[6450-01-P]

DEPARTMENT OF ENERGY

[EERE-2018-BT-DET-0014]

Final Determination Regarding Energy Efficiency Improvements in the 2018 International Energy Conservation Code (IECC)

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

ACTION: Notice of determination.

SUMMARY: The U.S. Department of Energy (DOE) has reviewed the 2018 edition of the International Energy Conservation Code (IECC) and determined the updated edition would improve energy efficiency in buildings subject to the code compared to the 2015 edition. DOE analysis indicates that buildings meeting the 2018 IECC (as compared with buildings meeting the 2015 IECC) would result in national site energy savings of 1.68 percent, national source energy savings of 1.91 percent, and national energy cost savings of approximately 1.97 percent of residential building energy consumption. Upon publication of this affirmative determination, each State is required by statute to certify that it has reviewed the provisions of its residential building code regarding energy efficiency, and made a determination as to whether to update its code to meet or exceed the 2018 IECC. Additionally, this notice provides guidance on state code review processes and associated certifications.

DATES: Certification statements provided by States shall be submitted by December 10, 2021.

ADDRESSES: A copy of the final analysis, as well as links to the Federal docket and public comments received, are available at: https://www.energycodes.gov/development/determinations.

Certification Statements must be addressed to the Building Technologies Office – Building Energy Codes Program Manager, U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy, 1000 Independence Avenue SW, EE-5B, Washington, DC 20585.

FOR FURTHER INFORMATION CONTACT: Jeremiah Williams; U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy, 1000 Independence Avenue SW, EE–5B, Washington, DC 20585; (202) 441–1288; *Jeremiah.Williams@ee.doe.gov*.

For legal issues, please contact Matthew Ring; U.S. Department of Energy, Office of the General Counsel, 1000 Independence Avenue SW, GC–33, Washington, DC 20585; (202) 586-2555; *Matthew.Ring@hq.doe.gov*.

SUPPLEMENTARY INFORMATION:

I. Background

Title III of the Energy Conservation and Production Act (ECPA), as amended, establishes requirements for building energy conservation standards, which are administered by the DOE Building Energy Codes Program. (42 U.S.C. 6831 *et seq*.) Section 304(a)(5)(A), as amended, of ECPA provides that whenever the 1992 CABO Model Energy Code, or any successor to that code, is revised, the Secretary of Energy (Secretary) must make a determination, not later than 12 months after such revision, whether the revised code would improve energy efficiency in residential buildings, and must publish notice of such determination in the *Federal Register*. (42 U.S.C. 6833(a)(5)(A)) If the Secretary determines that the revision of the CABO Model Energy Code, or any successor thereof, improves the level of energy efficiency in residential buildings then, not later than two years after the date of the publication of such affirmative determination, each State is required to certify that it has reviewed its residential building code regarding energy

efficiency, and made a determination as to whether it is appropriate to revise its code to meet or exceed the provisions of the successor code. (42 U.S.C. 6833(a)(5)(B))

The International Energy Conservation Code (IECC) is the contemporary successor to the CABO Model Energy Code specified in ECPA. The IECC is revised every three years through an established code development and consensus process administered by the International Code Council (ICC). Code change proposals may be submitted by any interested party, and are evaluated through a series of public hearings. As part of the ICC process, any interested party may submit proposals, as well as written comments or suggested changes to any proposal, and make arguments before a committee of experts assembled by the ICC. Proposals are presented to interested parties, and ultimately decided by a vote by the ICC Governmental Member Representatives, with the collection of accepted proposals forming the revised edition of the IECC. More information on the ICC code development process is available at: *https://www.iccsafe.org/codes-tech-support/codes/code-development-process/code-development-2/*.

The ICC published the most recent revision of the IECC, the 2018 edition of the IECC (2018 IECC or 2018 edition), on August 31, 2017, triggering the statutorily required DOE review process. To meet its statutory obligation, DOE conducted a preliminary analysis to quantify the expected energy savings associated with the 2018 IECC relative to the 2015 edition. Notice of this preliminary analysis was published in the Federal Register on May 2, 2019 (84 FR 18833), and is available at: *https://www.regulations.gov/docket?D=EERE-2018-BT-DET-0014*.

DOE reviewed the 2018 IECC to identify changes that have a direct impact on energy efficiency, and which could be reasonably quantified in estimating national average savings impacts. In total, 47 individual changes were identified, and of these changes:

- 11 were expected to reduce energy use;
- 3 were expected to increase energy use, and;
- 33 were considered administrative or not energy related.

A more detailed discussion of each of the 47 changes may be found in the final energy savings analysis, which is available at: *https://www.energycodes.gov/development/determinations*.

In its preliminary analysis, DOE found that many of the code changes are anticipated to have a neutral impact on energy efficiency, while a small number of code changes are anticipated to yield improved energy efficiency, and a smaller number of code changes are anticipated to be detrimental to energy efficiency. DOE's preliminary analysis identified two key changes that compose the bulk of the energy savings associated with the updated code:

- RE31 (Fenestration): Lowers (improves) fenestration U-factors in climate zones 3 through 8, and;
- RE127 (Lighting): Increases high-efficacy lighting from 75% to 90% of permanently installed fixtures in all homes.

These changes are expected to have a significant and measurable impact on energy efficiency in residential buildings because they increase energy savings, and impact a significant fraction of new homes. Overall, DOE's preliminary analysis found that the revisions in the 2018 IECC will yield annual aggregated site energy, source energy, and energy cost savings of 1.68 percent, 1.91 percent and 1.97 percent, respectively.

Together, the key impacts identified above are expected to result in life-cycle cost savings ranging from a low of $398 in climate zone 1 to a high of $1071 in climate zone 8.

Expected payback ranges from 0.0 years (immediate payback) in climate zones 1 and 2 to 1.8 years in climate zone 3. National average savings are $480 with a payback of 1.1 years.

II. Public Participation

DOE accepted public comments on the Notice of Preliminary Determination for the 2018 IECC until June 3, 2019, and received submissions from a total of three commenters. DOE received responsive comments from two commenters. DOE received a comment from a third commenter; however, this comment was not responsive because it was outside the scope of this determination. Responsive public comments and associated DOE answers are described below.

Responsible Energy Codes Alliance (RECA)

Comment: RECA commented that it agrees with DOE's affirmative determination, supports DOE's dual qualitative/quantitative approach to assessing the 2018 IECC, and agrees that the improvements in fenestration efficiency and lighting efficiency will likely have the most directly positive impact on energy conservation. RECA also agrees with DOE's split qualitative assessment of the Energy Rating Index (ERI) changes, noting that higher thresholds will reduce energy efficiency while enhanced envelope backstops will help maintain or increase energy efficiency.

RECA also commented that the consideration of costs and cost effectiveness metrics are not referenced in 42 U.S.C. 6833(a)(5)(A), and suggests they are therefore not appropriate to include in either the preliminary or final determination. RECA further noted that inclusion of cost information in the preliminary determination departs from the precedent of previous determinations. RECA urged DOE to either eliminate the cost discussion from the final determination or, at a minimum, clarify that the cost effectiveness and payback information is provided for informational purposes and does not play a role in the determination. RECA noted

that DOE's work to provide technical assistance, including cost effectiveness information to states and local jurisdictions, is part of its statutory directive in 42 U.S.C. 6833(d), but that such information should be provided through channels other than this determination.

Response: DOE notes that energy savings is the deciding factor in making its preliminary and final determinations. Cost and payback information is included for informational purposes only. DOE also intends to continue to conduct comprehensive cost-effectiveness analysis as a state technical assistance function in the future.

Edison Electric Institute (EEI)

Comment: EEI commented that keeping the site-source conversion factor used in the preliminary analysis static going forward ignores regional variations, and ignores overall trends from a previous DOE report that gives alternative, generally lower, ratios based on a methodology that is responsive to future deployment of renewable electricity generation. EEI indicated that national source factors for electricity should decline over a 30-year period, or a projected value representing the 2030 or 2040 timeframe should be selected, to account for the increased prevalence of renewable energy on the utility grid.

Response: DOE acknowledges that the primary energy sources for electricity generation are changing and agrees in principle that renewable energy will likely result in lower site-source ratios in the future. However, DOE's determination methodology is based simply on a comparison of the first-year energy cost savings of the 2018 IECC (relative to the previous 2015 IECC). The calculation relies on current factors and does not make projections beyond the first year, as would be necessary to apply the site-source conversion factors suggested by the comment. The out-year approach would also further introduce risk associated with future uncertainties regarding fuel prices, the shares and distribution of heating fuels among new

residences, the regional distribution of new residences, or the mix of primary energy sources for electricity generation. DOE therefore elects not to incorporate the suggested change, although it notes that declining factors may be appropriate for other forms of analysis where building energy code impacts are projected into the future or assessed relative to changing grid conditions.

III. Determination Statement

Residential buildings meeting the 2018 IECC (compared to the previous 2015 IECC edition) are expected to incur the following savings on a weighted national average basis:

- 1.68 percent of annual *site energy;*
- 1.91 percent of annual *source energy*, and;
- 1.97 percent of annual *energy costs.*

DOE has rendered the conclusion that the 2018 IECC will improve energy efficiency in residential buildings, and, therefore, receives an affirmative determination under Section 304(a) of ECPA.

IV. State Certification

Based on today's determination, each State is required to review the provisions of its residential building code regarding energy efficiency, and determine whether it is appropriate for such state to revise its building code to meet or exceed the energy efficiency provisions of the 2018 IECC. (42 U.S.C. 6833(a)(5)(B)) This action must be made not later than 2 years from the date of publication of a Notice of Determination, unless an extension is provided.

A. State Review and Update

The State determination must be: (1) made after public notice and hearing; (2) in writing; (3) based upon findings and upon the evidence presented at the hearing; and (4) made available to the public. (42 U.S.C. 6833(a)(2)) States have discretion with regard to the hearing procedures

they use, subject to providing an adequate opportunity for members of the public to be heard and to present relevant information. The Department recommends publication of any notice of public hearing through appropriate and prominent media outlets, such as in a newspaper of general circulation. States should also be aware that this determination does not apply to IECC chapters specific to nonresidential buildings[1], as defined in the IECC. Therefore, States should certify their evaluations of their State building codes for residential buildings with respect to all provisions of the IECC, except for those chapters not affecting residential buildings. Because state codes are based on a variety of model code editions, DOE encourages States to consider the energy efficiency improvements of the 2018 IECC, as well as other recent editions of the IECC, which may also represent a significant energy and cost savings opportunity. DOE determinations regarding earlier editions of the IECC are available on the DOE Building Energy Codes Program website.[2] Further national and state analysis is also available.[3]

B. State Certification Statements

State certifications are to be sent to the address provided in the **ADDRESSES** section, or may be submitted to BuildingEnergyCodes@ee.doe.gov, and must be submitted in accordance with the deadline identified in the **DATES** section. If a State makes a determination that it is not appropriate to revise the energy efficiency provisions of its residential building code, the State must submit to the Secretary, in writing, the reasons for this determination, which shall be made available to the public. (42 U.S.C. 6833(a)(4))

[1] For information regarding nonresidential buildings based on ANSI/ASHRAE/IES Standard 90.1 see https://www.energycodes.gov/development/determinations

[2] Available at http://www.energycodes.gov/regulations/determinations/previous

[3] Available at http://www.energycodes.gov/development/residential/iecc_analysis

The DOE Building Energy Codes Program tracks and reports State code adoption and certifications.[4] Once a State has adopted an updated residential code, DOE typically provides software, training, and support for the new code, as long as the new code is based on the national model code (*i.e.*, the 2018 IECC). DOE has issued previous guidance on how it intends to respond to technical assistance requests related to implementation resources, such as building energy code compliance software. (79 FR 15112) DOE also recognizes that some States develop their own codes that are only loosely related to the national model codes, and DOE does not typically provide technical support for those codes. DOE does not prescribe how each State adopts and enforces its energy codes.

Requests for Extensions

Section 304(c) of ECPA requires that the Secretary permit an extension of the deadline for complying with the certification requirements described above, if a State can demonstrate that it has made a good faith effort to comply with such requirements, and that it has made significant progress toward meeting its certification obligations. (42 U.S.C. 6833(c)) Such demonstrations could include one or both of the following: (1) a substantive plan for response to the requirements stated in Section 304; or (2) a statement that the State has appropriated or requested funds (within State funding procedures) to implement a plan that would respond to the requirements of Section 304 of ECPA. This list is not exhaustive.

[4] Available at http://www.energycodes.gov/adoption/states

Requests are to be sent to the address provided in the **ADDRESSES** section, or may be submitted to BuildingEnergyCodes@ee.doe.gov.

Signed in Washington, DC, on November 20, 2019.

Alexander N. Fitzsimmons,

Acting Deputy Assistant Secretary for Energy Efficiency,

Office of Energy Efficiency and Renewable Energy.

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