

November 17th, 2022

Honorable City Council
1400 Fifth Avenue
San Rafael, CA 94901

RE: San Rafael Building Electrification Reach Code

Dear Honorable Mayor and City Council Members,

Bloom Energy is pleased to provide comments on the proposed reach codes for building electrification. We would appreciate the opportunity to work with San Rafael to help identify pathways to decarbonize the building sector.

Bloom Energy is a leading clean energy company headquartered and with manufacturing facilities in the Bay Area. Bloom Energy Servers are a distributed energy resource that delivers reliable, uninterrupted power. Using solid oxide fuel cell technology, Bloom Servers convert natural gas, biogas, or hydrogen into electricity at a high efficiency and without combustion, significantly reducing environmental impacts. Our systems have proven resilient through outages caused by earthquakes, wildfires, storms and other extreme weather and natural disasters. Utilizing the same solid oxide technology, Bloom Electrolyzers can be paired with renewable energy sources to create clean, low-cost hydrogen at industry-leading efficiency.

We commend San Rafael for taking up the issue of building decarbonization, which we fully support as critical for addressing climate change. In fact, Bloom has been involved in similar initiatives elsewhere in California and across the country. In our experience, proposals must be carefully crafted in order to achieve real emissions reductions and avoid unintended consequences such as increased local air pollution and vulnerability to outages. In this vein, we suggest one change to the proposal that would focus the approach on energy end uses within buildings.

Fuel cells provide resilience and reduce emissions compared to “marginal generation units,” which are



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typically inefficient fossil fuel-fired combustion power plants. The definition of “all-electric building” in Marin County’s model reach code inadvertently obstructs customers’ ability to procure clean, resilient on-site power via non-combustion fuel cells. If the City adopts this version of a building electrification reach code, it would negatively impact the City’s ability to maintain energy reliability and explore the use of renewable fuels like biogas and zero-carbon hydrogen. We propose including an exception for non-combustion technologies powering commercial and industrial buildings to avoid this problem:

- **Exception for non-combustion technology running on natural gas, biogas, or hydrogen for commercial and industrial buildings.**

Without this change, fuel cells and other non-combustion microgrids would no longer be available as a resiliency option, creating a de facto monopoly for back-up diesel generators which release harmful air pollutants and greenhouse gas emissions.¹ This is especially the case for critical facilities such as hospitals, telecommunication centers, data centers, and grocery stores who often rely on fuel cells to avoid losing power.

Even as we are transitioning to a carbon neutral energy future, the population of diesel generators in California is growing precipitously due to an aging grid, increased extreme weather events, and the intermittent nature of wind and solar. The electrification of buildings and transportation can be expected to dramatically increase load on the electric grid, with a corresponding increase in the amount of back-up generation. Specifically, in San Rafael, the number of back-up diesel generators has increased 34% between December 2018 and June 2020, totaling 29.6 MW in Jun 2020.

The proposed edit will also help San Rafael move towards achieving the goals set forth in the City’s Climate Action Plan, as outlined below:

1. **Innovative Technologies (RE-C4):** This strategy aims to pursue innovative technologies such as microgrids and demand response programs that will improve the electric grid’s resiliency and help address energy demand. Allowing resilient, clean fuel microgrids to utilize the existing natural gas infrastructure outside of the building can displace diesel generators and keep the power on, without diesel’s harmful environmental and public health impacts.

¹ M.Cubed, 2021. *Diesel Back-Up Generator Population Grows Rapidly in the Bay Area and Southern California*, p. 7.



2. **Reduce Local Air Pollutants:** Replacing gas appliances with electric appliances in addition to encouraging the switch to electric vehicles will lead to an increased demand for energy generation.² Despite this challenge, electrifying end-use gas appliances is critical for improving indoor air quality and safety. Non-combustion energy solutions such as fuel cells can provide clean power to these end-uses and meet the resulting increased demand.
3. **Reduce GHG Emissions:** Fuel cells are prepositioned to run on renewable gases as they become available. Fuel cells can create electricity from biogas without combustion, significantly reducing methane emissions and virtually eliminating emissions of harmful local air pollutants including nitrous oxide. The proposed edit to Marin County’s Reach Code would allow the County to work towards this goal more effectively.

A zero-carbon non-combustion biogas powered fuel cell could result in even lower GHG emissions than intermittent renewables like solar. While both energy sources are considered carbon neutral, fuel cells operate with a capacity factor of 95%, they offset far more grid power than intermittent resources.³

It is also important to understand that this approach positions the City to support the future use of clean hydrogen, a zero-carbon fuel that is widely seen as a critical tool in achieving a net-zero energy transition.

As Marin County’s Climate Action Plan states, the majority of GHG emissions comes from fossil fuel *combustion* which in turn is used for electricity, transportation, industry, heating, etc.⁴ Non-combustion fuel cells can support building decarbonization as long as the approach to building decarbonization does not have the unintended consequence of prohibiting their use.

Thank you for the opportunity to provide input on San Rafael’s Proposed Building Electrification Reach Code. We believe sound policies that support building decarbonization and ensure energy reliability are key to the successful implementation of the goals of reducing greenhouse gas emissions and promoting resiliency. Please consider us a resource on distributed energy resources and building decarbonization,

² NREL, July 2018. “[NREL Analysis Explores Demand-Side Impacts of a Highly Electrified Future.](#)”

³ American Biogas Council, “[Why Biogas](#)”

⁴ ⁴ Marin Climate Action Plan 2030 (December 2020), p. 4.



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and feel free to reach out if I can be helpful.

Best Regards,

Manaal Shafi

Government & Community Relations Coordinator

CC:

Mayor Kate Colin
Councilmember Gulati
Councilmember Hill
Councilmember Bushey
Councilmember Kertz

Cory Bytof, Sustainability Program Manager
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