Shaping Tomorrow's Built Environment Today

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Mr. Jeremy Williams
Program Specialist
U.S. Department of Energy, Building Technologies Program
1000 Independence Ave SW,
Washington, DC 20585

RE: **Response to Supplemental Notice of Proposed Rulemaking for *Clean Energy for New Federal Buildings and Major Renovations of Federal Buildings* (Docket ID No. EERE-2010-BT-STD-0031)**

Dear Mr. Williams:

Thank you for the opportunity to respond to the Supplemental Notice of Proposed Rulemaking (SNOPR) for *Clean Energy for New Federal Buildings and Major Renovations of Federal Buildings*. As an organization committed to advancing energy efficiency and comfort in buildings, ASHRAE supports the efforts of the Department of Energy (DOE) to improve energy performance for new federal buildings and major renovations of existing federal buildings. ASHRAE is developing and revising standards and guidelines to reduce building GHG emissions while maintaining or improving building indoor environmental quality, sustainability, and resilience.[1,2] To assist the administration in reaching its zero-emission building portfolio goals[3], ASHRAE is providing the following comments to the proposed rule, with a focus on proposed changes to §433 *Energy Efficiency Standards For The Design And Construction Of New Federal Commercial And Multi Family High Rise Residential Buildings.*

1. Carbon Dioxide Equivalent (CO_2e)

We support the decision by DOE to include the option of using CO_2e as a metric for measuring on-site fossil fuel usage emissions per ft^2. There is an importance in the commonality of metrics across jurisdictions to allow for collaborative efforts as we strive to decarbonize our buildings. As we improve our understanding of how to best decarbonize buildings, the DOE should also consider including embodied carbon in its regulations if authorized.

[1] https://www.ashrae.org/about/ashrae-task-force-for-building-decarbonization
[2] https://www.ashrae.org/file%20library/about/position%20documents/pd_buildingdecarbonization_2022.pdf
[3] EO 14057: Catalyzing Clean Energy Industries and Jobs Through Federal Sustainability

2. ASHRAE Standard 90.1-2019 vs. Fossil Fuel Compliant Building Design

The analyses DOE conducted on ASHRAE Standard 90.1-2019 vs. the proposed Fossil Fuel Compliant Building Design showed a relatively small savings by using the proposed rule – only 0.223 percent savings in new Federal construction costs. However, ASHRAE recently released the more efficient ASHRAE Standard 90.1-2022. As such, DOE should reassess the potential savings of the proposed Fossil Fuel Compliant Building Design compared to ASHRAE Standard 90.1-2022 to ensure the new rule will truly be the most efficient and cost-effective path to reducing building GHG emissions.

3. Whole Building Simulation

DOE proposed in the 2010 NOPR that the fossil fuel-generated energy consumption of a proposed new Federal building or major renovation of a federal building be estimated using the Performance Rating Method found in *Appendix G of ANSI/ASHRAE/IESNA Standard 90.1-2004 For Commercial And Multi-Family High-Rise Residential*. This decision was reaffirmed in the 2014 SNOPR. In this SNOPR, DOE proposes to change the adopted approach to major renovations to system and components in a manner which will no longer require whole building simulation and instead rely on FEMP designated or ENERGY STAR equipment. However, the recently released Standard 90.1-2022 modifies Appendix G methodology for retrofit projects to simplify the analysis and moderate stringency recognizing the fundamental differences between new construction and renovations. The following changes are introduced:

- Major renovation projects must follow the same modeling rules as new construction projects but the performance target that they must meet in order to comply is relaxed by 5% compared to the target for new construction projects. These rules apply to projects that include at least two of the following three replacements: (a) 50% of HVAC, (b) 50% of lighting (c) 25% of envelope.
- For retrofit projects of more limited scope, the modeling rules are fully reworked to substantially simplify the analysis. Following the new Section G3.3, systems and equipment that are left as is must be modeled the same in the baseline and proposed design, based on the existing conditions. New and retrofitted systems must be modeled as shown on design documents in the proposed design, and minimally compliant with the prescriptive code requirements in the baseline. Project complies if energy cost of the proposed design does not exceed baseline energy cost.

The new approach was embraced by the ASHRAE Standard 90.1 Committee with only one negative vote and there is an early indication that jurisdictions are interested in the new approach. The NYStretch code that is slanted for adoption as the New York City base code uses 90.1 2019 Appendix G as the only whole building performance path and incorporated the *Addendum co* (which includes changes described above) to ensure that retrofit projects are adequately supported.

Standard 90.1 is under continuous maintenance and is frequently being updated to include more accurate information and incorporate new technologies. ASHRAE recently released Standard 90.1-2022, incorporating over 80 changes to Standard 90.1-2019 which is the version currently affirmed as a federal standard by the U.S. Department of Treasury and DOE. By continuing to use the most recent version of Standard 90.1 Appendix G as a method for whole building simulations of major renovations of all scales, DOE will be ensuring the decarbonization efforts continue to improve with developments in technology and knowledge of decarbonization. ASHRAE respectfully requests that DOE reinstate Appendix G of ASHRAE Standard 90.1-2019 or 2022 in the proposal.

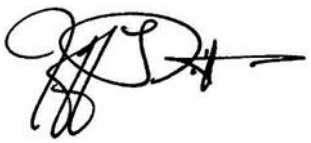
4. Proposed Heating System by Building Protype

In *Table IV.4 – Breakdown of Proposed Heating System by Building Protype*, DOE is proposing to convert annual fuel utilization efficiency (AFUE) gas furnaces to 99 percent electric boilers. However, a more effective alternative would be to convert AFUE gas furnaces to a system that uses heat pump rooftops and variable refrigerant flow (VRF). While electric boilers are cheaper and easier to install, heat pumps have superior energy efficiency. The proposed rule also fails to include thermal storage in its considerations of proposed heating systems.

5. Definition of *Scope 1 fossil fuel-based energy consumption*

The proposed rule specifically focuses on combustion of fuels in stationary sources in Scope 1 emissions, excluding mobile sources, fugitive emissions, or process emissions. In doing so, DOE is omitting primary sources of GHG emissions: building construction, methane leakage and refrigerants. To realistically achieve the administration's goal of a 50 percent reduction in GHG emissions by 2032 efforts such as this proposed rulemaking must give serious consideration to including all sources of GHG emissions in buildings.

ASHRAE is a global leader in advancing healthy, sustainable, efficient buildings through standards and guidelines that promote optimal energy performance and can reduce building GHG emissions. We are committed to providing technical guidance for lowering GHG emissions by improving building energy efficiency related to ventilation air systems, lighting systems, HVAC equipment selection and operation, envelope design, commissioning processes and much more. We look forward to continuing our collaboration with DOE towards higher performing federal buildings through updated codes and standards based on the most current scientific knowledge.



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