

BCSE Comments on the Proposed Federal Definition of a Zero Emissions Building

February 5, 2024

Thank you for the opportunity for the Business Council for Sustainable Energy (BCSE) to provide its views in response to the request for comments on the proposed National Definition for a Zero Emissions Building.

The Council appreciates the work of the staff at the White House Office of Domestic Climate Policy and the Department of Energy's (DOE) Building Technologies Office for recognizing the importance of decarbonizing the built environment in achieving sustainability and economy-wide net zero goals.

As stated in the proposal, the intent of the proposed definition is to "create a standardized, consistent, and measurable basis for a zero operating emissions building." Understanding that buildings contribute 40 percent of U.S greenhouse gas emissions, the design of a net zero building definition is vital to near-term and long-term emissions abatement in this sector.

BCSE advocates for energy and environmental policies that promote markets for clean, efficient, and sustainable energy products and services. Since its founding in 1992, BCSE has been focused on policy adoption that will increase the deployment of energy efficiency, natural gas, renewable energy, as well as energy storage, sustainable transportation, and emerging decarbonization technologies. As a diverse coalition, not all BCSE members take a position or endorse the issues discussed in this submission.

BCSE would like to acknowledge the submissions made in response to this request for comment provided by the Alliance to Save Energy, the American Gas Association, the Combined Heat and Power Association, the Fuel Cell and Hydrogen Energy Association, the North American Insulation Manufacturers Association and the Polyisocyanurate Insulation Manufacturers Association. BCSE encourages the thoughtful consideration of the issues and recommendations included in these submissions.

BCSE encourages the Administration and DOE to consider the following comments on the proposed federal definition for a zero emission building:

1) Design Holistic Criteria for Buildings Decarbonization to Maximize Impact

BCSE has supported federal initiatives that help states, localities and other parties understand technologies and policies that can enable building decarbonization. Those initiatives that are most impactful take a comprehensive and holistic approach to building decarbonization technologies and practices. Energy efficiency improvements, including building envelope upgrades, need to be the foundation for any successful building decarbonization strategy. Providing energy reliability and affordability are also essential elements of this foundation.

BCSE has recommended that the federal government offer information and tools to state and local jurisdictions to help guide them as they craft programs to reduce emissions from buildings.



Noting the proposed zero emissions building definition's three criteria: 1) high efficiency; 2) powered solely by clean energy; and 3) no on-site emissions, BCSE urges significant changes to this criteria approach to ensure it is relevant for the full range and diversity of building stock, especially in the near-term. Instead, BCSE recommends a focus on net zero, with criteria that will lead to secure and affordable building energy systems.

As stated in BCSE's comments in response to the proposed revised energy performance standard for federal buildings, "adopting a technology-inclusive, whole buildings approach throughout the project lifecycle will reduce costs, deliver significant co-benefits in the areas of energy reliability, energy security and energy resilience – as well as allow for more ambition over time."¹

Decarbonizing the built environment to help achieve the Administration's economy-wide net zero emissions goal will require a suite of performance-based policy tools that prioritize transparency, promote a level playing field and offer flexibility. BCSE's members represent the technologies and services that will reduce emissions in the buildings sector in the near term. As the market evolves, these same companies and industries will help innovate and iterate new solutions as decarbonization advances.

BCSE urges DOE to revise the draft definition and adopt a more holistic view in improving building energy and environmental performance and specifically, adopting a more comprehensive, inclusive, and flexible approach.

Further, BCSE recommends more clarity in the title of this draft definition to reflect its focus on operational emissions. This would provide increased transparency in the scope of the definition for all stakeholders.

Finally, it is recommended that the definition for zero emissions buildings include a regular cadence to verify continued achievement of zero emission operations. This presents an opportunity to highlight the available digital tools to optimize and track carbon emissions in real time.

2) Recognize the Higher Value of Near-Term Emissions Reductions in the Decarbonization of the Built Environment

The draft definition should be amended to recognize the high value of near-term emissions reductions. As noted by the Carbon Leadership Forum, "When we evaluate emission reduction strategies, there are two things to keep in mind: the amount of reduction, and when it happens. Because emissions are cumulative and because we have a limited amount of time to reduce them, carbon reductions now have more value than carbon reductions in the future."²

¹ Please see: [BCSE Comments on the Clean Energy for New Federal Buildings and Major Renovations of Federal Buildings, February 20, 2023](#)

² <https://carbonleadershipforum.org/wp-content/uploads/2017/06/CLF-Time-Value-of-Carbon.pdf>



The draft definition can do more to impact near-term emission reductions by including a building envelope backstop requirement. This requirement will work in tandem with a performance target that is more stringent than the current model energy code.

A recent analysis released by Lawrence Berkely National Lab³ found that the U.S. could substantially meet its 2050 building decarbonization goals through a portfolio of building energy efficiency, demand flexibility, and electrification measures. Among those measures studied, envelope improvements account for the single-largest share of CO₂ emissions reductions (33%–37%). To fully capture these available emissions reductions, the method of measurement for new construction in the draft definition should include a mandatory prescriptive envelope requirement.⁴

In addition, the current proposed definition relies too heavily on an electrification-only strategy and has the risk of producing significant carbon emissions in the short-term by not including a broader range of methods in its definition. This includes all forms of at- or near-load / behind-the-meter power generation including fuel cells, reciprocating engines, microturbines, Combined Heat and Power Systems (CHP) with natural gas, and CHP with low- and zero-carbon fuels. It also should include renewable fuels including renewable natural gas (RNG), renewable propane and fuel oil, and renewable/low-carbon hydrogen, among others.

3) Expand the Emission Reduction Methods Included in the Definition's Draft Criteria

BCSE urges the Administration and DOE to revise the draft definition to capture and recognize the technologies and practices available to building owners and managers that will lead to net zero operations more fully. In addition, any national definition should ensure flexibility and pathways for new technologies and innovative practices to be recognized and deployed within a net zero building.

Specifically, the draft criteria should be expanded to include a broader set of emission reduction methods. This includes but is not limited to CHP, direct use natural gas and the use of renewable fuels and low and zero carbon hydrogen for at- or near-load behind the meter power generation, as stated above.

This change would allow DERs to reduce the operation of large, centralized fossil power plants, while providing on-site resiliency. Please see the following examples:

Distributed Energy Resources and Net Zero Strategies

Deployment of Distributed Energy Resources (DERs) such as fuel cells and other back-up generation technologies such as reciprocating engines provide critical energy security and

³ "Demand-side solution in the U.S. building sector could achieve deep emission reductions and avoid over \$100 billion in power sector costs," One Earth Journal (Langevin, et al.), August 2023.

⁴ Regardless of the compliance path chosen or the additional efficiency measures selected under the latest IECC or ASHRAE 90.1 model code as required in the draft definition, the building should also be required to meet or exceed the 2021 IECC prescriptive thermal envelope requirements for air leakage and roof/ceiling, wall, floor, and slab insulation (envelope backstop).



resiliency services, while also reducing air pollution and greenhouse gas emissions. A top-notch healthcare facility in Southern California utilizes an on-site microgrid comprised of fuel cells to ensure uninterrupted power and continued service to the community. This microgrid reduces marginal CO₂e emissions by 25.5%, or 280 lb/MWh.

The country's first CO₂ net-zero data center microgrid, also in California, supports critical cloud computing and artificial intelligence capabilities. This data center also actively supports the community's resiliency by being able to "island" itself from the electricity grid during periods of grid stress or electrical emergencies; thereby freeing critical megawatts for other customers.

In New York, a grocery store located on Long Island with a 300 KWh fuel cell microgrid provides uninterrupted power. This is a region that has dealt with severe weather events in the past. This microgrid provides assurances that this store will be able to power through another event, and in the process, it also reduces marginal CO₂e emissions by 40.7%.

In Texas during Winter Storm Uri in 2022, and in similar climate related events since, behind-the-meter DER's ensured critical services such as hospitals and grocery stores remained operational and available to their communities when the electrical grid was unable to perform.

Analysis shows that CHP systems installed through 2035 and operating through 2050 are expected to cause a net reduction in carbon emissions over their system life. Natural gas CHP systems have lower electric emissions in terms of pounds CO₂ /MWh than current marginal grid generation in all regions of the country. In fact, CHP's operating efficiency and high-capacity factor enables it to displace more marginal grid generation and reduce more carbon emissions than the same capacity of solar PV or wind. This case holds true in nearly every region as the grid gets greener in the next 20 plus years.

Also, in response to the request for feedback on whether biofuels should be allowed for on-site consumption, per above, BCSE supports biofuels, such as RNG, being allowed for on-site consumption. A building owner should be eligible to purchase RNG with associated environmental attributes directly through its energy supplier, utility and/or a third-party offerings. The purchase of RNG and associated attributes can be tracked and verified through third-party verification bodies, just like renewable electricity credits. All buildings should have the same opportunity to purchase renewable energy and claim emission reductions regardless of whether that energy comes in the form of electrons or molecules.

4) Allow Renewable Electricity Certificates to Be Used for On-Site Emissions

In its current form, the definition explicitly states direct on-site (Scope 1) emissions must equal zero, not allowing any on-site fossil fuel combustion. However, the purchase of Renewable Electricity Certificates (RECs) are allowed for grid purchased electricity used in buildings (Scope 2).

The prohibition of any on-site emissions would have the effect of barring a wide swath of DERs even where those on-site DERs are far cleaner than the grid electricity they are displacing.



The proposed definition should treat all electricity generation in the same manner, and therefore be amended to allow the procurement of RECs for Scope 1 emissions, just as it is available in the draft definition for Scope 2 emissions.

Conclusion

To review, the proposed federal definition of a zero emission building should be amended to recognize the importance of a holistic set of net zero building strategies and catalyze investment and deployment of near-term emission reductions.

BCSE requests the opportunity to discuss these recommendations with Administration and DOE staff. Please contact BCSE President, [Lisa Jacobson](#) with any questions and to schedule a meeting to discuss these views as soon possible. Thank you for your consideration.