

ANSI/ASHRAE/ICC/USGBC/IES Addendum aw to ANSI/ASHRAE/ICC/USGBC/IES Standard 189.1-2020

Standard for the Design of High-Performance Green Buildings

Except Low-Rise Residential Buildings

The Complete Technical Content of the International Green Construction Code®

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FOREWORD

With the introduction of additional energy efficiency credits to Standard 90.1-2022, there is no need for a separate trade-off approach between renewables and equipment efficiency in the Alternate Renewables Approach section (7.4.1.1). These trade-offs are now accomplished through the additional efficiency credits. To prevent double dipping of equipment efficiency, it is easiest to remove the Alternate Renewables Approach, which is limited to buildings less than 10,000 ft² and buildings that do not need H02, H03, W02, and W03 efficiency measures to comply with the additional efficiency credits requirements.

This substantially streamlines Standard 189.1, as it removes an alternate approach that is replaced by the additional efficiency options for providing trade-off between renewables as a variety of efficiency options, including equipment efficiency. Informative Appendix H, "Option For Energy Efficiency Using the IECC Prescriptive Compliance Path," is also modified separately to remove the Alternative Renewables Approach along with other changes made during the standard's current three-year update cycle but is not shown in this addendum.

Note: In this addendum, changes to the current standard are indicated in the text by underlining (for additions) and ~~striking through~~ (for deletions) unless the instructions specifically mention some other means of indicating the changes.

Addendum aw to Standard 189.1-2020

Modify Sections 7.4.1 and 7.4.1.1 and Table 7.4.1.1 as shown. (Section 7.4.1.1 was previously modified by Addendum I.)

7.4.1 On-Site Renewable Energy Systems. ~~Building projects shall comply with either the Standard Renewables Approach or the Alternate Renewables Approach~~ install or purchase the required amount of renewables in Section 7.4.1.1 and Table 7.4.1.1, subject to the adjustment factors in Section 7.4.1.2, and if contracting for off-site renewable energy, the requirements of Section 7.4.1.3.

7.4.1.1 Renewable Energy Systems. *The building project shall have a renewable energy system that provides energy to the project that is not less than the renewable energy requirement from Table 7.4.1.1 multiplied by the gross conditioned and semiheated floor areas of the building project. Where there are multiple tenants within a building project, the energy shall be assigned to each tenant based on the total of gross conditioned and semiheated floor area of each tenant space.*

The renewable energy system shall be made up of one or more of the following system types. Off-site renewable energy systems shall comply with section 7.4.1.3.

- a. *On-site renewable energy system*
- b. *Off-site renewable energy system:*
 1. *Off-site renewable energy system owned by the building project owner*
 2. *Community renewable energy facility*
 3. *Financial renewable energy PPA*
 4. *Physical renewable energy PPA*

~~Building projects complying with the Alternate Renewables Approach shall comply with the applicable equipment efficiency requirements in Normative Appendix B, the water heating efficiency requirements in Section 7.4.4.1, equipment efficiency requirements in Section 7.4.7.1, and the applicable ENERGY STAR[®] requirements in Section 7.4.7.3.2. For equipment listed in Section 7.4.7.3.2 that are also contained in Normative Appendix B, the installed equipment shall comply by meeting or exceeding both requirements. The Alternate Renewables Approach shall apply only to building projects where the sum of the gross conditioned and semiheated floor areas of the building project are less than 25,000 ft² (2300 m²).~~

Documentation shall be provided to the AHJ that substantiates procurement of renewable energy systems, of renewable energy contracts, or of a quantity of RECs required to meet the Exception to 7.4.1.1. RECs shall be tracked in accordance with Section 10.9.8.

[. . .]

Table 7.4.1.1 Renewable Energy Requirement

Building Type	Standard Renewables Approach		Alternate Renewables Approach	
	kBtu/ft ² ·y	kWh/m ² ·y	kBtu/ft ² ·y	kWh/m ² ·y
Office	14	44	13	40
Retail	24	74	21	67
School	19	61	17	55
Health care	40	126	36	113
Restaurant	40	126	36	113
Hotel	34	108	31	98
Apartment	22	68	20	62
Warehouse	8	26	7	23
All others	25	80	23	72

Delete Section 7.4.3.1 and renumber subsections as shown. (Section 7.4.3.1 was previously modified by Addendum ar.)

7.4.3.1 Minimum Equipment Efficiencies for the Alternate Renewables Approach. ~~All building projects complying with the Alternate Renewables Approach in Section 7.4.1.1 and Table 7.4.1.1 shall comply with the applicable equipment efficiency requirements in Normative Appendix B and the applicable ENERGY STAR requirements in Section 7.4.7.3.2. Where equipment efficiency is not defined/listed in Normative Appendix B or in Section 7.4.7.3.2 or Section 7.4.7.6, the equipment shall meet the minimum efficiency requirements defined/listed in ANSI/ASHRAE/IES Standard 90.1. Specifically, this applies to the following products in ANSI/ASHRAE/IES Standard 90.1:~~

- a. ~~Table 6.8.1-3, “Liquid Chilling Packages—Minimum Efficiency Requirements”~~
- b. ~~Table 6.8.1-10, “Floor Mounted Air Conditioners and Condensing Units Serving Computer Rooms—Minimum Efficiency Requirements”~~
- e. ~~Table 6.8.1-11, “Commercial Refrigerators, Commercial Freezers, and Refrigeration—Minimum Efficiency Requirements”~~
- d. ~~Table 6.8.1-12, “Vapor-Compression Based Indoor Pool Dehumidifiers—Minimum Efficiency Requirements”~~
- e. ~~Table 6.8.1-13, “Electrically Operated DX-DOAS Units, Single Package and Remote Condenser, without Energy Recovery—Minimum Efficiency Requirements”~~
- f. ~~Table 6.8.1-14, “Electrically Operated DX-DOAS Units, Single Package and Remote Condenser, with Energy Recovery—Minimum Efficiency Requirements”~~
- g. ~~Table 6.8.1-15, “Electrically Operated Water-Source Heat Pumps—Minimum Efficiency Requirements”~~
- h. ~~Table 6.8.1-16, “Heat Pump and Heat Recovery Water-Chilling Packages—Minimum Efficiency Requirements”~~
- i. ~~Table 10.8-1, “Minimum Nominal Full-Load Efficiency for NEMA Design A, NEMA Design B, and IEC Design N Motors (Excluding Fire Pump Electric Motors) at 60 Hz”~~
- j. ~~Table 10.8-2, “Minimum Nominal Full-Load Efficiency for NEMA Design C and IEC Design H Motors at 60 Hz”~~
- k. ~~Table 10.8-3, “Minimum Average Full-Load Efficiency for Polyphase Small Electric Motors”~~
- l. ~~Table 10.8-4, “Minimum Average Full-Load Efficiency for Capacitor-Start Capacitor-Run and Capacitor-Start Induction-Run Small Electric Motors”~~
- m. ~~Table 10.8-5, “Minimum Nominal Full-Load Efficiency for Fire Pump Electric Motors”~~

Modify Section 7.4.3.4 as shown.

7.4.3.4 [JO] Economizers. Systems shall include economizers meeting the requirements in ANSI/ASHRAE/IES Standard 90.1, Section 6.5.1, except as modified by the following:

- a. The minimum size requirements for economizers for comfort cooling and for computer rooms are defined in Table 7.4.3.4 and supersede the requirements in ANSI/ASHRAE/IES Standard 90.1, Tables 6.5.1-1 and 6.5.1-2.

- b. Rooftop units with a capacity of less than 54,000 Btu/h (16 kW) shall have two stages of capacity control, with the first stage controlling the economizer and the second stage controlling *mechanical cooling*. Units with a capacity equal to or greater than 54,000 Btu/h (16 kW) shall comply with the staging requirements defined in ANSI/ASHRAE/IES Standard 90.1, Section 6.5.3.1
- c. For systems that control to a fixed leaving air temperature (i.e., *variable-air-volume [VAV]* systems), the system shall be capable of resetting the supply air temperature up at least 5°F (3°C) during economizer operation.
- d. All the exceptions in ANSI/ASHRAE/IES Standard 90.1, Section 6.5.1, shall apply except as modified by the following.
 1. ~~Where the alternate renewables approach defined in Section 7.4.1.1 and Table 7.4.1.1 is used, ANSI/ASHRAE/IES Standard 90.1, Section 6.5.1, Exception 10, shall be permitted to eliminate the economizer requirement, provided the requirements in ANSI/ASHRAE/IES Standard 90.1, Table 6.5.1-2, are applied to the efficiency requirements required by Section 7.4.1.1 and Table 7.4.1.1. If the standard renewable approach is chosen, as defined in Section 7.4.1.1 and Table 7.4.1.1, then the requirements in ANSI/ASHRAE/IES Standard 90.1, Table 6.5.1-2, shall be applied to the efficiency requirements in ANSI/ASHRAE/IES Standard 90.1, Tables 6.8.1-1 through 6.8.1-11.~~
 2. For water-cooled units with a capacity less than 54,000 Btu/h (16 kW) that are used in systems where heating and cooling loads are transferred within the building (i.e., water-source heat-pump systems), the requirement for an air or water economizer can be eliminated if the condenser-water temperature controls are capable of being set to maintain full-load heat rejection capacity down to a 55°F (12°C) condenser-water supply temperature, and the HVAC equipment is capable of operating with a 55°F (12°C) condenser-water supply temperature.

Delete Section 7.4.7.1 and renumber subsections accordingly.

~~**7.4.7.1 Equipment Efficiency for the Alternate Renewables Approach.** All *building projects* complying with the Alternate Renewables Approach in Section 7.4.1.1 and Table 7.4.1.1 shall comply with the applicable equipment efficiency requirements in Normative Appendix B, Table B-8, and with the applicable ENERGY STAR requirements in Section 7.4.7.3.2. These requirements supersede the requirements in ANSI/ASHRAE/IES Standard 90.1, Table 7.8.~~

Delete Section 7.4.7.3 and renumber and modify Section 7.4.7.3.1 as shown.

~~**7.4.7.3 ENERGY STAR Equipment.** All *building projects* shall comply with the requirements in Section 7.4.7.3.1 and all *building projects* complying with the Alternate Renewables Approach in Section 7.4.1.1 and Table 7.4.1.1 shall also comply with Section 7.4.7.3.2.~~

~~**7.4.7.3.1**~~ **7.4.7.2 ENERGY STAR[®] Requirements for Equipment not Covered by Federal Appliance Efficiency Regulations (All Building Projects).** The following equipment within the scope of the applicable ENERGY STAR[®] program shall comply with the equivalent criteria required to achieve the ENERGY STAR[®] label if installed prior to the issuance of the certificate of occupancy:

[. . .]

Delete Section 7.4.7.3.2 and renumber Section 7.4.7.4 as shown.

~~**7.4.7.3.2 ENERGY STAR Requirements for Equipment Covered by Federal Appliance Efficiency Regulations (Alternate Renewables Approach).** For all *building projects* complying with the Alternate Renewables Approach in Section 7.4.1.1 and Table 7.4.1.1, the following equipment within the scope of the applicable ENERGY STAR program shall comply with the equivalent criteria required to achieve the ENERGY STAR label if installed prior to the issuance of the certificate of occupancy. For those products listed below that are also contained in Normative Appendix B, the installed equipment shall comply by meeting or exceeding both the requirements in this section and in Normative Appendix B.~~

- a. Appliances
 1. ~~Clothes washers: ENERGY STAR Program Requirements for Clothes Washers (see also the water efficiency requirements in Section 6.3.2.2)~~
 2. ~~Dehumidifiers: ENERGY STAR Program Requirements for Dehumidifiers~~
 3. ~~Dishwashers: ENERGY STAR Program Requirements Product Specifications for Residential Dishwashers (see also the water efficiency requirements in Section 6.3.2.2)~~
 4. ~~Refrigerators and freezers: ENERGY STAR Program Requirements for Refrigerators and Freezers~~

5. ~~Room air conditioners: ENERGY STAR Program Requirements and Criteria for Room Air Conditioners~~
- b. ~~Heating and Cooling~~
 1. ~~Residential air source heat pumps: ENERGY STAR Program Requirements for ASHPs and Central Air Conditioners (see also the energy efficiency requirements in Section 7.4.1)~~
 2. ~~Residential boilers: ENERGY STAR Program Requirements for Boilers (see also the energy efficiency requirements in Section 7.4.1)~~
 3. ~~Residential central air conditioners: ENERGY STAR Program Requirements for ASHPs and Central Air Conditioners (see also the energy efficiency requirements in Section 7.4.1)~~
 4. ~~Residential ceiling fans: ENERGY STAR Program Requirements for Residential Ceiling Fans~~
 5. ~~Dehumidifiers: ENERGY STAR Program Requirements for Dehumidifiers~~
 6. ~~Residential warm air furnaces: ENERGY STAR Program Requirements for Furnaces~~
 7. ~~Residential geothermal heat pumps: ENERGY STAR Program Requirements for Geothermal Heat Pumps~~
- e. ~~Water Heaters: ENERGY STAR Program Requirements for Residential Water Heaters~~
- d. ~~Lighting~~
 1. ~~Lamps: ENERGY STAR Program Requirements for Lamps (Light Bulbs)~~
 2. ~~Luminaires: ENERGY STAR Program Requirements for Luminaires~~
 3. ~~Residential light fixtures: ENERGY STAR Program Requirements for Residential Light Fixtures~~
- e. ~~Commercial Food Service~~
 1. ~~Commercial refrigerators and freezers: ENERGY STAR Program Requirements for Commercial Refrigerators and Freezers~~
 2. ~~Commercial ice machines: ENERGY STAR Program Requirements for Commercial Ice Machines~~
- f. ~~Other Products~~
 1. ~~Battery charging systems: ENERGY STAR Program Requirements for Products with Battery Charger Systems (BCSs)~~
 2. ~~External power adapters: ENERGY STAR Program Requirements for Single Voltage AC-DC and AC-AC Power Supplies~~
 3. ~~Vending machines: ENERGY STAR Program Requirements for Refrigerated Beverage Vending Machines~~

~~7.4.7.4.7.3 [JO] Programmable Thermostats [. . .]~~

~~Delete Normative Appendix B, including Tables B-1 through B-11 (I-P an SI, not shown) and renumber appendices.~~

~~NORMATIVE APPENDIX B~~

~~PRESCRIPTIVE EQUIPMENT EFFICIENCY TABLES FOR THE ALTERNATE REDUCED RENEWABLES AND INCREASED EQUIPMENT EFFICIENCY APPROACH IN SECTION 7.4.1.1~~

~~*Informative Note:* The first 11 tables appear in I-P units and are followed by 11 tables in SI units.~~

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ASHRAE is concerned with the impact of its members' activities on both the indoor and outdoor environment. ASHRAE's members will strive to minimize any possible deleterious effect on the indoor and outdoor environment of the systems and components in their responsibility while maximizing the beneficial effects these systems provide, consistent with accepted Standards and the practical state of the art.

ASHRAE's short-range goal is to ensure that the systems and components within its scope do not impact the indoor and outdoor environment to a greater extent than specified by the Standards and Guidelines as established by itself and other responsible bodies.

As an ongoing goal, ASHRAE will, through its Standards Committee and extensive Technical Committee structure, continue to generate up-to-date Standards and Guidelines where appropriate and adopt, recommend, and promote those new and revised Standards developed by other responsible organizations.

Through its *Handbook*, appropriate chapters will contain up-to-date Standards and design considerations as the material is systematically revised.

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The effects of the design and selection of equipment and systems will be considered within the scope of the system's intended use and expected misuse. The disposal of hazardous materials, if any, will also be considered.

ASHRAE's primary concern for environmental impact will be at the site where equipment within ASHRAE's scope operates. However, energy source selection and the possible environmental impact due to the energy source and energy transportation will be considered where possible. Recommendations concerning energy source selection should be made by its members.

Standard 189.1 and the International Green Construction Code

Standard 189.1 serves as the complete technical content of the International Green Construction Code® (IgCC). The IgCC creates a regulatory framework for new and existing buildings, establishing minimum green requirements for buildings and complementing voluntary rating systems. For more information, visit www.iccsafe.org.

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