

on embargoed data from cognitive lab studies of 8th graders on the computer-based Technology and Engineering Literacy (TEL) assessment, in preparation for the 2013 TEL Pilot. The Board will be provided with specific test materials/questions for review that cannot be discussed/disclosed in an open meeting. Premature disclosure of these secure test items and materials would significantly impede implementation of the NAEP assessments, and is therefore protected by exemption 9(B) of section 552b(c) of Title 5 United States Code.

The Committee on Standards, Design and Methodology will meet in open session from 10:15 a.m. to 12:00 p.m., and in closed session from 12:00 p.m. to 12:30 p.m. During the closed session, the Committee will receive a briefing on secure data collected from the NAEP writing assessment regarding student uses of computer based options for the assessment and student responses collected as part of the assessment. The Board will be provided with specific assessment data for review that cannot be discussed/disclosed in an open meeting. Premature disclosure of these secure test results would significantly impede implementation of the NAEP assessments, and is therefore protected by exemption 9(B) of section 552b(c) of Title 5 United States Code.

On August 5, from 12:45 p.m. to 1:45 p.m. the full Board will meet in closed session to receive a briefing from NCES on the 2009 NAEP State Mapping Study. The Board will be provided with embargoed data and results that cannot be discussed in an open meeting prior to their official release by the National Center for Education Statistics on a date to be determined. Premature disclosure of these results would significantly impede implementation of the NAEP assessment program, and is therefore protected by exemption 9(B) of section 552b(c) of Title 5 United States Code.

From 2:00 p.m. to 3:00 p.m. in open sessions, the Board will receive updates from the Common Core State Assessment Consortia. Following this session, from 3:15 p.m. to 4:30 p.m., the Board will receive an overview of recent NAEP Report Card releases and discuss policy implications. The August 5, 2011 session of the Board meeting is scheduled to conclude at 4:30 p.m.

On August 6, 2011, the Nominations Committee will meet in closed session from 7:30 a.m. to 8:15 a.m. to receive an update on the status of finalists for Board terms beginning on October 1, 2011. Following the update, the Committee will discuss nominations for the 2011–2012 cycle. These discussions pertain solely to internal personnel

rules and practices of an agency and will disclose information of a personal nature where disclosure would constitute an unwarranted invasion of personal privacy. As such, the discussions are protected by exemptions 2 and 6 of section 552b(c) of Title 5 of the United States Code.

On August 6, the full Board will meet in open session from 8:30 a.m. to 10:30 a.m. From 8:30 a.m. to 9:30 a.m., the Board will receive an *Inside NAEP* briefing on maintaining NAEP Trends. The Board is scheduled to receive Committee reports and take action on Committee recommendations. The August 6, 2011 session of the Board meeting is scheduled to adjourn at 10:00 a.m.

Detailed minutes of the meeting, including summaries of the activities of the closed sessions and related matters that are informative to the public and consistent with the policy of section 5 U.S.C. 552b(c) will be available to the public within 14 days of the meeting. Records are kept of all Board proceedings and are available for public inspection at the U.S. Department of Education, National Assessment Governing Board, Suite #825, 800 North Capitol Street, NW., Washington, DC, from 9:00 a.m. to 5:00 p.m. Eastern Time, Monday through Friday.

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**Note:** The official version of this document is the document published in the **Federal Register**. Free Internet access to the official edition of the **Federal Register** and the Code of Federal Regulations is available on GPO Access at: <http://www.gpoaccess.gov/nara/index.html>.

Dated: July 14, 2011.

**Cornelia S. Orr,**

*Executive Director, National Assessment Governing Board, U.S. Department of Education.*

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## DEPARTMENT OF ENERGY

[Docket No. EERE–2006–BC–0132]

RIN 1904–AC18

### **Building Energy Standards Program: Determination Regarding Energy Efficiency Improvements in the Energy Standard for Buildings, Except Low-Rise Residential Buildings, ANSI/ASHRAE/IESNA Standard 90.1–2007**

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

**ACTION:** Notice of final determination.

**SUMMARY:** The Department of Energy (DOE) has determined that the 2007 edition of the *Energy Standard for Buildings, Except Low-Rise Residential Buildings*, American National Standards Institute (ANSI)/American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) Illuminating Engineering Society of North America (IESNA) Standard 90.1–2007, (Standard 90.1–2007) would achieve greater energy efficiency in buildings subject to the code, than the 2004 edition (Standard 90.1–2004 or the 2004 edition). Also, DOE has determined that the quantitative analysis of the energy consumption of buildings built to Standard 90.1–2007, as compared with buildings built to Standard 90.1–2004, indicates national source energy savings of approximately 3.9 percent of commercial building energy consumption. Additionally, DOE has determined site energy savings are estimated to be approximately 4.6 percent. Upon publication of this affirmative final determination, States are required to certify that they have reviewed the provisions of their commercial building code regarding energy efficiency, and as necessary, updated their code to meet or exceed Standard 90.1–2007. Additionally, this notice provides guidance to States on Certifications, and Requests for Extensions of Deadlines for Certification Statements.

**DATES:** Certification statements by the States must be provided by July 20, 2013

**ADDRESSES:** Certification Statements must be addressed to the Buildings Technologies Program-Building Energy Codes Program Manager, U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy, Forrestal Building, Mail Station EE–2J, 1000 Independence Avenue, SW., Washington, DC 20585–0121.

**FOR FURTHER INFORMATION CONTACT:** Michael Erbesfeld, U.S. Department of

Energy, Office of Energy Efficiency and Renewable Energy, Forrestal Building, Mail Station EE-2J, 1000 Independence Avenue, SW., Washington, DC 20585-0121, (202) 287-1874, e-mail: [michael.erbesfeld@ee.doe.gov](mailto:michael.erbesfeld@ee.doe.gov). For legal issues contact Mrs. Kavita Vaidyanathan, U.S. Department of Energy, Office of the General Counsel, Forrestal Building, Mail Station GC-71, 1000 Independence Avenue, SW., Washington, DC 20585-0121, (202) 586-0669, e-mail: [Kavita.Vaidyanathan@hq.doe.gov](mailto:Kavita.Vaidyanathan@hq.doe.gov).

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#### I. Introduction

##### A. Statutory Requirements

Title III of the Energy Conservation and Production Act, as amended (ECPA), establishes requirements for the Building Energy Efficiency Standards Program. (42 U.S.C. 6831 *et seq.*) Section 304(b) of ECPA provides that whenever the ANSI/ASHRAE/IESNA Standard 90.1-1989 (Standard 90.1-1989 or 1989 edition), or any successor to that code, is revised, the Secretary must make a determination, not later than 12 months after such revision, whether the revised code would improve energy efficiency in commercial buildings and must publish notice of such determination in the

**Federal Register.** (42 U.S.C. 6833 (b)(2)(A)) The Secretary may determine that the revision of Standard 90.1-1989 or any successor thereof, improves the level of energy efficiency in commercial buildings. If so, then not later than two years after the date of the publication of such affirmative determination, each State<sup>1</sup> is required to certify that it has reviewed and updated the provisions of its commercial building code regarding energy efficiency with respect to the revised or successor code. (42 U.S.C. 6833(b)(2)(B)(i)) The State must include in its certification a demonstration that the provisions of its commercial building code, regarding energy efficiency, meet or exceed the revised standard. (42 U.S.C. 6833(b)(2)(B)(ii))

If the Secretary makes a determination that the revised standard will not improve energy efficiency in commercial buildings, State commercial codes shall meet or exceed the last revised standard for which the Secretary has made a positive determination. (42 U.S.C. 6833(b)(2)(B)(ii)). On December 30, 2008, the Secretary published a determination in the **Federal Register** updating the reference code to Standard 90.1-2004. 73 FR 79868.

ECPA also requires the Secretary to permit extensions of the deadlines for the State certification if a State can demonstrate that it has made a good faith effort to comply with the requirements of Section 304 of ECPA and that it has made significant progress in doing so. (42 U.S.C. 6833(c))

##### B. Background

###### 1. Publication of Standard 90.1-2007

ASHRAE and the Illuminating Engineering Society of North America (IESNA) approved the publication of the 2007 edition of *Energy Standard for Buildings Except Low-rise Residential Buildings*, in December 2007.

The Standard was developed under ANSI-approved consensus standard procedures. Standard 90.1 is under continuous maintenance by a Standing Standard Project Committee (SSPC) for which the ASHRAE Standard Committee has established a documented program for regular publication of addenda or revisions, including procedures for timely, documented, consensus action on requests for change to any part of the standard. The ANSI approves addenda prior to their publication by ASHRAE and IESNA and therefore prior to their

inclusion in a new version of Standard 90.1. ANSI approved the final addendum for inclusion in Standard 90.1-2007 on December 18, 2007. The 2007 edition was published in December 2007.

###### 2. Preliminary Determination

DOE published in the **Federal Register** a Notice of Preliminary Determination for Standard 90.1-2007 that the 2007 edition would achieve greater energy efficiency in buildings subject to the code, than the 2004 edition. 75 FR 54117, September 30, 2010. In arriving at a final determination, the DOE first reviewed all significant changes between the 2004 edition and the 2007 edition of Standard 90.1. Standard 90.1 is complex and covers a broad spectrum of the energy related components and systems in buildings ranging from simple storage buildings to complex hospitals and laboratories.

The size of buildings addressed range from those smaller than single family homes to the largest buildings in the world. The approach to development of the standard used in the 2007 edition was not changed from that used for the 2004 edition, with no changes to the scope or the way components are defined. DOE determined that because no significant changes were made to the structure, scope, or component definitions of Standard 90.1-2004, a similar methodology used for the analysis of Standard 90.1-2004 could be utilized for the analysis of Standard 90.1-2007, consisting of a qualitative comparison of the textual changes to requirements in Standard 90.1-2007 from Standard 90.1-2004, and a quantitative estimate of the energy savings developed from whole building simulations of a standard set of buildings constructed to both Standards over a range of U.S. climates. DOE chose to modify several details of how the quantitative analysis would be done, including changes in the simulation tool used, the building models, and the procedure and data for weighting of results by building type and climate. A detailed discussion of the analysis methodology, which was subject to public comment in 2009, can be found in the Notice of Preliminary Determination for Standard 90.1-2007. 75 FR 54117 (Sept. 30, 2010)

###### 3. Public Comments Regarding the Preliminary Determination

DOE accepted public comments on the preliminary determination for Standard 90.1-2007 until October 4, 2010. DOE received submissions from a total of five different entities.

<sup>1</sup> The term "State" is defined to include each of the several States, the District of Columbia, the Commonwealth of Puerto Rico, and any territory and possession of the United States. (42 U.S.C. 6832(11))

The Responsible Energy Codes Alliance (RECA) submitted a written comment (Docket No. EERE-2006-BC-0132-0004.1, pgs. 2-4) stating that it strongly supports the Department's determination that the 2007 edition of ASHRAE Standard 90.1 would achieve greater energy efficiency in buildings than the 2004 edition. RECA also commented that the Department should follow up individually with each State to ensure that States are complying with their obligations under federal law and that the Department should make the certification letters that States submit available on the Department's Web site, along with any additional materials provided by the Department to support state compliance. RECA went on to comment that the Department's decision to publish a Notice of Preliminary Determination rather than a Notice of Determination is unnecessary to comply with the Energy Policy Act and that adding an extra level of administrative procedure is likely to further delay determinations on future editions of the model energy codes. Lastly, RECA commented that the Secretary of Energy should carefully consider the magnitude of each addendum approved for ASHRAE 90.1 in between publications and exercise statutory discretion to issue determinations any time the code would be significantly improved.

In response to RECA's comment concerning following up with the States in their certification efforts, DOE notes that under section 304(d) and (e) of ECPA DOE provides technical assistance and funding to States to implement the requirements of Section 304, and to improve and implement State commercial building energy efficiency codes, including increasing and verifying compliance with such codes. As certification letters are received from the States, they will be made public on the Department's Web site at <http://www.energycodes.gov/states/>. The certification letters will also be forwarded to the State Energy Program for their consideration. DOE further notes that a listing of those States that have submitted certification letters from their respective governors under the requirements of the American Recovery and Reinvestment Act is available at <http://www.energy.gov/InYourState.htm>. The letters can be found on each State's Web site under Recovery Act activity.

With regard to issuing a preliminary determination, the Department believes that there is value in providing an opportunity for public comment on its analysis, particularly given that a positive determination could potentially impact States. Lastly, DOE interprets the

language in Section 304(b)(2) of ECPA to mean that when a comprehensive revision of the ASHRAE Standard is published (which in this case is ASHRAE Standard 90.1-2007), then that revised or successor standard triggers the Secretary's obligation to issue a determination as to whether the revised standard improves energy efficiency. While the addenda process is part of the ongoing maintenance of the standard and thus continually modifies or revises existing standard over time, it would be an unreasonable reading of the statute to categorize each addenda in this maintenance process as a "revised or successor standard" within the meaning of Section 304(b)(2) of ECPA, so as to require a determination by the Secretary. Such an interpretation of the statute would put an unreasonable burden both on the States and DOE. For the States, a determination by the Secretary requires some State action, and what is required depends upon whether the Secretary issues an affirmative or a negative determination. If the Secretary were to issue a determination after each addenda was published, the States would be constantly required to change their codes. This would affect the stability and certainty of State commercial building codes.

The American Chemistry Council (ACC) submitted a written comment (Docket No. EERE-2006-BC-0132-0005.1, pg. 1) stating that it strongly supports the Department's determination that the 2007 edition of ASHRAE Standard 90.1 would achieve greater energy efficiency in buildings than the 2004 edition.

The Edison Electric Institute (EEI) submitted a written comment (Docket No. EERE-2006-BC-0132-0002.1, pgs. 2-3) supporting the preliminary determination with a suggested modification to the estimated source energy savings. EEI has one concern about the analysis from the **Federal Register** notice, and that is the statement: "To estimate primary energy, all electrical energy use intensities were first converted to primary energy using a factor of 10,800 Btus primary energy per kWh" and "Natural Gas EUI's in the prototypes were converted to primary energy using a factor of 1.089 Btus primary energy per Btu of site natural gas energy use". EEI stated that the electricity estimate value of 10,800 is overstated as EIA "assigns" a heat rate to all renewable electricity generation, which accounted for over 10.4% of U.S. generation in 2009. This type of "accounting" overstates the primary energy usage from electricity by a significant amount (over 10.4%). EEI

also stated concerns over the natural gas estimate value appearing to only estimate upstream energy losses for domestic land-based gas drilling activities, while ignoring the losses associated with the importation of liquefied natural gas (LNG), increased energy associated with deepwater offshore drilling, increased energy and other energy losses associated with the hydraulic fracturing process (energy used to move and heat water, energy used to move and pump sand, and the energy used to produce and mix all of the chemicals used in the process), and energy losses from the flaring of natural gas due to imports of imported petroleum products.

EEI further stated that there is no agreement among entities that have performed recent analyses as to what the correct upstream multipliers should be and that a review of these documents shows significant differences in the estimates. EEI stated that since there is no agreement among different parties as to what the appropriate multipliers are, with all of the variability in assumptions, that DOE publish its determination on the basis of site energy analytics, which can be measured and verified with real world data that has much lower uncertainty and error ranges.

The Department has chosen to be consistent within their energy analyses by using Energy Information Administration's (EIA) conversion factors solely and by choosing not to mix and match conversion factors. DOE recognizes that these conversion factors are estimates and not true conversion factors due to some types of utility energy inputs not having known conversion factors and other inputs having multiple generally accepted conversion factors. See a more detailed discussion at <http://www.eia.doe.gov/emeu/mecs/mecs94/ei/elec.html>. That said, DOE still believes that despite the fact that these are estimates, the source energy analysis is important to the discussion of global resources and environmental issues. It should also be noted that the site energy savings are provided in the determination. Ultimately the focus of this determination is on estimating whether the adoption of the revised standard as the basis of State building codes would result in energy savings as compared to the previous version.

The Building Codes Assistance Project (BCAP) submitted a written comment (Docket No. EERE-2006-BC-0132-0003.1, pgs. 1-2) supporting the DOE's determination and suggests that DOE follow up with the States after publication of the Final Determination

as well as making public which States comply with the statutory requirements to submit certification letters within two years of publication. As stated above in response to RECA's comments, DOE intends to make public the certification letters received from States, and under section 304(e) of ECPA DOE provides funding and technical assistance to States to implement the requirements of Section 304, and to improve and implement State residential and commercial building energy efficiency codes, including increasing and verifying compliance with such codes.

The Natural Resources Defense Council (NRDC) submitted a written comment (Docket No. EERE-2006-BC-0132-0006.1, pgs. 2-4) stating the following three issues: (1) They urge DOE to use this opportunity to clarify States' commitments with regards to updating and implementing their building energy codes; (2) clarify the limits of preemption under section 327 of the Energy Policy and Conservation Act (EPCA) (42 U.S.C. 6297); and (3) revise the energy efficiency standards for Federal buildings to reflect the most recent model energy codes. In regards to NRDC's first comment see response to RECA's comments above. In addition, Section III below describes the process for States to file certification statements with DOE.

NRDC's second comment is in reference to the preemption requirements applicable to the Federal energy efficiency standards for appliances. Essentially, section 307(f) of ECPA limits the ability of State and local building codes to require minimum energy efficiency levels of covered appliances. (See, 42 U.S.C. 6297(e)) It is important to note that today's final determination does not require States to adopt a specific building code. Today's final determination requires a State to review and update as necessary the provisions of its commercial building code regarding energy efficiency to ensure that the State's code provisions meet or exceed the energy efficiency requirements of Standard 90.1-2007. (42 U.S.C. 6833(b)(2)(B)(i)) Section 304 of ECPA does not prescribe how State code provisions must achieve the required energy efficiencies. Given that this final determination does not require States to adopt a specific method for achieving energy efficiency levels of covered appliances but rather it allows for States to adopt building codes that meet or exceed the energy efficiency requirements of Standard 90.1-2007. As such, there is no potential conflict between the State code provisions of

ECPA and the preemption language in EPCA.

In response to NRDC's final comment, DOE intends to update the baseline standards for Federal buildings that reference Standard 90.1 following the issuance of this final determination for Standard 90.1-2007.

## II. Summary of the Comparative Analysis

DOE's preliminary qualitative analysis was not revised from the preliminary determination for Standard 90.1-2007. DOE considers the preliminary qualitative analysis to be final and in support of this final determination for Standard 90.1-2007. The preliminary quantitative analysis was revised to reflect updated energy cost values based on EIA statistics for 2010. Both analyses can be found at [http://www.energycodes.gov/status/determinations\\_com.stm](http://www.energycodes.gov/status/determinations_com.stm), [Docket No. EERE-2006-BC-0132].

### A. Qualitative Analysis

#### 1. Discussion of Detailed Textual Analysis

DOE performed a detailed analysis of the differences between the textual requirements and stringencies of the two editions of Standard 90.1 in the scope of the standard, the building envelope requirements, the building lighting and power requirements, and the building mechanical equipment requirements.

The emphasis of the detailed requirement and stringency analysis was on looking at the specific changes that ASHRAE made in going from Standard 90.1-2004 to Standard 90.1-2007. ASHRAE publishes changes to their standards as addenda to the preceding standard and then bundles all the addenda together to form the next edition. ASHRAE processed 44 addenda to Standard 90.1-2004 to create Standard 90.1-2007. Each of these addenda was evaluated by DOE in preparing this determination.

In addition, each standard has multiple ways to demonstrate compliance, including a prescriptive set of requirements by section of the standard, various tradeoff approaches within those same sections, and a whole building performance method (Energy Cost Budget; "ECB"). For each addendum we identified whether it applies to the prescriptive requirements, or one of the tradeoff paths provided for in the envelope, lighting, or mechanical sections, or the ECB whole building performance path. For each addendum DOE identified the impact on the stringency for that path to compliance.

DOE's review and evaluation indicates that there are significant differences between the 2004 edition and the 2007 edition. DOE's overall conclusion is that the 2007 edition will improve the energy efficiency of commercial buildings.

However, DOE identified two changes in textual requirements that taken alone appear to represent a reduction in stringencies and could decrease energy efficiency. The two changes are:

- Addendum p, which broadens the implicit definition of "visually impaired" as used in exceptions provided in the standard, which allow for lighting power to not be included in the calculated lighting power densities subject to maximum limits, and
- Addendum av, which provides for an explicit shading credit allowed for louvered projections, where such a credit was not explicitly provided for in 90.1-2004.

DOE believes that in these cases, the reduction in stringency was not considered a major impact. For the other addenda, DOE determined that the remaining addenda either represented no change in stringency, or indicated a positive change in stringency corresponding to improved efficiency. Overall, DOE concluded the changes in textual requirements and stringencies are "positive," in the sense that they would improve energy efficiency in commercial construction.

#### 2. Results of Detailed Textual Analysis

A qualitative analysis of all addenda to Standard 90.1-2004 that were included in Standard 90.1-2004 was conducted. All 44 addenda processed by ASHRAE in the creation of Standard 90.1-2007 from Standard 90.1-2004 were evaluated by DOE for their impact on energy efficiency. DOE determined whether that addenda would have a positive, neutral, or negative impact on overall building efficiency. Table-1 shows the potential number of positive and negative changes for each section of Standard 90.1.

The results of the textual analysis indicate that the majority of changes (30 of the total of 44 listed) were neutral. These include editorial changes, changes to reference standards, changes to alternative compliance paths, and other changes to the text of the standard that may improve the usability of the standard, but do not generally improve or degrade the energy efficiency of building. There were 11 changes that were evaluated as having a positive impact on energy efficiency and 2 changes that were evaluated as having a negative impact on energy efficiency.

The 2 negative impacts on energy efficiency include:

1. Addendum p—Expanded lighting power exceptions allowed for use with the visually impaired; and

2. Addendum av—Allowance for louvered overhangs.

The 11 positive impacts on energy efficiency include:

1. Addendum c—Increased requirement for building vestibules;

2. Addendum h—Removal of data processing centers from exceptions to HVAC requirements;

3. Addendum q—Removal of hotel room exceptions to HVAC requirements;

4. Addendum v—Modification of demand controlled ventilation requirements;

5. Addendum ac—Modification of fan power limitations;

6. Addendum ai—Modification of retail display lighting requirements;

7. Addendum ak—Modification of cooling tower testing requirements;

8. Addendum an—Modification of commercial boiler requirements;

9. Addendum ar—Modification of part load fan requirements;

10. Addendum as—Modification of opaque envelope requirements; and

11. Addendum at—Modification of fenestration envelope requirements.

The results of the textual analysis are shown in Table 1. Overall, the potential positive impacts outweigh the potential negative impacts in a simple numerical comparison.

TABLE 1—RESULTS OF TEXTUAL ANALYSIS BY SECTION OF STANDARD 90.1

| Section of standard                                               | Number of changes made to section | Number of positive (energy saving) changes | Number of unquantifiable changes | Number of neutral (no energy saving) changes | Number of negative (energy increasing) changes |
|-------------------------------------------------------------------|-----------------------------------|--------------------------------------------|----------------------------------|----------------------------------------------|------------------------------------------------|
| Title, Purpose, and Scope .....                                   | 0                                 | 0                                          | 0                                | 0                                            | 0                                              |
| Definitions .....                                                 | 0                                 | 0                                          | 0                                | 0                                            | 0                                              |
| Administration and Enforcement .....                              | 0                                 | 0                                          | 0                                | 0                                            | 0                                              |
| Envelope and Normative Appendices .....                           | 11                                | 3                                          | 0                                | 7                                            | 1                                              |
| HVAC Equipment and Systems .....                                  | 13                                | 6                                          | 0                                | 7                                            | 0                                              |
| Service Water Heating .....                                       | 0                                 | 0                                          | 0                                | 0                                            | 0                                              |
| Power .....                                                       | 0                                 | 0                                          | 0                                | 0                                            | 0                                              |
| Lighting .....                                                    | 9                                 | 2                                          | 1                                | 5                                            | 1                                              |
| Energy Cost Budget and Appendix G Performance Rating Method ..... | 7                                 | 0                                          | 0                                | 7                                            | 0                                              |
| Normative and Informative References .....                        | 4                                 | 0                                          | 0                                | 4                                            | 0                                              |
| Overall .....                                                     | 44                                | 11                                         | 1                                | 30                                           | 2                                              |

### B. Quantitative Analysis

#### 1. Discussion of Whole Building Energy Analysis

The quantitative comparison of ASHRAE Standard 90.1–2007 was carried out using whole-building energy simulations of buildings built to both ASHRAE Standard 90.1–2004 and ASHRAE Standard 90.1–2007. DOE used the EnergyPlus whole building simulation tool to simulate 15 representative building types in 15 U.S. climate locations, each climate location selected to be representative of one of the 15 U.S. climate zones used in the definition of building energy code criteria in ASHRAE Standard 90.1–2004 and Standard 90.1–2007. The simulations were developed using specific building prototypes based on the DOE commercial reference building models developed for DOE's Net-Zero Energy Commercial Building Initiative.

For each building prototype simulated in each climate the energy use intensities (EUI) by fuel type and by end-use were extracted. These EUIs by fuel type for each building were then weighted to national average EUI figures using weighting factors based on the relative square footage of construction represented by that prototype in each of the 15 climate regions. These weighting

factors were based on commercial building construction starts data for a five-year period from 2003 to 2007. The source of data was the McGraw-Hill Construction Projects Starts Database (MHC). The MHC database captures over 90% of new commercial construction in any given year and the collection process is independently monitored to ensure the coverage of most of the commercial construction in the U.S. The data is used by other federal agencies such as the U.S. Census Bureau, the Federal Reserve and the U.S. Department of Health and Human Services (HHS) for characterizing building construction in the U.S. For the purpose of developing construction weighting factors, the strength of this data lies in the number of samples, the characterization of each sample in terms of building end-use and size and number of stories, the frequency of data collection, and the detailed location data. In addition, the MHC database can be used to identify multifamily residential buildings that would be covered under ASHRAE Standard 90.1.

DOE's prototypes reflect the use of two fuel types, electricity and natural gas. Using the weighting factors, DOE was able to establish an estimate of the relative reduction in building energy use, as determined by a calculated

reduction in weighted average site EUI for each building prototype. Site energy refers to the energy consumed at the building site. In a corresponding fashion, DOE was also able to calculate a reduction in terms of weighted average primary EUI and in terms of weighted average energy cost intensity (ECI) in \$/sq. ft. of building floorspace. Primary energy as used here refers to the energy required to generate and deliver energy to the site. To estimate primary energy, all electrical energy use intensities were first converted to primary energy using a factor of 10,918 Btus primary energy per kWh (based on the 2010 estimated values reported in Table 2 of the EIA Annual Energy Outlook, release date December 2009, available at [http://www.eia.doe.gov/oiaf/archive/aeo10/aeoref\\_tab.html](http://www.eia.doe.gov/oiaf/archive/aeo10/aeoref_tab.html)). The conversion factor of 10,918 was calculated from Table 2 by summing the commercial electricity value of 4.62 quads with the electricity losses value of 10.17 quads and then dividing that sum by the commercial value.  $((4.62 + 10.17)/4.62 = 3.2)$  This yields an electricity ratio of 3.2 for converting how much primary (source) electricity is required per unit of site required electricity. This ratio of 3.2 is then multiplied by 3,412 Btu per kWh, producing a value of 10,918 Btus primary energy per kWh of site energy.

Natural Gas EUIs in the prototypes were converted to primary energy using a factor of 1.090 Btus primary energy per Btu of site natural gas use (based on the 2010 national energy use estimated shown in Table 2 of the AEO 2010). This natural gas source energy conversion factor was calculated by dividing the natural gas subtotal of 23.15 quads (sum of all natural gas usage, including usage for natural gas field production, leases, plant fuel, and pipeline (compression) supply) by the delivered natural gas total of 21.23 quads (sum of four primary energy sectors (residential, commercial, industrial, and transportation)).

#### a. Calculation of Energy Cost Index

To estimate the reduction in energy cost index, DOE relied on national average commercial building energy prices of \$0.1027/kWh of electricity and \$10.06 per 1000 cubic feet (\$0.9796/therm) of natural gas, based on EIA statistics for 2010 (the last complete year of data available in Table 5.3 Average Retail Price of Electricity to Ultimate Consumers: Total by End-Use Sector for the commercial sector—available from EIA at [http://www.eia.doe.gov/cneaf/electricity/epm/table5\\_3.html](http://www.eia.doe.gov/cneaf/electricity/epm/table5_3.html) and for 2009 (the last complete year of data available from the EIA Natural Gas Annual Summary for the commercial sector available at [http://tonto.eia.doe.gov/dnav/ng/ng\\_pri\\_sum\\_dcu\\_nus\\_a.htm](http://tonto.eia.doe.gov/dnav/ng/ng_pri_sum_dcu_nus_a.htm).) DOE recognizes that actual fuel costs will vary somewhat by building type within a region, and will in fact vary more across regions. Nevertheless, DOE believes that the use of simple national average figures illustrates whether there will be energy cost savings sufficient for the purposes of the DOE determination.

#### b. Calculation of Energy Use Intensities

Energy use intensities developed for each representative building type were weighted by total national square footage of each representative building type to provide an estimate of the difference between the national energy use in buildings constructed to both editions of the Standard 90.1. Note that the 15 buildings types used in the determination reflect approximately 80% of the total square footage of commercial construction including multi-family buildings greater than three stories covered under ASHRAE Standard 90.1.

Note that only differences between new building requirements were considered in this quantitative analysis. Changes to requirements in the 2007 edition that pertain to existing buildings

only are addressed in the detailed textual analysis only.

#### c. Application to Additions and Renovations

Both the 2007 and 2004 editions address additions and renovations to existing buildings. Since DOE has found insufficient data to characterize renovations in terms of what energy using features are utilized, DOE has not determined that the results obtained from the whole building prototypes used would reasonably reflect the EUI benefits that would accrue to renovated floor space. For this reason, renovated floor space is not included in the DOE weighting factors. Building additions on the other hand are believed to be substantially equivalent to new construction. For this reason, FW Dodge construction data on additions has been incorporated into the overall weighting factors. Floor space additions reflect approximately 13 percent of new construction floor space based on data captured in the FW Dodge dataset.

#### d. Ventilation Rate Assumptions

The quantitative analysis assumed the same base ventilation level for buildings constructed to Standard 90.1–2004 and Standard 90.1–2007. Neither edition of Standard 90.1 specifies ventilation rates for commercial building construction. ASHRAE has a separate ventilation standard for commercial construction, ASHRAE Standard 62.1 *Ventilation for Acceptable Indoor Air Quality*. This standard is cited only in a few exceptions within the mechanical sections of either ASHRAE 90.1–2004 or ASHRAE 90.1–2007, with each edition referencing a different version of standard 62.1. ASHRAE 90.1–2004 lists ASHRAE 62.1–1999 in its table of references. ASHRAE 90.1–2007 lists ASHRAE 62.1–2004 in its table of references. The latest version of ASHRAE Standard 62 is Standard 62.1–2007.

Ventilation rates can have significant impact on the energy use of commercial buildings. States and local jurisdictions typically specify the ventilation requirements for buildings within their respective building codes and can set these requirements independent of the energy code requirements. Because of the limited reference to ventilation within either the 2004 or the 2007 edition of ASHRAE 90.1, the requirements that States certify that their energy codes meet or exceed the 2007 edition of ASHRAE 90.1 would in general not require modification of State ventilation code requirements. However, in many cases, ventilation requirements can be traced back to

requirements found in one or another version of ASHRAE Standard 62.1. For the purpose of the quantitative analysis, DOE assumed ventilation rate for the simulation prototypes based on the requirements ASHRAE 62.1–2004. DOE also performed a sensitivity analysis which calculated the quantitative impacts assuming a ventilation rate based on ASHRAE Standard 62.1–1999.

#### 2. Results of Whole Building Energy Analysis

The quantitative analysis of the energy consumption of buildings built to Standard 90.1–2007, as compared with buildings built to Standard 90.1–2004, indicates national primary energy savings of approximately 3.9 percent of commercial building energy consumption based on the weighting factors for the 15 buildings simulated. Site energy savings are estimated to be approximately 4.6 percent. Using national average fuel prices for electricity and natural gas DOE estimated a reduction in energy expenditures of 3.9 percent would result from the use of ASHRAE Standard 90.1–2007 as compared to ASHRAE Standard 90.1–2004. As identified previously, these estimated savings figures do not include energy savings from equipment or appliance standards that would be in place due to Federal requirements regardless of their presence in the ASHRAE Standard 90.1–2007.

Tables 2 and 3 show the aggregated energy use and associated energy savings by building type for the 15 building prototypes analyzed and on an aggregated national basis for the 2004 and 2007 editions, respectively. For each edition of Standard 90.1, the national building floor area weight used to calculate the national impact on building EUI or building ECI, is presented. The national average electricity and gas building energy use intensity is presented separately for each building prototype analyzed, electricity being the predominant energy usage in all prototypes. National-average site energy use intensities range from over five hundred Btu per square foot annually for the Fast Food prototype to approximately 28 Btu per square foot annually for the Non-refrigerated Warehouse type. Source energy use intensities and building energy cost intensities (\$/sf-yr) are also presented. Further details on the quantitative analysis can be found in the full quantitative analysis report available at [http://www.energycodes.gov/implement/determinations\\_90.1-2007.stm](http://www.energycodes.gov/implement/determinations_90.1-2007.stm).

TABLE 2—ESTIMATED ENERGY USE INTENSITY BY BUILDING TYPE—2004 EDITION

| Building type    | Building prototype               | Building type floor area weight % | Whole building EUI data for building population kBtu/ft <sup>2</sup> -yr |         |          |            |                            |
|------------------|----------------------------------|-----------------------------------|--------------------------------------------------------------------------|---------|----------|------------|----------------------------|
|                  |                                  |                                   | Electric EUI                                                             | Gas EUI | Site EUI | Source EUI | ECI \$/ft <sup>2</sup> -yr |
| Office .....     | Small Office .....               | 6.16                              | 35.6                                                                     | 3.6     | 39.2     | 117.8      | \$1.11                     |
|                  | Medium Office .....              | 6.64                              | 42.1                                                                     | 4.2     | 46.3     | 139.2      | 1.31                       |
|                  | Large Office .....               | 3.65                              | 34.4                                                                     | 5.7     | 40.1     | 116.2      | 1.09                       |
| Retail .....     | Stand-Alone Retail .....         | 16.76                             | 56.1                                                                     | 15.0    | 71.1     | 195.7      | 1.84                       |
|                  | Strip Mall .....                 | 6.23                              | 55.2                                                                     | 20.1    | 75.2     | 198.3      | 1.86                       |
| Education .....  | Primary School .....             | 5.49                              | 47.9                                                                     | 23.5    | 71.4     | 178.9      | 1.68                       |
|                  | Secondary School .....           | 11.38                             | 43.7                                                                     | 19.5    | 63.1     | 160.9      | 1.51                       |
| Healthcare ..... | Outpatient Health Care .....     | 4.80                              | 106.7                                                                    | 54.7    | 161.4    | 400.8      | 3.76                       |
|                  | Hospital .....                   | 3.79                              | 96.3                                                                     | 57.6    | 153.9    | 370.9      | 3.48                       |
| Lodging .....    | Small Hotel .....                | 1.89                              | 48.3                                                                     | 26.1    | 74.3     | 182.8      | 1.71                       |
|                  | Large Hotel .....                | 5.44                              | 68.5                                                                     | 84.4    | 152.9    | 311.0      | 2.91                       |
| Warehouse .....  | Non-Refrigerated Warehouse ..... | 18.36                             | 14.5                                                                     | 10.7    | 25.2     | 58.1       | 0.54                       |
| Food Service ..  | Fast-Food Restaurant .....       | 0.64                              | 226.5                                                                    | 326.1   | 552.6    | 1080.0     | 10.10                      |
|                  | Sit-Down Restaurant .....        | 0.72                              | 179.3                                                                    | 202.1   | 381.4    | 794.0      | 7.43                       |
| Apartment .....  | Mid-Rise Apartment .....         | 8.04                              | 32.5                                                                     | 10.1    | 42.7     | 115.1      | 1.08                       |
| National .....   | .....                            | 100                               | 48.1                                                                     | 24.2    | 72.3     | 180.3      | 1.69                       |

TABLE 3—ESTIMATED ENERGY USE INTENSITY BY BUILDING TYPE—2007 EDITION

| Building type    | Building prototype               | Building type floor area weight % | Whole building EUI data for building population kBtu/ft <sup>2</sup> -yr |         |          |            |                            |
|------------------|----------------------------------|-----------------------------------|--------------------------------------------------------------------------|---------|----------|------------|----------------------------|
|                  |                                  |                                   | Electric EUI                                                             | Gas EUI | Site EUI | Source EUI | ECI \$/ft <sup>2</sup> -yr |
| Office .....     | Small Office .....               | 6.16                              | 35.3                                                                     | 3.3     | 38.6     | 116.6      | \$1.10                     |
|                  | Medium Office .....              | 6.64                              | 40.2                                                                     | 4.3     | 44.5     | 133.2      | 1.25                       |
|                  | Large Office .....               | 3.65                              | 34.3                                                                     | 4.6     | 38.9     | 114.7      | 1.08                       |
| Retail .....     | Stand-Alone Retail .....         | 16.76                             | 51.4                                                                     | 13.3    | 64.7     | 178.9      | 1.68                       |
|                  | Strip Mall .....                 | 6.23                              | 52.3                                                                     | 16.9    | 69.2     | 185.8      | 1.74                       |
| Education .....  | Primary School .....             | 5.49                              | 46.7                                                                     | 19.9    | 66.6     | 171.1      | 1.61                       |
|                  | Secondary School .....           | 11.38                             | 42.5                                                                     | 16.6    | 59.1     | 154.2      | 1.45                       |
| Healthcare ..... | Outpatient Health Care .....     | 4.80                              | 102.1                                                                    | 52.8    | 154.9    | 384.3      | 3.60                       |
|                  | Hospital .....                   | 3.79                              | 95.8                                                                     | 56.2    | 152.0    | 367.7      | 3.45                       |
| Lodging .....    | Small Hotel .....                | 1.89                              | 46.5                                                                     | 24.7    | 71.2     | 175.7      | 1.65                       |
|                  | Large Hotel .....                | 5.44                              | 69.1                                                                     | 79.1    | 148.2    | 307.3      | 2.88                       |
| Warehouse .....  | Non-Refrigerated Warehouse ..... | 18.36                             | 14.5                                                                     | 10.6    | 25.2     | 58.0       | 0.54                       |
| Food Service ..  | Fast-Food Restaurant .....       | 0.64                              | 222.1                                                                    | 319.5   | 541.6    | 1058.7     | 9.90                       |
|                  | Sit-Down Restaurant .....        | 0.72                              | 177.5                                                                    | 200.0   | 377.6    | 785.9      | 7.35                       |
| Apartment .....  | Mid-Rise Apartment .....         | 8.04                              | 31.8                                                                     | 9.0     | 40.8     | 111.7      | 1.05                       |
| National .....   | .....                            | 100                               | 46.5                                                                     | 22.5    | 69.0     | 173.3      | 1.63                       |

Table 4 presents the estimated percent energy savings (based on change in EUI) between the 2004 and 2007 editions. Overall, considering those differences that can be reasonably quantified, the 2007 edition is expected to increase the

energy efficiency of commercial buildings. Numbers in Table 5 represent percent energy savings; thus, negative numbers represent increased energy use. There is a decrease in gas EUI for all building types except medium office.

This decrease in gas EUI represents the majority of the national site energy savings from the 2007 edition. There is a decrease in electrical EUI for all building prototypes except for large hotel.

TABLE 4—ESTIMATED PERCENT ENERGY SAVINGS WITH 2007 EDITION—BY BUILDING TYPE

| Building type    | Building prototype           | Building type floor area weight % | Percent savings in whole building energy use intensity (%) |         |          |            |     |
|------------------|------------------------------|-----------------------------------|------------------------------------------------------------|---------|----------|------------|-----|
|                  |                              |                                   | Electric EUI                                               | Gas EUI | Site EUI | Source EUI | ECI |
| Office .....     | Small Office .....           | 6.16                              | 0.8                                                        | 9.0     | 1.5      | 1.0        | 1.0 |
|                  | Medium Office .....          | 6.64                              | 4.6                                                        | - 2.3   | 3.9      | 4.3        | 4.4 |
|                  | Large Office .....           | 3.65                              | 0.3                                                        | 18.0    | 2.8      | 1.3        | 1.3 |
| Retail .....     | Stand-Alone Retail .....     | 16.76                             | 8.3                                                        | 11.2    | 9.0      | 8.6        | 8.6 |
|                  | Strip Mall .....             | 6.23                              | 5.2                                                        | 15.6    | 8.0      | 6.3        | 6.3 |
| Education .....  | Primary School .....         | 5.49                              | 2.5                                                        | 15.4    | 6.8      | 4.4        | 4.3 |
|                  | Secondary School .....       | 11.38                             | 2.6                                                        | 14.8    | 6.3      | 4.2        | 4.2 |
| Healthcare ..... | Outpatient Health Care ..... | 4.80                              | 4.2                                                        | 3.4     | 4.0      | 4.1        | 4.1 |
|                  | Hospital .....               | 3.79                              | 0.6                                                        | 2.3     | 1.2      | 0.9        | 0.9 |

TABLE 4—ESTIMATED PERCENT ENERGY SAVINGS WITH 2007 EDITION—BY BUILDING TYPE—Continued

| Building type   | Building prototype               | Building type<br>floor area<br>weight<br>% | Percent savings in whole building energy use intensity (%) |         |          |            |     |
|-----------------|----------------------------------|--------------------------------------------|------------------------------------------------------------|---------|----------|------------|-----|
|                 |                                  |                                            | Electric EUI                                               | Gas EUI | Site EUI | Source EUI | ECI |
| Lodging .....   | Small Hotel .....                | 1.89                                       | 3.6                                                        | 5.2     | 4.2      | 3.9        | 3.9 |
|                 | Large Hotel .....                | 5.44                                       | –1.0                                                       | 6.3     | 3.0      | 1.2        | 1.2 |
| Warehouse ..... | Non-Refrigerated Warehouse ..... | 18.36                                      | 0.0                                                        | 0.7     | 0.3      | 0.2        | 0.2 |
| Food Service .. | Fast Food Restaurant .....       | 0.64                                       | 1.9                                                        | 2.0     | 2.0      | 2.0        | 2.0 |
|                 | Sit-Down Restaurant .....        | 0.72                                       | 1.0                                                        | 1.0     | 1.0      | 1.0        | 1.0 |
| Apartment ..... | Mid-Rise Apartment .....         | 8.04                                       | 2.1                                                        | 11.5    | 4.3      | 3.0        | 3.0 |
| National .....  | .....                            | 100                                        | 3.4                                                        | 6.9     | 4.6      | 3.9        | 3.9 |

### C. Final Determination Statement

DOE qualitative analysis shows that the changes in textual requirements and stringencies are “positive,” in the sense that they would improve energy efficiency in commercial construction.

DOE’s quantitative analysis shows that for the 15 prototype buildings, a weighted average national improvement in new building efficiency of 3.7 percent, when considering source energy, and by 4.4 percent, when considering site energy.

As both the 2004 and 2007 editions cover existing buildings, to the extent that these standards are applied to existing buildings in retrofits or in new construction addition, the 2007 edition should also improve the efficiency of the existing building stock.

DOE has, therefore, concluded that Standard 90.1–2007 receive an affirmative determination under Section 304(b) of the ECPA.

### III. Filing Certification Statements With DOE

#### A. Review and Update

Upon publication of this affirmative final determination, each State is required to review and update, as necessary, the provisions of its commercial building energy code to meet or exceed the provisions of the 2007 edition of Standard 90.1. (42 U.S.C. 6833(b)(2)(B)(i)) This action is required to be taken not later than two years from the date of publication of this notice of final determination, unless an extension is provided.

The DOE recognizes that some States do not have a State commercial building energy code or have a State code that does not apply to all commercial buildings. If local building energy codes regulate commercial building design and construction rather than a State code, the State must review and make all reasonable efforts to update as authorized those local codes to determine whether they meet or exceed the 2007 edition of Standard 90.1. States may base their certifications on

reasonable actions by units of general purpose local government. Each such State must still review the information obtained from the local governments and gather any additional data and testimony for its own certification.

Note that the applicability of any State revisions to new or existing buildings would be governed by the State building codes. However, it is our understanding that generally, the revisions would not apply to existing buildings unless they are undergoing a change that requires a building permit.

States should be aware that the DOE considers high-rise (greater than three stories) multi-family residential buildings, hotel, motel, and other transient residential building types of any height as commercial buildings for energy code purposes. Consequently, commercial buildings, for the purposes of certification, would include high-rise (greater than three stories) multi-family residential buildings, hotel, motel, and other transient residential building types of any height.

#### B. Certification

Section 304(b) of ECPA, as amended, requires each State to certify to the Secretary of Energy that it has reviewed and updated the provisions of its commercial building energy code regarding energy efficiency to meet or exceed the Standard 90.1–2007 edition. (42 U.S.C. 6833 (b)) The certification must include a demonstration that the provisions of the State’s commercial building energy code regarding energy efficiency meet or exceed Standard 90.1–2007. If a State intends to certify that its commercial building energy code already meets or exceeds the requirements of Standard 90.1–2007, the State should provide an explanation of the basis for this certification, e.g., Standard 90.1–2007 is incorporated by reference in the State’s building code regulations. The chief executive of the State (e.g., the Governor) or a designated State official, such as the Director of the State energy office, State code commission, utility commission, or

equivalent State agency having primary responsibility for commercial building energy codes, would provide the certification to the Secretary. Such a designated State official would also provide the certifications regarding the codes of units of general purpose local government based on information provided by responsible local officials.

ECPA also requires the Secretary to permit extensions of the deadlines for the State certification if a State can demonstrate that it has made a good faith effort to comply with the requirements of Section 304 of ECPA and that it has made significant progress in doing so. (42 U.S.C. 6833(c))

DOE does list the States that have filed certifications and those that have or have not adopted new codes on the DOE Energy Efficiency and Renewable Energy Web site at <http://www.energycodes.gov/states/>. The letters can also be found on each State’s Web site under Recovery Act activity. Under Section 304(d) and (3) of ECPA, once a State has adopted a new commercial code, DOE typically provides software, training, and support for the new code as long as the new code is based on the national model codes (in this case, ASHRAE Standard 90.1).

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. However, DOE does provide grants to these States through grant programs administered by the National Energy Technology Laboratory (NETL). DOE does not prescribe how each State adopts and enforces its energy codes.

It should be noted that the 2010 edition of Standard 90.1 has been published by ASHRAE, and DOE has prepared a preliminary determination on which comments will be taken. Were DOE to make a positive determination on the 2010 edition, the 2010 edition would supersede the 2007 edition. If the 2010 edition of the Standard 90.1 is finalized before the 2 year deadline to



file a certification for the 2007 positive determination then a state may file just one certification to address both determinations.

#### *C. Request for Extensions To Certify*

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 plan for response to the requirements stated in section 304; and/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.

### **IV. Regulatory Analysis**

#### *A. Review Under Executive Order 12866*

Today's action is a significant regulatory action under section 3(f)(1) of Executive Order 12866, "Regulatory Planning and Review" (58 FR 51735 (Oct. 4, 1993)). Accordingly, today's action was reviewed by the Office of Information and Regulatory Affairs (OIRA) in the Office of Management and Budget (OMB).

#### *B. Review Under the Regulatory Flexibility Act*

The Regulatory Flexibility Act (5 U.S.C. 601 *et seq.*) requires the preparation of an initial regulatory flexibility analysis for any rule that by law must be proposed for public comment, unless the agency certifies that the rule, if promulgated, will not have a significant economic impact on a substantial number of small entities. As required by Executive Order 13272, "Proper Consideration of Small Entities in Agency Rulemaking," (67 FR 53461 (Aug. 16, 2002)), DOE published procedures and policies on February 19, 2003, to ensure that the potential impacts of its rules on small entities are properly considered during the rulemaking process (68 FR 7990). DOE has made its procedures and policies available on the Office of General Counsel's Web site: <http://www.gc.doe.gov>.

DOE has reviewed today's final determination under the provisions of the Regulatory Flexibility Act and the procedures and policies published on February 19, 2003. Today's final determination of improved energy

efficiency between the ASHRAE 2004 and 2007 of Standard 90.1 requires States to undertake an analysis of their respective building codes and to update codes, if necessary. As such, the only entities directly regulated by this final determination would be States. DOE does not believe that there will be any direct impacts on small entities such as small businesses, small organizations, or small governmental jurisdictions.

On the basis of the foregoing, DOE certifies that this final determination would not have a significant economic impact on a substantial number of small entities. Accordingly, DOE has not prepared a regulatory flexibility analysis for this final determination. DOE's certification and supporting statement of factual basis will be provided to the Chief Counsel for Advocacy of the Small Business Administration pursuant to 5 U.S.C. 605(b).

#### *C. Review Under the National Environmental Policy Act of 1969*

DOE has determined that today's action is covered under the Categorical Exclusion found in DOE's National Environmental Policy Act regulations at paragraph A.6. of Appendix A to subpart D, 10 CFR Part 1021. That Categorical Exclusion applies to actions that are strictly procedural, such as rulemaking establishing the administration of grants. Today's action is required by Title III of ECPA, as amended, which provides that whenever the Standard 90.1–1989, or any successor to that code, is revised, the Secretary must make a determination, not later than 12 months after such revision, whether the revised code would improve energy efficiency in commercial buildings and must publish notice of such determination in the **Federal Register**. (42 U.S.C. 6833(b)(2)(A)) If the Secretary determines that the revision of Standard 90.1–1989 or any successor thereof, improves the level of energy efficiency in commercial buildings then no later than two years after the date of the publication of such affirmative determination, ECPA requires each State to certify that it has reviewed and updated the provisions of its commercial building code regarding energy efficiency with respect to the revised or successor code. (42 U.S.C. 6833(b)(2)(B)(i)) If the Secretary makes a determination that the revised standard will not improve energy efficiency in commercial buildings then State commercial codes shall meet or exceed the last revised standard for which the Secretary has made a positive determination. (42 U.S.C. 6833(b)(2)(B)(ii)) Therefore, DOE has

determined that the Secretary's determination is not a major federal action that would have direct environmental impacts. Accordingly, DOE has not prepared an environmental assessment or an environmental impact statement.

#### *D. Review Under Executive Order 13132, "Federalism"*

Executive Order 13132, 64 FR 43255 (Aug. 4, 1999), imposes certain requirements on agencies formulating and implementing policies or regulations that pre-empt State law or that have federalism implications. Agencies are required to examine the constitutional and statutory authority supporting any action that would limit the policymaking discretion of the States and carefully assess the necessity for such actions.

DOE has reviewed the statutory authority. Congress found that:

(1) Large amounts of fuel and energy are consumed unnecessarily each year in heating, cooling, ventilating, and providing domestic hot water for newly constructed residential and commercial buildings because such buildings lack adequate energy conservation features;

(2) Federal voluntary performance standards for newly constructed buildings can prevent such waste of energy, which the Nation can no longer afford in view of its current and anticipated energy shortage;

(3) The failure to provide adequate energy conservation measures in newly constructed buildings increases long-term operating costs that may affect adversely the repayment of, and security for, loans made, insured, or guaranteed by Federal agencies or made by federally insured or regulated instrumentalities; and

(4) State and local building codes or similar controls can provide an existing means by which to assure, in coordination with other building requirements and with a minimum of Federal interference in State and local transactions, that newly constructed buildings contain adequate energy conservation features. (42 U.S.C. 6831)

Pursuant to Section 304(b) of ECPA, DOE is statutorily required to determine whether the most recent versions of ASHRAE 90.1 would improve the level of energy efficiency in commercial buildings as compared to the previous version. If DOE makes a positive determination, the statute requires each State to certify that it has reviewed and updated the provisions of its commercial building code regarding energy efficiency with respect to the revised or successor codes. (42 U.S.C. 6833(b)(2)(B)(i))

Executive Order 13132, 64 FR 43255 (Aug. 4, 1999) requires meaningful and timely input by State and local officials in the development of regulatory policies that have federalism implications unless “funds necessary to pay the direct costs incurred by the State and local governments in complying with the regulation are provided by the Federal Government.” (62 FR 43257) Pursuant to Section 304(e) of ECPA, the Secretary is required to “provide incentive funding to States to implement the requirements of [Section 304], and to improve and implement State residential and commercial building energy efficiency codes, including increasing and verifying compliance with such codes. In determining whether, and in what amount, to provide incentive funding under this subsection, the Secretary shall consider the actions proposed by the State to implement the requirements of this section, to improve and implement residential and commercial building energy efficiency codes, and to promote building energy efficiency through the use of such codes.” (42 U.S.C. 6833(e)) Therefore, consultation with States and local officials regarding this determination was not required.

However, DOE notes that State and local governments were invited to participate in the development Standard 90.1–2007. Standard 90.1–2007, was developed in a national American National Standards Institute consensus process open to the public and in which State and local governments participate along with DOE and other interested parties. It is the product of a series of amendments to the prior addition of the standard. Each addendum is put out for national public review. Anyone may submit comments, and in the process comments were received from State and local governments. Comments on the addendum are received, reviewed and resolved through a consensus process. Members of the standards project committee have included representatives of State and local governments.

DOE annually holds a national building energy codes workshop at which the progress on development of the model energy codes are presented, along with discussion and sharing of problems and successes in adoption, implementation, and enforcement of building energy codes. The predominate attendance of these workshops are State and local officials responsible for building energy codes. They are consistently encouraged and urged to participate in the model building energy code processes, which will be the subject of DOE’s next determinations

under section 304 of ECPA. Thus, State and local officials have had the opportunity to participate in the development of the standard through the ASHRAE process. Some have done so.

Similarly, the comments of States and local governments about provisions of the developing Standard 90.1–2007 were received in formal comment periods and heard and addressed in ASHRAE committee deliberations open to the public. In addition, concerns and issues about adoption, implementation and enforcement issues were presented and discussed at informal sessions at the Department’s annual national workshops on building energy codes. DOE believes that the above process has given State and local jurisdictions extensive opportunity to comment on and express their concerns on Standard 90.1–2007, the subject of this determination.

On issuance of this determination that Standard 90.1–2007 would improve the energy efficiency of commercial buildings, ECPA requires the States to certify to the Secretary that it has reviewed and updated the provisions of its commercial building code regarding energy efficiency to meet or exceed the requirements of Standard 90.1–2007. DOE notes that ECPA sets forth this requirement for States. (42 U.S.C. 6833(b)(2)(B)(i)) States are given broad freedom to either adopt Standard 90.1–2007 or develop their own code that meets equivalent energy efficiency.

#### *E. Review Under the Unfunded Mandates Reform Act of 1995*

The Unfunded Mandates Reform Act of 1995 (Pub. L. 104–4) generally requires Federal agencies to examine closely the impacts of regulatory actions on State, local, and tribal governments. Subsection 101(5) of Title I of that law defines a Federal intergovernmental mandate to include any regulation that would impose upon State, local, or tribal governments an enforceable duty, except a condition of Federal assistance or a duty arising from participating in a voluntary Federal program. Title II of that law requires each Federal agency to assess the effects of Federal regulatory actions on State, local, and tribal governments, in the aggregate, or to the private sector, other than to the extent such actions merely incorporate requirements specifically set forth in a statute. Section 202 of that title requires a Federal agency to perform a detailed assessment of the anticipated costs and benefits of any rule that includes a Federal mandate which may result in costs to State, local, or tribal governments, or to the private sector, of

\$100 million or more. Section 204 of that title requires each agency that proposes a rule containing a significant Federal intergovernmental mandate to develop an effective process for obtaining meaningful and timely input from elected officers of State, local, and tribal governments.

Today’s action requires each State under Section 304 of ECPA to review and update, as necessary, the provisions of its commercial building energy code to meet or exceed the provisions of the 2007 edition of Standard 90.1. (42 U.S.C. 6833(b)(2)(B)(i)) The statutory requirements of ECPA require DOE to provide a determination irrespective of costs. While the processes that States may undertake to update their codes vary widely, as a general rule a State at a minimum would need to:

- Evaluate Standard 90.1–2007 using the background material provided by DOE.
- Compare the existing State commercial building energy code to Standard 90.1–2007 to see if an update is needed.
- Update the State commercial building energy code to meet or exceed Standard 90.1–2007.

DOE evaluated the potential for State activity to exceed \$100 million in any one year. The approach looked at the three steps for minimum activity listed in the previous paragraph—evaluate, compare and update. A fourth potential step of providing training on the new code was also considered as some States may consider training on the new code to be an integral part of adopting the new code. For the three steps of minimum activity, DOE estimated the following:

Evaluate Standard 90.1–2007—DOE estimated a minimum of 8 hours of review per State and a maximum review time of 500 hours of review per State (12.5 work weeks). The minimum review time of 8 hours (one day) is the estimated minimum amount of time can see States taking to review Standard 90.1–2007. Simply reading and reviewing the **Federal Register** notice, the qualitative analysis document and the quantitative analysis document will take the average person several hours. Deciding on whether or not to upgrade to Standard 90.1–2007 may take another couple of hours. The maximum review time of 500 hours (62.5 day, 3 working months) upper limit was estimated as the amount of time that a state that was not familiar with energy codes at all or which has a particularly arduous review process within the state would take to review these documents.

(1) A cost per hour of \$100 per hour was assumed based on actual rates

proposed in subcontracts associated with compliance studies funded by DOE. The average rate calculated from these subcontracts for 10 types of building officials from 6 States was \$93.41, so DOE chose to round this up to \$100 per hour.

a. Low estimate—8 hours \* 50 States \* \$100 per hour = \$40,000.

b. High estimate—500 hours \* 50 States \* \$100 per hour = \$2,500,000.

(2) Compare Standard 90.1–2007 to existing state code—Assuming the State is familiar with its code and has performed an effective evaluation of Standard 90.1 in the first step, the range of potential costs should be similar to Step 1. (See Step 1 for discussion of 8 hour and 500 hour times and \$100 per hour cost estimate).

a. Low estimate—8 hours \* 50 States \* \$100 per hour = \$40,000.

b. High estimate—500 hours \* 50 States \* \$100 per hour = \$2,500,000.

(3) Update the State Codes to meet or exceed Standard 90.1–2007—Adopting a new energy code could be as simple as updating an order within the State, or it could be very complex involving hearings, testimony, etc. Again, the range of potential costs should be similar to Step 1. (See Step 1 for discussion of origin of 8 hour and 500 hour times and \$100 per hour cost estimate).

a. Low estimate—8 hours \* 50 States \* \$100 per hour = \$40,000.

b. High estimate—500 hours \* 50 States \* \$100 per hour = \$2,500,000.

The potential range of total costs to States to under these assumptions would be \$120,000 to \$7.5 million. This range is well below the \$100 million threshold in the Unfunded Mandates Act. DOE has also considered potential costs were States to include providing training on the new code.

(4) Train Code officials on New Code—Assuming every jurisdiction has at least one person that needs to be trained on energy code. There are roughly 40,000 general purpose local governments, or jurisdictions, in the U.S. The total number of jurisdictions in the U.S. that enforce energy codes is not known with any degree of certainty. The National League of Cities publishes an estimate of the number of local governments in the U.S. at [http://www.nlc.org/about\\_cities/cities\\_101/142.aspx](http://www.nlc.org/about_cities/cities_101/142.aspx). Their summary indicates the following:

- 19,429 Municipal governments;
- 16,504 Town or Township governments;
- 3,034 County governments;
- 13,506 School districts; and
- 35,052 Special district governments.

DOE believes it is reasonable to assume that all of the municipal governments, town or township governments, and county governments could be required to acquire training on Standard 90.1–2007 in order to enforce this standard as an adopted energy code. In addition, the 50 state governments would be required to acquire training. This number adds up to  $19,429 + 16,504 + 3,034 + 50 = 38,667$ . Another widely mentioned estimate of the total number of code adopting jurisdictions in the U.S. is 44,000. This number is based on the National Conference of States on Building Codes and Standards (NCBCS). See, for example, [http://www.ncsbc.org/newsite/New%20Releases/RW\\_Presentation\\_060602.htm](http://www.ncsbc.org/newsite/New%20Releases/RW_Presentation_060602.htm). Both these estimates are in reasonable agreement and so DOE assumed that there are 40,000 potential jurisdictions that potentially would need training on a new energy code. This number is likely to be on the extreme high end of possible values. DOE believes there are approximately 38,000 to 44,000 jurisdictions that could adopt energy codes. Many of those jurisdictions do not adopt energy codes and many of those jurisdictions have already adopted Standard 90.1–2007 or the 2009 IECC as evidenced by the BECP maps that show 14 States have already adopted 90.1–2007 or the equivalent. DOE believes that 40,000 is very much on the high side of the estimate for jurisdictions that may need training on Standard 90.1–2007, but in the absence of a lower defensible value, DOE has chosen to use this higher conservative number.

Based on training experiences of the Building Energy Codes Program staff, with conducting training sessions for jurisdictional staff regarding Standard 90.1, one full-day (8 hours) of training is normally sufficient. Therefore we have used 8 hours as a low estimate and 16 hours as a high estimate for training hours required if a jurisdiction were to adopt Standard 90.1–2007.

a. Low estimate—8 hours \* 40,000 jurisdictions \* \$100 per hour = \$32,000,000.

b. High Estimate—16 hours \* 40,000 jurisdictions \* \$100 per hour = \$64,000,000.

Adding the potential training costs of \$32 million to \$64 million to the costs for the 3 steps indicates a potential total costs ranging from \$32.12 million to \$71.5 million. The high end of this estimate is less than the \$100 million threshold in the Unfunded Mandates Act. Accordingly, no further action is required under the Unfunded Mandates Reform Act of 1995.

#### *F. Review Under the Treasury and General Government Appropriations Act of 1999*

Section 654 of the Treasury and General Government Appropriations Act of 1999 (Pub. L. 105–277) requires Federal agencies to issue a Family Policymaking Assessment for any rule that may affect family well-being. Today's action would not have any impact on the autonomy or integrity of the family as an institution. Accordingly, DOE has concluded that it is not necessary to prepare a Family Policymaking Assessment.

#### *G. Review Under the Treasury and General Government Appropriations Act of 2001*

Section 515 of the Treasury and General Government Appropriations Act, 2001 (44 U.S.C. 3516, note) provides for agencies to review most disseminations of information to the public under guidelines established by each agency pursuant to general guidelines issued by OMB. OMB's guidelines were published at 67 FR 8452 (Feb. 22, 2002), and DOE's guidelines were published at 67 FR 62446 (Oct. 7, 2002). DOE has reviewed today's action under the OMB and DOE guidelines and has concluded that it is consistent with applicable policies in those guidelines.

#### *H. Review Under Executive Order 13211*

Executive Order 13211, "Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use," 66 FR 28355 (May 22, 2001), requires Federal agencies to prepare and submit to the OMB a Statement of Energy Effects for any proposed significant energy action. A "significant energy action" is defined as any action by an agency that promulgated or is expected to lead to promulgation of a final rule, and that: (1) Is a significant regulatory action under Executive Order 12866, or any successor order; and (2) is likely to have a significant adverse effect on the supply, distribution, or use of energy; or (3) is designated by the Administrator of the Office of Information and Regulatory Affairs (OIRA) as a significant energy action. For any proposed significant energy action, the agency must give a detailed statement of any adverse effects on energy supply, distribution, or use, should the proposal be implemented, and of reasonable alternatives to the action and their expected benefits on energy supply, distribution, and use.

Today's action would not have a significant adverse effect on the supply, distribution, or use of energy and is

therefore not a significant energy action. Accordingly, DOE has not prepared a Statement of Energy Effects.

#### *I. Review Under Executive Order 13175*

Executive Order 13175. "Consultation and Coordination with Indian tribal Governments" (65 FR 67249 (Nov. 9, 2000)), requires DOE to develop an accountable process to ensure "meaningful and timely input by tribal officials in the development of regulatory policies that have tribal implications." "Policies that have tribal implications" refers to regulations that have "substantial direct effects on one or more Indian tribes, on the relationship between the Federal Government and Indian tribes, or on the distribution of power and responsibilities between the Federal Government and Indian tribes." Today's regulatory action is not a policy that has "tribal implications" under Executive Order 13175. DOE has reviewed today's action under Executive Order 13175 and has determined that it is consistent with applicable policies of that Executive Order.

Issued in Washington, DC, on July 13, 2011.

**Kathleen Hogan,**

*Deputy Assistant Secretary for Energy Efficiency, Office of Technology Development, Energy Efficiency and Renewable Energy.*

[FR Doc. 2011-18251 Filed 7-19-11; 8:45 am]

**BILLING CODE 6450-01-P**

## **DEPARTMENT OF ENERGY**

[Docket No. EERE-2006-BC-0132]

**RIN 1904-AC42**

### **Building Energy Standards Program: Preliminary Determination Regarding Energy Efficiency Improvements in the Energy Standard for Buildings, Except Low-Rise Residential Buildings, ANSI/ASHRAE/IESNA Standard 90.1-2010**

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

**ACTION:** Notice of preliminary determination.

**SUMMARY:** The Department of Energy (DOE) has preliminarily determined that the 2010 edition of the *Energy Standard for Buildings, Except Low-Rise Residential Buildings*, American National Standards Institute (ANSI)/American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) Illuminating Engineering Society of North America (IESNA) Standard 90.1-2010, (Standard

90.1-2010 or the 2010 edition) would achieve greater energy efficiency in buildings subject to the code, than the 2007 edition (Standard 90.1-2007 or the 2007 edition). Also, DOE has preliminarily determined that the quantitative analysis of the energy consumption of buildings built to Standard 90.1-2010, as compared with buildings built to Standard 90.1-2007, indicates national source energy savings of approximately 18.2 percent of commercial building energy consumption. Additionally, DOE has preliminarily determined site energy savings are estimated to be approximately 18.5 percent. If these determinations are finalized, States would be required to certify that they have reviewed the provisions of their commercial building code regarding energy efficiency, and as necessary, updated their code to meet or exceed the energy efficiency of Standard 90.1-2010. Additionally, this notice provides guidance to States on Certifications, and Requests for Extensions of Deadlines for Certification Statements, should the preliminary determination be adopted as final.

**DATES:** Comments on the preliminary determination must be provided by August 19, 2011.

**ADDRESSES:** You may submit comments, identified by any of the following methods:

- *Federal eRulemaking Portal:* <http://www.regulations.gov>. Follow the instructions for submitting comments.

- *E-mail:* [ASHRAE90.1-2010-DET-0050@ee.doe.gov](mailto:ASHRAE90.1-2010-DET-0050@ee.doe.gov). Include RIN 1904-AC42 in the subject line of the message.

- *Postal Mail:* Michael Erbesfeld, U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy, Forrestal Building, Mail Station EE-2J, 1000 Independence Avenue, SW., Washington, DC 20585-0121, Please submit one signed paper original.

- *Hand Delivery/Courier:* Michael Erbesfeld, U.S. Department of Energy, Building Technologies Program, Room 6003, 1000 Independence Avenue, SW., Washington, DC 20585-0121.

Instructions: All submissions must include the agency name, Department of Energy, and docket number, EERE-2006-BC-0132, or Regulatory Information Number (RIN), 1904-AC42, for this preliminary determination.

#### **FOR FURTHER INFORMATION CONTACT:**

Michael Erbesfeld, U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy, Forrestal Building, Mail Station EE-2J, 1000 Independence Avenue, SW., Washington, DC 20585-0121, (202) 287-1874, e-mail: [michael.erbesfeld@ee.doe.gov](mailto:michael.erbesfeld@ee.doe.gov). For legal

issues contact Mrs. Kavita Vaidyanathan, U.S. Department of Energy, Office of the General Counsel, Forrestal Building, GC-71, 1000 Independence Avenue, SW., Washington, DC 20585, (202) 586-0669, e-mail:

[Kavita.Vaidyanathan@hq.doe.gov](mailto:Kavita.Vaidyanathan@hq.doe.gov).

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#### **I. Introduction**

##### **A. Statutory Requirements**

Title III of the Energy Conservation and Production Act, as amended (ECPA), establishes requirements for the Building Energy Efficiency Standards Program. (42 U.S.C. 6831 *et seq.*) Section 304(b), as amended, of ECPA provides that whenever the ANSI/ASHRAE/IESNA Standard 90.1-1989 (Standard 90.1-1989 or 1989 edition), or any successor to that code, is revised, the Secretary must make a determination, not later than 12 months after such revision, whether the revised code would improve energy efficiency in commercial buildings and must publish notice of such determination in the **Federal Register**. (42 U.S.C. 6833 (b)(2)(A)) The Secretary may determine that the revision of Standard 90.1-1989 or any successor thereof, improves the level of energy efficiency in commercial buildings. If so, then not later than two years after the date of the publication of