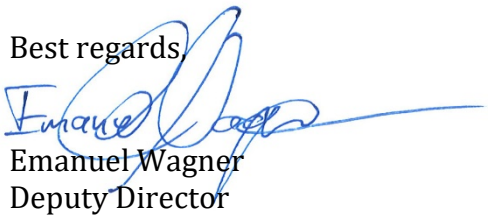
[5] https://carbon180.org/carbontech-labs
[6] See H2 Council announcement, which CHBC supports, here: http://hydrogencouncil.com/our-2030-goal/

over the last ten years, including recommendations made by in UC Irvine's Renewable Hydrogen Production Roadmap.[7]

When he was running for Governor, Gavin Newsom called for achieving greater than 100 percent clean energy and for eliminating diesel pollution by 2030.[8] We can achieve these goals, if we enable zero carbon hydrogen to reach its potential. To do so, the joint agencies need to start sending signals now, to allow zero carbon hydrogen markets to continue developing and costs to decline as expected. The state can lead in enabling this critical global solution, and reap the benefits.

We appreciate the joint agencies' consideration of these remarks and would be happy to discuss them further with you or answer any questions you have.

Best regards,



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[7] See pp. 72-76 of Project Webinar Slides by Jeffrey Reed/UC Irvine 8/29/19
https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=17-HYD-01
[8] https://medium.com/@GavinNewsom/a-sustainable-world-can-start-in-california-df8c0d1332d4