BEFORE THE PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA

Order Instituting Rulemaking Regarding Building Decarbonization.	R.19-01-011 (Filed January 31, 2019)

CHBC COMMENTS ON ADMINISTRATIVE LAW JUDGE RULING SEEKING COMMENT ON STAFF PROPOSAL FOR BUILDING DECARBONIZATION PILOTS

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I. Introduction

The California Hydrogen Business Council (CHBC)[1] appreciates the opportunity to submit the following comments on *Administrative Law Judge's (ALJ) Ruling Seeking Comment on Staff Proposal for Building Decarbonization Pilots.*

II. Comments

1. Is staff's proposed approach for using gas corporation revenue from the direct allocation of GHG allowances for funding the BUILD program and TECH program reasonable?

We have no comment at this time.

2. Does staff's proposal appropriately and adequately prescribe how to prioritize among different authorized uses of the directly allocated GHG emission allowance revenue described in Question 1?

CHBC supports the guiding principles put forth by the CPUC, namely vendor neutral competition; transparency; regulatory simplicity; market transformation; and equity. We also think the metrics put forth in Section 3.5 are reasonable, although we suggest adding resiliency as a metric. We disagree with prioritizing a requirement that new construction must be all-

[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/

electric to be eligible for the BUILD program. The use of renewable gas for fuel cells and other direct end uses should be eligible for prioritization in the BUILD program. Fuel cells emit zero criteria pollutants, and when fueled by a renewable gas, emit zero criteria pollutants or greenhouse gas over their lifecycle. Precluding fuel cells from eligibility in the BUILD program because they do not run on electricity would not support maximum emission reductions AND resiliency. Therefore, the CHBC strongly urges renewable gas and fuel cells to be considered eligible technologies.

3. Are the annual budgets proposed for the BUILD and TECH program reasonable? Why or why not?

We have no comment at this time.

4. Is the proposed budget allocation of 40 percent of the budget for the BUILD program and 60 percent for the TECH program appropriate? Why or why not?

We think staff's reasoning is appropriate that more funds should be allocated to decarbonizing the existing building stock than new construction because of the relative magnitude and impact of the existing building stock, and support the proposed proportions.

5. Is it appropriate for the CPUC to select the CEC as the administrator of the BUILD program? Why or why not?

We have no comment at this time.

6. Are the proposed elements of the BUILD program reasonable and sufficiently comprehensive? If not, what elements should be removed, changed, or added? Specific questions to consider:

a. Given that production builders (e.g., builders who build houses, townhouses, condos, and rental properties on land owned by a building firm) construct the majority of new homes in California, should BUILD incentives be offered separately for each new home or collectively for each new subdivision?

We have no comment on this at this time.

b. Should BUILD incentives be offered on a first-come, first-served basis across the state, or should BUILD incentives be limited to the regions of the state where the largest GHG emission reduction potentials exist? Or should it be based on some other standard? Please explain your rationale.

Since the program's goal is to reduce GHG emissions in the state, it seems reasonable that the incentives should prioritize regions where the largest GHG emission potential exists. This should be based on a comprehensive, data-driven lifecycle analysis.

c. Should each developer or builder have a limit on the total share of incentive dollars received per year, or overall?

We have no comment at this time.

d. What is the appropriate incentive level for the BUILD program?

We have no comment at this time.

i. Should the level of BUILD incentives be equivalent to or greater than the current social cost of carbon (e.g. $48/Tonne CO2e)?

We have no comment at this time.

e. Should BUILD incentives target the qualifying residential equipment and/or systems that have the highest costs?

We have no comment at this time.

f. For the low-income component of BUILD, should funding levels be prioritized for the technical assistance work or for the incentive budget? Why or why not?

We have no comment at this time.

g. Is the funding for the low-income component of BUILD at 30 percent of total budget appropriate? Why or why not?

We believe this is appropriate and in keeping with SB 1477's statutory requirements, as

cited in the Build Design Proposal.[2]

7. Which elements of the BUILD program should be established by the Commission in a decision, and which should the BUILD program administrator have the flexibility to modify in implementation, with oversight by Commission staff?

We have no comment at this time.

8. Comment on whether the Staff Proposal's analysis and recommendations for the BUILD program's technology eligibility criteria, process for evaluating new technologies, guidelines and evaluation metrics, and criteria for scoring and selecting projects are reasonable.

We strongly disagree with Staff's proposal to limit eligibility for the BUILD program to all-electric homes. There is no language in SB 1477 that specifies all-electric as the criteria for the BUILD program, and concluding that this is the only or best strategy to decarbonize all new construction is without sound basis.

The staff proposal bases limiting new construction pilots to all electric on projected cost favorability of all electric buildings compared to those using technologies that rely on gas infrastructure. However, the analysis behind this assertion is lacking. The E3 study from which the staff proposal draws its conclusion shows that close to half new single-family homes and a third of multi-family homes would actually have increased energy bills of $100 or more a year, if they are built all electric.[3] This suggests that what may be most efficient/most economic for one community or set of developments may be uneconomical for others, and that a more diverse set of options to decarbonize, beyond all electrification, is more appropriate. More fundamentally, a realistic future cost comparison between all electric homes and those that rely on renewable gas for some uses is a virtually impossible exercise at present because of the uncertainty of wildfire impacts on future electricity costs. The E3 study states explicitly that it does not attempt to "*forecast how the cost of wildfires may affect future electricity rates*."[4] Without this data, any attempt at estimating costs of all electrification are highly speculative. Moreover, both the

[2] See staff Build Design Proposal, Section 4.4.1 on p. 32 of Ruling.
[3] p. 69, *Residential Building Decarbonization in California*, E3; April 2019
[4] p. 37, *Residential Building Decarbonization in California*, E3; April 2019

renewable gas and building electrification markets are nascent in California, further compounding the difficulty of accurately assessing and comparing costs between pathways based on the two types of technologies. California has just begun to provide policy support for renewable hydrogen,[5] which if sustained, would favorably impact costs. The bottom line is that rather than jump to conclusions based on incomplete data and guess work, the BUILD program should instead take a technology neutral approach and encourage pilots that allow the state to test a wide range of technologies capable of decarbonizing buildings, including electrification that is inclusive of fuel cells, solar thermal, *and* renewable gas like renewable hydrogen. The criteria ought to demonstrate the ability to decarbonize building energy, and such solutions ought to be allowed to be deployed in various combinations based on specific needs and priorities identified for the sites at which projects are being developed.

The limits of narrowing the BUILD program to all-electric pathways for every project are plainly evident when considering disaster resiliency, which is notably absent from any meaningful discussion in the proposal and a glaring omission considering the thousands of homes that need to be rebuilt following recent years of catastrophic wildfires in California. The staff proposal for the BUILD program does not consider the vulnerabilities of the distributed electricity grid to impacts of severe weather, wildfire, and other disasters, and the associated risks with making buildings entirely dependent on electricity. Underground gas lines, which may carry increasing amounts of hydrogen, are comparatively less vulnerable than overhead power grids. To manage the risks of the power grids, electric utilities are planning to de-energize for hours or days at a time during high wind periods in large and potentially expanding regions of California considered at high risk of wildfires.[6] The risk is that longer term power shutdowns of weeks or longer occur in such regions, along with the rest of the state in the event of major earthquakes, when disasters strike. Some homes impacted by the Woolsey fire still do not have access to grid electricity, due to the long timetable for restoring power, and remain reliant on gas appliances

[5] The CEC is funding the state's first two renewable hydrogen demonstration projects for transportation fueling; https://ww2.energy.ca.gov/contracts/GFO-17-602_NOPA_revised.pdf; the legislature passed SB 1369 in 2018 to advance green electrolytic hydrogen; and the CPUC has expressed interest in establishing hydrogen pipeline blending protocols to support renewable hydrogen development (see R.1302008 Scoping Memo and Ruling), is considering hydrogen scenarios in the IRP process (see R1602007) and has recently hired staff to help oversee renewable gas related issues.

[6] One in four Californians now live in areas considered at high risk of wildfires, according to the California Department of Forest and Fire Protection, as reported in the *Los Angeles Times.* https://www.latimes.com/local/lanow/la-me-california-braces-for-new-wildfires-20190614-story.html

and gas back up generation several months after the fire as their sole source of building energy. These gas resources ought to be renewable, just like California is planning for electricity resources. Switching to all electrification is not a wise solution, as it risks leaving such communities more vulnerable. Diversifying between decarbonized electricity, electrification with fuel cells, and renewable gas end uses, would promote resiliency along with decarbonization – indeed diversification of resources is a core principle of resiliency - rather than potentially putting these two critical goals in conflict.

Some may say that solar and battery storage are enough. But solar panels are prone to fail during smoky fire conditions, will not supply power during a shut down unless they are not grid-tied, and in worst case are prone to melting in fires. CHBC is supportive of solar power, but also pointing out the importance of diversification where resiliency is concerned. Homes that have some gas appliances – which could be fueled by renewable gas like renewable hydrogen - would still be able to have critical functions like cooking and heat when the power grid goes down. Where backup power supply is concerned, battery storage is an excellent solution for short-duration storage and generation, but not for long-duration storage and generation across all weather and circumstances. Hydrogen, on the other hand, are ideal for long-duration storage and with and fuel cells, ideal for generation, even under extreme conditions. Fuel cells withstood the Sonoma fires in 2018 and the 6.0 magnitude Napa earthquake in 2014, and they provided continuous generation to nine microgrids during four storms that buffeted the East Coast from March 2-22 in 2018 and caused millions to lose power. Fuel cells emit zero criteria pollutants, and when fueled by renewable gas, emit zero criteria pollutants or greenhouse gas over their lifecycle. Precluding fuel cells running on renewable gas from eligibility in the BUILD program because they do not run on electricity would be the antithesis of supporting maximum resiliency. We, therefore, strongly urge fuel cells to also considered an eligible technology.

While CHBC does not oppose electrification technologies, we believe homeowners should have options. Neighborhoods needing new construction, and especially in view of the state's vulnerability to natural disaster, should not be forced to choose between decarbonization and resiliency.

9. Is the proposed mechanism for selecting a program administer for the TECH program reasonable?

Yes, it seems reasonable.

10. Are the proposed elements for the TECH program appropriate? Are there any elements that should be removed, changed, or added prior to initiating the solicitation process? Specific questions to consider:

a. The staff proposal describes a four-pronged effort which includes an upstream strategy, a mid-stream strategy, a grants program, and a prize program. Is this four-pronged approach appropriate? Why or why not?

We have no comment at this time.

11. Comment on whether the Staff Proposal's analysis and recommendations for the TECH program's technology eligibility criteria, process for evaluating new technologies, guidelines and evaluation metrics, and criteria for scoring and selecting projects are reasonable.

We generally agree with the attributes to consider for technology eligibility laid out in Section 5.5 of the staff proposal (i.e. a balance of GHG reduction potential first and foremost, with consideration also of commercial readiness, plus equipment and installation costs). However, we strongly disagree with the narrow list of target technologies in Section 3.8, which completely excludes solutions using renewable gas, like hydrogen. The E3 report on which these recommendations are stated to be based, specifically recommends that California ought to presently pursue developing both electrification *and* renewable gas pathways. In their study on *Building Electrification in California*, they conclude:

"There are two primary strategies to mitigate direct GHG emissions from buildings: 1) natural gas energy efficiency combined with extensive use of renewable natural gas (RNG), and 2) electrification of fossil fuel end uses in buildings. Neither one of these strategies have seen wide adoption to date, and both face implementation challenges. ***In the near-term, progress is needed on both fronts."***[7] The TECH program, which seeks to fund pilot projects over the next

[7] p. 2, *Building Electrification in California*, E3; April 2019 (emphasis in citation added) https://www.ethree.com/wp-content/uploads/2019/04/E3_Residential_Building_Electrification_in_California_April_2019.pdf

four years, is clearly a near term program and ought to support progress on both fronts - electrification and renewable gas building heat applications.

This overly limited focus on grid electric solutions also appears elsewhere in the staff proposal, such as Section 5.7, which omits renewable gas solutions, like hydrogen, and implies that electric technologies are the only way to fuel switch from fossil natural gas to renewable alternatives. In fact, renewable methane made from organic sources or electrolytic hydrogen can be seamlessly blended into the existing gas grid in unlimited quantities, and renewable hydrogen can be blended into the existing pipeline to lower the lifecycle GHG content of the delivered gas.

Renewable hydrogen is notably being pursued for heating applications elsewhere in the world, such as in the United Kingdom (U.K.), where the HyDeploy Project plans to blend up to 20% hydrogen as part of their decarbonization efforts.[8] One of the anchor projects is taking place at Keele University, which is exploring hydrogen blending into its private gas network beginning in 2019 to reduce carbon emissions from heating buildings.[9] Blending hydrogen with natural gas across the U.K. is estimated to reduce 6 million tons of carbon annually, the equivalent of taking 2.5 million cars off the roads.[10] Leeds, one of the largest cities in the U.K., also launched the Leeds H21 City Gate hydrogen project[11] in 2016, targeting the conversion of the existing natural gas supply and distribution system to deliver hydrogen to consumers. Northern Germany is similarly soon to begin blending 20% hydrogen produced by renewable electricity into the gas distribution grid. This fall, 400 heating systems and other customer devices will be installed to demonstrate hydrogen's compatibility with household appliances.[12] In Europe, the heat pump market[13] is far ahead of California's,[14] but as promising a solution as they are for efficient heating and cooling, the European Commission forecasts that even in its high electrification

[8] https://networks.online/gphsn/news/1000904/trial-explore-blending-hydrogen-gas-network
[9] https://networks.online/gphsn/news/1000904/trial-explore-blending-hydrogen-gas-network
[10] https://www.telegraph.co.uk/business/2018/01/06/hydrogen/
[11] https://www.northerngasnetworks.co.uk/2016/07/12/watch-our-h21-leeds-city-gate-film/
[12] https://www.eon.com/en/about-us/media/press-release/2019/hydrogen-levels-in-german-gas-distribution-system-to-be-raised-to-20-percent-for-the-first-time.html
[13] *European Heat Pump Statistics and Market Report 2018* finds a growing market four years in succession, with over 10 million units sold. https://www.researchandmarkets.com/research/6sgzkn/european_heat?w=5
[14] *Decarbonization of Heating Energy Use in California Buildings*, Synapse Energy Economics, Inc; October 2018; p. 1 – States that heat pumps " today represent a small share of California's market, due to regulatory barriers and higher upfront costs in older homes."

scenario for deep decarbonization, only two thirds of buildings would adopt heat pumps by 2050. Indeed, the European Commission found that the only way to achieve deep decarbonization of 90+% greenhouse gas emissions below 1990 levels by 2050 economy-wide was to aggressively pursue a diversified approach that neither focuses on just electrification nor gaseous fuels, but rather both, along with efficiency and waste management and that net carbon neutrality by 2050 and net negativity thereafter (as California's Executive Order B-55-18 calls for) would require additional efficiency and carbon capture or management of land sinks and a circular economy.[15] California ought to similarly recognize that diversified approaches to deep decarbonization and carbon neutrality and encourage such approaches in the building sector and beyond.

12. Is the proposed process for selecting an evaluator for the BUILD and TECH programs appropriate? Why or why not?

We have no comments at this time.

13. Other Questions:

a. The staff proposal includes a list of GHG metrics and sub-metrics to measure the success of the BUILD and TECH programs. Are these metrics appropriate? Why or why not? Are there any additional or different metrics that should be considered? Why or why not?

14. Transcripts: the upcoming July 30, 2019 workshop will be transcribed. Therefore, parties are encouraged to comment on the discussion transcribed at the workshop.

We have no comment at this time.

III. Conclusion

We look forward to working with the Commission on developing a technology neutral approach to decarbonizing the building sector, which is inclusive of renewable hydrogen and fuel cells.

Respectfully submitted,

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[15] https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:52018DC0773&from=EN

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