

STANDARD

**ANSI/ASHRAE/IES Addendum k to
ANSI/ASHRAE/IES Standard 90.1-2022**

Energy Standard for Sites and Buildings Except Low-Rise Residential Buildings

Approved by the ASHRAE Standards Committee on March 27, 2024, by the Illuminating Engineering Society on March 15, 2024, and by and the American National Standards Institute on April 22, 2024.

This addendum was approved by a Standing Standard Project Committee (SSPC) for which the Standards Committee has established a documented program for regular publication of addenda or revisions, including procedures for timely, documented, consensus action on requests for change to any part of the standard. Instructions for how to submit a change can be found on the ASHRAE® website (<https://www.ashrae.org/continuous-maintenance>).

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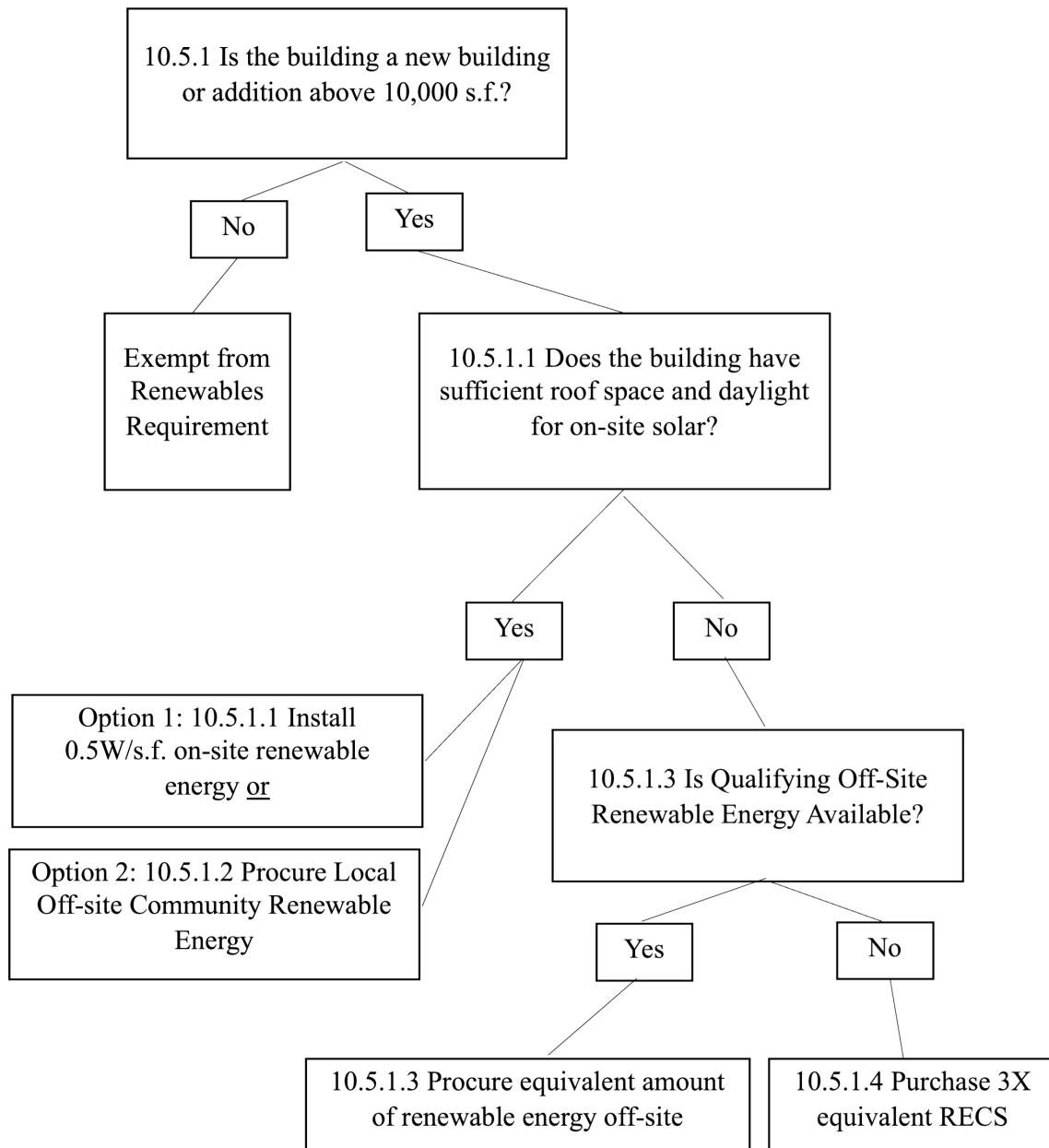
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FOREWORD

In many cases, on-site renewable energy requirements in ANSI/ASHRAE/IES Standard 90.1 can not be met with installed systems on every building or building site. Addendum k defines qualifying off-site sources of renewable energy that can be applied to the renewable energy requirements and under which conditions off-site procurement can be used. Certain requirements for tracking and disposition of renewable energy credits are included in the provisions. Because this addendum adds additional compliance options to the existing requirements, it was not subject to a separate cost-effectiveness analysis, but it is expected to either have no impact or improved cost effectiveness. The following flowchart explains the new requirement.



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 k to Standard 90.1-2022

Modify Section 3.2 as shown (I-P and SI).

community renewable energy facility: a facility that produces energy harvested from *renewable energy resources* and is qualified as a community renewable energy facility under applicable regulations.

financial renewable energy power purchase agreement: a financial arrangement between a renewable energy generator and a purchaser wherein the purchaser pays or guarantees a price to the generator for the project's renewable generation. Also known as a "financial power purchase agreement" or "virtual power purchase agreement."

physical renewable energy power purchase agreement: a contract for the purchase of renewable energy from a specific renewable energy generator to a purchaser of renewable energy.

renewable energy resources: energy from solar, wind, biomass harvested at the building site, or hydro, or extracted from hot fluid or steam heated within the earth.

Modify Section 3.2 as shown (I-P).

renewable energy certificate (REC): a market-based instrument that represents and conveys the environmental, social, and other nonpower attributes of one megawatt-hour of renewable electricity generation or 3412 kBtu of renewable thermal energy or bioenergy production and could be sold separately from the underlying physical energy associated with renewable energy resources; also known as "energy attribute" or "energy attribute certificate" (EAC).

Modify Section 3.2 as shown (SI).

renewable energy certificate (REC): a market-based instrument that represents and conveys the environmental, social, and other nonpower attributes of one megawatt-hour of renewable electricity generation or renewable thermal energy or bioenergy production and could be sold separately from the underlying physical energy associated with renewable energy resources; also known as "energy attribute" or "energy attribute certificate" (EAC).

Modify Section 10.5 as shown.

10.5 Prescriptive Compliance Path

10.5.1 Renewable Energy Resources. ~~Buildings shall be served by renewable energy resources complying with~~ in accordance with either Section 10.5.1.1 or Section 10.5.1.2 or a combination thereof in accordance with Section 10.5.1.2.

Exceptions to 10.5.1:

1. Buildings or additions in which the sum of the *gross conditioned floor area* of the three largest floors of the *building or addition* is less than 10,000 ft² (930 m²).
2. Alterations.
3. Projects meeting the requirements of Section 10.5.1.4.

10.5.1.1 On-Site Renewable Energy. The *building site* shall have *equipment* for *on-site renewable energy* with a rated capacity of not less than 0.50 W/ft² or 1.7 Btu/ft² multiplied by the sum of the *gross conditioned floor area* for all floors up to the three largest floors.

Exceptions to 10.5.1.1: Buildings complying with Section 10.5.1.3 and not less than one of the following:

1. ~~Any~~ Buildings located where an unshaded flat plate collector oriented toward the equator and tilted at an angle from horizontal equal to the latitude receives an annual daily average incident solar radiation less than 1.1 kBtu/ft²·day.
2. ~~Any~~ Buildings where more than 80% of the *roof area* is covered by any combination of *equipment other than for on-site renewable energy systems*, planters, vegetated *space*, skylights, or occupied *roof deck*, or *equipment other than renewable energy systems*.
3. ~~Any~~ Buildings where more than 50% of *roof area* is shaded from direct-beam sunlight by natural objects or by *structures* that are not part of the *building* for more than 2500 annual hours between 8:00 a.m. and 4:00 p.m.
4. ~~New construction or additions in which the sum of the gross conditioned floor area of the three largest floors of the new construction or addition is less than 10,000 ft².~~
5. Alterations.

Table 10.5.1.3 Annual Off-Site Renewable Energy Requirement (I-P)

Climate Zone	Annual Off-Site Renewable Energy, kWh/W or Btu/Btuh
1A, 2B, 3B, 4B 5B and 3C	1.75 (5.971)
0A, 0B, 1B, 2A,3A and 6B	1.55 (5.289)
4A, 4C, 5A, 5C, 6A, and 7	1.35 (4.606)

Table 10.5.1.3 Annual Off-Site Renewable Energy Requirement (SI)

Climate Zone	Annual Off-Site Renewable Energy, kWh/W
1A, 2B, 3B, 4B 5B and 3C	1.75
0A, 0B, 1B, 2A,3A and 6B	1.55
4A, 4C, 5A, 5C, 6A, and 7	1.35

10.5.1.2 Off-Site Community Renewable Energy. Renewable energy shall be procured for the *building* from a local *community renewable energy facility* in accordance with Sections 10.5.1.3. The *community renewable energy facility* shall be located within the same electric utility provider service territory as the *site* and comply with one or more of the following:

- a. The *community renewable energy facility* is located within the same county or an adjacent county.
- b. The *community renewable energy facility* is located within 60 mi (100 km) of the *site*.

10.5.1.3 Off-Site Renewable Energy Procurement. Off-site renewable energy shall be procured for *buildings* in accordance with Sections 10.5.1.3.1 and 10.5.1.3.2 and shall be not less than the total off-site renewable energy determined as follows:

$$TRE_{OFF} = [(REN_{OFF} \times 0.50 \text{ W/ft}^2 \times FLRA) - IRE_{ON}] \times 15$$

where

- TRE_{OFF} = total off-site renewable energy to be procured
- REN_{OFF} = annual off-site renewable energy of renewable system capacity from Table 10.5.1.3
- $FLRA$ = the sum of the *gross conditioned floor area* of the three largest floors
- IRE_{ON} = annual *on-site renewable energy* generation quantity in accordance with Section 10.5.1.1

10.5.1.3.1 Off-Site Renewable Energy Procurement Paths. The *building* owner shall procure and be credited for not less than the total amount of off-site renewable energy required by Section 10.5.1.3, using one or more of the following:

- a. A *community renewable energy facility* for projects complying with Section 10.5.1.2
- b. A *physical renewable energy power purchase agreement* for projects qualifying for an exception to Section 10.5.1.1
- c. A *financial renewable energy power purchase agreement* for projects qualifying for an exception to Section 10.5.1.1
- d. An off-site renewable energy system owned by the *building* property owner for projects qualifying for an exception to Section 10.5.1.1

Generation sources shall be located where the energy can be delivered to the *building site* by any of the following:

- a. Direct connection to the off-site renewable energy facility
- b. The local utility or distribution entity
- c. An interconnected electrical or pipeline network where energy delivery capacity between the generator and the *building site* is available

10.5.1.3.2 Off-Site Renewable Energy Contract Terms. The total off-site renewable energy shall be delivered or credited to the *building site* under an energy contract with a duration of not less than ten years. The contract shall be structured to survive a partial or full transfer of ownership of the *building* property.

10.5.1.4 Renewable Energy Certificate Purchase. Where it can be demonstrated to the code official that the requirements of Sections 10.5.1.1 through 10.5.1.3 or a combination of the three cannot be met, either in part or full, and prior to the issuance of the certificate of occupancy, the *building* owner shall document a contract for delivery of *renewable energy certificates* certified in compliance with the Green-e[®] Renewable Energy Standard for Canada and the United States, or an equivalent *approved* standard, equal to three times the amount of total off-site renewable energy calculated in accordance with Section 10.5.1.3.

Informative Note: For building projects located in nations other than Canada or the United States, use the Green-e[®] Standard for that nation, or equivalent *approved* standard.

10.5.1.5 Renewable Energy Certificate Documentation. The property owner or owner's authorized agent shall demonstrate that for an *on-site renewable energy system* or off-site renewable energy system required by Section 10.5.1, either no *RECs* are associated with the renewable energy system, or the following provisions for *RECs* have been met:

- a. The *RECs* are retained and retired by or on behalf of the property owner or tenant for a period of not less than ten years.
- b. The *RECs* are created within a 12-month period of the use of the *REC*.
- c. The *RECs* are from a generating asset placed in service no more than five years before the issuance of the *building's* certificate of occupancy.

POLICY STATEMENT DEFINING ASHRAE'S CONCERN FOR THE ENVIRONMENTAL IMPACT OF ITS ACTIVITIES

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.

ASHRAE will take the lead with respect to dissemination of environmental information of its primary interest and will seek out and disseminate information from other responsible organizations that is pertinent, as guides to updating Standards and Guidelines.

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.

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As an industry leader in research, standards writing, publishing, certification, and continuing education, ASHRAE and its members are dedicated to promoting a healthy and sustainable built environment for all, through strategic partnerships with organizations in the HVAC&R community and across related industries.

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