PART 435—ENERGY CONSERVATION VOLUNTARY PERFORMANCE STANDARDS FOR NEW BUILDINGS; MANDATORY FOR FEDERAL BUILDINGS

Subpart A [Reserved]

Subpart B—Voluntary Performance Standards for New Non-Federal Residential Buildings [Reserved]

Subpart C—Mandatory Performance Standards for New Federal Residential Buildings

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SOURCE: 53 FR 32545, Aug. 25, 1988, unless otherwise noted.
Subpart C—Mandatory Performance Standards for New Federal Residential Buildings

§ 435.300 Purpose.

(a) This subpart establishes voluntary energy conservation performance standards for new residential buildings. The voluntary energy conservation performance standards are designed to achieve the maximum practicable improvements in energy efficiency and increases in the use of non-depletable sources of energy.

(b) Voluntary energy conservation performance standards prescribed under this subpart shall be developed solely as guidelines for the purpose of providing technical assistance for the design of energy conserving buildings, and shall be mandatory only for the design of Federal buildings.

(c) The energy conservation performance standards will direct Federal policies and practices to ensure that cost-effective energy conservation features will be incorporated into the designs of all new residential buildings designed and constructed by and for Federal agencies.

§ 435.301 Scope.

(a) The energy conservation performance standards for new Federal residential buildings will apply to the design of all new residential buildings except multifamily buildings more than three stories above grade.

(b) The primary types of buildings built by or for the Federal agencies, to which the energy conservation performance standards will apply, are:

(1) Single-story single-family residences;

(2) Split-level single-family residences;

(3) Two-story single-family residences;

(4) End-unit townhouses;

(5) Middle-unit townhouses;

(6) End-units in multifamily buildings (of three stories above grade or less);

(7) Middle-units in multifamily buildings (of three stories above grade or less);

(8) Single-section mobile homes; and

(9) Multi-section mobile homes.

§ 435.302 Definitions.

(a) ANSI means American National Standards Institute.


(c) ASTM means American Society of Testing and Measurement.

(d) British thermal unit (Btu) means approximately the amount of heat required to raise the temperature of one pound of water from 59°F to 60°F.

(e) Building means any new residential structure:

(1) That includes or will include a heating or cooling system, or both, or a domestic hot water system, and

(2) For which a building design is created after the effective date of this rule.

(f) Building design means the development of plans and specifications for human living space.

(g) Conservation Optimization Standard for Savings in Federal Residences means the computerized calculation procedure that is used to establish an energy consumption goal for the design of Federal residential buildings.

(h) COSTSAFR means the Conservation Optimization Standard for Savings in Federal Residences.

(i) DOE means U.S. Department of Energy.

(j) Domestic hot water (DHW) means the supply of hot water for purposes other than space conditioning.

(k) Energy conservation measure (ECM) means a building material or component whose use will affect the energy consumed for space heating, space cooling, domestic hot water or refrigeration.

(l) Energy performance standard means an energy consumption goal or goals to be met without specification of the method, materials, and processes to be employed in achieving that goal or goals, but including statements of the requirements, criteria evaluation methods to be used, and any necessary commentary.

(m) Federal agency means any department, agency, corporation, or other entity or instrumentality of the executive branch of the Federal Government, including the United States Postal
§ 435.303 Requirements for the design of a Federal residential building.

(a) The head of each Federal agency responsible for the construction of Federal residential buildings shall establish an energy consumption goal for each building to be designed or constructed by or for the agency.

(b) The energy consumption goal for a Federal residential building shall be a total point score derived by using the micro-computer program and user manual entitled “Conservation Optimization Standard for Savings in Federal Residences (COSTSAFR),” unless the head of the Federal agency shall establish more stringent requirements for that agency.

(c) The head of each Federal agency shall adopt such procedures as may be necessary to ensure that the design of a Federal residential building is not less energy conserving than the energy consumption goal established for the building.

§ 435.304 The COSTSAFR Program.

(a) The COSTSAFR Program (Version 3.0) provides a computerized calculation procedure to determine the most effective set of energy conservation measures, selected from among the measures included within the Program that will produce the practicable optimum life cycle cost for a type of residential building in a specific geographic location. The most effective set of energy conservation measures is expressed as a total point score that serves as the energy consumption goal.

(b) The COSTSAFR Program (Version 3.0) also prints out a point system that identifies a wide array of different energy conservation measures indicating how many points various levels of each measure would contribute to reaching the total point score of the energy consumption goal.
This enables a Federal agency to use the energy consumption goal and the point system in the design and procurement procedures so that designers and builders can pick and choose among various energy conservation measures to meet or exceed the energy consumption goal.

(c) The COSTSAFR Program (Version 3.0) may be obtained from:
National Technical Information Service: Department of Commerce; Springfield, Virginia 22161; (202) 487-4600

§ 435.305 Alternative compliance procedure.

(a) If a proposed building design includes unusual or innovative energy conservation measures which are not covered by the COSTSAFR program, the Federal agency shall determine whether that design meets or exceeds the applicable energy consumption goal in compliance with the procedures set forth in this section.

(b) The Federal agency shall determine the estimated discounted energy cost for the COSTSAFR prototype building design, which is the most similar of the COSTSAFR prototypes to the proposed building design, by—

(1) Printing out the COSTSAFR compliance forms for the prototype showing the points attributable to levels of various energy conservation measures;

(2) Calculating the estimated unit energy cost on the compliance forms, on the basis of selecting the optimum levels on the compliance forms or otherwise in the User’s Manual for each energy conservation measure; and

(3) Multiplying the estimated unit energy cost by 100.

(c) The Federal agency shall determine the estimated discounted energy cost for the proposed building design by—

(1) Estimating the heating and cooling total annual coil loads of the proposed building design with the DOE 2.1C computer program on the basis of input assumptions including—
(i) Shading coefficients of 0.6 for summer and 0.8 for winter;
(ii) Thermostat setpoints of 78 degrees Fahrenheit for cooling, 70 degrees Fahrenheit for heating (6 am to 12 midnight, and 60 degrees Fahrenheit for Night Setback (12 midnight to 6 am, except for houses with heat pumps);
(iii) The infiltration rate measured in air changes per hour as calculated using appendix B of the COSTSAFR User’s Manual;
(iv) Natural venting with a constant air change rate of 10 air changes per hour—
(A) When the outdoor temperature is lower than the indoor temperature, but not above 78 degrees Fahrenheit; and
(B) When the enthalpy of the outdoor air is lower than the indoor air.

(v) Internal gains in accordance with the following table for a house with 1540 square feet of floor area, adjusted by 0.35 Btu/ft²/hr to account for changes in lighting as the floor area varies from 1540 square feet—

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<thead>
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<th>Hour of day</th>
<th>Sensible</th>
<th>Latent</th>
</tr>
</thead>
<tbody>
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<td>1</td>
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<td>247</td>
</tr>
<tr>
<td>2</td>
<td>1139</td>
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<td>247</td>
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<tr>
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<td>3701</td>
<td>802</td>
</tr>
</tbody>
</table>

(vi) Thermal transmittances for building envelope materials measured in accordance with applicable ASTM procedures or from the ASHRAE Handbook;

(vii) Proposed heating and cooling equipment types included in
§ 435.306 Selecting a life cycle effective proposed building design.

In selecting between or among proposed building designs which comply with the applicable energy consumption goal under this part, each Federal agency shall select the design which, in comparison to the applicable COSTSAFE prototype, has the highest Net Savings or lowest total life cycle costs calculated in compliance with subpart A of 10 CFR part 436.

[56 FR 3773, Jan. 31, 1991]

PART 436—FEDERAL ENERGY MANAGEMENT AND PLANNING PROGRAMS

Sec. 436.1 Scope.
436.2 General objectives.