



Shaping Tomorrow's  
Built Environment Today

180 Technology Parkway, NW • Peachtree Corners, GA 30092-2977 • Tel: 404.636.8400 • Fax: 404.321.5478

Michael CA Schwedler, PE  
2021-2022 ASHRAE President

Trane  
3600 Pammel Creek Rd  
La Crosse, WI 54601-7599  
Phone: 608-787-4339  
Email: [mschwedler@trane.com](mailto:mschwedler@trane.com)

October 22, 2021

Ms. Kelly Speakes-Backman  
Assistant Secretary (Acting)  
U.S. Department of Energy  
Office of Energy Efficiency and Renewable Energy  
1000 Independence Avenue SW  
Washington, DC 20585

Sent via E-mail to: [Manufactured\\_Housing@ee.doe.gov](mailto:Manufactured_Housing@ee.doe.gov)

**Re: Proposed Energy Conservation Standards for Manufactured Housing  
Docket Number EERE-2009-BT-STD-0021  
Regulatory Information Number (RIN) 1904-AC11**

Dear Assistant Secretary Speakes-Backman:

ASHRAE appreciates the opportunity to submit comments to the U.S. Department of Energy on its Supplemental Notice (SNO PR) of proposed rulemaking entitled, *Energy Conservation Program: Energy Conservation Standards for Manufactured Housing*. With millions of Americans living in manufactured homes, strong energy efficiency standards are important to reducing the cost of living in these homes, as well as conserving energy, reducing greenhouse gas emissions, and improving the resiliency of these structures.

ASHRAE, founded in 1894, is a technical society advancing human well-being through sustainable technology for the built environment. The Society and its more than 50,000 individual members worldwide focus on building systems, energy efficiency, indoor environmental quality, refrigeration and sustainability. Through research, standards writing, publishing, certification and continuing education, ASHRAE shapes tomorrow's built environment today.

ASHRAE first published its flagship Standard 90, *Energy Conservation in New Building Design*, in 1975. Since that time, ASHRAE has developed two energy conservation standards:

one for low-rise residential buildings (ASHRAE Standard 90.2) and the other for commercial and multifamily residential structures four stories and above (ASHRAE Standard 90.1).

The most recent edition of ASHRAE's residential energy standard, ANSI/ASHRAE/IES Standard 90.2-2018, *Energy-Efficiency Design of Low-Rise Residential Buildings*, delivers residential building energy performance that is about 50% less energy consumptive than the energy efficiency defined by the 2006 IECC and 20% more efficient than the 2021 IECC. Importantly, manufactured housing is within the scope of ASHRAE Standard 90.2.

Because Standard 90.2 is a performance-based standard, it allows manufacturers credit for energy savings from a wider variety of measures than are used in other model codes such as the IECC prescriptive standards, including the use of higher efficiency heating and cooling equipment, and also solar panels. Providing for these renewable resources can also make manufactured housing more resilient, and keep occupants safer in times of disasters. Standard 90.2 also contains minimum requirements for ventilation air to assure healthy indoor air quality.

We recognize that by statute, as noted in the SNO PR, "EISA directs DOE to base the standards on the most recent version of the International Energy Conservation Code ("IECC") ...***except in cases where DOE finds that ...a more stringent standard would be more cost-effective...*** [emphasis added]"

ASHRAE 90.2-2018 is some 20% more stringent than the referenced IECC; so ASHRAE requests DOE evaluate whether ASHRAE Standard 90.2-2018 would be more cost effective, and for DOE to consider Standard 90.2 as a potential standard alongside or in place of the 2021 IECC, considering the total lifecycle construction (purchase price) and operating costs.

The consideration should also address the extent to which the current standards for energy efficiency are correctly enforced. ASHRAE 90.2 contains two chapters on verification and reporting, which requires inspections and tests. Thus it will be more stringent in reality than the level calculated assuming perfect compliance in both the business-as-usual case and the 90.2 case, further protecting the occupants against high bills and discomfort.

Over 80% of residents of manufactured housing have household incomes lower than the median household income.<sup>1</sup> As occupants of manufactured housing may be particularly cost sensitive, improved energy performance and the resulting cost reductions may be especially important to these populations. With DOE paying attention to equity matters as well as energy, ASHRAE hopes that DOE will thoughtfully consider the long-term energy costs faced by manufactured housing occupants and not focus too heavily on first costs.

ASHRAE would be happy to work with DOE and share any of its data and analysis to help assess if Standard 90.2 would be a more cost-effective energy conservation standard for manufactured housing. The Florida Solar Energy Center conducted an analysis demonstrating

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<sup>1</sup> May 2020. Manufactured Housing Institute. *2020 Manufactured Housing Facts: Industry Overview*.

that Standard 90.2-2018 is cost effective for on-site built construction.<sup>2</sup> DOE should re-analyze the costs and savings using cost assumptions specific to manufactured housing, accounting for the lower costs of bulk ordering of efficiency supplies by manufacturers of housing.

ASHRAE thanks DOE for its hard work in developing energy conservation standards, and we appreciate your consideration of these comments. ASHRAE looks forward to continued engagement in this rulemaking, and we welcome any follow-up questions about ASHRAE Standard 90.2-2018, our standards development process, or other technical matters. Please feel free to contact me directly or have your staff contact ASHRAE's government affairs staff at [GovAffairs@ASHRAE.org](mailto:GovAffairs@ASHRAE.org). Thank you again for your consideration of our comments.

Sincerely,

A handwritten signature in black ink that reads "Michael CA Schwedler". The signature is fluid and cursive, with a long horizontal flourish extending to the right.

Michael CA (Mick) Schwedler, P.E., Fellow ASHRAE, LEED AP  
2021-2022 ASHRAE President

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<sup>2</sup> Fairey, P., "Maximum Energy Efficiency Cost Effectiveness in New Home Construction." Report No. FSEC-RR-584-15, FSEC Energy Research Center, Cocoa, Florida. <https://publications.energyresearch.ucf.edu/wp-content/uploads/2018/06/FSEC-RR-584-15.pdf>