

# Proposed Rules

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This section of the FEDERAL REGISTER contains notices to the public of the proposed issuance of rules and regulations. The purpose of these notices is to give interested persons an opportunity to participate in the rule making prior to the adoption of the final rules.

## DEPARTMENT OF ENERGY

### 10 CFR Parts 433 and 435

[Docket No. EERE-2010-BT-STD-0031]

RIN 1904-AB96

#### Fossil Fuel-Generated Energy Consumption Reduction for New Federal Buildings and Major Renovations of Federal Buildings

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

**ACTION:** Notice of proposed rulemaking.

**SUMMARY:** The U.S. Department of Energy (DOE) is publishing this notice of proposed rulemaking to implement provisions of the Energy Conservation and Production Act, as amended by the Energy Independence and Security Act of 2007 that require DOE to establish revised performance standards for the construction of all new Federal buildings, including commercial buildings, multi-family high-rise residential buildings and low-rise residential buildings. The provisions in this notice of proposed rulemaking specifically address the reduction of fossil fuel-generated energy consumption in new Federal buildings and Federal buildings undergoing major renovations. This proposed rule also addresses how agencies other than the General Services Administration (GSA) may petition DOE for a downward adjustment of the requirements if they believe meeting the full fossil fuel-generated energy consumption reduction level is technically impracticable in light of the specified functional needs for that building.

**DATES:** Public comments on this proposed rule will be accepted until December 14, 2010. DOE will hold a public meeting on Friday, November 12, 2010, from 9 a.m. to 5 p.m., in Washington, DC. Interested persons who wish to speak at the public meeting should e-mail or phone Ms. Brenda Edwards by 4:30 p.m., Friday, October 29, 2010. DOE must receive a signed

original and an electronic copy of statements to be given at the public meeting before 4 p.m., Friday, November 5, 2010. Additionally, DOE plans to conduct the public meeting via webinar. You can attend the public meeting via webinar, and registration information, participant instructions, and information about the capabilities available to webinar participants will be published on the Building Energy Codes Program's Web site [http://www.energycodes.gov/events/doe/fossil\\_fuels.stm](http://www.energycodes.gov/events/doe/fossil_fuels.stm), and/or on the Federal Energy Management Program's Web site [http://www1.eere.energy.gov/femp/regulations/notices\\_rules.html](http://www1.eere.energy.gov/femp/regulations/notices_rules.html). Participants are responsible for ensuring their systems are compatible with the webinar software.

DOE will accept comments, data, and information regarding this notice of proposed rulemaking (NOPR) before and after the public meeting, but no later than December 14, 2010. If you submit information that you believe to be exempt by law from public disclosure, you should submit one complete copy, as well as one copy from which the information claimed to be exempt by law from public disclosure has been deleted. DOE is responsible for the final determination with regard to disclosure or nondisclosure of the information and for treating it accordingly under the DOE Freedom of Information regulations at 10 CFR 1004.11.

**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:* [FossilFuelReduct-2010-STD-0031@ee.doe.gov](mailto:FossilFuelReduct-2010-STD-0031@ee.doe.gov). Include EERE-2010-BT-STD-0031 and/or RIN 1904-AB96 in the subject line of the message.

- *Postal Mail:* Ms. Brenda Edwards, U.S. Department of Energy, Building Technologies Program, Mailstop EE-2J, Fossil Fuel-Generated Energy Consumption Reduction for New Federal Buildings and Major Renovations of Federal Buildings EERE-2010-BT-STD-0031 and/or RIN 1904-AB96, 1000 Independence Avenue, SW., Washington, DC 20585-0121. Telephone: (202) 586-9138. Please submit one signed paper original. Due to the potential delays in DOE's receipt and processing of mail sent through the U.S. Postal Service, DOE encourages

respondents to submit comments electronically to ensure timely receipt.

- *Hand Delivery/Courier:* Brenda Edwards, U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy, Building Technologies Program, EE-2J, 1000 Independence Avenue, SW., Washington, DC 20585-0121.

*Instructions:* All submissions must include the agency name and docket number or Regulatory Information Number (RIN) for this rulemaking.

*Docket:* For access to the docket to read background documents or comments received by DOE, go to the U.S. Department of Energy, Forrestal Building, Room 5E-080 (Resource Room of the Federal Energy Management Program), 1000 Independence Avenue, SW., Washington, DC, (202) 586-9127, between 9 a.m. and 4 p.m., Monday through Friday, except Federal holidays. Please call Brenda Edwards at (202) 586-2945 for additional information regarding visiting the Resource Room.

#### FOR FURTHER INFORMATION CONTACT:

Margo Appel, U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy, Building Technologies Program, EE-2J, 1000 Independence Avenue, SW., Washington, DC 20585-0121, (202) 586-9495, e-mail: [margo.appel@hq.doe.gov](mailto:margo.appel@hq.doe.gov), or Ami Grace-Tardy, U.S. Department of Energy, Office of the General Counsel, Forrestal Building, GC-71, 1000 Independence Avenue, SW., Washington, DC 20585, (202) 586-5709, e-mail: [ami.grace-tardy@hq.doe.gov](mailto:ami.grace-tardy@hq.doe.gov).

#### SUPPLEMENTARY INFORMATION:

- I. Background
- II. Discussion of Proposed Rule
- III. Reference Resources
- IV. Regulatory Review
- V. Approval by the Office of the Secretary

#### I. Background

Section 305 of the Energy Conservation and Production Act (ECPA) established energy conservation requirements for Federal buildings (42 U.S.C. 6834). Section 433(a) of the Energy Independence and Security Act of 2007 (Pub. L. 110-140) (EISA) amended section 305 of ECPA and directed that DOE establish regulations that revised Federal building energy efficiency performance standards to require that "[f]or new Federal buildings and Federal buildings undergoing major renovations, with respect to which the

Administrator of General Services is required to transmit a prospectus to Congress under section 3307 of Title 40, in the case of public buildings (as defined in section 3301 of Title 40), or of at least \$2,500,000 in costs adjusted annually for inflation for other buildings,” the “buildings shall be designed so that the fossil fuel-generated energy consumption of the buildings is reduced as compared with such energy consumption by a similar building in fiscal year 2003 (as measured by Commercial Buildings Energy Consumption Survey or Residential Energy Consumption Survey data from the Energy Information Agency), by” specific graduated percentages ranging from 55 percent to 100 percent over a specified period of time beginning in fiscal year 2010 and ending in fiscal year 2030 (42 U.S.C. 6834(a)(3)(D)(i)(I)).

In addition, ECPA as amended by EISA permits DOE upon petition by an agency subject to the statutory requirements, to adjust the applicable numeric reduction requirement “downward with respect to a specific building, if the head of the agency designing the building certifies in writing that meeting such requirement would be technically impracticable in light of the agency’s specified functional needs for that building and” DOE concurs with the agency’s conclusion (42 U.S.C. 6834(a)(3)(D)(i)(II)). ECPA as amended by EISA further directs that such an adjustment does not apply to GSA (42 U.S.C. 6834(a)(3)(D)(i)(II)).

Today’s proposed rule on fossil fuel-generated energy consumption reduction proposes to amend certain portions of 10 CFR parts 433 and 435, the regulations governing energy efficiency in Federal buildings. Additionally, DOE published a proposed rule on sustainable design standards for new Federal buildings on May 28, 2010 (75 FR 29933), which also proposes to amend certain portions of 10 CFR parts 433 and 435. DOE has already addressed some elements of today’s proposed rule in the sustainable design proposed rule. Specifically, overlapping elements of both proposed rules are the definitions of “new Federal building” and “major renovation.” The proposed regulatory text in today’s document would amend the current regulatory text, without consideration of amendments that may result from the sustainable design rulemaking. If and when these two rulemakings are finalized, DOE will coordinate the final regulatory text between the two rulemakings.

In addition, there are a number of statutory provisions, regulations,

Executive Orders, and memorandums of understanding that govern the construction of new Federal buildings or major renovations to Federal buildings. These include, but are not limited to, Executive Order 13514 (74 FR 52117); sections 323, 433, 434, and 523 of the Energy Independence and Security Act 2007 (Pub. L. 110–140); Executive Order 13423 (72 FR 3919); the Guiding Principles for Federal Leadership in High Performance and Sustainable Buildings originally adopted in the Federal Leadership in High Performance and Sustainable Buildings MOU; section 109 of the Energy Policy Act of 2005 (Pub. L. 109–58); and 10 CFR parts 433 and 435. If made final, the proposed rule would not supersede other applicable legal requirements for new Federal buildings or major renovations to Federal buildings.

## II. Discussion of Proposed Rule

### A. Overview

The proposed rule would establish revised Federal building energy efficiency performance standards for achieving the reductions in fossil fuel-generated energy consumption as listed in ECPA as amended by EISA (42 U.S.C. 6834(a)(3)(D)(i)(I)). The proposed rule would also clarify which building types are covered by the standards and which building types are excluded. The proposed rule establishes a methodology for compliance, including calculation of the maximum allowable fossil fuel-generated energy consumption based on building type, and how fossil fuel consumption resulting from electricity usage should be considered. Today’s proposed rule would also establish procedures for agencies to petition DOE for downward adjustment of the applicable percentage reduction requirement.

### B. Scope of Proposed Rule

Section 305(a)(3) of ECPA as amended directs DOE to establish regulations that require fossil fuel-generated energy consumption reductions be applied to a subset of new Federal buildings and Federal buildings undergoing major renovation. (42 U.S.C. 6834(a)(3)(D)(i)(I)) A building is in the subset of new Federal buildings and Federal buildings undergoing major renovations if the building is:

- A public building as defined in 40 U.S.C. 3301,<sup>1</sup> for which the

<sup>1</sup> Under 40 U.S.C. 3301(5) “public building” is a building, whether for single or multitenant occupancy, and its grounds, approaches, and appurtenances, which is generally suitable for use as office or storage space or both by one or more

Administrator of General Services is required to transmit a prospectus to Congress under U.S.C. Title 40, section 3307, or

- A building and major renovation for which the construction project cost is at least \$2,500,000 (in 2007 dollars, adjusted for inflation using U.S. Department of Labor Producer Price Indexes).

DOE notes that the definition of “Federal building” was changed in statute, and DOE is addressing that definition and the definition of “new Federal building” in a separate rulemaking. (42 U.S.C. 6832(6)) The statute now defines “Federal building” to mean any building to be constructed by, or for the use of, any Federal agency. In the separate rulemaking DOE is proposing that the term include buildings built for the purpose of being leased by a Federal agency, and privatized military housing.

For the purpose of this rulemaking, DOE would consider public buildings to include buildings leased by a Federal agency. DOE recognizes, however, that a Federal agency may not have control over the design of a renovation of a leased building in which the agency is a tenant. For the purpose of this rulemaking, DOE considers major renovations to be limited to those renovations for which a Federal agency has significant control over the renovation design.

Additionally, DOE would consider construction project costs to be those costs for which the agency currently has

Federal agencies or mixed-ownership Government corporations.

“Public building” includes Federal office buildings, post offices, customhouses, courthouses, appraisers stores, border inspection facilities, warehouses, record centers, relocation facilities, telecommuting centers, similar Federal facilities, and any other buildings or construction projects the inclusion of which the President considers to be justified in the public interest.

The definition does not include a building or construction project that is on the public domain (including that reserved for national forests and other purposes); that is on property of the Government in foreign countries; that is on Indian and native Eskimo property held in trust by the Government; that is on land used in connection with Federal programs for agricultural, recreational, and conservation purposes, including research in connection with the programs; that is on or used in connection with river, harbor, flood control, reclamation or power projects, for chemical manufacturing or development projects, or for nuclear production, research, or development projects; that is on or used in connection with housing and residential projects; that is on military installations (including any fort, camp, post, naval training station, airfield, proving ground, military supply depot, military school, or any similar facility of the Department of Defense); that is on installations of the Department of Veterans Affairs used for hospital or domiciliary purposes; or the exclusion of which the President considers to be justified in the public interest.

funding. That is, the \$2,500,000 threshold would not include renovation activities that potentially could occur in future fiscal years. Generally, construction project costs include design, permitting, construction (materials and labor), and commissioning costs. Land and legal costs would generally not be included. DOE requests comment on this definition of construction costs.

DOE is proposing that Federal agencies would be required to comply with the final rule starting one year from the date of the final rule. As proposed, covered buildings for which design for construction begins on or after that effective date must meet the requirements established in this rule. The one year period would provide Federal agencies sufficient time to revise new building designs prior to the start of construction and would be consistent with that the lead time provided for the energy efficiency performance standards for the construction of all new Federal buildings.

#### C. Fiscal Year Percentage Reductions

Section 305 of ECPA as amended by EISA mandates that buildings subject to this proposed rule be designed to reduce fossil fuel-generated energy consumption by 55 percent beginning in fiscal year 2010, 65 percent beginning in fiscal year 2015, 80 percent beginning in fiscal year 2020, 90 percent beginning in fiscal year 2025, and 100 percent beginning in fiscal year 2030 (42 U.S.C. 6834(a)(3)(D)(i)(I)). DOE interprets this table in the statute to mean that any building whose design for construction begins in the fiscal year specified in the statute must be designed to achieve the fossil fuel-generated energy consumption reductions for that fiscal year. DOE welcomes comments on this interpretation. DOE interprets the fiscal years listed in the statute as spans of years for which the fossil fuel-generated energy consumption reductions would apply. For instance, the applicable percentage reduction for fiscal year 2010 would apply for the time span of fiscal year 2010 through fiscal year 2014. The applicable percentage reduction for fiscal year 2015 would apply for the time span of fiscal year 2015 through fiscal year 2019, and so on. DOE welcomes comments on this interpretation. Congress directed DOE to establish a rule addressing these fossil fuel-generated energy consumption reductions beginning in fiscal year 2010. DOE believes that the fossil fuel-generated energy consumption reductions do not apply to Federal agencies until the regulations

implementing the reductions are finalized. Today's proposed rule would apply to buildings for which design for construction begins at least one year after the final rule is issued.

#### D. Methodology To Determine Compliance

Section 305 of ECPA as amended by EISA in part requires that the buildings that are the subject of today's proposed rule be designed so that the fossil fuel-generated energy consumption of the buildings is reduced, as compared with such energy consumption by a similar building in fiscal year 2003 (as measured by Commercial Buildings Energy Consumption Survey or Residential Energy Consumption Survey data from the Energy Information Agency), by the percentages specified in Section 305 of ECPA. (42 U.S.C. 6834(a)(3)(D)(i)(I)).

#### Determine Baseline Fossil Fuel-Generated Energy Consumption of Similar Building

To determine whether a building meets the numeric fossil fuel reduction requirements specified by ECPA as amended by EISA, it is necessary to establish a baseline against which the reductions can be measured. For purposes of this proposed rulemaking, the statute establishes the baseline to be energy consumption data from Commercial Buildings Energy Consumption Survey (CBECS) for commercial buildings and Residential Buildings Energy Consumption Survey (RECS) for residential buildings. The CBECS and RECS data, which can be found at <http://www.eia.doe.gov/emeu/cbecs/contents.html> and at <http://www.eia.doe.gov/emeu/recs/contents.html>, are based on actual reported energy use over a large sample of buildings, normalized for size to thousands of British thermal units per square foot of floor space (kBtu/ft<sup>2</sup>).

ECPA as amended by EISA requires that the buildings subject to this proposed rule be designed so that the fossil fuel-generated energy consumption of the buildings is reduced as compared with energy consumption data of a similar building in fiscal year 2003 as measured by CBECS or RECS (42 U.S.C. 6834(a)(3)(D)(i)(I)). The limited number of buildings surveyed by CBECS and RECS data does not always allow for a direct estimate of building energy use by climate zone and building type because there are only a few surveyed buildings that fit into some building type/climate zone groups. DOE believes, however, that a climate adjustment is necessary to provide reasonable baselines. Therefore,

DOE is developing fossil fuel-generated energy requirements based on building type using CBECS or RECS data, and then applying a climate adjustment using the climate zones defined in the baseline energy efficiency standards at 10 CFR parts 433 and 435. This ensures that new Federal buildings will have to achieve reductions commensurate to a baseline appropriate for their respective climate zone, rather than to a national average that does not account for the impacts of the local climate on the energy use of a specific building. DOE solicits comment on the best technique for calculating the climate adjustment for the different building types.

Note that ECPA as amended by EISA makes no distinction between fossil fuels such as natural gas, petroleum, and coal for purposes of the required fossil fuel-generated reductions addressed in today's rule. DOE recognizes that some fossil fuels have higher CO<sub>2</sub> emission factors than other fossil fuels, with coal being the highest and natural gas being the lowest. While the statute does not specifically direct DOE to consider variation in fossil fuels for purposes of this rulemaking, it does not prohibit DOE from doing so. With this in mind, DOE seeks public comment on whether all fossil fuels should be treated equally or whether each should be treated differently based on CO<sub>2</sub> emission factors or some other factor.

#### Commercial Buildings Baseline—CBECS

ECPA as amended by EISA requires that the fossil fuel-generated energy consumption of new Federal buildings and Federal buildings undergoing major renovations be compared to that of similar buildings in fiscal year 2003 as measured by CBECS or RECS data (42 U.S.C. 6834(a)(3)(D)(i)(I)). The most recent available CBECS data is from a CBECS survey that was conducted in 2003.

As discussed in the previous section, for purposes of establishing a baseline, DOE is developing a baseline based on building type, as defined by CBECS, with a climate adjustment as discussed previously. In the CBECS data, Column G of the following table, [http://www.eia.doe.gov/emeu/cbecs/cbecs2003/detailed\\_tables\\_2003/2003set9/2003excel/c3.xls](http://www.eia.doe.gov/emeu/cbecs/cbecs2003/detailed_tables_2003/2003set9/2003excel/c3.xls), lists the energy use per square foot of various groups of buildings. Note that in CBECS documents, the phrases *building type* and *principal building activity* are used interchangeably. For the sake of consistency, this document only uses the phrase *building type*.

It should be noted that DOE has commissioned an analysis of the 2003

CBECS data by building type and climate zone, and the results may be found in the report *Methodology for Modeling Building Energy Performance Across the Commercial Sector* by the National Renewable Energy Laboratory (NREL/TP-550-41956 2008) at [http://apps1.eere.energy.gov/buildings/publications/pdfs/commercial\\_initiative/energy\\_use\\_intensity\\_targets.pdf](http://apps1.eere.energy.gov/buildings/publications/pdfs/commercial_initiative/energy_use_intensity_targets.pdf). Examination of Table 4 in the analysis DOE commissioned indicates the insufficient sample size of the CBECS data when both building type and climate zone are used to characterize building energy consumption. DOE's analysis produced often erratic and large variation in kBtu/ft<sup>2</sup> by building type across the different climate zones and even across similar climate zones, indicating an insufficient sample size. For this reason, DOE is performing additional analysis and processing of the CBECS data with the goal of producing CBECS-based requirements by building type and climate zone, with the climate zones as defined in the baseline standard for 10 CFR part 433 (ANSI/ASHRAE/IESNA Standard 90.1-2004).

One issue that arises with the use of this CBECS data is what to do with buildings that are split into multiple building types. It is quite common to find buildings that are a combination of warehouse and office, or warehouse and retail, or education and office, or laboratory and office, or some other combination of building types. Today's proposed rule will offer agencies the option to perform a building area-weighted average in order to determine the appropriate baseline level of fossil fuel-generated energy consumption. This process is described in 10 CFR 433.4(e) of the proposed rule.

CBECS does not provide data on total fossil fuel-generated energy consumption in buildings. However, fossil fuel-generated energy consumption can be calculated from CBECS data by using the following equation:

Fossil fuel-generated energy consumption = Direct consumption of fossil fuels in the building plus the amount of electrical energy consumption that is generated from fossil fuels

The 2003 CBECS lists direct consumption of fossil fuels in Table C1 ([http://www.eia.doe.gov/emeu/cbecs/cbecs2003/detailed\\_tables\\_2003/2003set9/2003excel/c1.xls](http://www.eia.doe.gov/emeu/cbecs/cbecs2003/detailed_tables_2003/2003set9/2003excel/c1.xls)) in columns labeled natural gas and fuel oil. The 2003 CBECS also identifies both the primary electrical energy, which is the

total energy used to generate and transmit electricity to a building, and the energy content of the electricity consumed in the building. In CBECS energy consumption data, the primary electrical energy required to generate and transmit electricity to the point of use in a building is roughly three times the energy content of the electricity itself. The fraction of electricity generated from fossil fuels on a nationwide basis, referred to in this document as the fossil fuel generation ratio, is calculated from data in Table 2.1 of the Energy Information Administration (EIA) 2008 Electric Power Annual Report (<http://www.eia.doe.gov/cneaf/electricity/epa/epat2p1.html>) by summing the electric generation from coal, petroleum, natural gas, and other gases (derived from fossil fuels) and then dividing by the total electric generation. The fossil fuel generation ratio changes each year. Because ECPA as amended by EISA requires that the fossil fuel-generated energy consumption in new buildings and those undergoing major renovations be compared to that of similar buildings in fiscal year 2003, the 2003 fossil fuel generation ratio must be used in order to calculate the baseline fossil fuel-generated energy consumption levels. For 2003, the fossil fuel generation ratio was 0.71, meaning that about 71% of all electricity in the United States is generated from fossil fuels.

The approach taken in today's rulemaking to estimate the fossil fuel consumption associated with electricity consumption applies the national average contribution of fossil fuel to electricity generation. This approach would result in reductions in electricity consumption being treated the same across all geographic areas, and would not reflect regional variations in the contribution of fossil fuels to electricity generation. DOE is considering a regional approach to establishing the average fossil fuel fraction associated with building energy use. Prior to reaching a conclusion regarding the use of national or regional averages of fossil fuel inputs to the electric sector, DOE will evaluate both approaches and both average and marginal factors to determine their likely effects on agency decision-making and their ability to provide an accurate indication of the likely impacts of reductions in Federal agency electricity use on the use of fossil fuels in the electric sector. For example, the use of national average fossil fuel inputs to electric sector (rather than regional averages) may provide a better indication of the actual fossil fuel reductions likely to result

from reductions in electricity use. Reductions in future electricity demand are likely to cause electric utilities to reduce the power supplied by those electricity generation units or sources that have the highest marginal costs. Over both the short and long run, the types of power generation that have the highest marginal costs are more likely to be fossil fuel units than those powered by nuclear, hydropower or other renewable energy sources. This is likely to be true in all regions of the country, regardless of their current or projected reliance on fossil fuels to generate electricity. Regional marginal fossil fuel reduction factors may also be appropriate. DOE invites comments on whether it should use a national or regional approach and average or marginal factors to estimate the fossil fuel consumption associated with electricity consumption, taking into consideration the potential implications on agency decision-making and actual fossil fuel use.

The fossil fuel-generated energy consumption baseline column in Table 1 below is calculated directly from Table C1 in the 2003 CBECS. For each building type, the primary electrical energy is multiplied by the fossil fuel generation ratio then added to the direct fossil fuel consumption to get the total fossil fuel-generated consumption for that particular building type. The total fossil fuel consumption is then divided by the total floorspace for that building type to get the fossil fuel-generated energy consumption, as reported in Table 1 below. DOE is proposing building type definitions based largely on the CBECS glossary, with some minimal modifications for regulatory clarity. DOE requests comment on the building type definitions.

The baselines provided in Table 1 do not currently reflect any adjustment for climate-related variations in building energy use. As discussed elsewhere in this proposed rule, DOE believes a climate adjustment is necessary to provide reasonable baselines, and DOE is seeking comment on this issue. In a final rule, DOE intends to update the values provided in Table 1 for climate.

#### Residential Buildings Baseline—RECS

ECPA as amended by EISA requires that the fossil fuel-generated energy consumption of new Federal buildings and Federal buildings undergoing major renovations be compared to that of similar buildings in fiscal year 2003 as measured by CBECS or RECS data (42 U.S.C. 6834(a)(3)(D)(i)(I)). Residential Energy Consumption Surveys (RECS) were conducted in 2001 and 2005; there is no data for 2003. Because the 2005

RECS data is the most recently available data at the time of this proposed rulemaking, DOE expects to use the 2005 RECS data as a baseline.

As with the CBECS data for commercial buildings, the limited number of buildings surveyed by RECS data does not always allow for a direct calculation of building energy use by climate zone and building type without additional analysis. DOE believes, however, that a climate adjustment is necessary to provide more reasonable baselines. DOE, therefore, proposes to establish fossil fuel-generated energy requirements based on building type using RECS data, and then apply a climate adjustment using the climate zones defined in the baseline energy efficiency standard at 10 CFR part 435 (the 2004 IECC). This ensures that new Federal buildings will have to achieve reductions commensurate to a baseline appropriate for their respective climate zone, rather than to a national average baseline that is either too cold or too warm for their particular needs. DOE solicits comment on the best technique for calculating the climate adjustment for the different building types.

The 2005 RECS lists direct consumption of fossil fuels by households in Table US9 available at [http://www.eia.doe.gov/emeu/recs/recs2005/hc2005\\_tables/c&e/excel/tableus9.xls](http://www.eia.doe.gov/emeu/recs/recs2005/hc2005_tables/c&e/excel/tableus9.xls) in columns labeled natural gas, fuel oil, kerosene, and LPG. To calculate the total fossil fuel-generated energy consumption per household for each type of housing unit, the direct fossil fuel consumption per household and fossil fuel consumption for electricity consumption per household are summed, using the same factors to determine the fossil fuel fraction of residential electricity consumption that was used for commercial buildings. The total fossil fuel-generated energy consumption per household is then divided by the average floorspace for each type of housing unit. The average floor space for each type of housing unit can be found at <http://www.eia.doe.gov/emeu/recs/recs2005/c&e/summary/excel/tableus1part1.xls>. This calculation produces the fossil fuel use per square foot for each type of housing unit. The results can be found in the baseline column of Table 2 below. DOE is proposing building type definitions

based largely on the RECS glossary, with some minimal modifications for regulatory clarity. For example, the 2005 RECS data includes values for “manufactured homes” although the RECS glossary does not define “manufactured homes” but does define “mobile home.” DOE requests comment on the building type definitions.

The baselines provided in Table 2 do not currently reflect any adjustment for climate-related variations in building energy use. As discussed elsewhere in this proposed rule, DOE believes a climate adjustment is necessary to provide reasonable baselines, and DOE is seeking comment on this issue. In a final rule, DOE intends to update the values provided in Table 2 for climate.

When using Table 2, it is important to note a shortcoming of RECS data for use in performance standards for Federal buildings. The shortcoming is that RECS data is collected on a per household basis and does not include energy use in common areas. As a result, the value for fossil fuel-generated energy consumption per square foot of floorspace shown in Table 2 only accounts for the non-common areas of these buildings. DOE considered accounting for common area energy use in the requirements, but RECS does not collect that data. To resolve this issue, DOE proposes applying the RECS-derived fossil fuel requirements to all applicable floorspace, including common and non-common areas. The benefits of this approach are that it is relatively simple and will not make it more difficult for building designers to show compliance. Because common areas account for a small fraction of floorspace, the effect on the requirement will be minimal. Also, common areas often have a lower energy intensity, so by using only non-common areas the maximum allowable fossil fuel-generated energy requirement will, if anything, be slightly higher. DOE welcomes comments on this approach or other specific approaches that could be used to develop the RECS-derived requirements.

#### Calculation of Maximum Allowable Fossil Fuel-Generated Energy Consumption

Once the baseline fossil fuel-generated energy consumption from the

2003 CBECS and 2005 RECS has been determined, the consumption reduction requirements as specified in ECPA as amended by EISA should be calculated. Again, although the baselines provided in Tables 1 and 2 do not currently reflect any adjustment for climate-related variations in building energy use, DOE is developing fossil fuel-generated energy requirements based on building type using CBECS or RECS data, and then applying a climate adjustment. In a final rule, DOE intends to update the values provided in Tables 1 and 2 for climate.

The requirements derived from CBECS, which apply to commercial buildings, are shown in Table 1. The consumption reduction requirements derived from RECS, which apply to both multi-family high-rise residential buildings and low-rise residential buildings, are found in Table 2. In this rulemaking DOE is proposing a revised definition of “Multi-family high-rise residential building,” largely based on the definition at 10 CFR 434.201, although the proposed definition clarifies that multi-family high-rise residential buildings are designed to be four or more stories above grade.

As discussed above, Tables 1 and 2 show data only at the national level, with national average values used for the fossil fuel generation ratio of 0.71. As discussed elsewhere in this rule, DOE is considering and invites comments on whether it should use a national or regional approach and average or marginal factors to estimate the fossil fuel consumption associated with electricity consumption.

For purposes of simplification, values in these tables have been truncated to the nearest kBtu/ft<sup>2</sup>. In today’s notice, the fossil fuel-generated energy consumption percentage reductions are presented as maximum allowable fossil fuel-generated energy consumption levels. Because the figures are premised on the proposed baseline values, the percentage reductions equate to the absolute values which are presented as the maximum allowable values. For ease of agency interpretation, the maximum allowable approach was used in today’s notice.

TABLE 1—2003 CBECS FOSSIL FUEL-GENERATED ENERGY CONSUMPTION BASELINE AND MAXIMUM ALLOWABLE FOSSIL FUEL-GENERATED ENERGY CONSUMPTION BY BUILDING TYPE AND FISCAL YEAR (FY), kBtu/ft<sup>2</sup>

| Building type                  | Baseline (kBtu/ft <sup>2</sup> ) | FY 2012–2014                          | FY 2015–2019                          | FY 2020–2024                          | FY 2025–2029                          | FY 2030 and beyond                     |
|--------------------------------|----------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|--|
|                                |                                  | 55% reduction (kBtu/ft <sup>2</sup> ) | 65% reduction (kBtu/ft <sup>2</sup> ) | 80% reduction (kBtu/ft <sup>2</sup> ) | 90% reduction (kBtu/ft <sup>2</sup> ) | 100% reduction (kBtu/ft <sup>2</sup> ) |
| Education .....                | 126                              | 57                                    | 44                                    | 25                                    | 13                                    | 0                                      |
| Food Sales .....               | 387                              | 174                                   | 135                                   | 77                                    | 39                                    | 0                                      |
| Food Service .....             | 404                              | 182                                   | 141                                   | 81                                    | 40                                    | 0                                      |
| Health Care (Inpatient) .....  | 313                              | 141                                   | 109                                   | 63                                    | 31                                    | 0                                      |
| Health Care (Outpatient) ..... | 148                              | 67                                    | 52                                    | 30                                    | 15                                    | 0                                      |
| Lodging .....                  | 148                              | 67                                    | 52                                    | 30                                    | 15                                    | 0                                      |
| Retail (Other Than Mall) ..... | 126                              | 57                                    | 44                                    | 25                                    | 13                                    | 0                                      |
| Office .....                   | 160                              | 72                                    | 56                                    | 32                                    | 16                                    | 0                                      |
| Public Assembly .....          | 125                              | 56                                    | 44                                    | 25                                    | 12                                    | 0                                      |
| Public Order and Safety .....  | 146                              | 66                                    | 51                                    | 29                                    | 15                                    | 0                                      |
| Religious Worship .....        | 62                               | 28                                    | 22                                    | 12                                    | 6                                     | 0                                      |
| Service .....                  | 113                              | 51                                    | 40                                    | 23                                    | 11                                    | 0                                      |
| Warehouse and Storage .....    | 66                               | 30                                    | 23                                    | 13                                    | 7                                     | 0                                      |

TABLE 2—2005 RECS FOSSIL FUEL-GENERATED ENERGY CONSUMPTION BASELINE AND MAXIMUM ALLOWABLE FOSSIL FUEL-GENERATED ENERGY CONSUMPTION BY TYPE OF HIGH-RISE OR LOW-RISE HOUSING UNIT, kBtu/ft<sup>2</sup>

| Building type                                  | Baseline (kBtu/ft <sup>2</sup> ) | FY 2012–2014                          | FY 2015–2019                          | FY 2020–2024                          | FY 2025–2029                          | FY 2030 and beyond                     |
|--|----------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|--|
|  |                                  | 55% reduction (kBtu/ft <sup>2</sup> ) | 65% reduction (kBtu/ft <sup>2</sup> ) | 80% reduction (kBtu/ft <sup>2</sup> ) | 90% reduction (kBtu/ft <sup>2</sup> ) | 100% reduction (kBtu/ft <sup>2</sup> ) |
| Single-Family Detached .....                   | 59                               | 27                                    | 21                                    | 12                                    | 6                                     | 0                                      |
| Single-Family Attached .....                   | 66                               | 30                                    | 23                                    | 13                                    | 7                                     | 0                                      |
| Multi-Family in 2–4 Unit Buildings .....       | 105                              | 47                                    | 37                                    | 21                                    | 11                                    | 0                                      |
| Multi-Family in 5 or More Unit Buildings ..... | 94                               | 42                                    | 33                                    | 19                                    | 9                                     | 0                                      |
| Manufactured Homes .....                       | 115                              | 52                                    | 40                                    | 23                                    | 12                                    | 0                                      |

DOE recognizes that the required reductions identified in the above tables for the years preceding FY 2030 may change based on how climate and fossil fuels are considered and characterized. However, the FY 2030 requirement for buildings to be designed such that the fossil fuel-generated energy consumption is zero would remain unchanged.

Although ECPA as amended by EISA requires that new Federal buildings and Federal buildings undergoing major renovations be designed so that fossil fuel-generated energy consumption of the buildings is reduced as compared with such energy consumption by a similar building in fiscal year 2003 (as measured by CBECS and RECS), there are some building types for which no amount of processing of CBECS and RECS data will yield an appropriate baseline for comparison. Examples might include industrialized or research facilities. For purpose of determining the Maximum Allowable Fossil Fuel Energy Consumption for these buildings not addressed by CBECS or RECS, DOE proposes to use the ASHRAE's Performance Rating Method to

determine the baseline energy consumption for a new Federal commercial or multi-family high-rise residential building, and the IECC's Simulated Performance Alternative to determine the baseline energy consumption for a new Federal low-rise residential building. DOE welcomes input on this approach.

#### Calculation of Proposed Building Fossil Fuel-Generated Energy Consumption

To determine compliance, DOE is proposing that the fossil fuel-generated energy consumption of the proposed new Federal building or Federal building undergoing major renovation should be estimated using the Performance Rating Method found in Appendix G of ANSI/ASHRAE/IESNA Standard 90.1–2004 for commercial and multi-family high-rise residential buildings, and the ICC International Energy Conservation Code 2004 Supplement for low-rise residential buildings. These are the same methods already prescribed at 10 CFR parts 433 and 435, respectively. Because of the complexity involved in estimating fossil fuel-generated energy consumption, this

compliance requirement effectively requires the use of a whole building simulation tool. Whole building simulations are already performed today for most medium- and large-sized buildings to accurately estimate loads for purposes of sizing HVAC equipment for evaluating buildings under voluntary industry building codes. The outputs from these tools typically include site energy usage for both electricity and fossil fuel.

To compare the estimated fossil fuel-generated energy consumption from the whole-building simulation tool to the maximum allowable fossil fuel-generated energy consumption under the statute, the designer should first calculate the primary electrical energy by multiplying the site electrical energy (from the whole building simulation), including receptacle and process loads, by the electricity source energy factor. The designer then calculates the fossil fuel-generated electrical consumption by multiplying the primary electrical energy by the fossil fuel-generation ratio. Finally, the designer must then sum up the fossil fuel-generated electrical consumption and any non-

electrical fossil fuels directly used in the proposed building (such as gas furnaces, gas cooking stoves, gas water heaters, *etc.*). The sum should be less than or equal to the required fossil fuel-generated energy consumption value for the appropriate building type.

The electricity source energy factor is the ratio of primary electrical energy consumed to generate and deliver energy to a site to the electrical energy consumed on site. DOE is proposing that the electricity source energy factor would be calculated by dividing the average utility delivery ratio in Table 6.2.4 of the DOE Building Energy Data Book ([http://buildingsdatabook.eren.doe.gov/docs/xls\\_pdf/6.2.4.xls](http://buildingsdatabook.eren.doe.gov/docs/xls_pdf/6.2.4.xls)) by 3412 to convert the value from Btu/kWh to kWh/kWh. The fossil fuel generation ratio would be calculated using the EIA's latest Electric Power Annual report by summing the electric generation from coal, petroleum, natural gas, and other gases (derived from fossil fuels) and then dividing by the total electric generation.

DOE notes that the simulation analysis requirement may be burdensome for designers of some buildings, particularly small buildings. DOE also acknowledges that the Advanced Energy Design Guides (AEDGs) have been completed for a few building types, including the most significant commercial building types and sizes, but the AEDGs are not designed to achieve the reduction levels necessary under this rule. DOE welcomes comments on alternatives to a whole building simulation to demonstrate compliance of these buildings with the requirements of this proposed rulemaking. DOE also welcomes comments on the calculations methods discussed in this section.

#### Plug and Process Energy Consumption

EPACT 2005 as amended by EISA requires that building be designed so that the fossil fuel-generated energy consumption of the buildings is reduced as compared with such energy consumption by a similar building as measured by CBECS and RECS. All building energy consumption, including plug and process energy consumption, is included in baseline CBECS and RECS data, and thus is also factored into the maximum allowable fossil fuel-generated energy consumption. Therefore, it is necessary that plug and process loads also be included in the fossil fuel-generated energy consumption of the new Federal building or Federal building undergoing major renovations. This is consistent with Table G3.1.12 in Appendix G, Performance Rating Method, ASHRAE

Standard 90.1–2004. DOE acknowledges the difficulty of estimating plug and process loads and that their inclusion may make it more difficult to achieve the mandated fossil fuel-generated energy consumption reductions. DOE welcomes comments on how the proposed rule can be designed such that the assumptions used in the whole building simulations accurately reflect, to the best degree possible, the final building design and the operation of the building, including plug and process loads.

#### Purchase of Offsite Renewable Energy

In order to meet the maximum allowable fossil fuel-generated energy consumption requirements mandated by ECPA as amended by EISA, fossil fuel-generated energy consumption could be offset with use of energy created from other sources, including renewable energy sources. DOE also recognizes there may be physical limitations to the amount of on-site renewable electricity that can be produced, and it may be more affordable in some cases for an agency to purchase electricity from centralized renewable energy-generation facilities. As an example, ASHRAE Standard 189.1–2009, “The Standard for High-Performance Green Buildings,” has an on-site renewable energy requirement, but allows the use of Renewable Energy Certificates as an alternative to meet the requirement.

DOE is concerned however, that purchase of renewable energy-generated electricity via Renewable Energy Certificates or direct Power Purchase Agreements may simply reduce the amount of renewable energy available for purchase by other entities within the U.S. and may not necessarily lead to an overall decrease in domestic fossil fuel-generated energy consumption. In addition, unlike Power Purchase Agreements, the purchase of Renewable Energy Certificates does not involve a long-term binding agreement and can readily be cancelled. It should also be noted that the use of Renewable Energy Certificates is being phased out by January 2012, as a way to meet the renewable energy consumption levels established under section 203 of EPACT 2005 and Executive Order 13423 (*see* “Renewable Energy Requirement Guidance for EPACT 2005 and Executive Order 13423,” available at: [http://www1.eere.energy.gov/femp/pdfs/epact05\\_fedrenewenergyguid.pdf](http://www1.eere.energy.gov/femp/pdfs/epact05_fedrenewenergyguid.pdf)).

DOE is leaning toward allowing Power Purchase Agreements with a long-term contract to count toward meeting the fossil fuel-generated energy consumption reduction requirements, but not allowing Renewable Energy

Certificates. Under this approach, agencies would be allowed to subtract the annual electricity generated by the renewable energy-generation facility from the building's annual site electrical energy consumption. The building designer would use this quantity, the net site electrical energy consumption, when calculating the building's fossil fuel-generated energy consumption. In effect, the Power Purchase Agreements would help agencies meet the fossil fuel consumption requirements. DOE invites comments on how Renewable Energy Certificates and Power Purchase Agreements should be addressed in the context of this rulemaking. DOE also invites comments on the proposed approach with respect to Power Purchase Agreements.

#### Potential Impact on Onsite Electrical Generation From Natural Gas

DOE is interested in the effect of fossil fuel-generated energy consumption reduction requirements on distributed energy technologies that provide onsite electrical generation from natural gas such as in power plants and combined heat and power (CHP) systems. At power plants and in CHP systems, natural gas is used to generate both heat and electricity. A building with a CHP system could potentially be an all-gas building in terms of utility purchases and would therefore be required to reduce natural gas consumption in accordance with the fossil fuel-generated energy consumption reduction requirements. DOE's intent is to ensure the rule does not penalize or discourage the use of on-site CHP systems, and invites comments how appropriate credit may be given for CHP systems through the compliance determination methodology.

#### E. Cost Analysis

Given the significant reductions in fossil fuel-generated energy consumption that would be required in today's proposed rulemaking, one obvious question is how much will compliance with this proposed rule impact the cost of new Federal construction and major renovations. The answer to that question depends both on the building type and type of housing unit being constructed and the level of fossil fuel-generated energy consumption reduction that is required. DOE commissioned a study by Pacific Northwest National Laboratory in 2008 to look at the incremental costs of high performance buildings. Cost data for high performance buildings is fairly rare and many times the costs for achieving high levels of energy efficiency are intermingled with the costs to achieve

more sustainable design. That report entitled, "Literature Review of Data on the Incremental Costs to Design and Build Low-Energy Buildings (Hunt, WD, 2008, PNNL-17502 and available at [http://www.pnl.gov/main/publications/external/technical\\_reports/PNNL-17502.pdf](http://www.pnl.gov/main/publications/external/technical_reports/PNNL-17502.pdf)) came to the following key findings as noted in the summary of the document:

Key findings of this literature review are as follows:

1. Objectively-developed and verifiable data on the cost premium for low-energy (high efficiency) buildings are very limited. Most of the literature focused on green or sustainable buildings, not on low-energy buildings.
2. In cases where energy efficiency cost data were available, the cost premiums ranged from 1% to 7%. In most cases, the cost premium was less than 4%.
3. Technology solutions are available right now to achieve savings on the order of 30% and more over ASHRAE Standard 90.1-2004; however, cost-effectiveness of these technology solutions is often not addressed.
4. Independent surveys administered to assess the perceptions of building owners and designers regarding the costs to build and operate green/energy-efficient buildings, and the willingness of owners/developers to invest in green/energy-efficient buildings, reveal some interesting common threads.

i. There is a perception that energy-efficient/green buildings cost significantly more to design (starting at a 5% premium) and represent a key barrier with decision makers.

ii. There seems to be a potential willingness (as implied or measured through survey responses) to build more energy-efficient buildings for cost premiums below 5%.

In response to the third key finding listed in the report, DOE began calculating cost impacts for their work associated with AEDGs. Cost impact data are available in the technical support document (TSD) of one published ASHRAE AEDG for small warehouses that are 30% better than Standard 90.1-2004 and four TSDs prepared by DOE for support of future AEDGs that will achieve 50% savings over Standard 90.1-2004. The four TSDs are for medium offices, roadside lodging, general retail, and grocery stores. DOE expects to develop six additional TSDs for small offices, large offices, quick service restaurants, large hospitals, university dormitories, and K-12 schools in FY10. These additional TSDs were not available at the time this notice was prepared.

The available TSDs may be found at: Small Warehouse (30% savings)—

[http://www.pnl.gov/main/publications/external/technical\\_reports/PNNL-17056.pdf](http://www.pnl.gov/main/publications/external/technical_reports/PNNL-17056.pdf). General Merchandise (50% savings)—<http://www.nrel.gov/docs/fy09osti/46100.pdf>. Grocery Stores (50% savings)—<http://www.nrel.gov/docs/fy09osti/46101.pdf>. Highway Lodging Buildings (50% savings)—[http://www.pnl.gov/main/publications/external/technical\\_reports/PNNL-18773.pdf](http://www.pnl.gov/main/publications/external/technical_reports/PNNL-18773.pdf). Medium Office (50% savings)—[http://www.pnl.gov/main/publications/external/technical\\_reports/PNNL-19004.pdf](http://www.pnl.gov/main/publications/external/technical_reports/PNNL-19004.pdf).

Results from the cost analyses in three of these TSDs—small warehouse, highway lodging, and medium office—are shown below in Table 3. Ranges in the results are a function of climate zone, with buildings in some climates zones costing more or generating less energy savings. Multiple HVAC systems were evaluated for the 50% medium office—a more efficient but more expensive radiant system and a more standard variable air volume (VAV) system. It should be noted that all of the buildings analyzed for the TSDs did have increased first costs, but that the energy savings provided relatively good payback periods.

TABLE 3—COST EFFECTIVENESS ANALYSIS OF HIGHLY ENERGY EFFICIENT BUILDINGS

| TSD                 | Building square footage      | Incremental cost (\$ per ft <sup>2</sup> ) | Incremental cost (percentage increase)     | Simple payback on energy savings (years) |
|---------------------|------------------------------|--|--|--|
| Warehouse .....     | 50,000 ft <sup>2</sup> ..... | 1.88 to 3.56 .....                         | 2.6% to 7% .....                           | 6.0 to 13.5.                             |
| Highway Lodging ... | 43,000 ft <sup>2</sup> ..... | 7.58 to 10.85 .....                        | 8.4% to 8.7% .....                         | 9.6 to 15.9.                             |
| Medium Office ..... | 53,600 ft <sup>2</sup> ..... | 5.47 to 9.03 (Radiant) 2.37 to 4.22 (VAV). | 5.4% to 7.0% (Radiant) 2.7% to 3.9% (VAV). | 5.6 to 11.1 (Radiant) 3.3 to 6.2 (VAV).  |

Consideration of the graduated levels of fossil fuel-generated energy consumption reduction listed in the statute (55%, 65%, 80%, 90%, and 100%), coupled with the fact that a percentage reduction is not directly comparable to a 30% or 50% savings over ASHRAE Standard 90.1-2004, makes it hard to determine what level of savings is associated with the 1% to 7% cost premiums cited in the PNNL study ("Literature Review of Data on the

Incremental Costs to Design and Build Low-Energy Buildings," Hunt, WD, 2008, PNNL-17502). Converting both the requirements of this proposed rulemaking and the simulated performance of buildings built to 30% better than ASHRAE Standard 90.1-2004 to a common Energy Use Intensity basis provides a better method of comparison. Also note that the comparison must be made on a similar energy basis. Today's proposed

rulemaking applies to fossil fuel-generated energy consumption, which is close to source energy, while results from the TSDs are typically expressed in site energy.

Table 4 shows the comparison of the fossil fuel-generated energy consumption reductions proposed in this rulemaking to the fossil fuel reductions achieved in the simulations associated with two of the TSDs, the medium office and highway lodging.

TABLE 4—FOSSIL FUEL-GENERATED ENERGY CONSUMPTION PROPOSED IN TODAY'S RULEMAKING AND CALCULATED IN SELECTED AEDGS

| Building type             | 55% Fossil fuel reduction from CBECs kBtu/ft <sup>2</sup> | 65% Fossil fuel reduction from CBECs kBtu/ft <sup>2</sup> | 80% Fossil fuel reduction from CBECs kBtu/ft <sup>2</sup> | Fossil fuel reduction calculated in TSD kBtu/ft <sup>2</sup> | Incremental cost (percentage increase) |
|---------------------------|---|---|---|--|--|
| Medium Office (Rad) ..... | 72  | 56  | 32  | 49.2   | 5.4% to 7.0%.                          |
| Medium Office (VAV) ..... | 72  | 56  | 32  | 63.6   | 2.7% to 3.9%.                          |
| Highway Lodging .....     | 67  | 52  | 30  | 56.4   | 8.4% to 8.7%.                          |

Table 4 indicates that the estimated cost savings from the 50% TSDs can be used to support the fact that 55% fossil fuel-generated energy consumption reductions and perhaps even 65% fossil fuel-generated energy consumption reductions from CBECS will require cost increases of no more than 8.7%. None of the savings achieved in the 50% TSDs approach the reduction mandated at the 80% fossil fuel-generated energy consumption reduction level, so the cost estimates for that level of savings and higher levels cannot be estimated.

With respect to residential buildings, DOE does not anticipate that there will be many low-rise residential buildings that will fall under today's proposed rulemaking as most Federal low-rise residential buildings are not likely to be public buildings or buildings for which construction costs are at least \$2.5 million in 2007 dollars, which are criteria that determine whether buildings are subject to the requirements in today's proposed rule. The only low-rise residential buildings that might be considered to fall under today's proposed rule would be low-rise military barracks, and those barracks are best considered to be similar to the dormitory or lodging building types found in CBECS.

Using CBECS and RECS baselines without a climate adjustment puts buildings in colder climate zones at a cost disadvantage because the non-adjusted baseline would be lower than for one adjusted for climate. A non-adjusted baseline for colder climates would require larger, more costly fossil fuel-generated energy consumption reductions. Conversely, using CBECS and RECS baselines without a climate adjustment provides a cost advantage to buildings in warmer climate zones because the baseline would be greater than for one adjusted for climate. A non-adjusted baseline for warmer climates would require smaller, less costly fossil fuel-generated energy consumption reductions.

However, adjusting for climate in both the baseline and the required reduction level would be expected to eliminate potential regional inequity that could result from climate variation and help ensure that the fossil fuel-generated energy consumption reductions are commensurate to the climate zone. Similarly, consideration of regional variations in the fossil fuel contribution to electricity is not expected to result in substantial differences in the compliance burden for buildings across regions so long as regional variations are also reflected in the baseline buildings. If the regional values were used for both the baseline building and the required

reduction level, the burden of meeting the percentage reductions would remain roughly the same in all regions (although regions with low fossil fuel use in the electric sector might have to find more savings in non-electric end-uses).

DOE is seeking comment on a number of issues related to the cost-effectiveness of today's proposed rule, especially any construction cost increases for buildings Federal agencies are in the process of designing or have already built. DOE is seeking comment on these cost impacts.

#### *F. Agency Petitions for Adjustment to the Percentage Reduction Requirement*

ECPA as amended by EISA permits DOE upon petition by an agency subject to the statutory requirements to adjust the applicable numeric fossil fuel-generated energy consumption percentage reduction requirement "downward with respect to a specific building, if the head of the agency designing the building certifies in writing that meeting such requirement would be technically impracticable in light of the agency's specified functional needs for the building" and DOE concurs with the agency's conclusion. (42 U.S.C. 6834(a)(3)(D)(i)(II)) ECPA as amended by EISA further directs that such an adjustment does not apply to GSA.

Today's action proposes that a petition for downward adjustment of the numeric requirement should include an explanation of what measures would be required to meet the fossil fuel-generated energy consumption reduction requirement, and why those measures would be technically impracticable in light of the agency's specified functional needs for the building. DOE proposes that the petition should also demonstrate that the adjustment requested by the agency represents the largest feasible reduction in fossil fuel-generated energy consumption that can reasonably be achieved. DOE welcomes comments on that proposal. Although the downward adjustment provision of ECPA as amended by EISA does not expressly include cost considerations, DOE is considering incorporating cost considerations as part of a "technically impracticable" determination. Cost would not be the sole rationale for a determination of "technically impracticable," but high costs could be part of the evaluation. (42 U.S.C. 6834(a)(3)(D)). DOE also invites comments that would help clarify what kind of technical impracticability would constitute grounds for a petition for downward adjustment.

The petition pursuant to ECPA as amended by EISA should also include a written certification statement by the head of the agency designing the building that meeting the fossil fuel-generated energy consumption reduction requirements would be technically impracticable in light of the agency's specified functional needs for that building. 42 U.S.C. 6834(D)(i)(II).

DOE notes that the statute exempts GSA from the option to petition DOE for a downward adjustment of the applicable percentage reduction requirement. However, DOE proposes that a new Federal building or a Federal building undergoing major renovations for which a Federal agency is providing substantive and significant design criteria may be the subject of a petition. Under this approach, a GSA building that is designed to meet the specifications provided by a tenant agency may be considered for a downward adjustment if a petition is submitted by the head of the tenant agency.

DOE will review petitions in a timely manner. If the petitioning agency has successfully demonstrated the need for a downward adjustment per the discussion above, DOE will concur with the agency's conclusion and notify the agency in writing. If DOE does not concur, it will forward its reasons to the petitioning agency with suggestions as to how the fossil fuel-generated energy consumption percentage reduction requirement may be achieved.

A petition for downward adjustment of the numeric reduction, including any supporting information, would be addressed to: Margo Appel, Building Technologies Program, U.S. Department of Energy, 1000 Independence Avenue, SW., Washington, DC 20585.

#### *G. Guidance on Measures To Reduce Fossil Fuel-Generated Energy Consumption*

Building energy efficiency solutions involve advanced technologies, integrated design principles, control strategies and other tools. The appropriate solution and the effectiveness of each solution will vary based on building type, building size, and location. To successfully design a high performance building, Federal agencies must use a reputable, experienced design team. There are an increasing number of firms in all locations that have designed high performance buildings. The key to successful design is identifying firms with the requisite experience and skills, adopting an integrated design process that begins at the first phase of the building project, and providing clear

direction and quality control over the firm's work. DOE invites comment from agencies as to what additional training in this area might be helpful.

Numerous tools are available to help Federal agencies achieve the required fossil fuel reductions. DOE, in conjunction with ASHRAE, has developed a series of Advanced Energy Design Guides to achieve 30 percent reductions in energy use for several types of small buildings (small office buildings, small retail buildings, K–12 school buildings, small warehouses and self-storage buildings, highway lodging, and small hospitals and healthcare facilities). DOE and ASHRAE are working on 50 percent reduction guidelines for several building types. Additional tools and resources are available through the EERE Web site. DOE's Building Technologies Program maintains a database of high-performance buildings (available at <http://eere.buildinggreen.com>).

Other resources include: The National Institute of Building Sciences' *Whole Building Design Guide*; the U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED) system; ASHRAE Standard 189.1–2009, *Standard for the Design of High Performance Green Buildings Except Low-Rise Residential Buildings*; and the International Code Council's *International Green Construction Code Public Version 1.0*. DOE's Federal Energy Management Program (FEMP) Web site provides access to these and other resources and tools that can help Federal agencies improve the energy efficiency of new and existing buildings (available at <http://www1.eere.energy.gov/femp/>). DOE has also published a cool roof resource guide for Federal agencies, available at [http://www1.eere.energy.gov/femp/features/cool\\_roof\\_resources.html](http://www1.eere.energy.gov/femp/features/cool_roof_resources.html). DOE is also developing additional guidance that provides technical and cost data related to the installation of cool roofs.

#### H. Post-Construction Monitoring and Reporting

ECPA as amended by EISA does not contain any explicit post-construction monitoring and reporting requirements. Federal agencies, however, are reminded of the monitoring, reporting, and benchmarking requirements in section 103 of the Energy Policy Act of 2005 (EPA 2005) and section 432 of EISA. FEMP has issued guidance for the metering requirements in section 103 of EPA 2005 (available at [http://www1.eere.energy.gov/femp/pdfs/adv\\_metering.pdf](http://www1.eere.energy.gov/femp/pdfs/adv_metering.pdf)). FEMP has also developed guidance for meeting EISA section 432 requirements (available at

[http://www1.eere.energy.gov/femp/pdfs/eisa\\_s432\\_guidelines.pdf](http://www1.eere.energy.gov/femp/pdfs/eisa_s432_guidelines.pdf)). Finally, FEMP has also issued additional guidance on EISA section 432 benchmarking (available at [http://www1.eere.energy.gov/femp/pdfs/eisa\\_s432\\_guidelines.pdf](http://www1.eere.energy.gov/femp/pdfs/eisa_s432_guidelines.pdf)).

FEMP has selected the Energy Star Portfolio Manager as the required building energy use benchmarking system for Federal agencies. Additional information on the use of Energy Star Portfolio Manager, energy management, and benchmarking in general may be found on the EPA Energy Star Web site at [http://www.energystar.gov/index.cfm?c=business.bus\\_index](http://www.energystar.gov/index.cfm?c=business.bus_index).

### III. Reference Resources

DOE has prepared a list of resources to help Federal agencies address the reduction of fossil fuel-generated energy consumption. The interim final rule on energy efficiency published in the **Federal Register** on December 4, 2006 (71 FR 70275) contains reference resources for energy efficiency improvement in building design. These resources come in many forms such as design guidance, case studies and in a variety of media such as printed documents or on Web sites. The resources for energy efficiency improvement will also provide guidance for fossil fuel-based energy consumption reduction.

### IV. Regulatory Review

#### A. Review Under Executive Order 12866

Today's notice of proposed rulemaking has been determined to be a significant regulatory action under section 3(f)(1) of Executive Order 12866, "Regulatory Planning and Review," 58 FR 51735 (October 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 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," (August 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 proposed rule under the provisions of the Regulatory Flexibility Act and the procedures and policies published on February 19, 2003. Today's proposed rulemaking applies only to the fossil fuel-generated energy consumption of new Federal buildings and Federal buildings undergoing major renovation. As such, the only entities impacted by this rulemaking would be Federal agencies. DOE does not believe that there will be any impacts on small entities such as small businesses, small organizations, or small governmental jurisdictions.

On the basis of the foregoing, DOE certifies that this proposed rule 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 rulemaking. 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 Paperwork Reduction Act of 1995

This proposed rule will impose no new information or record keeping requirements. Accordingly, OMB clearance is not required under the Paperwork Reduction Act. (44 U.S.C. 3501 *et seq.*)

#### D. Review Under the National Environmental Policy Act

The Department prepared a draft Environmental Assessment (EA) (DOE/EA-1463) pursuant to the Council on Environmental Quality's (CEQ) Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act (40 CFR parts 1500–1508), the National Environmental Policy Act of 1969 (NEPA), as amended (42 U.S.C. 4321 *et seq.*), and DOE's NEPA Implementing Procedures (10 CFR part 1021).

The draft EA addresses the potential incremental environmental effects attributable to the application of the proposed rules. The draft EA has been added to the docket for this rulemaking.

#### E. Review Under Executive Order 13132

Executive Order 13132, "Federalism," 64 FR 43255 (August 4, 1999), imposes certain requirements on agencies formulating and implementing policies



or regulations that preempt State law or that have federalism implications. The Executive Order requires agencies 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 examined the proposed rule and determined that it would not preempt State law and would not have a substantial direct effect on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of Government. No further action is required by Executive Order 13132.

#### *F. Review Under Executive Order 12988*

With respect to the review of existing regulations and the promulgation of new regulations, section 3(a) of Executive Order 12988, "Civil Justice Reform," 61 FR 4729 (February 7, 1996), imposes on Executive agencies the general duty to adhere to the following requirements: (1) Eliminate drafting errors and ambiguity; (2) write regulations to minimize litigation; and (3) provide a clear legal standard for affected conduct, rather than a general standard and promote simplification and burden reduction. With regard to the review required by section 3(a), section 3(b) of Executive Order 12988 specifically requires that Executive agencies make every reasonable effort to ensure that the regulation: (1) Clearly specifies the preemptive effect, if any; (2) clearly specifies any effect on existing Federal law or regulation; (3) provides a clear legal standard for affected conduct, while promoting simplification and burden reduction; (4) specifies the retroactive effect, if any; (5) adequately defines key terms; and (6) addresses other important issues affecting clarity and general draftsmanship under any guidelines issued by the Attorney General. Section 3(c) of Executive Order 12988 requires Executive agencies to review regulations in light of applicable standards in section 3(a) and section 3(b) to determine whether they are met or it is unreasonable to meet one or more of them. DOE has completed the required review and determined that to the extent permitted by law, this proposed rule meets the relevant standards of Executive Order 12988.

#### *G. 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. For a proposed regulatory action likely to result in a rule that may cause the expenditure by State, local, and Tribal governments, in the aggregate, or by the private sector of \$100 million or more in any one year (adjusted annually for inflation), section 202 of UMRA requires a Federal agency to publish a written statement that estimates the resulting costs, benefits, and other effects on the national economy. (2 U.S.C. 1532(a) and (b)) The UMRA also requires a Federal agency to develop an effective process to permit timely input by elected officers of State, local, and Tribal governments on a proposed "significant intergovernmental mandate," and requires an agency plan for giving notice and opportunity for timely input to potentially affected small governments before establishing any requirements that might significantly or uniquely affect small governments. On March 18, 1997, DOE published a statement of policy on its process for intergovernmental consultation under UMRA (62 FR 12820) (also available at <http://www.gc.doe.gov>). This notice of proposed rulemaking contains neither an intergovernmental mandate nor a mandate that may result in the expenditure of \$100 million or more in any year, so these requirements under the Unfunded Mandates Reform Act do not apply.

#### *H. Review Under the Treasury and General Government Appropriations Act, 1999*

Section 654 of the Treasury and General Government Appropriations Act, 1999 (Pub. L. 105-277) requires Federal agencies to issue a Family Policymaking Assessment for any proposed rule that may affect family well-being. This proposed rule 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.

#### *I. Review Under Executive Order 12630*

DOE has determined, under Executive Order 12630, "Governmental Actions and Interference with Constitutionally Protected Property Rights," 53 FR 8859 (March 18, 1988), that this notice of proposed rulemaking would not result in any takings which might require compensation under the Fifth Amendment to the United States Constitution.

#### *J. Review Under the Treasury and General Government Appropriations Act, 2001*

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 (February 22, 2002), and DOE's guidelines were published at 67 FR 62446 (October 7, 2002). DOE has reviewed today's proposed rule under the OMB and DOE guidelines and has concluded that it is consistent with applicable policies in those guidelines.

#### *K. 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 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 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 proposed rule would not have a significant adverse effect on the supply, distribution, or use of energy and, therefore, is not a significant energy action. Accordingly, DOE has not prepared a Statement of Energy Effects.

#### **V. Approval of the Office of the Secretary**

The Secretary of Energy has approved publication of today's notice of proposed rulemaking.

#### **List of Subjects in 10 CFR Parts 433 and 435**

Buildings and facilities, Energy conservation, Engineers, Federal buildings and facilities, Housing.

Issued in Washington, DC, on September 30, 2010.

Cathy Zoi,

Assistant Secretary, Energy Efficiency and Renewable Energy.

For the reasons set forth in the preamble, DOE proposes to amend chapter II of title 10 of the Code of Federal Regulations as set forth below:

**PART 433—ENERGY EFFICIENCY AND FOSSIL FUEL-GENERATED ENERGY CONSUMPTION REDUCTION DESIGN STANDARDS FOR NEW AND MAJOR RENOVATIONS TO FEDERAL COMMERCIAL AND MULTI-FAMILY HIGH-RISE RESIDENTIAL BUILDINGS**

1. The authority citation for part 433 continues to read as follows:

**Authority:** 42 U.S.C. 6831–6832, 6834–6835; 42 U.S.C. 7101 *et seq.*

2. The heading for part 433 is revised to read as set forth above.

3. Section 433.1 is revised to read as follows:

**§ 433.1 Purpose and scope.**

This part establishes an energy efficiency performance and maximum allowable fossil fuel-generated energy consumption standard for new Federal commercial and multi-family high-rise residential buildings, for which design for construction began on or after January 3, 2007 (except as otherwise indicated: fossil fuel-generated energy consumption requirements are applicable one year after publication of the final rule), as required by section 305(a) of the Energy Conservation and Production Act, as amended (42 U.S.C. 6834(a)). Additionally, this part establishes certain requirements applicable to major renovations of Federal commercial and multi-family high-rise residential buildings, as indicated. For renovated buildings, those requirements apply only to the portions of the building or building systems that are being renovated and to the extent that the scope of the renovation permits compliance with the applicable requirements in this part. Unaltered portions of the building or building systems are not required to comply with this part.

4. Section 433.2 is amended by adding in alphabetical order new definitions for “Direct fossil fuel consumption,” “District Energy System,” “Electricity fossil fuel-generation ratio,” “Electricity source energy factor,” “Fossil fuel,” “Fossil fuel consumption for electricity generation,” “Fossil fuel-generated energy consumption,” “Multi-family high-rise residential building,” and “Primary electrical energy consumption” to read as follows:

**§ 433.2 Definitions.**

\* \* \* \* \*

*Direct fossil fuel consumption* means the total fossil fuel consumption in a building excluding fossil fuel consumption for electricity generation. This includes any fossil fuel consumption resulting from a district energy system used in a building.

*District Energy System* means a central energy conversion plant and transmission and distribution system that provides thermal energy to a group of buildings (heating via hot water or steam, and/or cooling via chilled water). This definition includes only thermal energy systems; central energy supply systems that provide only electricity are excluded from this definition.

\* \* \* \* \*

*Electricity fossil fuel-generation ratio* means the fraction of national U.S. electricity generation from fossil fuel sources as provided by the Energy Information Administration Electric Power Annual report for the appropriate year.

*Electricity source energy factor* is the ratio of primary electrical energy consumed to generate and deliver energy to a site relative to electrical energy consumed on site. The electricity source energy factor may be calculated by dividing the average utility delivery ratio in Table 6.2.4 of the DOE Building Energy Data Book for the appropriate year by 3412 to convert the value from Btu/kWh to kWh/kWh.

\* \* \* \* \*

*Fossil fuel* means a fuel formed in the earth from plant or animal remains. Fossil fuels include coal, oil, natural gas, kerosene, and liquefied petroleum gas (LPG).

*Fossil fuel consumption for electricity generation* means the primary electrical energy consumption in a building supplied from the national power grid multiplied by the electricity fossil fuel-generation ratio. Electricity generated completely from non-fossil fuel sources or from a dedicated source not connected to the national power grid is excluded from this definition.

*Fossil fuel generated-energy consumption* means the sum of direct fossil fuel consumption plus fossil fuel consumption for electricity generation.

\* \* \* \* \*

*Multi-family high-rise residential building* means a residential building that contains three or more dwelling units and that is designed to be 4 or more stories above grade.

\* \* \* \* \*

*Primary electrical energy consumption* means the total amount of energy used to generate and deliver

electrical energy to a building from the national power grid.

\* \* \* \* \*

5. Section 433.4 is amended by adding new paragraphs (d), (e), and (f) to read as follows:

**§ 433.4 Energy efficiency performance standard.**

\* \* \* \* \*

(d) All Federal agencies shall design new Federal commercial and multi-family high-rise residential buildings and major renovations to Federal commercial and multi-family high-rise residential buildings, for which design for construction began at least one year after publication of the final rule, to meet the requirements of paragraph (e) of this section if:

(1) The subject building is a public building as defined in 40 U.S.C. 3301 and for which transmittal of a prospectus to Congress is required under 40 U.S.C. 3307; or

(2) The cost of the building or major renovation is at least \$2,500,000 (in 2007 dollars, adjusted for inflation).

(e)(1) All Federal agencies shall design new Federal commercial and multi-family high-rise residential buildings and major renovations of Federal commercial and multi-family high-rise residential buildings for which design for construction began at least one year after publication of the final rule and that are classified in paragraph (d) of this section, to meet fossil fuel-generated energy consumption values equal to or lesser than the values shown in Table 1. The maximum allowable fossil fuel generated energy consumption values in Table 1 are a function of building type and fiscal year for which design for construction began.

(2) For the purpose of this paragraph (e), the following definitions apply:

(i) *Education* means buildings used for academic or technical classroom instruction, such as elementary, middle, or high schools, and classroom buildings on college or university campuses. Buildings on education campuses for which the main use is not classroom are included in the category relating to their use. For example, administration buildings are part of “Office,” dormitories are “Lodging,” and libraries are “Public Assembly.”

(ii) *Food sales* means buildings used for retail or wholesale of food. For example, grocery stores are “Food Sales.”

(iii) *Food service* means buildings used for preparation and sale of food and beverages for consumption. For example, restaurants are “Food Service.”

(iv) *Health care (inpatient)* means buildings used as diagnostic and treatment facilities for inpatient care.

(v) *Health care (outpatient)* means buildings used as diagnostic and treatment facilities for outpatient care. Medical offices are included here if they use any type of diagnostic medical equipment (if they do not, they are categorized as an office building).

(vi) *Lodging* means buildings used to offer multiple accommodations for short-term or long-term residents, including skilled nursing and other residential care buildings.

(vii) *Multi-family in 2–4 unit buildings* means a unit in a building with two to four housing units—a structure that is divided into living quarters for two, three, or four families or households in

which one household lives above or beside another. This category also includes houses originally intended for occupancy by one family (or for some other use) that have since been converted to separate dwellings for two to four families.

(viii) *Multi-family in 5 or more unit buildings* means a unit in a building with five or more housing units—a structure that contains living quarters for five or more households or families and in which one household lives above or beside another.

(ix) *Public assembly* means public or private buildings, or spaces therein, in which people gather for social or recreational activities.

(x) *Public order and safety* means buildings used for the preservation of law and order or public safety.

(xi) *Religious worship* means buildings in which people gather for religious activities, (such as chapels, churches, mosques, synagogues, and temples).

(xii) *Retail (other than mall)* means buildings used for the sale and display of goods other than food.

(xiii) *Service* means buildings in which some type of service is provided, other than food service or retail sales of goods.

(xiv) *Warehouse and storage* means buildings used to store goods, manufactured products, merchandise, raw materials, or personal belongings (such as self-storage).

TABLE 1—MAXIMUM ALLOWABLE FOSSIL FUEL-GENERATED ENERGY CONSUMPTION BY BUILDING TYPE, COMMERCIAL BUILDINGS, kBtu/ft<sup>2</sup>

| Building type                  | kBtu/ft <sup>2</sup> by fiscal year for which design for construction began |              |              |              |                    |
|--------------------------------|---|--------------|--------------|--------------|--------------------|
|                                | FY 2012–2014  | FY 2015–2019 | FY 2020–2024 | FY 2025–2029 | FY 2030 and beyond |
| Education .....                | 57  | 44           | 25           | 13           | 0                  |
| Food Sales .....               | 174   | 135          | 77           | 39           | 0                  |
| Food Service .....             | 182   | 141          | 81           | 40           | 0                  |
| Health Care (Inpatient) .....  | 141   | 109          | 63           | 31           | 0                  |
| Health Care (Outpatient) ..... | 67  | 52           | 30           | 15           | 0                  |
| Lodging .....                  | 67  | 52           | 30           | 15           | 0                  |
| Retail (Other Than Mall) ..... | 57  | 44           | 25           | 13           | 0                  |
| Office .....                   | 72  | 56           | 32           | 16           | 0                  |
| Public Assembly .....          | 56  | 44           | 25           | 12           | 0                  |
| Public Order and Safety .....  | 66  | 51           | 29           | 15           | 0                  |
| Religious Worship .....        | 28  | 22           | 12           | 6            | 0                  |
| Service .....                  | 51  | 40           | 23           | 11           | 0                  |
| Warehouse and Storage .....    | 30  | 23           | 13           | 7            | 0                  |

(3) For multi-family high-rise residential buildings, the maximum allowable fossil fuel-generated energy

consumption in kBtu per ft<sup>2</sup> is listed in Table 2.

TABLE 2—MAXIMUM ALLOWABLE FOSSIL FUEL-GENERATED ENERGY CONSUMPTION BY BUILDING TYPE, MULTI-FAMILY HIGH-RISE RESIDENTIAL BUILDINGS, kBtu/ft<sup>2</sup>

| Building type                                  | kBtu/ft <sup>2</sup> by fiscal year for which design for construction began |              |              |              |                    |
|--|---|--------------|--------------|--------------|--------------------|
|  | FY 2012–2014  | FY 2015–2019 | FY 2020–2024 | FY 2025–2029 | FY 2030 and beyond |
| Multi-Family in 2–4 Unit Buildings .....       | 47  | 37           | 21           | 11           | 0                  |
| Multi-Family in 5 or More Unit Buildings ..... | 42  | 33           | 19           | 9            | 0                  |

(4) For buildings that combine one or more building types within or between Tables 1 and 2, area-weighted fossil fuel-generated energy consumption may be calculated by multiplying the floor area of each building type by the consumption value from the appropriate table for that building type, then dividing by the total floor area of the combined building types.

(5) For Federal buildings that do not fit into any of the building type categories listed in Table 1 or Table 2 of § 433.4, a baseline fossil fuel-generated energy consumption shall be calculated using the Performance Rating Method, Appendix G of ASHRAE Standard 90.1–2004, as outlined in § 433.5. The maximum allowable fossil fuel-generated energy consumption for

the proposed design shall be calculated by using the following formula:

$$\text{Maximum Allowable Fossil Fuel-Generated Energy Consumption} = ((\text{Baseline Design Electricity Consumption} \times \text{Electricity Source Energy Factor} \times \text{Electricity Fossil Fuel-Generation Ratio}) + \text{Baseline Design Direct Fossil Fuel Consumption}) \times \text{Fossil Fuel Reduction Multiplier}$$

(6) The fossil fuel reduction multiplier in the formula above shall be taken from Table 3.

**TABLE 3—FOSSIL FUEL REDUCTION MULTIPLIER BY FISCAL YEAR FOR WHICH DESIGN FOR CONSTRUCTION BEGAN**

| Fiscal year           | Reduction multiplier |
|-----------------------|----------------------|
| 2012–2014 .....       | 0.45                 |
| 2015–2019 .....       | 0.35                 |
| 2020–2024 .....       | 0.20                 |
| 2025–2029 .....       | 0.10                 |
| 2030 and beyond ..... | 0.00                 |

(7) All building energy usage, including estimated receptacle and plug loads, must be included in the calculation in Table 3 of this section.

(f)(1) Upon petition by an agency subject to this section, the Secretary may adjust the applicable numeric requirement in paragraph (e) of this section with respect to a specific building if:

(i) The head of the agency designing the building certifies in writing that meeting such requirement would be technically impracticable in light of the agency’s specified functional needs for that building;

(ii) The head of the agency designing the building demonstrates that the requested adjustment is the largest feasible reduction in fossil fuel-generated consumption that can reasonably be achieved; and

(iii) The Secretary concurs with the agency’s conclusion.

(2) This adjustment shall not apply to the General Services Administration.

6. Section 433.5 is revised to read as follows:

**§ 433.5 Performance level determination.**

(a) For new Federal commercial and multi-family high-rise residential buildings whose design for construction began on or after January 3, 2007, each Federal agency shall determine energy consumption levels for both the baseline and proposed building by using the Performance Rating Method found in Appendix G of ANSI/ASHRAE/IESNA Standard 90.1–2004, (incorporated by reference; see § 433.3), except the formula for calculating the Performance Rating in paragraph G1.2 shall read as follows:

$$\text{Percentage improvement} = 100 \times \frac{\text{Baseline building consumption} - \text{Proposed building consumption}}{\text{Baseline building consumption} - \text{Receptacle and process loads}}$$

(b) Each Federal agency shall consider laboratory fume hoods and kitchen

ventilation systems as part of the ASHRAE-covered HVAC loads subject to the 30 percent savings requirements in this section, rather than as process loads.

(c) Subject to § 433.4(d), each Federal agency shall calculate the fossil fuel-generated energy consumption of a proposed design by the following formula:

$$\text{Proposed Design Fossil Fuel-Generated Energy Consumption} = (\text{Proposed Design Electricity Consumption} \times \text{Electricity Source Energy Factor} \times \text{Electricity Fossil Fuel-Generation Ratio}) + \text{Direct Fossil Fuel Consumption of Proposed Design}$$

(d) Subject to § 433.4(d), if the fossil fuel-generated energy consumption of the proposed design is equal to or less than the applicable maximum allowable fossil fuel-generated energy consumption value in § 433.4(e), the proposed design complies with the fossil fuel-generated consumption reduction requirement in § 433.4. If the fossil fuel-generated energy consumption of the proposed design is greater than the applicable maximum allowable fossil fuel-generated energy consumption value in § 433.4(e), the proposed design does not comply with the fossil fuel-generated energy consumption reduction requirement in § 433.4, and the agency must either modify the design until the design complies with the requirement, or request and receive approval from the Secretary for a downward adjustment of the requirement.

**PART 435—ENERGY EFFICIENCY AND FOSSIL FUEL-GENERATED ENERGY CONSUMPTION REDUCTION DESIGN STANDARDS FOR NEW AND MAJOR RENOVATIONS TO FEDERAL LOW-RISE RESIDENTIAL BUILDINGS**

7. The authority citation for part 435 continues to read as follows:

**Authority:** 42 U.S.C. 6831–6832; 6834–6836; 42 U.S.C. 8253–54; 42 U.S.C. 7101 *et seq.*

**Subpart A—Mandatory Energy Efficiency and Fossil Fuel-Generated Energy Consumption Reduction Design Standards for Federal Low-Rise Residential Buildings**

8. The headings for part 435 and subpart A are revised to read as set forth above.

9. Section 435.1 is revised to read as follows:

**§ 435.1 Purpose and scope.**

This part establishes an energy efficiency performance and maximum allowable fossil fuel-generated energy

consumption standard for new Federal low-rise residential buildings, for which design for construction began on or after January 3, 2007 (except as otherwise indicated: fossil fuel-generated energy requirements are applicable one year after publication of the final rule, as required by section 305(a) of the Energy Conservation and Production Act, as amended (42 U.S.C. 6834(a)). Additionally, this part establishes certain requirements applicable to major renovations of Federal low-rise buildings, as indicated. For renovated buildings, those requirements apply only to the portions of the building or building systems that are being renovated and to the extent that the scope of the renovation permits compliance with the applicable requirements in this rule. Unaltered portions of the building or building systems are not required to comply with this rule.

10. Section 435.2 is amended by adding in alphabetical order new definitions for “Direct fossil fuel consumption,” “District Energy System,” “Electricity fossil fuel-generation ratio,” “Electricity source energy factor,” “Fossil fuel,” “Fossil fuel consumption for electricity generation,” “Fossil fuel-generated energy consumption,” and “Primary electrical energy consumption” to read as follows:

**§ 435.2 Definitions.**

\* \* \* \* \*

*Direct fossil fuel consumption* means the total fossil fuel consumption in a building excluding primary electrical energy consumption. This includes any fossil fuel consumption resulting from a district energy system used in a building.

*District Energy System* means a central energy conversion plant and transmission and distribution system that provides thermal energy to a group of buildings (heating via hot water or steam, and/or cooling via chilled water). This definition includes only thermal energy systems; central energy supply systems that provide only electricity are excluded from this definition.

\* \* \* \* \*

*Electricity fossil fuel-generation ratio* means the fraction of national U.S. electricity generation from fossil fuel as provided by the Energy Information Administration Electric Power report for the appropriate year.

*Electricity source energy factor* is the ratio of primary electrical energy consumed to generate and deliver energy to a site to the electrical energy consumed on site. Electricity source energy factor may be calculated by dividing the average utility delivery

ratio in Table 6.2.4 of the DOE Building Energy Data Book for the appropriate year by 3412 to convert the value from Btu/kWh to kWh/kWh.

\* \* \* \* \*

*Fossil fuel* means a fuel formed in the earth from plant or animal remains. Fossil fuels include coal, oil, natural gas, kerosene, and liquefied petroleum gas (LPG).

*Fossil fuel consumption for electricity generation* means the primary electrical energy consumption in a building supplied from the national power grid multiplied by the electricity fossil fuel-generation ratio. Electricity generated completely from non-fossil fuel sources or from a dedicated source not connected to the national power grid is excluded from this definition.

*Fossil fuel-generated energy consumption* means the sum of direct fossil fuel consumption plus fossil fuel consumption for electricity generation.

\* \* \* \* \*

*Primary electrical energy consumption* means the total amount of energy used to generate and deliver electrical energy to a building from the national power grid.

\* \* \* \* \*

11. Section 435.4 is amended by adding new paragraphs (d), (e), and (f) to read as follows:

**§ 435.4 Energy efficiency performance standard.**

\* \* \* \* \*

(d) All Federal agencies shall design new Federal low-rise residential buildings and major renovations to Federal low-rise residential buildings, for which design for construction began at least one year after publication of the

final rule, to meet the requirements of paragraph (e) of this section if:

(1) The subject building is a public building as defined in 40 U.S.C. 3301 and for which transmittal of a prospectus to Congress is required under 40 U.S.C. 3307; or

(2) The cost of the building or major renovation is at least \$2,500,000 (in 2007 dollars, adjusted for inflation).

(e)(1) All Federal agencies shall design new Federal low-rise residential buildings or major renovations of Federal low-rise residential buildings for which design for renovation began at least one year after publication of the final rule and that are classified in paragraph (d) of this section, to meet fossil fuel-generated energy consumption values equal to or lesser than the values shown in Table 1. The maximum allowable fossil fuel-generated energy consumption values in Table 1 area function of housing type and fiscal year for which design for construction began.

(2) For the purpose of this paragraph (e), the following definitions apply:

(i) *Manufactured home* means a housing unit built to the Federal Manufactured Home Construction and Safety Standards in 24 CFR part 3280, that is built on a permanent chassis and moved to a site. It may be placed on a permanent or temporary foundation and may contain one or more rooms.

(ii) *Multi-family in 2–4 unit buildings* means a unit in a building with two to four housing units—a structure that is divided into living quarters for two, three, or four families or households in which one household lives above or beside another. This category also includes houses originally intended for occupancy by one family (or for some

other use) that have since been converted to separate dwellings for two to four families. This includes modular homes but does not include manufactured homes.

(iii) *Multi-family in 5 or more unit buildings* means a unit in a building with five or more housing units—a structure that contains living quarters for five or more households or families and in which one household lives above or beside another. This includes modular homes but does not include manufactured homes.

(iv) *Single-family attached* means a housing unit connected to another housing unit, generally with a shared wall, that provides living space for one household or family. Attached houses are considered single-family houses as long as they are not divided into more than one housing unit and they have an independent outside entrance. A single-family house is contained within walls extending from the basement (or the ground floor, if there is no basement) to the roof. Townhouses, rowhouses, and duplexes are considered single-family attached housing units, as long as there is no household living above another one within the walls extending from the basement to the roof to separate the units. This includes modular homes but does not include manufactured homes.

(v) *Single-family detached* means a separate, unconnected housing unit, not sharing a wall with any other building or housing unit, that provides living space for one household or family. A single-family house is contained within walls extending from the basement (or the ground floor, if there is no basement) to the roof. This includes modular homes but does not include manufactured homes.

TABLE 1—MAXIMUM ALLOWABLE FOSSIL FUEL-GENERATED ENERGY CONSUMPTION BY BUILDING TYPE, LOW-RISE RESIDENTIAL BUILDINGS, kBtu/ft<sup>2</sup>

| Building type                                  | kBtu/ft <sup>2</sup> by Fiscal year for which design for construction began |              |              |              |                   |
|--|---|--------------|--------------|--------------|-------------------|
|  | FY 2012–2014  | FY 2015–2019 | FY 2020–2024 | FY 2025–2029 | FY2030 and beyond |
| Single-Family Detached .....                   | 27  | 21           | 12           | 6            | 0                 |
| Single-Family Attached .....                   | 30  | 23           | 13           | 7            | 0                 |
| Multi-Family in 2–4 Unit Buildings .....       | 47  | 37           | 21           | 11           | 0                 |
| Multi-Family in 5 or More Unit Buildings ..... | 42  | 33           | 19           | 9            | 0                 |
| Manufactured Homes .....                       | 52  | 40           | 23           | 12           | 0                 |

(3) For Federal buildings that do not fit into any of the building type categories listed in Table 1 of § 435.4, a baseline fossil fuel-generated energy consumption shall be calculated using the Simulated Performance Alternative outlined in § 435.5. The maximum allowable fossil fuel-generated energy

consumption for the proposed design shall be calculated by using the following formula:

Maximum Allowable Fossil Fuel-Generated Energy Consumption = ((Baseline Design Electricity Consumption × Electricity Source Energy Factor × Electricity Fossil

Fuel-Generation Ratio) + Baseline Design Direct Fossil Fuel Consumption) × Fossil Fuel Reduction Multiplier

(4) The fossil fuel reduction multiplier in the formula above shall be taken from Table 2.

TABLE 2—FOSSIL FUEL REDUCTION MULTIPLIER BY FISCAL YEAR FOR WHICH DESIGN FOR CONSTRUCTION BEGAN

| Fiscal year           | Reduction multiplier |
|-----------------------|----------------------|
| 2012–2014 .....       | 0.45                 |
| 2015–2019 .....       | 0.35                 |
| 2020–2024 .....       | 0.20                 |
| 2025–2029 .....       | 0.10                 |
| 2030 and beyond ..... | 0.00                 |

(5) All building energy usage, including estimated receptacle and plug loads, must be included in the calculation in Table 2 of this section.

(f)(1) Upon petition by an agency subject to this section, the Secretary may adjust the applicable numeric requirement in paragraph (e) of this section with respect to a specific building, if:

(i) The head of the agency designing the building certifies in writing that meeting such requirement would be technically impracticable in light of the agency's specified functional needs for that building;

(ii) The head of the agency designing the building demonstrates that the requested adjustment is the largest feasible reduction in fossil fuel-generated consumption that can reasonably be achieved; and

(iii) The Secretary concurs with the agency's conclusion.

(2) This adjustment shall not apply to the General Services Administration.

12. Section 435.5 is revised to read as follows:

**§ 435.5 Performance level determination.**

(a) For new Federal low-rise residential buildings whose design for construction started on or after January 3, 2007, each Federal agency shall determine energy consumption levels for both the baseline building and proposed building by using the Simulated Performance Alternative found in section 404 of the ICC International Energy Conservation Code, 2004 Supplement Edition, January 2005 (incorporated by reference; see § 435.3).

(b) Subject to § 435.4(d), each Federal agency shall calculate the fossil fuel-generated energy consumption of a proposed design by the following formula:

Proposed Design Fossil Fuel-Generated Energy Consumption = (Proposed Design Electricity Consumption × Electricity Source Energy Factor × Electricity Fossil Fuel-Generation Ratio) + Direct Fossil Fuel Consumption of Proposed Design

(c) Subject to § 435.4(d), if the fossil fuel-generated energy consumption of

the proposed design is equal to or less than the applicable maximum allowable fossil fuel-generated energy consumption value in § 435.4(e), the proposed design complies with the fossil fuel-generated energy consumption reduction requirement in § 435.4. If the fossil fuel-generated energy consumption of the proposed design is greater than the applicable maximum allowable fossil fuel-generated energy consumption value in § 435.4(e), the building does not comply with the fossil fuel-generated energy consumption reduction requirement in § 435.4, and the agency must either modify the design until the design complies with the requirement, or request and receive approval from the Secretary for a downward adjustment of the requirement.

[FR Doc. 2010–25852 Filed 10–14–10; 8:45 am]

BILLING CODE 6450–01–P

## SMALL BUSINESS ADMINISTRATION

### 13 CFR Part 115

#### RIN 3245–AG14

#### Surety Bond Guarantee Program; Timber Sales

**AGENCY:** Small Business Administration.

**ACTION:** Proposed rule.

**SUMMARY:** The Small Business Administration (SBA) proposes to amend its Surety Bond Guarantee Program rules to guarantee performance bonds for timber sale contracts awarded by the Federal Government or other public or private landowners.

**DATES:** Comments must be received on or before November 15, 2010.

**ADDRESSES:** You may submit comments, identified by RIN 3245–AG14, by any of the following methods:

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

*Mail:* Office of Surety Guarantees, Suite 8600, 409 Third Street, SW., Washington, DC 20416.

*Hand Delivery/Courier:* Office of Surety Guarantees, 409 Third Street, SW., Washington, DC 20416.

SBA will post all comments on <http://www.regulations.gov>. If you wish to submit confidential business information (CBI) as defined in the User Notice at <http://www.regulations.gov>, please submit information to Ms. Barbara Brannan, Special Assistant, Office of Surety Guarantees, 409 Third Street, SW., Washington, DC 20416 or send an e-mail to [Barbara.brannan@sba.gov](mailto:Barbara.brannan@sba.gov). Highlight the

information that you consider to be CBI and explain why you believe SBA should hold this information as confidential. SBA will review the information and make the final determination whether it will publish the information.

**FOR FURTHER INFORMATION CONTACT:** Ms. Barbara Brannan, Office of Surety Guarantees, 202–205–6545, e-mail: [Barbara.brannan@sba.gov](mailto:Barbara.brannan@sba.gov).

#### SUPPLEMENTARY INFORMATION:

##### I. Background Information

The Forest Service of the U.S. Department of Agriculture (USDA) manages the National Forest System, and may permit the harvesting of timber on National Forest System lands in exchange for the payment of an agreed upon sum of money. More information on that program is available at the Web site of the USDA Forest Service at <http://www.fs.fed.us>. Under regulations issued by the Forest Service, these timber sale contracts may require the purchaser to furnish a performance bond for satisfactory compliance with the contract terms. 36 CFR 223.35. Generally, the Performance Bond, as defined in 13 CFR 115.10, ensures that the Principal, as defined in 13 CFR 115.10, complies with all contract terms and conditions associated with forest management, such as the protection of natural resources, soil, water, erosion control, and road maintenance, as well as to ensure the Principal does not cut any trees that are expressly excluded from harvesting in the contract. In the process of cutting and transporting the logs, for example, forest roads may be damaged and the Principal is responsible for repairing the roads. The performance period for most timber sale contracts ranges from one to three years, and some can exceed five years.

With respect to a Performance Bond involving the sale of timber on land managed by USDA, the Federal Government is the Obligor, as defined in 13 CFR 115.10, and the purchaser of the timber is the Principal. Unlike the typical contract for supplies or services where the Obligor pays the Principal for providing supplies or rendering services, the Principal in the timber sale contract is paying the Obligor for the right to cut the designated trees. However, under the definition of "Contract" in 13 CFR 115.10, a contract for which SBA may issue a Surety Bond Guarantee cannot include a contract requiring any payment by the Principal to the Obligor. Thus, SBA cannot presently guarantee a bond for a timber sales contract.