

## DEPARTMENT OF ENERGY

### 10 CFR Parts 433 and 435

[Docket No. EE-RM/STD-02-112]

RIN 1904-AC13

#### Energy Efficiency and Sustainable Design Standards for New 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 (NOPR) to implement provisions of the Energy Conservation and Production Act, as amended by the Energy Policy Act of 2005 and the Energy Independence and Security Act of 2007, that require DOE to establish revised performance standards for the construction of new Federal buildings and major renovations of Federal buildings. This NOPR specifically addresses the use of sustainable design principles for siting, design, and construction, and the use of water conservation technologies to achieve energy efficiency. This proposed rulemaking also provides criteria for identifying a certification system and level for green buildings that encourages a comprehensive and environmentally-sound approach to certification of green buildings.

**DATES:** Public comments on this proposed rule will be accepted until July 27, 2010. The Department will hold a public meeting on Wednesday, July 28, 2010, from 9 a.m. to 4 p.m., in Washington, DC. DOE must receive requests to speak at the public meeting before 4 p.m., Wednesday, July 14, 2010. DOE must receive a signed original and an electronic copy of statements to be given at the public meeting before 4 p.m., Wednesday, July 21, 2010.

DOE will accept comments, data, and information regarding the NOPR before and after the public meeting, but no later than July 27, 2010.

**ADDRESSES:** The public meeting will be held at the U.S. Department of Energy, Forrestal Building, Room 8E-089. You may submit comments using any of the following methods:

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

2. *E-mail:* [Cyrus.Nasseri@ee.doe.gov](mailto:Cyrus.Nasseri@ee.doe.gov). Include EE-RM/STD-02-112 and/or RIN 1904-AC13 in the subject line of the message.

3. *Postal Mail:* Cyrus Nasseri, U.S. Department of Energy, Federal Energy Management Program, Mailstop EE-2L, Energy Efficiency and Sustainable Design Standards for New Federal Commercial and Multi-Family High-Rise Residential Buildings and Energy Efficiency and Sustainable Design Standards for New Federal Low-Rise Residential Buildings, EE-RM/STD-02-112 and/or RIN 1904-AC13, 1000 Independence Avenue, SW., Washington, DC 20585-0121. Telephone: (202) 586-9138. Please submit one signed paper original.

4. *Hand Delivery/Courier:* Cyrus Nasseri, U.S. Department of Energy, Federal Energy Management Program, Room 5E-080, 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 Cyrus Nasseri at the above telephone number for additional information regarding visiting the Resource Room.

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 Title 10 of the Code of Federal Register (10 CFR) 1004.11.

#### FOR FURTHER INFORMATION CONTACT:

Cyrus Nasseri, U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy, Federal Energy Management Program, EE-2L, 1000 Independence Avenue, SW., Washington, DC 20585-0121, (202) 586-9138, e-mail: [Cyrus.Nasseri@ee.doe.gov](mailto:Cyrus.Nasseri@ee.doe.gov), or Chris Calamita, U.S. Department of Energy, Office of the General Counsel, Forrestal Building, GC-72, 1000 Independence Avenue, SW., Washington, DC 20585, (202) 586-1777, e-mail: [Christopher.Calamita@hq.doe.gov](mailto:Christopher.Calamita@hq.doe.gov).

#### SUPPLEMENTARY INFORMATION:

- I. Introduction
- II. Discussion of Today's Action
- III. Reference Resources
- IV. Regulatory Analysis
- V. Approval of the Office of the Secretary

#### I. Introduction

Section 305 of the Energy Conservation and Production Act (ECPA) established energy conservation requirements for Federal buildings. (42 U.S.C. 6834) Section 109 of the Energy Policy Act of 2005 amended section 305 of ECPA by adding section 305(a)(3)(A), which requires DOE, through regulation, to update the energy efficiency requirements for new Federal buildings. (42 U.S.C. 6834(a)(3)(A)) DOE is also required to establish a requirement that, if life-cycle cost-effective, sustainable design principles must be applied to the siting, design, and construction of all new and replacement buildings. (42 U.S.C. 6834(a)(3)(A)(i)(II)) Section 433 of the Energy Independence and Security Act of 2007 (EISA; Pub. L. 110-140) further amended section 305 of ECPA to apply sustainable design principles to certain new Federal buildings and major renovations of Federal buildings without specifying consideration of life-cycle cost-effectiveness. (42 U.S.C. 6834(a)(3)(D)(i)(III)) In addition, DOE is directed to establish regulations that require water conservation technologies and solar hot water heaters be applied to the extent life-cycle cost-effective. (42 U.S.C. 6834 (a)(3)(A)(ii) and (a)(3)(D)(vii)) Today's proposed rule addresses sustainable design principles, water conservation technologies, and solar water heating. Additionally, as amended by EISA, ECPA directs DOE to identify a certification system and level for rating green buildings that DOE determines to be the most likely to encourage a comprehensive and environmentally sound approach to such certification and rating. (42 U.S.C. 6834(a)(3)(D)(i)(III)) Finally, section 433 of EISA revised the definition of "Federal building" applicable to the regulations for Federal buildings. (42 U.S.C. 6832(6)) This definitional change is addressed in today's notice.

DOE has already addressed energy efficiency in new Federal buildings in a final rule published on December 21, 2007 (72 FR 72565). Specifically, new Federal buildings must be designed to achieve energy consumption levels that are at least 30 percent below the updated minimum standards referenced in section 305(a)(2), if life-cycle cost-effective. (42 U.S.C. 6834(a)(3)(A)(i)(I); see also 10 CFR 433.4 and 435.4) DOE placed the revised Federal commercial

and multi-family high-rise residential building standards in a new 10 CFR Part 433, entitled “Energy Efficiency Standards for the Design and Construction of New Federal Commercial and Multi-Family High-Rise Residential Buildings.” The updated standards for Federal low-rise residential buildings are contained in 10 CFR Part 435, Subpart A.

Section 433 of EISA added section 305(a)(3)(D) to require fossil fuel energy savings for certain building types. DOE will address the fossil fuel requirements of section 433 of EISA in a separate rulemaking. The fossil fuel requirement rulemaking may amend the same regulatory sections as those proposed to be amended in today’s notice of proposed rulemaking. The proposed regulatory text in today’s document would amend the current regulatory text, without consideration of amendments that may result from the fossil fuel requirement rulemaking. If and when these rulemakings are finalized, DOE will coordinate the final regulatory text between the two rulemakings.

DOE notes that it is required to review and revise energy efficiency requirements for Federal building as the voluntary industry codes are updated. (42 U.S.C. 6834(a)(3)(b)) DOE intends to address this review of the current versions of ASHRAE Standard 90.1 and the International Code Council International Energy Conservation Code (IECC) as the minimum energy efficiency performance standards in 10 CFR Parts 433 and 435 in a separate rulemaking.

## II. Discussion of Today’s Action

### A. Scope of Proposed Rulemaking

#### 1. Definition of “Federal Building”

Section 305 of ECPA requires, in part, that DOE establish, by rule, standards for new Federal buildings that require, if life-cycle cost-effective, new Federal buildings be designed to achieve energy consumption levels that are at least 30 percent below the levels established in the applicable industry code, and that sustainable design principles are applied to the siting, design, and construction of all new and replacement buildings. (42 U.S.C. 6834(a)(3)(A)(i)) Further, water conservation technologies must be applied to the extent that the technologies are life-cycle cost-effective. (42 U.S.C. 6834(a)(3)(A)(ii)) and 6834(a)(3)(D)(vii)

As stated previously in this notice, DOE has established regulations that address the energy consumption requirements for new Federal buildings. (72 FR 72565) In the final rule for the

energy consumption requirements of new Federal buildings, DOE relied on the statutory definition of “Federal building,” *i.e.*, “any building to be constructed by, or for the use of, any Federal agency which is not legally subject to State or local building codes or similar requirements.” (72 FR 72565)

Section 433 of EISA amended the definition of “Federal building” applicable to section 305 of EPCA, including the energy consumption, sustainability, and water conservation requirements. The statute now defines “Federal building” to mean any building to be constructed by, or for the use of, any Federal agency. DOE is proposing that the term include buildings built for the purpose of being leased by a Federal agency, and privatized military housing awarded subsequent to promulgation of this rule.<sup>1</sup> (42 U.S.C. 6832(6)) DOE is proposing to revise the definition of “new Federal building” consistent with the amendment in EISA. Additionally, DOE is considering limiting the inclusion of leased buildings in the definition of “Federal building” to new leased buildings in which a Federal agency has significant control over the design of the building (*e.g.*, “lease-constructs”). DOE welcomes comments on these considerations.

#### 2. Consideration of Life-Cycle Costs

In general, DOE is proposing that the sustainable design requirements be applied to all new and replacement Federal buildings to the extent those requirements are life-cycle cost effective. For a subset of new Federal buildings and Federal buildings undergoing major renovation, DOE is proposing that the sustainable design principles be applied to the “extent practicable.” As explained further in this section, “extent practicable” considerations would include specified cost considerations separate from a life-cycle cost threshold.

Section 305(a)(3)(i)(II) requires DOE to establish regulations that require sustainable design principles to be applied to the siting, design, and construction of all new and replacement Federal buildings, to the extent life-cycle cost-effective. (42 U.S.C. 6834(a)(3)(i)(II))

Section 305(a)(3) of ECPA as amended directs DOE to establish regulations that require sustainable design principles be applied to a subset of new Federal buildings and Federal buildings

undergoing major renovation, without specifying consideration of life-cycle cost. (42 U.S.C. 6834(a)(3)(D)(i)(III)) 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>2</sup> for which the Administrator of General Services is required to transmit a prospectus to Congress under 40 U.S.C. 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).

If a new or replacement Federal building does not fit into one of these two categories, sustainable design principles would apply only to the extent that they are life-cycle cost-effective.

DOE is proposing that sustainable design principles be applied to the new Federal buildings and major renovations identified by the statute. The sustainable design principles set forth in the requirements of this proposed rule would be required to be incorporated into the new Federal building or major renovation design “to the extent practicable,” except in the case of indoor environmental quality requirements, which would be mandatory. DOE

<sup>2</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 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.

<sup>1</sup> The Military Housing Privatization Initiative (MHPI) is a public/private program whereby private sector developers may own, operate, and maintain military family housing. The MHPI was enacted on February 10, 1996, as part of the National Defense Authorization Act for fiscal year 1996.



believes that indoor air quality requirements are vitally important to the health and life safety of Federal employees and visitors to Federal buildings and has therefore emphasized their importance by making the requirements mandatory. For major renovations, the sustainable design requirements would only apply to the portion of the building being renovated.

Today's proposed rule would require Federal agencies to apply sustainable design principles to the extent practicable when designing the new Federal buildings and major renovations identified by the statute. Under the proposed rule, actions would be required to be implemented "to the extent practicable;" *i.e.*, actions would need to be implemented unless an agency determines that: Full implementation would prevent the building or facility from fulfilling a key design or function objective; the necessary products or materials cannot be commercially procured in a timely fashion; the net increases in total project life cycle costs are very large, or if initial funding required to integrate features to comply with this rule exceeds 3 percent of total first costs. DOE requests comments on whether or not the 3 percent of total first cost limitation should be added directly to the definition of "to the extent practicable" in today's rulemaking. In this rulemaking, individual sustainable design measures are discussed individually. It is the intent of the 3 percent of total project cost that the entire package of sustainable design measure be less than 3 percent of the total first cost for the project. In addition, DOE requests comments on whether "very large" net increases in total project life cycle costs should be numerically defined, and if so, what that threshold or range should be.

DOE believes that life cycle costing is an important consideration in the definition of "to the extent practicable," but that failure of proof of life-cycle cost-effectiveness in of itself is not sufficient to disregard the application of sustainable design principles. The life-cycle cost analysis may not capture all of the benefits from sustainable design. Environmental impacts often extend far beyond the "life" of a building or measures installed in a building. If a required action cannot be fully implemented for one of these reasons, agencies should endeavor to implement the required action to the maximum extent feasible.

DOE is proposing that new Federal buildings that are not in these two categories identified above would need to comply with the sustainable design

requirements only if they are life-cycle cost-effective.

The requirements in this proposed rule would not apply to major renovations that have construction project costs less than \$2,500,000 (in 2007 dollars, adjusted for inflation using U.S. Department of Labor Producer Price Indexes).

### 3. Definition of "Major Renovation"

Major renovations are defined in the proposed rule as changes to a building that provide significant opportunities for substantial improvement in the sustainable design elements covered in this rule, including energy efficiency. DOE has also included in the definition of major renovation the statement that any renovation that exceeds 25 percent of the replacement value of the building would be considered a major renovation. The replacement value is used rather than the current value because the current value of old buildings in poor condition may be very low. The proposed rule would only apply to portions of the building or building system that are being renovated. For example, if the renovation includes the replacement of the watering system for landscaping around an office building, then the requirements for outdoor water use in the rules would apply. DOE notes that this definition has been used for a number of years by the Department of Defense, the Federal government's single largest manager of Federal buildings. DOE welcomes comments on the definition of "major renovation," particularly as to whether the definition would result in an unreasonable burden on planned renovations that are not extensive enough to accomplish sustainable design objectives.

### B. Solar Hot Water Heaters

Section 523 of EISA modifies Section 305(a)(3)(A) of ECPA to require 30 percent of hot water demand in new Federal buildings or Federal buildings undergoing major renovations to be met by solar water heaters if life-cycle cost-effective. (42 U.S.C. 6834(a)(3)(A)(iii)) DOE interprets Section 523 to include all hot water usage in the building, including hot water used for restrooms, janitorial closets, food handling facilities, and laundry facilities. Agencies should calculate the total hot water load for the building and then determine if it is life cycle cost-effective to use solar hot water systems to meet 30 percent of the annual demand. This requirement has been reflected in the proposed rule. DOE welcomes comments on this requirement.

### C. Federal Leadership in High Performance and Sustainable Building—Guiding Principles

DOE is proposing to add requirements to 10 CFR Parts 433 and 435 to implement the directive of section 305 of ECPA that Federal buildings use sustainable design principles for siting, design, and construction, and water conservation. As a basis for the proposed sustainability requirements DOE utilized the December 2008 version of the Guiding Principles originally adopted in the Federal Leadership in High Performance and Sustainable Building Memorandum of Understanding (MOU) signed by most Federal agencies. DOE incorporated those requirements into today's proposed rulemaking. The guiding principles are aimed at helping Federal agencies and organizations:

- Reduce the total ownership cost of facilities.
- Improve energy efficiency and water conservation.
- Provide safe, healthy, and productive built environments.
- Promote sustainable environmental stewardship.

Under Executive Order 13514, "Federal Leadership in Environmental, Energy and Economic Performance" (October 5, 2009), Federal agencies are already required to ensure that new construction and major renovations of agency buildings comply with the Guiding Principles. By basing the rulemaking on the Guiding Principles already in use, DOE intends to minimize the regulatory burden on Federal agencies. DOE notes that the Guiding Principles do not address the issue of site selection, and therefore provisions related to site selection have been added to the proposal. Additionally, DOE is aware that revisions to the Guiding Principles are currently being considered. DOE will evaluate and consider any revisions to the Guiding Principles as part of the final rule.

DOE is aware that several voluntary industry standards that would address sustainable design are currently under development. Specifically, DOE is aware of the development of:

- ASHRAE 189.1P—Standard for the Design of High-Performance, Green Buildings Except Low-Rise Residential Buildings,
- The International Green Construction Code under development by the International Code Council (ICC), and
- The National Green Building Standard jointly developed by the National Association of Home Builders and the ICC for residential buildings.

To the extent that such voluntary industry standards are finalized prior to the issuance of a final rule under this rulemaking, DOE may consider incorporating some or all of the provisions of the identified voluntary industry standards. DOE welcomes comments on whether these or other nationally recognized green/sustainable building design standards should be deemed to comply with the sustainable design requirements in the DOE rules.

The proposed requirements for sustainable design are nearly identical for commercial buildings (including high-rise residential) in 10 CFR 433 and residential buildings in 10 CFR part 435. The differences are a requirement for radon control in residential buildings, and a signage requirement to prohibit smoking for commercial buildings only. Radon is generally considered to be less of a potential health concern in commercial buildings than in residential buildings. The signage requirement for prohibiting smoking is based on GSA notice in **Federal Register** on December 22, 2008.

The major sustainable design elements of the proposed rules are:

- Integrated Design Principles.
- Optimize Energy Performance.
- Protect and Conserve Water.
- Enhance Indoor Environmental

Quality.

- Reduce Environmental Impact of Materials.
- Building Siting.

#### 1. Integrated Design Principles

Integrated design principles include planning, setting goals, and building commissioning. Building commissioning is the process of ensuring that building systems and equipment are designed, installed, tested, and capable of being operated and maintained according to the owner's or occupants operational needs. Building commissioning is a key part of designing and building high-performance buildings because it helps ensure that controls, sensors, and equipment will perform as intended throughout their expected life. Building commissioning requires that the facility and all of its systems and assemblies are planned, designed, installed, tested, operated, and maintained to meet the owner's or occupant's project requirements.

The building commissioning requirements in the proposed rule are based on the Guiding Principles. Additionally, DOE has specified the operation of a building as part of the commissioning efforts. DOE recognizes that certain Federal agencies are required to conduct water and energy

evaluations of certain facilities. (42 U.S.C. 8253(f)). DOE has issued guidance on the implementation of this requirement, which would address the operational component of the commissioning requirement proposed in this rulemaking. That guidance can be found at [http://www1.eere.energy.gov/femp/pdfs/eisa\\_s432\\_guidelines.pdf](http://www1.eere.energy.gov/femp/pdfs/eisa_s432_guidelines.pdf).

#### 2. Optimize Energy Performance

Energy efficiency is considered as a major component of sustainable building design. As mentioned above, DOE issued a final rule on December 21, 2007, that incorporates the energy efficiency standards required in section 305 of ECPA. That final rule incorporated the American Society of Heating, Refrigerating, and Air-Conditioning Engineers ANSI/ASHRAE/IESNA Standard 90.1–2004, “Energy Standard for Buildings Except Low-Rise Residential Buildings,” and the International Code Council’s 2004 “International Energy Conservation Code.” That final rule also established a requirement for new Federal buildings to achieve a level of energy consumption at least 30 percent below that of the Standard 90.1–2004 or the 2004 IECC, as appropriate, when life-cycle cost-effective, as directed by the statute.

Today’s notice of proposed rulemaking expands on the energy-related requirements in the previously published final rule to include solar water heating and renewable energy generation projects. The solar water heating requirements are from section 305 of ECPA as amended by section 523 of EISA. The proposed renewable energy generation requirements are reflective of the Guiding Principles and would support compliance with section 203 of the Energy Policy Act of 2005, which sets renewable energy consumption percentages for Federal agencies. (42 U.S.C. 15852)

#### 3. Protect and Conserve Water

Water is a key element of sustainability because water is a limited resource. The U.S. Government Accountability Office estimated in 2003 that 36 States will face water shortages by 2013. The U.S. Geological Survey estimates water use in the U.S. and reports that 410 billion gallons per day were withdrawn for all uses during 2005. Public supply (including commercial and industrial uses) and domestic water use was 48 billion gallons per day, or 12 percent of the national total. Most water use in the nation is for thermoelectric power (49 percent) and irrigation (31 percent).

The proposed rule would implement the requirement established in EPCA, as amended, that if water is used to achieve energy efficiency, water conservation technologies shall be applied to the extent that the technologies are life-cycle cost-effective. (42 U.S.C. 6834(a)(3)(A)(ii)) As proposed, this requirement would apply in instances in which a Federal agency was relying on technologies such as cooling towers or condensing units as a means to achieve energy efficiency. In those instances, the proposed regulation would require that, to the extent life-cycle cost-effective, the technologies are water efficient.

The proposed rule adopts the water saving targets from the Guiding Principles: a 20 percent reduction of indoor potable water usage and a 50 percent reduction in outdoor potable water usage. DOE is interested in input on how to define procedures relating to the calculation of baseline water use and water savings for meeting these requirements. The DOE Federal Energy Management Program provides an estimate of water use by building type ([http://www1.eere.energy.gov/femp/program/waterefficiency\\_useindices.html](http://www1.eere.energy.gov/femp/program/waterefficiency_useindices.html)) and in the absence of other data, DOE proposes to use these as the baseline. To the extent practicable, use of WaterSense labeled products, or products with comparable water efficiency, for product categories labeled by WaterSense is required.

The issue of stormwater and hydrology is not addressed in this rule. Stormwater runoff for “Federal development projects” is explicitly addressed in Section 438 of EISA. The U.S. Environmental Protection Agency (EPA) has issued guidance on complying with section 438 of EISA (<http://www.epa.gov/owow/nps/lid/section438/>).

#### 4. Enhance Indoor Environmental Quality

The indoor environmental quality requirements from the Guiding Principles were adapted for this proposed rule. Leading sustainability programs include indoor environmental quality in their scope. A key component of the indoor environment is air quality. All buildings have some potential for indoor air quality-related health problems, such as “sick-building syndrome.” The proposed rule addresses the major aspects of indoor air quality—source control for pollutants, moisture, and ventilation.

For pollutant sources, the rules specify low-emitting materials and products used within buildings. For

moisture control, the proposed rule addresses the potential for moisture flows and condensation that may lead to the development of mold. The proposed rule does not identify a particular standard to address moisture control. DOE requests comment on whether a voluntary industry standard, such as the ASHRAE "Indoor Air Quality Guide: Best Practices for Design, Construction and Commissioning" (2009), should be incorporated into the regulation.

For ventilation, the proposed rule would require use of ASHRAE "Standards on Ventilation for Acceptable Indoor Air Quality: Standard 62.1" for commercial buildings and residential high-rise buildings and Standard 62.2 for low-rise residential buildings. Signage prohibiting smoking would be required for commercial and high-rise residential buildings.

Radon control requirements from ASTM Standard 1465 are included in the proposed rule for low-rise residential buildings. DOE requests comments on the inclusion of a radon control requirement. DOE also welcomes suggestions for other or additional radon standards that could be incorporated into this rule. Measures to seal the foundation to prevent or reduce radon from entering the building would be required in regions with high radon potential (about one-third of the nation, mostly in colder States). DOE has taken the definition of high radon potential from EPA as counties that have a predicted average indoor radon screening level greater than 4 pCi/L (picocuries per liter), as shown on the map at: <http://www.epa.gov/radon/zonemap.html>. DOE requests comments on this definition of high radon potential.

Radon is a cancer-causing naturally occurring radioactive gas that is the second leading cause of lung cancer in America and EPA estimates this leads to the loss of about 20,000 lives annually in radon related lung cancers.

##### 5. Reduce Environmental Impacts of Materials

Buildings use a diverse array of products. There is a limited supply of some products' raw materials. Products can also require a substantial amount of energy to be produced and transported. In 1998, an EPA report found 10.8 million tons of waste was generated from new building construction in 1996. In 2003, EPA reported a 21 percent increase in construction waste since the 1998 report. The proposed rule would reduce construction waste and would require the use of materials with recycled content and rapidly renewable materials. The proposals for

construction waste and recycled content are taken from the Guiding Principles. The 10 percent recycle content requirement is adopted from the original version of the Guiding Principles.

The proposed rule also addresses ozone depletion. The EPA defines ozone-depleting substance(s) (ODS) as a compound that contributes to stratospheric ozone depletion. ODS include CFCs, HCFCs, halons, methyl bromide, carbon tetrachloride, and methyl chloroform. ODS are generally very stable in the troposphere and only degrade under intense ultraviolet light in the stratosphere. When they break down, they release chlorine or bromine atoms, which then deplete ozone. The proposed rule would instruct agencies to not use ozone depleting compounds if an environmentally preferable material is available. Again, this element of the rule was adapted from the Guiding Principles.

DOE requests comments on whether requirements related to waste diversion and ozone depletion should be included in the rulemaking.

##### 6. Building Siting

The proposed rule includes requirements for siting and directs Federal agencies to comply with all applicable Executive Orders, statutes and regulations. The applicable siting authorities may include Executive Orders 12072, 13006, and 13514; the Rural Development Act of 1972; Federal Urban Land Use Act of 1949; and Public Buildings Cooperative Use Act of 1976.

Site selection is important to minimize direct and indirect environmental impacts on the surroundings of the building(s) to be constructed, including protecting environmentally sensitive lands, reducing energy use for transportation and associated greenhouse gas emissions, and orienting the building to take advantage of solar heat gains in the winter and/or minimize solar heat gains in the summer. The proposed rule includes energy efficiency consideration as a siting priority.

##### D. Life-Cycle Cost-Effectiveness

Section 305 of ECPA, as amended by section 109 of the Energy Policy Act of 2005, mandates the application of sustainable design principles to the siting, design, and construction of all new and replacement buildings when life-cycle cost-effective. (42 U.S.C. 6834(a)(3)(A)(i)(II)) Section 433 of EISA further amended section 305 of ECPA to apply sustainable design principles to certain new Federal buildings and major renovations of Federal buildings without specific consideration of life-

cycle cost-effectiveness. (42 U.S.C. 6834(a)(3)(D)(i)(III)) For major renovations and new buildings that fall in the two categories defined in EISA ("public buildings" requiring a prospectus and buildings/renovations costing at least \$2.5 million), the proposed rule would apply to the extent practicable.

Under the proposed rule, for new buildings that do not fall into the two categories, the sustainability design requirements would apply only if the requirements are proven to be life-cycle cost-effective using the procedures in 10 CFR part 436 (excluding indoor air quality requirements, which are mandatory). DOE is proposing that Federal agencies would be permitted to use one of four methods listed in 10 CFR part 436 to demonstrate life-cycle cost-effectiveness. These methods include lower life-cycle costs, positive net savings, savings-to-investment ratio that is estimated to be greater than one, and an adjusted internal rate of return that is estimated to be greater than the Federal Energy Management Program (FEMP) discount rate. The proposed rule would only require that sustainable design measures that are cost effective be done, it would not prohibit measures that improve sustainability but cannot be shown to be cost effective.

Defining life-cycle cost as it applies to sustainable buildings presents challenges. Some of the benefits are economically measurable over a finite period of time, such as energy and water savings. Other benefits may not have an economic benefit that can be clearly calculated, such as reduced greenhouse gases, reduced waste in landfills, protection of natural habitat, *etc.* DOE has not attempted to quantify externalities related to sustainable design, such as the value of wetlands preservation. The International Organization for Standards (ISO) has outlined principles and a framework for life cycle assessments for environmental management in ISO Standard 14040 that provides some guidance. DOE welcomes public comments on whether DOE should attempt to quantify externalities for these types of environmental benefits. Also, DOE requests comments on which types of sustainability objectives should be subject to life cycle cost analysis.

##### E. Green Building Certification Systems

Section 433 of EISA added a certification system requirement for new Federal buildings and renovations that are public buildings defined in 40 U.S.C. 3301, for which the Administrator of General Services is required to transmit a prospectus to



Congress under U.S.C. Title 40, section 3307, or that are at least \$2,500,000 in costs adjusted annually for inflation. (42 U.S.C. 6834(a)(3)(D)(i)(III)) Under that requirement, DOE is to “identify a certification system and level for green buildings that the Secretary determines to be the most likely to encourage a comprehensive and environmentally-sound approach to certification of green buildings.” Section 433 of EISA directs that the identification of the certification system and level shall be based on a review of findings prepared by the Federal Director of the Office of Federal High-Performance Green Buildings (within the General Service Administration) under section 436(h) of EISA and the criteria specified in clause (iii), shall identify the highest level the Secretary determines is appropriate above the minimum level required for certification under the system selected, and shall achieve results at least comparable to the system used by and highest level referenced by the General Services Administration (GSA) as of the date of enactment of EISA. In addition to the findings of the Federal Director, DOE is to take into consideration—

(I) The ability and availability of assessors and auditors to independently verify the criteria and measurement of metrics at the scale necessary to implement this subparagraph;

(II) The ability of the applicable certification organization to collect and reflect public comment;

(III) The ability of the standard to be developed and revised through a consensus-based process;

(IV) An evaluation of the robustness of the criteria for a high-performance green building, which shall give credit for promoting:

(a) Efficient and sustainable use of water, energy, and other natural resources;

(b) Use of renewable energy sources;

(c) Improved indoor environmental quality through enhanced indoor air quality, thermal comfort, acoustics, day lighting, pollutant source control, and use of low-emission materials and building system controls; and

(d) Such other criteria as the Secretary determines to be appropriate.

(V) National recognition within the building industry. (42 U.S.C. 6834(a)(3)(D)(iii))

GSA identified a green building certification system under section 436(h) of EISA in a letter to the Secretary of Energy.<sup>3</sup> GSA stated that the U.S. Green Building Council's

Leadership in Energy and Environmental Design (LEED) rating system would meet the criteria in section 436(h) of EISA and identified the “Silver” level as the minimum level. The Department of Defense also identified LEED with the Silver level as the preferred rating system and level in a letter to the Secretary of Energy.<sup>4</sup>

GSA informed DOE in the letter that it evaluated the following five rating systems:

- Building Research Establishment's Environmental Assessment Method (BREEAM);

- Comprehensive Assessment System for Building Environmental Efficiency (CASBEE);

- GBTool;

- Green Globes™ U.S.; and

- Leadership in Energy and Environmental Design.

GSA stated that it evaluated each rating system's:

- *Applicability*: Whether it is relevant to the large scale and complexity of Federal buildings.

- *Stability*: Whether it has been stable over time, so that the evaluation of a building's performance is not subject to drastic changes.

- *Objectivity*: Whether it measures quantifiable aspects of sustainable design and its ratings are verified by qualified third parties.

- *Availability*: Whether it is widely used and has broad practitioner awareness.

In its identification, GSA utilized a 2006 report by Pacific Northwest National Laboratory<sup>5</sup> (PNNL) that evaluated leading green building rating systems. The PNNL report identified the five rating systems listed above as having the greatest potential of addressing GSA needs. The PNNL report summarized and reviewed each of the five rating systems, but did not provide a recommendation on a preferred system.

DOE recognizes that there are multiple green building rating systems currently available and additional systems may be developed. These systems have various levels of ratings, representing differing degrees of energy efficiency and sustainable design. Additionally, the existing systems may be revised and updated over time.

As part of a Federal building being green-rated, DOE is considering the development of requirements to apply

the continued certification of a building as a certified green building. DOE is considering a requirement for Federal agencies to demonstrate that the energy use of a certified green building is consistent with the energy use targets identified under the green building certification program. DOE is considering a requirement for a Federal agency to demonstrate that the energy use, at a minimum, in the first year of a building's green building certification is consistent with the energy use identified as part of the certification process. If the building's energy use exceeded the target energy use identified under the green building rating system, DOE is considering the removal of the green building certification.

Focusing on the energy targets identified in a green building rating system would be consistent with the Guiding Principles MOU, which directs the agencies to establish a whole building performance target that takes into account the intended use, occupancy, operations, plug loads, and other energy demands, and design. Reviewing energy use in the first year following construction or renovation would help ensure that green-rated buildings continue to perform as originally specified under the rating. DOE is requesting comment on this potential regulation.

The statute does not require DOE to identify a specific commercially available system, but requires DOE to identify a certification system and level for green buildings. As stated in the statute, DOE believes that the green rating of a building must encourage a comprehensive and environmentally sound approach to building and renovation design. Given that systems may be further developed, DOE is proposing minimum criteria for any system that a Federal agency would choose to use to green rate a building.

DOE is proposing criteria for agencies to identify green rating systems if an agency chooses to green rate a building. Under the proposed regulations, if an agency were to choose to green rate a building the green rating system would be required to—

(1) Enable assessors and auditors to independently verify the criteria and measurement metrics of the system;

(2) Be developed by a certification organization that

(i) Provides an opportunity for public comment on the system; and

(ii) Provides an opportunity for development and revision of the system through a consensus based process; and

(3) Be nationally recognized within the building industry.

<sup>3</sup> Letter from Lorita Doan, GSA Administrator to Samuel Bodman, Secretary of Energy, dated April 25, 2008. EXEC-2008-005379.

<sup>4</sup> Letter from Wayne Arny, Deputy Under Secretary of Defense (Installations and Environment), dated May 5, 2009.

<sup>5</sup> Fowler, KM and Rauch, EM. 2006. *Sustainable Building Rating Systems: Summary*. PNNL-15858. Pacific Northwest National Laboratory. Richland, Washington.

Included in the statutory criteria for consideration by DOE in identifying green building rating systems is the evaluation of the robustness of the system's criteria for a high-performance green building. DOE considers the evaluation of the "robustness" of a green building rating system to include consideration of its ability to improve over time and ensure design performance over time. As such, DOE is also considering to require that green rating systems used by Federal agencies are those systems that—

(1) Are subject to periodic evaluation and assessment of the environmental and energy benefits that result under the rating system; and

(2) Include a verification system for post-occupancy assessment of the rated buildings to periodically demonstrate continued environmental benefits and energy savings.

DOE understands that existing green building rating systems may not meet these two additional criteria, but understands that several systems are moving in a direction consistent with these additional criteria.

Under this proposal, DOE believes that agencies would be provided the flexibility to choose the green building rating system that best fits their needs as long as the system meets the criteria set in this rulemaking.

Under today's proposed rule, the minimum level of rating would need to be a level that ensures compliance with the applicable energy efficiency, water use, and sustainable design requirements established in regulation. DOE requests comments as to whether the minimum level should also reflect the Guiding Principles MOU and all applicable executive orders.

As indicated above, GSA identified LEED Silver as a green rating system and level that meets the criteria expressly identified in the statute. DOE requests comment on other green rating systems and associated levels/points that also would meet the statutory criteria. DOE also requests comments on the additional criteria being considered by DOE. DOE intends to make a list of any green building rating systems determined by Federal agencies to meet the criteria adopted in the final rule available to Federal agencies in order to provide guidance. DOE requests comment on the proposed criteria and the potential for other green rating systems to meet the proposed criteria.

Section 305(a)(3)(D)(v) of ECPA states that "the Secretary may by rule allow Federal agencies to develop internal certification processes, using certified professionals, in lieu of certification by the certification entity identified under

clause (i)(III). The Secretary shall include in any such rule guidelines to ensure that the certification process results in buildings meeting the applicable certification system and level identified under clause (i)(III). An agency employing an internal certification process must continue to obtain external certification by the certification entity identified under clause (i)(III) for at least 5 percent of the total number of buildings certified annually by the agency." Under the proposal agencies would be able to submit to DOE their own internal certification systems for approval by DOE.

### III. Reference Resources

DOE has prepared a list of resources to help Federal agencies address the principles of sustainable design. The **Federal Register** final rule published on December 21, 2007 (71 FR 72565) contains reference resources for energy efficiency. These resources come in many forms (such as design guidance and case studies) and in a variety of media (such as in printed documents or on Web sites).

*Life-Cycle Cost Analysis—U.S. DOE Federal Energy Management Program* [http://www.access.gpo.gov/nara/cfr/waisidx\\_04/10cfr436\\_04.html](http://www.access.gpo.gov/nara/cfr/waisidx_04/10cfr436_04.html)

The life-cycle cost analysis rules promulgated in 10 CFR part 436 Subpart A, "Methodology and Procedures for Life Cycle Cost Analysis," conform to requirements in the Federal Energy Management Improvement Act of 1988 and subsequent energy conservation legislation. The life-cycle cost guidance, discount rates, and energy price projections are determined annually by FEMP and the Energy Information Administration, and published in the Annual Supplement to The National Institute of Standards and Technology Handbook 135: "Energy Price Indices and Discount Factors for Life-Cycle Cost Analysis." FEMP also provides guidance on the LCC requirements of Executive Order 13423 at <http://www1.eere.energy.gov/femp/program/lifecycle.html> and [http://www1.eere.energy.gov/femp/information/download\\_blcc.html](http://www1.eere.energy.gov/femp/information/download_blcc.html). Life cycle cost rules also refer to OMB Circular A-4 and A-94, which may be found at the following links:

Circular A-4—[www.whitehouse.gov/OMB/Circulars/a004/a-4.pdf](http://www.whitehouse.gov/OMB/Circulars/a004/a-4.pdf).

Circular A-94—[www.whitehouse.gov/omb/circulars/a094/a094.html](http://www.whitehouse.gov/omb/circulars/a094/a094.html).

*Whole Building Design Guide—National Institute of Building Sciences* <http://www.wbdg.org>

This is a portal providing one-stop access to up-to-date information on a wide range of building-related guidance, criteria and technology from a whole buildings perspective. Specific guidance for implementing the Guiding Principles for sustainable buildings is provided at [http://www.fedcenter.gov/Documents/index.cfm?id=11130&pge\\_prg\\_id=19319&pge\\_id=1860](http://www.fedcenter.gov/Documents/index.cfm?id=11130&pge_prg_id=19319&pge_id=1860).

*American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE)* <http://spc189.ashraepcs.org/>

ASHRAE has issued Standard 189.1, "Standard for the Design of High-Performance, Green Buildings Except Low-Rise Residential Buildings."

*"Building America"—U.S. Department of Energy* [http://www.eere.energy.gov/buildings/building\\_america/](http://www.eere.energy.gov/buildings/building_america/)

Building America is a private/public partnership that develops energy solutions for new and existing homes. The Building America project combines the knowledge and resources of industry leaders with DOE's technical capabilities. Together, they act as a catalyst for change in the home-building industry.

*Energy & Environmental Building Association (EEBA)* <http://www.eeba.org/>

EEBA's mission is to provide education and resources to transform the residential design, development and construction industries to profitably deliver energy efficient and environmentally responsible buildings and communities.

*The Partnership for Advancing Technology in Housing (PATH)—U.S. Department of Housing and Urban Development* <http://www.pathnet.org/>

PATH is dedicated to accelerating the development and use of technologies that radically improve the quality, durability, energy efficiency, environmental performance, and affordability of America's housing. PATH is a voluntary partnership between leaders of the homebuilding, product manufacturing, insurance, and financial industries and representatives of Federal agencies concerned with housing.

*WaterSense Program* <http://www.epa.gov/watersense>

Launched in 2006, WaterSense is an EPA-sponsored partnership program that seeks to protect the future of our



nation's water supply by promoting water efficiency and enhancing the market for water-efficient products, programs, and practices. WaterSense helps consumers identify water-efficient products and programs that meet WaterSense water efficiency and performance criteria. Products carrying the *WaterSense* label perform well, help save money, and encourage innovation in manufacturing.

*Federal Energy Management Program*  
[http://www1.eere.energy.gov/femp/program/sustainable\\_resources.html](http://www1.eere.energy.gov/femp/program/sustainable_resources.html)

*Executive Order 13514—Federal Leadership in Environmental, Energy, and Economic Performance* <http://www1.eere.energy.gov/femp/regulations/eo13514.html>

This executive order references the Guiding Principles which are incorporated into this rulemaking.

#### IV. Regulatory Analysis

##### *A. Review Under Executive Order 12866, "Regulatory Planning and Review"*

Today's notice of public rulemaking is 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 the preparation of an initial regulatory flexibility analysis for any rule that by law must be proposed for public comment, unless the agency certifies that the rule, if promulgated, will not have a significant economic impact on a substantial number of small entities. As required by Executive Order 13272, *Proper Consideration of Small Entities in Agency Rulemaking*, 67 FR 53461 (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. The Department has made its procedures and policies available on the Office of General Counsel's Web site: <http://www.gc.doe.gov>.

Today's proposed rule would amend standards for the design and construction of new Federal buildings and major renovations of Federal buildings. Today's rulemaking is related

to public property, and therefore, is not subject to any legal requirement to publish a general notice of proposed rulemaking. The Regulatory Flexibility Act does not apply.

##### *C. Review Under the Paperwork Reduction Act of 1995*

This rulemaking 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 of 1969*

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, "Federalism"*

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 to carefully assess the necessity for such actions. The Executive Order also requires agencies to have an accountable process to ensure meaningful and timely input by State and local officials in the development of regulatory policies that have federalism implications. On March 14, 2000, DOE published a statement of policy describing the intergovernmental consultation process it will follow in the development of such regulations. (65 FR 13735). DOE examined this notice of proposed rulemaking and determined that it does not preempt State law and does 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. The proposed rulemaking would establish

requirements for Federal buildings only. No further action is required by Executive Order 13132.

##### *F. Review Under Executive Order 12988, "Civil Justice Reform"*

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 Federal 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. 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 notice of proposed rulemaking meets the relevant standards of Executive Order 12988.

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

Title II of the Unfunded Mandates Reform Act of 1995 (UMRA) (Pub. L. 104–4) requires each Federal agency to assess the effects of Federal regulatory actions on State, local, and Tribal governments and the private sector. 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 1 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 of 1999*

Section 654 of the Treasury and General Government Appropriations Act of 1999 (Pub. L. 105–277) requires Federal agencies to issue a Family Policymaking Assessment for any rule that may affect family well-being. This notice of proposed rulemaking 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, “Governmental Actions and Interference With Constitutionally Protected Property Rights”*

The Department 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*

Section 515 of the Treasury and General Government Appropriations Act, 2001 (44 U.S.C. 3516, note) provides for agencies to review most disseminations of information to the public under guidelines established by each agency pursuant to general guidelines issued by OMB. OMB’s guidelines were published at 67 FR 8452 (February 22, 2002), and DOE’s guidelines were published at 67 FR

62446 (October 7, 2002). DOE has reviewed today’s notice of proposed rulemaking 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, “Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use”*

Executive Order 13211, “Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use,” 66 FR 28355 (May 22, 2001), requires Federal agencies to prepare and submit to the Office of Information and Regulatory Affairs (OIRA), Office of Management and Budget, 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. This notice of proposed rulemaking 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, Sustainable design.

Issued in Washington, DC, on April 13, 2010.

**Cathy Zoi,**

*Assistant Secretary, Energy Efficiency and Renewable Energy.*

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

### **PART 433—ENERGY EFFICIENCY AND SUSTAINABLE DESIGN STANDARDS FOR NEW 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. Revise § 433.1 to read as follows:

#### **§ 433.1 Purpose and scope.**

This part establishes an energy efficiency performance and sustainable design standard for the 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: Solar water heating, sustainable design, and green building certification requirements are applicable 1 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 rule. Unaltered portions of the building or building systems are not required to comply with this rule.

4. Section 433.2 is amended by:

a. Adding in alphabetical order, definitions of “Biobased,” “Commissioning,” “Critical visual tasks,” “Daylight factor,” “EPA-designated product,” “Major renovation,” “Postconsumer material,” “Potable water” and “Rapidly renewable,” “To the extent practicable” and “USDA-designated product;” and

b. Revising the definitions of “Life-cycle cost,” “Life-cycle cost-effective,” and “New Federal building.”

The additions and revisions read as follows:

#### **§ 433.2 Definitions.**

\* \* \* \* \*

*Biobased* means a commercial or industrial product (other than food or feed) that is composed, in whole or in significant part, of biological products, including renewable agricultural

materials (e.g., plant, animal, and marine materials) and forestry materials.

\* \* \* \* \*

*Commissioning* means a quality focused process for enhancing the delivery of a project. The process focuses upon verifying and documenting that the facility and all of its systems and assemblies are planned, designed, installed, tested, operated, and maintained to meet the owner's or occupant's project requirements.

*Critical visual tasks* means office/classroom type work which involves reading printed text, entering data into computers, writing and drawing.

*Daylight factor* means the illuminance due to daylight on the indoor working plane divided by the illuminance outdoors on an unobstructed horizontal plane.

\* \* \* \* \*

*EPA-designated product* means a product listed by EPA as a designated product under EPA's comprehensive procurement guidelines established under section 6002 of the Solid Waste Disposal Act. (42 U.S.C. 6962)

\* \* \* \* \*

*Life-cycle cost* means the total cost of owning, operating and maintaining a building, building systems, or building components, including any mechanical systems, service water heating systems and electric power and lighting systems located on the building site and supporting the building over its useful life (including its fuel and water, energy, labor, and replacement components), determined on the basis of a systematic evaluation and comparison of alternative building systems, except that in the case of leased buildings, the life cycle cost shall be calculated over the effective remaining term of the lease.

*Life-cycle cost-effective* means that the building, energy or water systems in the building, components of those energy or water systems, and conservation measures as defined in 10 CFR 436.11 in the proposed building or major renovation have a lower life-cycle cost than the life-cycle costs of the corresponding systems and measures in the baseline building, as described by 10 CFR 436.19, or has a positive estimated net savings, as described by 10 CFR 436.20; or has a savings-to-investment ratio estimated to be greater than one, as described by 10 CFR 436.21; or has an adjusted internal rate of return, as described by 10 CFR 436.22, that is estimated to be greater than the FEMP discount rate.

\* \* \* \* \*

*Major renovation* means changes to a building that provide significant opportunities for substantial

improvement in energy efficiency. This may include but is not limited to replacement of the HVAC system, the lighting system, the building envelope, and other components of the building that have a major impact on energy usage. Major renovation also includes a renovation of any kind which has a cost exceeding 25 percent of the replacement value of the building.

*New Federal building* means any new building (including a complete replacement of an existing building from the foundation up) to be constructed by, or for the use of, any Federal agency. Such term shall include buildings built for the purpose of being leased by a Federal agency, and privatized military housing.

*Postconsumer material* means a material or finished product that has served its intended use and has been discarded for disposal or recovery, having completed its life as a consumer item.

*Potable water* means water from public drinking water systems or from natural freshwater sources such as lakes, streams, and aquifers where water from such natural sources would or could meet drinking water standards.

\* \* \* \* \*

*Rapidly renewable* refers to materials and products made from plants that are harvested within a 10-year cycle.

\* \* \* \* \*

*To the extent practicable* means wherever feasible, taking into consideration health and life safety, key project design and function objectives, agency mission, product or material availability, net increases in life cycle cost (if significant), and total funding available.

*USDA-designated product* means a product listed by USDA as a designated product under USDA's biobased procurement program established Section 9002 of the Farm Security and Rural Investment Act of 2008. (7 U.S.C. 8102)

5. Add in § 433.4 a new paragraph (d) to read as follows:

#### **§ 433.4 Energy efficiency performance standard.**

(d) *Solar hot water.* (1) All Federal agencies shall design new Federal commercial and multi-family high-rise residential buildings, for which design for construction began 1 year after publication of the final rule, such that at least 30 percent of the hot water demand is provided through the installation of solar hot water heaters, to the extent life-cycle cost-effective as compared to other reasonably available technologies.

(2) Federal buildings undergoing a major renovation, for which design for renovation began 1 year after publication of the final rule, must provide at least 30 percent of the hot water demand for the portion of the building that is being renovated through the installation of solar hot water heaters, to the extent life-cycle cost-effective as compared to other reasonably available technologies.

6. Add § 433.6 to read as follows:

#### **§ 433.6 Sustainable design principles for siting, design and construction.**

(a) This section applies to 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 1 year after publication of the final rule.

(b) 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 to meet the requirements of paragraphs (e) and (f) of this section to the extent practicable, and paragraph (g) 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).

(c) All Federal agencies shall design new Federal commercial and multi-family high-rise residential buildings other than those that meet the criteria in paragraph (b) of this section to comply with the requirements in paragraph (f) of this section to the extent the requirements are life-cycle cost-effective and paragraph (g) of this section.

(d) The requirements of this section are not applicable to major renovations that do not meet the criteria in paragraph (b) of this section.

(e) (1) *Integrated design.* Federal agencies must use a planning and design process that:

(i) Initiates and maintains an integrated project team as described in the National Institute of Building Science "Whole Building Design Guide" in all stages of a project's planning and delivery.

(ii) Integrates the use of OMB's Circular A-11, Section 7, Exhibit 300: *Capital Asset Plan and Business Case Summary*.

(iii) Establishes performance specifications consistent with this part for siting, energy, water, materials, and

indoor environmental quality along with other comprehensive design goals and ensures incorporation of these goals throughout the design and life-cycle of the building.

(iv) Considers all stages of the building's lifecycle, including construction, occupancy, and deconstruction.

(2) *Commissioning*. Federal agencies must employ commissioning practices to verify performance of building components and systems and help ensure that design requirements are met. Commissioning practices must include:

(i) An experienced commissioning provider;

(ii) Inclusion of commissioning requirements in construction documents;

(iii) A commissioning plan;

(iv) Verification of the installation, performance, and operation of systems to be commissioned; and

(v) A commissioning report.

(f) (1) *Renewable energy*. Federal agencies must implement renewable energy generation projects on agency property for agency use, when lifecycle cost effective.

(2) *Indoor water*. Federal agencies must employ strategies that in aggregate use a minimum of 20 percent less potable water than the indoor water use baseline calculated for the building. If baseline data is not available, the baseline for the building shall be calculated from the Federal water use indices issued by the DOE Federal Energy Management Program for a building of the same building type as the proposed building.

(i) Water meters must be installed to allow for the management of water use during occupancy.

(ii) Harvested rainwater, treated wastewater, and air conditioner condensate shall be used to the extent practicable for non-potable use and potable use, but shall not be used to meet the 20 percent reduction in potable water usage.

(3) *Outdoor water*. Federal agencies must use water efficient landscape and irrigation strategies, such as water reuse, recycling, and the use of harvested rainwater, to reduce outdoor potable water consumption by a minimum of 50 percent over the outdoor water baseline calculated for the building. If baseline data is not available, the baseline for the building shall be calculated from the Federal water use indices issued by the DOE Federal Energy Management Program for a building of the same building type as the proposed building.

(4) *Water-efficient products*. Use of WaterSense labeled products, or products with comparable water efficiency, for product categories labeled by WaterSense is required.

(5) *Moisture control*. Federal agencies shall establish and implement a moisture control strategy for controlling moisture flows and condensation to prevent building damage, minimize mold contamination, and reduce health risks related to moisture.

(6) *Day lighting*. (i) Federal agencies must achieve a minimum daylight factor of 2 percent (excluding all direct sunlight penetration) in 75 percent of all space occupied in new buildings and

major renovations for critical visual tasks.

(ii) Federal agencies should provide automatic dimming controls or accessible manual lighting controls, and appropriate glare control.

(7) *Low-emitting materials*. Federal agencies must use materials and products with low pollutant emissions, including composite wood products, adhesives, sealants, interior paints and finishes, carpet systems, and furnishings.

(8) *Indoor air quality during construction*. (i) Federal agencies shall follow the appropriate recommended approach of the Sheet Metal and Air Conditioning Contractor's National Association "Indoor Air Quality Guidelines for Occupied Buildings under Construction, 2007," (incorporated by reference, *see* § 433.3)

(ii) After construction and prior to occupancy, Federal agencies shall conduct a minimum 72-hour flush-out with maximum outdoor air consistent with achieving relative humidity no greater than 60 percent.

(iii) After occupancy, Federal agencies shall continue flush-out as necessary to minimize exposure to contaminants from new building materials.

(iv) As an alternative to the requirements in paragraphs (f)(8)(i), (ii), and (iii) of this section, demonstrate that the contaminant maximum concentration levels listed in the table below are not exceeded in the completed building:

Contaminant	Maximum concentration
Formaldehyde .....	27 parts per billion.
Particulates (PM10) .....	50 micrograms per cubic meter.
Total volatile organic compounds (TVOCs) .....	500 micrograms per cubic meter.
4-Phenylcyclohexene (4-PCH) * .....	6.5 micrograms per cubic meter.
Carbon monoxide (CO) .....	9 parts per million and no greater than 2 parts per million above outdoor levels.

\* This test is only required if carpets and fabrics with styrene butadiene rubber (SBR) latex backing are installed as part of the base building systems.

(9) *Materials*. (i) *Recycled content*. Selection of construction materials and products shall reflect a preference for materials and products containing recycled materials or made from recycled materials such that the post-consumer recycled content, plus one-half of the pre-consumer recycled content, shall constitute a minimum of 10 percent, based on cost or replacement value, of the total materials in the building project. To achieve the 10 percent requirement, the following practices may be employed:

(A) For product categories that are designated in EPA's Comprehensive Procurement Guidelines (CPG), products meeting or exceeding EPA's recycled content recommendations shall be used.

(B) The reuse of lumber, and masonry units, such as brick, tile, stone and concrete block, conforming to the requirements specified in the International Building Code shall be recognized as recycled/recovered content.

(C) Utilize recycled-content landscaping materials (*e.g.*, shredded

wood, landscape trimmings, compost, crushed concrete)

(ii) *Biobased content*. (A) Per Section 9002 of the Farm Security and Rural Investment Act for USDA designated products, use products with the highest content level per USDA's biobased content recommendations as specified in the USDA Biopreferred Program.

(B) For other products, specify biobased products made from rapidly renewable resources and certified sustainable wood products.

(iii) *Environmentally preferable products*. Federal agencies must use



products that have a lesser or reduced effect on human health and the environment over their life-cycle when compared with competing products or services that serve the same purpose. Federal agencies should consider the number of standards and ecolabels are available in the marketplace to assist specifiers in making environmentally preferable decisions. Consult the EPA "Federal Green Construction Guide for Specifiers" for recommendations.

(iv) *Waste and materials management.* (A) Buildings shall plan for recycling of specific materials, such as paper, metals, plastics, cardboard, and electronics (and associated products).

(B) Adequate space, equipment, and transport accommodations for recycling must be included in the building design.

(C) During a project's planning stage, local recycling and salvage operations that could process site-related construction and demolition materials must be identified. If such operations are available locally, materials must be recycled or salvaged.

(v) At least 50 percent of non-hazardous and non-radioactive construction, demolition and land clearing materials, excluding soil, must be recycled or salvaged.

(vi) Ozone depleting compounds. The use of ozone depleting compounds during and after construction must be eliminated where alternative environmentally preferable products are available.

(10) *Siting.* (i) The site selection for Federal building construction shall comply with all applicable Federal rules, Executive Orders, and other Federal actions governing environmental issues impacted by Federal building construction.

(ii) Site selection must prioritize:

(A) Building orientation to maximize energy efficiency of the building,

(B) Locations in central business districts and rural town center,

(C) Sites well served by transit,

(D) Site design elements that ensure safe and convenient pedestrian access,

(E) Consideration of transit access and proximity to housing affordable to a wide range of Federal employees,

(F) Adaptive reuse or renovation of buildings,

(G) Avoiding development of sensitive land resources (such as greenfields and USDA Prime Farmland), and

(H) Evaluation of parking management strategies.

(g)(1) *Ventilation and thermal comfort.* Federal agencies shall design new buildings and major renovations to meet the requirements of ASHRAE 55

(incorporated by reference; see § 433.3), including continuous humidity control within established ranges per climate zone, and ASHRAE 62.1 (incorporated by reference; see § 433.3).

(2) *Environmental tobacco smoke control.* Federal agencies shall implement a policy and post signage indicating that smoking is prohibited within the building and within 25 feet of all building entrances, operable windows, and building ventilation intakes during building occupancy. Agency policy shall be consistent with all applicable Federal rules, Executive Orders, and other relevant Federal actions.

7. Add § 433.7 to read as follows:

#### **§ 433.7 Water conservation.**

If water is used to achieve energy efficiency, water conservation technologies must be applied to the extent practicable that the technologies are life-cycle cost-effective.

8. Revise § 433.8 to read as follows:

#### **§ 433.8 Life-cycle costing.**

For the purpose of this section, evaluation of whether compliance with a requirement is life-cycle cost-effective shall be considered on the basis of individual requirements, not the entire rule. If synergies exist that make combinations of requirements life-cycle cost-effective where individual requirements are not, then these combination of requirements shall be complied with. If requirements containing numerical savings values are not life-cycle cost-effective, the design of the proposed building shall incorporate as much savings as is life-cycle cost-effective.

9. Add a new § 433.9 to read as follows:

#### **§ 433.9 Green building certification.**

(a) *Green building certification system.* If a new Federal building or Federal building undergoing a major renovation, meeting the criteria in § 433.6(b) for which design for construction began 1 year after publication of the final rule is to be certified under a green building certification system, the system under which the building is certified must—

(1) Have the ability for assessors and auditors to independently verify the criteria and measurement metrics of the system;

(2) Be developed by a certification organization that

(i) Provides an opportunity for public comment on the system; and

(ii) Provides an opportunity for development and revision of the system through a consensus based process;

(3) Be nationally recognized within the building industry;

(4) Be subject to periodic evaluation and assessment of the environmental and energy benefits that result under the rating system; and

(5) Include a verification system for post occupancy assessment of the rated buildings to periodically demonstrate continued environmental benefits and energy savings.

(b) *Certification level.* If a new Federal building or Federal building undergoing a major renovation meeting either of the two criteria in § 433.6(b) is to be certified under a green building certification system, the building must be certified to a level that—

(1) Ensures compliance with—

(i) The energy efficiency performance standards of this part; and

(ii) Water use requirements of this part; and

(iii) Sustainable design requirements of this part.

(2) Promotes the high performance sustainable building guidelines referenced in E. O. 13423

"Strengthening Federal Environmental, Energy, and Transportation Management."

(c) Federal agencies may request DOE approval of internal certification processes, using certified professionals, in lieu of certification by a system meeting the criteria in paragraph (a) of this section. Requests for approval must be sent to the Office of the Federal Energy Management Program in DOE. Submissions should demonstrate how the internal certification process would ensure compliance with all applicable regulations under this Part. The Office of the Federal Energy Management Program may request additional information as necessary. The Office of Federal Energy Management will make a determination within 120 days of a completed submission. An agency may then employ the approved internal certification process but must obtain external certification by a system meeting the criteria in paragraph (a) of this section for at least 5 percent of the total number of buildings certified annually by the agency.

### **PART 435—ENERGY EFFICIENCY AND SUSTAINABLE DESIGN STANDARDS FOR NEW FEDERAL LOW-RISE RESIDENTIAL BUILDINGS**

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

**Authority:** 42 U.S.C. 6831–6832, 6834–6835; 42 U.S.C. 8253–54; 42 U.S.C. 7101 *et seq.*

11. The heading for part 435 is revised to read as set forth above.

12. Revise § 435.1 to read as follows:

**§ 435.1 Purpose and scope.**

This part establishes an energy efficiency performance and sustainable design standard for the new Federal low-rise residential buildings, for which design for construction began on or after January 3, 2007 (except as otherwise indicated: solar water heating, sustainable design, and green building certification requirements are applicable 1 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 indicating in the regulatory text. 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.

13. Section 435.2 is amended by:

a. Adding in alphabetical order, the definitions “ASHRAE,” “Biobased,” “Commissioning,” “Critical visual tasks,” “Daylight factor,” “EPA-designated product,” “High radon potential,” “Major renovation,” “Post consumer material,” “Potable water,” “Rapidly renewable,” “To the extent practicable” and “USDA-designated product;” and

b. Revising the definitions of “Life-cycle cost,” “Life-cycle cost-effective,” and “New Federal building.”

The additions and revisions read as follows:

**§ 435.2 Definitions.**

*ASHRAE* means the American Society of Heating, Refrigerating and Air-Conditioning Engineers.

\* \* \* \* \*

*Biobased* means a commercial or industrial product (other than food or feed) that is composed, in whole or in significant part, of biological products, including renewable agricultural materials (e.g., plant, animal, and marine materials) and forestry materials.

*Commissioning* means a quality-focused process for enhancing the delivery of a project. The process focuses upon verifying and documenting that the facility and all of its systems and assemblies are planned, designed, installed, tested, operated, and maintained to meet the owner's or occupant's project requirements.

*Critical visual tasks* means office/classroom type work which involves

reading printed text, entering data into computers, writing and drawing.

*Daylight factor* means the illuminance due to daylight on the indoor working plane divided by the illuminance outdoors on an unobstructed horizontal plane.

\* \* \* \* \*

*EPA-designated product* means a product listed by EPA as a designated product under EPA's comprehensive procurement guidelines established under Section 6002 of the Solid Waste Disposal Act. (42 U.S.C. 6962)

\* \* \* \* \*

*High radon potential* means locations that have a predicted average indoor radon screening level greater than 4 pCi/L (picocuries per liter). For locations within the United States, these are shown on the map at: <http://www.epa.gov/radon/zonemap.html>.

\* \* \* \* \*

*Life-cycle cost* means the total cost of owning, operating and maintaining a building, building systems, or building components, including any mechanical systems, service water heating systems and electric power and lighting systems located on the building site and supporting the building over its useful life (including its fuel and water, energy, labor, and replacement components), determined on the basis of a systematic evaluation and comparison of alternative building systems, except that in the case of leased buildings, the life-cycle cost shall be calculated over the effective remaining term of the lease.

*Life-cycle cost-effective* means that the building, energy or water systems in the building, components of those energy or water systems, and conservation measures as defined in 10 CFR 436.11 in the proposed building or major renovation have a lower life-cycle cost than the life-cycle costs of the corresponding systems and measures in the baseline building, as described by 10 CFR 436.19, or has a positive estimated net savings, as described by 10 CFR 436.20; or has a savings-to-investment ratio estimated to be greater than one, as described by 10 CFR 436.21; or has an adjusted internal rate of return, as described by 10 CFR 436.22, that is estimated to be greater than the FEMP discount rate.

\* \* \* \* \*

*Major renovation* means changes to a building that provide significant opportunities for substantial improvement in energy efficiency. This may include but is not limited to replacement of the HVAC system, the lighting system, the building envelope, and other components of the building that have a major impact on energy

usage. Major renovation also includes a renovation of any kind which has a cost exceeding 25 percent of the replacement value of the building.

*New Federal building* means any new building (including a complete replacement of an existing building from the foundation up) to be constructed by, or for the use of, any Federal agency. Such term shall include buildings built for the purpose of being leased by a Federal agency, and privatized military housing.

*Postconsumer material* means a material or finished product that has served its intended use and has been discarded for disposal or recovery, having completed its life as a consumer item.

*Potable water* means water from public drinking water systems or from natural freshwater sources such as lakes, streams, and aquifers where water from such natural sources would or could meet drinking water standards.

\* \* \* \* \*

*Rapidly renewable* refers to materials and products made from plants that are harvested within a 10-year cycle.

*To the extent practicable* means wherever feasible, taking into consideration health and life safety, key project design and function objectives, agency mission, product or material availability, net increases in life-cycle cost (if significant), and total funding available.

*USDA-designated product* means a product listed by USDA as a designated product under USDA's biobased procurement program established Section 9002 of the Farm Security and Rural Investment Act of 2008. (7 U.S.C. 8102)

14. Add in § 435.4 a new paragraph (d) to read as follows:

**§ 435.4 Energy efficiency performance standard.**

\* \* \* \* \*

(d) *Solar hot water.* (1) All Federal agencies shall design new Federal low-rise residential buildings, for which design for construction began 1 year after publication of the final rule, such that at least 30 percent of the hot water demand is provided through the installation of solar hot water heaters, to the extent life-cycle cost-effective as compared to other reasonably available technologies.

(2) Federal buildings undergoing a major renovation, for which design for renovation began 1 year after publication of the final rule, must provide at least 30 percent of the hot water demand for the portion of the building that is being renovated through the installation of solar hot water

heaters, to the extent life-cycle cost-effective as compared to other reasonably available technologies.

15. Add § 435.6 to read as follows:

**§ 435.6 Sustainable design principles for siting, design and construction.**

(a) This section applies to new Federal low-rise residential buildings and major renovations to Federal low-rise residential buildings for which design for construction began 1 year after publication of the final rule.

(b) All Federal agencies shall design new Federal low-rise residential buildings and major renovations to Federal low-rise residential buildings to meet the requirements of paragraphs (e) and (f) of this section to the extent practicable, and paragraph (g) 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).

(c) All Federal agencies shall design new Federal low-rise residential buildings other than those that meet the criteria in paragraph (b) of this section to comply with the requirements in paragraphs (f) of this section to the extent the requirements are life-cycle cost-effective and paragraph (g) of this section.

(d) The requirements of this section are not applicable to major renovations that do not meet the criteria in paragraph (b) of this section.

(e)(1) *Integrated design.* Federal agencies must use a planning and design process that:

(i) Initiates and maintains an integrated project team as described on the National Institute of Building Science “Whole Building Design Guide” in all stages of a project’s planning and delivery;

(ii) Integrates the use of OMB’s Circular A–11, Section 7, Exhibit 300: “Capital Asset Plan and Business Case Summary”;

(iii) Establishes performance specifications consistent with this Part for siting, energy, water, materials, and indoor environmental quality along with other comprehensive design goals and ensures incorporation of these goals throughout the design and life-cycle of the building; and

(iv) Considers all stages of the building’s lifecycle, including construction, occupancy, and deconstruction.

(2) *Commissioning.* Federal agencies must employ commissioning practices

to verify performance of building components and systems and help ensure that design requirements are met. Commissioning practices must include:

(i) An experienced commissioning provider,

(ii) Inclusion of commissioning requirements in construction documents,

(iii) A commissioning plan,

(iv) Verification of the installation, performance, and operation of systems to be commissioned, and

(v) A commissioning report.

(f)(1) *Renewable energy.* Federal agencies must implement renewable energy generation projects on agency property for agency use, when life-cycle cost-effective.

(2) *Indoor water.* Federal agencies must employ strategies that in aggregate use a minimum of 20 percent less potable water than the indoor water use baseline calculated for the building. If baseline data is not available, the baseline for the building shall be calculated from the Federal water use indices issued by the DOE Federal Energy Management Program for a building of the same building type as the proposed building.

(i) Water meters must be installed to allow for the management of water use during occupancy.

(ii) Harvested rainwater, treated wastewater, and air conditioner condensate shall be used for nonpotable use and potable use, but shall not be used to meet the 20 percent reduction in potable water usage.

(3) *Outdoor water.* Federal agencies must use water efficient landscape and irrigation strategies, such as water reuse, recycling, and the use of harvested rainwater, to reduce outdoor potable water consumption by a minimum of 50 percent over the outdoor water baseline calculated for the building. If baseline data is not available, the baseline for the building shall be calculated from the Federal water use indices issued by the DOE Federal Energy Management Program for a building of the same building type as the proposed building.

(4) *Water-efficient products.* Use of WaterSense labeled products, or products with comparable water efficiency, for product categories labeled by WaterSense is required.

(5) *Moisture control.* Federal agencies shall establish and implement a moisture control strategy for controlling moisture flows and condensation to prevent building damage, minimize mold contamination, and reduce health risks related to moisture.

(6) *Day lighting.* (i) Federal agencies must achieve a minimum daylight factor of 2 percent (excluding all direct

sunlight penetration) in 75 percent of all space occupied in new buildings and major renovations for critical visual tasks.

(ii) Federal agencies should provide automatic dimming controls or accessible manual lighting controls, and appropriate glare control.

(7) *Low-emitting materials.* Federal agencies must use materials and products with low pollutant emissions, including composite wood products, adhesives, sealants, interior paints and finishes, carpet systems, and furnishings.

(8) *Materials.* (i) *Recycled content.* Selection of construction materials and products shall reflect a preference for materials and products containing recycled materials or made from recycled materials such that the post-consumer recycled content, plus one half of the pre-consumer recycled content, shall constitute a minimum of 10 percent, based on cost or replacement value, of the total materials in the building project. To achieve the 10 percent requirement, the following practices may be employed:

(A) For product categories that are designated in EPA’s Comprehensive Procurement Guidelines (CPG), products meeting or exceeding EPA’s recycled content recommendations shall be used.

(B) The reuse of lumber, masonry units, such as brick, tile, stone and concrete block, conforming to the requirements specified in the International Building Code shall be recognized as recycled/recovered content.

(C) Utilize recycled-content landscaping materials (e.g., shredded wood, landscape trimmings, compost, crushed concrete).

(ii) *Biobased content.* (A) Per Section 9002 of the Farm Security and Rural Investment Act for USDA designated products, use products with the highest content level per USDA’s biobased content recommendations as specified in the USDA Biopreferred Program.

(B) For other products, specify biobased products made from rapidly renewable resources and certified sustainable wood products.

(iii) *Environmentally preferable products.* Federal agencies must use products that have a lesser or reduced effect on human health and the environment over their life-cycle when compared with competing products or services that serve the same purpose. Federal agencies should consider the number of standards and ecolabels are available in the marketplace to assist specifiers in making environmentally preferable decisions. Consult the “EPA



Federal Green Construction Guide for Specifiers” for recommendations.

(iv) *Waste and materials management.* (A) Buildings shall plan for recycling of specific materials, such as paper, metals, plastics, cardboard, and electronics (and associated products).

(B) Adequate space, equipment, and transport accommodations for recycling must be included in the building design.

(C) During a project’s planning stage, local recycling and salvage operations that could process site-related construction and demolition materials must be identified. If such operations are available locally, materials must be recycled or salvaged.

(v) At least 50 percent of non-hazardous and non-radioactive construction, demolition and land clearing materials, excluding soil, must be recycled or salvaged.

(vi) *Ozone-depleting compounds.* The use of ozone-depleting compounds during and after construction must be eliminated where alternative environmentally preferable products are available.

(9) *Siting.* (i) The site selection for Federal building construction shall comply with all applicable Federal rules, Executive Orders, and other Federal actions governing environmental issues impacted by Federal building construction.

(ii) Site selection must prioritize;

(A) Building orientation to maximize energy efficiency of the building;

(B) Locations in central business districts and rural town center;

(C) Sites well served by transit;

(D) Site design elements that ensure safe and convenient pedestrian access;

(E) Consideration of transit access and proximity to housing affordable to a wide range of Federal employees;

(F) Adaptive reuse or renovation of buildings;

(G) Avoiding development of sensitive land resources (such as greenfields and USDA Prime Farmland); and

(H) Evaluation of parking management strategies.

(g)(1) *Ventilation and thermal comfort.* Federal agencies shall design new buildings and major renovations to meet the requirements of ASHRAE 55 (incorporated by reference; *see* § 435.3), including continuous humidity control within established ranges per climate zone, and ASHRAE 62.2, (incorporated by reference; *see* § 435.3).

(2) *Radon.* New Federal low-rise residential buildings and major renovations to such buildings in locations with a high radon potential shall comply with ASTM 1465–08a (incorporated by reference; *see* § 435.3).

16. Add § 435.7 to read as follows:

**§ 435.7 Water conservation.**

If water is used to achieve energy efficiency, water conservation technologies must be applied to the extent practical that the technologies are life-cycle cost-effective.

17. Revise § 435.8 to read as follows:

**§ 435.8 Life-cycle costing.**

For the purpose of this section, evaluation of whether compliance with a requirement is life-cycle cost-effective shall be considered on the basis of individual requirements, not the entire rule. If synergies exist that make combinations of requirements life-cycle cost-effective where individual requirements are not, then these combination of requirements shall be complied with. If requirements containing numerical savings values are not life-cycle cost-effective, the design of the proposed building shall incorporate as much savings as is life-cycle cost-effective.

18. Add a new § 435.9 to read as follows:

**§ 435.9 Green building certification.**

(a) *Green building certification system.* If a new Federal building or Federal building undergoing a major renovation, meeting the criteria in § 435.6(b) for which design for construction began 1 year after publication of the final rule is to be certified under a green building certification system, the system under which the building is designed must –

(1) Have the ability for assessors and auditors to independently verify the criteria and measurement metrics of the system;

(2) Be developed by a certification organization that

(i) Provides an opportunity for public comment on the system; and

(ii) Provides an opportunity for development and revision of the system through a consensus based process;

(3) Be nationally recognized within the building industry;

(4) Be subject to periodic evaluation and assessment of the environmental and energy benefits that result under the rating system; and

(5) Include a verification system for post occupancy assessment of the rated buildings to periodically demonstrate continued environmental benefits and energy savings.

(b) *Certification level.* If a new Federal building or Federal building undergoing a major renovation meeting either of the two criteria in § 435.6(b) is to be certified under a green building certification system, the building must be certified to a level that –

(1) Ensures compliance with—

(i) The energy efficiency performance standards of this part; and

(ii) Water use requirements of this part; and

(iii) Sustainable design requirements of this part.

(2) Promotes the high performance sustainable building guidelines referenced in E.O. 13423 “Strengthening Federal Environmental, Energy, and Transportation Management.”

(c) Federal agencies may request DOE approval of internal certification processes, using certified professionals, in lieu of certification by a system meeting the criteria in paragraph (a) of this section. Requests for approval must be sent to the Office of the Federal Energy Management Program in the DOE. Submissions should demonstrate how the internal certification process would ensure compliance with all applicable regulations under this Part. The Office of the Federal Energy Management Program may request additional information as necessary. The Office of Federal Energy Management will make a determination within 120 days of a completed submission. An agency may then employ the approved internal certification process but must obtain external certification by a system meeting the criteria in paragraph (a) of this section for at least 5 percent of the total number of buildings certified annually by the agency.

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## FEDERAL HOUSING FINANCE AGENCY

### 12 CFR Part 1281

RIN 2590–AA16

### Federal Home Loan Bank Housing Goals

**AGENCY:** Federal Housing Finance Agency.

**ACTION:** Notice of proposed rulemaking; request for comment.

**SUMMARY:** Section 1205 of the Housing and Economic Recovery Act of 2008 (HERA) amended the Federal Home Loan Bank Act (Bank Act) by adding a new section 10C(a) that requires the Director of the Federal Housing Finance Agency (FHFA) to establish housing goals with respect to the Federal Home Loan Banks’ (Banks) purchase of mortgages, if any. Section 10C(b) provides that the Banks’ housing goals are to be consistent with the housing