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**CALIFORNIA HYDROGEN BUSINESS COUNCIL COMMENTS ON SB
100 TECHNICAL WORKSHOP**

Additional submitted attachment is included below.



CALIFORNIA HYDROGEN BUSINESS COUNCIL COMMENTS ON SB 100 TECHNICAL WORKSHOP

December 2, 2019

I. INTRODUCTION

Thank you for the opportunity to comment on the SB 100 Technical Workshop. The California Hydrogen Business Council (CHBC)¹ appreciates the joint agencies hosting a workshop exploring technologies and pathways to achieve the mandates of SB 100. We welcome your consideration of these comments, which are summarized here and expanded on below:

- 1. It is important for agencies to provide a clear vision now for California’s clean energy future, including specifying renewable and zero-carbon hydrogen as an eligible resource.**
- 2. The metric for determining eligibility under SB 100 should be carbon, and all zero-carbon technologies should be eligible. This includes renewable and zero-carbon hydrogen – whether used onsite or offsite, or in a fuel cell or thermal power plant.**
- 3. Curtailed power, which produces no incremental carbon emissions if utilized, should be put to use and considered zero-carbon energy.**
- 4. The modeling and presentations highlighted the important role that renewable and zero-carbon hydrogen and other long duration energy storage technologies will play in meeting the goals of SB 100. The state should support the development of these technologies in the near-term, and enhance its modeling capabilities to better explore the role hydrogen can play in the longer term as a resource that can shift renewable generation on a daily, weekly, or even seasonal basis to help overcome the identified reliability constraints.**

¹ 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. 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

II. COMMENTS

A detailed explanation of these comments is provided below.

1. It is important for agencies to provide a clear vision now for California’s clean energy future, including specifying renewable and zero-carbon hydrogen as an eligible resource.

The presentations and panels included references to several promising projects under consideration or even active development today. They included hydrogen-related projects, such as the LADWP Intermountain Power Project, among others. We appreciate the inclusion of hydrogen during the panel discussion, and recognize that hydrogen and other long duration energy storage technologies were highlighted as potential key technologies for transitioning to a 100 percent zero-carbon energy future while maintaining grid reliability.

Even if the state hasn’t clearly identified hydrogen or other technologies as zero-carbon and eligible under SB 100, project developers and utilities are moving forward under the assumption that they will be. Several companies are making significant investments now to help the state meet the requirements under SB 100. The state should support these efforts by clearly and quickly defining what will be eligible under SB 100, and include renewable and zero carbon hydrogen in the portfolio of options.

2. The metric for determining eligibility under SB 100 should be carbon, and all zero-carbon technologies should be eligible. This includes renewable and zero-carbon hydrogen – whether used onsite or offsite, or in a fuel cell or thermal power plant.

The statute is clear that the guiding metric for eligible generation should be carbon. The state already has clear definitions for eligible renewable energy resources under the Renewable Portfolio Standard through 2030. Beyond that, any zero-carbon resource that complies with other environmental protections, including air quality and water quality requirements, should be eligible.

Eliminating combustion from eligible technologies as proposed in one of ARB’s scenarios, for example, would be arbitrary and goes beyond the scope of SB 100. Renewable and zero-carbon hydrogen, in particular, should be eligible zero-carbon resources under SB 100 – regardless of whether used in a fuel cell or a thermal power plant.

Additionally, the state should not impose limitations that require zero-carbon energy resources to be utilized at its point of production. In the case of renewable and zero-carbon hydrogen, for

example, it should allow hydrogen to be produced and used where it is most practical, even if they are different locations. It may make sense to produce hydrogen in the desert or offshore – using solar power or wind – and transport it to a power plant elsewhere. Provided that this process does not add carbon emissions, it should be eligible.

Any arbitrary limitations that stretch interpretation of SB 100 beyond carbon threatens unforeseen consequences that may increase costs or stifle innovation. The state should set clear zero-carbon thresholds, but allow flexibility and innovation beyond that.

3. Curtailed power, which produces no incremental carbon emissions if utilized, should be put to use and considered zero-carbon energy.

The workshop highlighted the important and increasing role that energy storage – longer duration energy storage in particular – will play in meeting the goals of SB 100, yet it appears more work remains to be done to incorporate these resources and technologies into the state’s modeling and accounting frameworks. As was noted in the workshop, this is a space full of rapid innovation, and detailed modeling of all emerging and promising technologies will be difficult.

The joint agencies can support innovation and market development in the energy storage industry by specifying that power that would be otherwise curtailed counts as zero-carbon, since it produces no incremental carbon emissions, if it is otherwise stored and used later. Furthermore, the agencies should take steps to enable curtailed power to be utilized for renewable and zero-carbon hydrogen production, which will further the goals of SB 100 – including decarbonizing other sectors of the economy.

4. The modeling and presentations highlighted the important role that renewable and zero-carbon hydrogen and other long duration energy storage technologies will play in meeting the goals of SB 100. The state should support the development of these technologies in the near-term, and enhance its modeling capabilities to better explore the role hydrogen can play in the longer term as a resource that can shift renewable generation on a daily, weekly, or even seasonal basis to help overcome the identified reliability constraints.

The modeling presentations highlighted the important role that energy storage, especially storage of longer durations, play in meeting the goals of SB 100. In particular, the presentation by E3 demonstrated that long duration storage is necessary to displace conventional, natural gas-fired generation, but assumed costs currently remain high.

The state can change this calculation and accelerate a cost-effective transition to 100 percent clean energy by supporting policies that deploy renewable hydrogen production at scale, among others. Bloomberg New Energy Finance, for example, has suggested that the costs to produce renewable hydrogen could drop by 80 percent by 2030.²

One of the major keys to achieving these cost reductions, which would help reduce emissions further than envisioned in the IRP modeling and at lower cost, is scale. The state can help achieve scale by taking several near-term steps to support project deployment and market development:

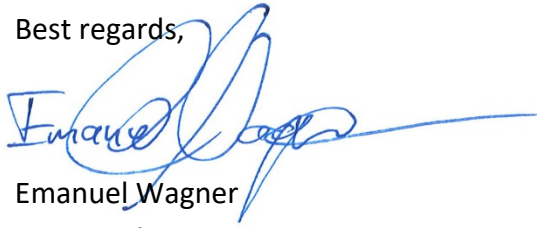
- The CPUC should quickly move to implement several existing statutes supporting renewable gas development, including SB 1440, SB 1369, SB 1383, and AB 3187.
- As part of any of rulemaking processes on renewable gas, the CPUC should support a study to establish evidence-based limits, along with protocols and standards based on the study results for hydrogen to be injected into the gas pipeline system.
- As part of its rulemaking pursuant to SB 1383, CalRecycle should require procurement of products from diverted organic waste material, while allowing maximum flexibility in terms of eligible products and end uses, including hydrogen derived from organic waste.
- The state should invest in renewable hydrogen research and development and pilot projects to accelerate scale.
- The CPUC should quickly resolve its microgrid rulemaking, so that clear rules and procedures are in place by next spring to allow microgrids to come online before the 2020 wildfire season. As part of that rulemaking, the CPUC should direct utilities to support microgrid pilot projects utilizing renewable hydrogen – to demonstrate zero carbon microgrids capable of continuous operation.
- State agencies should include hydrogen solutions, such as electrolyzers, hydrogen fuel cells, and hydrogen to decarbonize the pipeline as part of its building decarbonization strategy. Specifically, the CPUC should do so in the next phase of its building decarbonization rulemaking.
- The CPUC should adopt cross-sectoral modeling and regulatory frameworks to support implementation of hydrogen solutions in its Integrated Resource Planning efforts.
- As part of the next Scoping Plan or separate process, CARB should develop a renewable and zero carbon hydrogen strategy, identifying clear opportunities and how to reduce costs to enable deeper and more rapid decarbonization of buildings, electricity, industry, transportation, and all sectors.

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

III. CONCLUSION

We appreciate your consideration of these comments and are available to answer any questions or discuss any of them in detail with you.

Best regards,

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