[6450-01-P]

DEPARTMENT OF ENERGY

10 CFR Part 460

[Docket Number EERE-2009-BT-BC-0021]

RIN: 1904-AC11

Energy Conservation Program: Energy Efficiency Standards for Manufactured Housing

AGENCY: Office of Energy Efficiency and Renewable Energy, Department of Energy.

ACTION: Request for information.

SUMMARY: The U.S. Department of Energy (DOE) has initiated the process to develop and publish energy efficiency standards for manufactured housing, as directed by the Energy Independence and Security Act of 2007 (EISA). To facilitate this process, enhance the quality of the standards and supporting documentation, and to allow interested parties to provide comments and information, DOE is publishing this request for information (RFI). DOE specifically is interested under this RFI in receiving information that relates to solar heat gain coefficient (SHGC) and window fenestration pertaining to manufactured housing for consideration under the proposed rule that currently is in development.

DATES: Written comments and information are requested on or before **[INSERT DATE 30 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER]**.

ADDRESSES: Interested parties are encouraged to submit comments electronically. However, comments may be submitted by any of the following methods:

- Federal eRulemaking Portal: www.regulations.gov. Follow the instructions for submitting comments.

- E-mail: MfgHousing2009BC0021@ee.doe.gov. Include docket number EERE-2009-BT-BC-0021 and/or Regulatory Identification Number (RIN) 1904-AC11 in the subject line of the message. All comments should clearly identify the name, address, and, if appropriate, organization of the commenter.

- Postal Mail: Ms. Brenda Edwards, U.S. Department of Energy, Building Technologies Program, Mailstop EE-5B, Request for Information for Energy Efficiency Standards for Manufactured Housing, Docket No. EERE-2009-BT-BC-0021, 1000 Independence Avenue, SW., Washington, DC 20585-0121. Please submit one signed paper original.

- Hand Delivery/Courier: Ms. Brenda Edwards, U.S. Department of Energy, Building Technologies Program, Sixth Floor, 950 L'Enfant Plaza, SW., Washington, DC 20024. Please submit one signed paper original.

Instructions: All submissions received must include the agency name and docket number for this rulemaking. No telefacsimiles (faxes) will be accepted. Due to potential delays in DOE's receipt and processing of mail sent through the U.S. Postal Service, we encourage respondents to

submit comments electronically to ensure timely receipt.

Docket: This RFI and any comments that DOE receives will be made available on the docket, which is available for review at www.regulations.gov and includes all Federal Register notices, public meeting attendees' lists and transcripts, comments, and other supporting documents/materials applicable to this rulemaking. All documents in the docket are listed in the www.regulations.gov index. However, not all documents listed in the index may be publicly available, such as information that is exempt from public disclosure.

A link to the docket webpage can be found at: http://www1.eere.energy.gov/buildings/appliance_standards/rulemaking.aspx?ruleid=97. This webpage contains a link to the docket for this notice on the www.regulations.gov website. The www.regulations.gov webpage contains simple instructions on how to access all documents, including public comments, in the docket.

FOR FURTHER INFORMATION CONTACT: Mr. Joseph Hagerman, Senior Advisor, U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy, Building Technologies Program, EE-5B, 1000 Independence Avenue, SW., Washington, DC, 20585-0121. Telephone: (202) 586-4549. E-mail: Manufactured.Housing@ee.doe.gov.

Kavita Vaidyanathan, U.S. Department of Energy, Office of the General Counsel, GC-33, 1000 Independence Avenue, SW., Washington, DC 20585-0121. Telephone: (202) 586-0669. E-mail: Kavita.Vaidyanathan@hq.doe.gov .

For information on how to submit or review public comments, contact Ms. Brenda Edwards, U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy, Building Technologies Program, Mailstop EE-5B, 1000 Independence Avenue, SW, Washington, DC 20585-0121. Telephone: (202) 586-2945. E-mail: Brenda.Edwards@ee.doe.gov.

SUPPLEMENTARY INFORMATION:

Table of Contents

I. Introduction

A. Authority

The Energy Independence and Security Act of 2007 (EISA, Pub. L. No. 110-140) requires that DOE establish by regulation standards for energy efficiency in manufactured housing. DOE is directed to base the standards on the most recent version of the International Energy Conservation Code (IECC) and any supplements to that document, except where DOE finds that the IECC is not cost-effective, or where a more stringent standard would be more cost-effective, based on the impact of the IECC on the purchase price of manufactured housing and on total life-cycle construction and operating costs. *See* 42 U.S.C. 17071(b)(1).

B. Background

On June 13, 2014, DOE published a notice of intent to establish a manufactured housing working group (MH working group) to discuss and, if possible, achieve consensus on recommendations for a proposed rule. 79 FR 33873. On July 16, 2014, the MH working group was established under the Appliance Standards and Rulemaking Federal Advisory Committee (ASRAC) in accordance with the Federal Advisory Committee Act and the Negotiated Rulemaking Act. *See* 79 FR 41456; 5 U.S.C. 561-570, App. 2. The MH working group was to consist of representatives of parties having a defined stake in the outcome of the proposed standards, and the group would consult, as appropriate, with a range of external experts on technical issues.

The MH working group consisted of 22 members, including one member from ASRAC and one DOE representative. The MH working group met in-person during six sets of meetings held August 4-5, August 21-22, September 9-10, September 22-23, October 1-2, and October 23-24. *See* 79 FR 48097 and 79 FR 59154.

On October 31, 2014, the MH working group reached consensus on energy efficiency standards in manufactured housing and assembled its recommendations for DOE into a term sheet that was presented to ASRAC. *See* EERE-2009-BT-BC-0021-0107. ASRAC approved the term sheet during an open meeting on December 1, 2014. As part of the term sheet, the MH working group recommended that DOE conduct additional analysis to inform the selection of solar heat gain coefficient (SHGC) requirements in certain climate zones. *See* EERE-2009-BT-

BC-0021-0107, p. 3, Recommendation 5. For more information on the MH working group's recommendations, please refer to the complete term sheet posted in the public docket. *See* EERE-2009-BT-BC-0021-0107.

II. Request for Information and Comments

A. Solar Heat Gain Coefficient Sensitivity Analysis

The MH working group did not recommend a specific SHGC value for climate zones 1B and 2. *See* EERE-2009-BT-BC-0021-0107, p. 2, Recommendation 3.1 for climate zones. Instead, the MH working group requested that DOE complete additional sensitivity analysis and select the SHGC based on that data. Specifically, the MH working group requested that DOE analyze window fenestration SHGC values of 0.25, 0.30, and 0.33. In previous energy simulation analysis, DOE performed a modeling analysis with windows uniformly distributed on the exterior walls of a manufactured home. While windows are frequently concentrated on one side of typical manufactured homes in practice, a uniform configuration for the energy simulation represented the fact that manufactured homes are sited in a full range of orientations (east, west, north, south, etc.). This configuration effectively calculates a weighted average energy use for homes facing all directions. For the sensitivity analysis, the MH working group requested energy simulation analysis that places all windows on a single side of the home, with windows facing the cardinal direction that would give SHGC the greatest impact on energy use. In response to the MH working group's request, DOE completed additional energy simulation analysis and life-cycle cost (LCC) analysis. For more information on the MH working group's recommendations with regard to SHGC, please refer to the complete term sheet posted in the public docket. *See*

EERE-2009-BT-BC-0021-0107.

For simulation of manufactured housing energy use, DOE used the EnergyPlus 5.0 software that was also used for energy simulation analytical support during meetings of the MH working group. EnergyPlus 5.0 is a detailed whole-building energy modeling tool that is useful for simulating the heating, cooling, and ventilation loads in a building. To simulate manufactured home energy use, DOE created a representative manufactured home using typical construction assumptions such as building geometry and framing member size. These assumptions are the same as those used for energy simulation during the MH working group process.

To maximize the impact of SHGC on energy use, DOE placed all windows on one side of the representative manufactured home, with that side facing west. DOE then generated energy use values for the three SHGC values in nine cities (four cities in climate zone 1B and five cities in climate zone 2, as recommended by the MH working group) and for two sizes of manufactured homes (single-section and double-section).

The LCC analysis calculates the total cost of ownership savings over a specified period of time. The total cost of ownership savings is equal to the total cost of ownership of a reference manufactured home minus the total cost of ownership of a manufactured home constructed in accordance with DOE's proposed standards. The reference home is modeled to meet the minimum energy efficiency requirements of the Department of Housing and Urban Development Code. *See* 24 CFR 3280 *et seq*. The LCC analysis includes both operating costs (primarily energy costs) and purchase cost of the manufactured home. DOE calculated energy costs (using

the energy simulation results) and added those to the purchase cost of the manufactured home, accounting for differences in the cost of the three window fenestration types. Regarding the purchase cost of the standards-compliant manufactured home, only the cost of window fenestration varied for each scenario of the SHGC sensitivity analysis. Other building thermal envelope components were modeled (for energy simulation and cost analysis) as specified in the MH working group term sheet. *See* EERE-2009-BT-BC-0021-0107. DOE calculated the 10-year total cost of ownership savings for manufactured housing with window fenestration SHGC of 0.25, 0.30, and 0.33. The 10-year analysis period represents the total cost of ownership for the first owner of the manufactured home and assumes the first owner keeps the manufactured home for 10 years. For more information with regard to DOE's LCC analysis, please refer to the complete term sheet posted in the public docket. *See* EERE-2009-BT-BC-0021-0107.

The energy simulation analysis indicated SHGC of 0.25 had the lowest energy use and SHGC of 0.33 had the highest energy use. Based on industry input collected from the MH working group, DOE assigned single-section manufactured home window fenestration prices (retail prices before sales tax) of $1446, $1389, and $1355 for SHGC of 0.25, 0.30, and 0.33, respectively.

The LCC analysis, based on the energy simulation results and window fenestration prices, determined that SHGC of 0.30 provided the largest 10-year cost of ownership savings in all four cities analyzed in climate zone 1B and in four of the five cities analyzed in climate zone 2. SHGC of 0.33 had the second most 10-year cost-of-ownership savings, and SHGC of 0.25 had the least 10-year cost-of-ownership savings. These 10-year cost-of-ownership savings results are

listed in Table II.1.

Table II.1 10-year Cost-of-Ownership Savings Results

		Single Section 10-year Total Cost-of-Ownership Savings			Double Section 10-year Total Cost-of-Ownership Savings		
Climate Zone	City	SHGC 0.25	SHGC 0.30	SHGC 0.33	SHGC 0.25	SHGC 0.30	SHGC 0.33
1B	Atlanta	$1,030	$1,046	$1,036	$2,003	$2,028	$2,007
1B	Charleston	$734	$746	$726	$1,479	$1,497	$1,460
1B	Jackson	$928	$942	$925	$1,807	$1,830	$1,799
1B	Birmingham	$836	$854	$842	$1,652	$1,681	$1,658
2	Memphis	$962	$974	$962	$1,736	$1,757	$1,733
2	El Paso	$828	$830	$793	$1,524	$1,528	$1,461
2	San Francisco	$179	$197	$195	$504	$532	$520
2	Baltimore	$1,240	$1,265	$1,281	$1,996	$2,037	$2,059
2	Albuquerque	$927	$934	$920	$1,702	$1,714	$1,682

Based on the 10-year cost-of-ownership savings results, DOE concluded that an SHGC requirement of 0.30 would lead to the most cost-effective manufactured home for both climate zones 1B and 2. DOE requests comment on whether to include an SHGC requirement of 0.30 for climate zones 1B and 2 in development of the proposed rule.

B. Window Fenestration Energy Efficiency Programs for Manufactured Housing

DOE is interested in receiving information that relates to window fenestration manufacturing and programs available to the manufactured housing industry. DOE requests comment on several topics related to window fenestration efficiency and manufactured homes:

1. DOE is interested in receiving additional information on existing window fenestration labeling programs available to the manufactured housing industry that may label the whole window or individual insulated glass units (IGUs.
2. DOE requests comment on the potential challenges related to determining the energy

efficiency of IGUs in manufactured homes or insuring the efficiency of IGUs in manufactured homes in connection with voluntary window fenestration labeling programs.

3. DOE requests comment on any other issues related to the regulation of window fenestration in manufactured housing.

III. Submission of Comments

DOE invites all interested parties to submit in writing by **[INSERT DATE 30 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER]**, comments and information on matters addressed in this RFI. After the close of the comment period, DOE will consider the public comments in development of the proposed rule.

DOE considers public participation to be a very important part of the process for developing energy efficiency standards for manufactured housing. DOE actively encourages the participation and interaction of the public during the comment period at each stage of the rulemaking process. Interactions with and between members of the public provide a balanced discussion of the issues and assist DOE in the rulemaking process. Anyone who wishes to be added to the DOE mailing list to receive future notices and information about this rulemaking should contact Ms. Brenda Edwards at (202) 586–2945, or via e-mail at Brenda.Edwards@ee.doe.gov.

Issued in Washington, DC, on February 3, 2015.

Kathleen B. Hogan
Deputy Assistant Secretary for Energy Efficiency
Energy Efficiency and Renewable Energy