Public Review Draft

Proposed Addendum b to Standard 189.1-2017

Standard for the Design of High-Performance Green Buildings

Except Low-Rise Residential Buildings

Second Public Review (February 2019)
(Draft Shows Proposed Independent Substantive Changes to Previous Public Review Draft)

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Foreword

This ISC would limit the use of the "Section 7.4.1.1.2, Alternate Renewables Approach: Reduced On-Site Renewable Energy Systems and Higher-Efficiency Equipment" to building projects that are less than 25,000 square feet. This threshold is the same as that for the simplified mechanical system approach for compliance with ASHRAE 90.1, which is also 25,000 square feet. Larger buildings will be able to comply with the standard by either complying prescriptively to the on-site renewables requirements in Section 7.4.1.1.1 or calculating trade-offs between energy efficiency and on site renewables by using the performance approach in Section 7.5.

Note: This public review draft makes proposed independent substantive changes to the previous public review draft. These changes are indicated in the text by underlining (for additions) and strikethrough (for deletions) except where the reviewer instructions specifically describe some other means of showing the changes. Only these changes to the previous draft are open for review and comment at this time. Additional material is provided for context only and is not open for comment except as it relates to the proposed substantive changes.

Addendum b to 189.1-2017

Modify Section 7.4.1.1 as follows:

7.4.1.1 On-Site Renewable Energy Systems. *Building projects* shall comply with either the Standard Renewables Approach in Section 7.4.1.1.1 or the Alternate Renewables Approach in Section 7.4.1.1.2. Section 7.4.1.1.2 shall apply only to *building projects* ~~that meet one of the following requirements:~~

- ~~a. The *building project* shall comply with ANSI/ASHRAE/IES Standard 90.1 Section 6.3 Simplified Approach Option for HVAC Systems.~~
- ~~b.~~ ~~The~~ where the sum of the *gross conditioned* and *semi-heated floor areas* of the *building project* are ~~shall be~~ less than 25,000~~10,000~~ ft^2 (2300~~930~~ m^2).

7.4.1.1.1 Standard Renewables Approach: Baseline On-Site Renewable Energy Systems. *Building projects* shall contain *on-site renewable energy systems* that provide the annual energy production equivalent of not less than 6.0 kBtu/ft^2 (20 kWh/m^2) multiplied by the

horizontal projection of the *gross roof area* in feet squared (metres squared) for single-story buildings, and not less than 10.0 kBtu/ft^2 (32 kWh/m^2) multiplied by the horizontal projection of the *gross roof area* in feet squared (metres squared) for all other buildings. The annual energy production shall be the combined sum of all *onsite renewable energy systems.* Documentation shall be provided to the *AHJ* that indicates that the *renewable energy certificates* (*RECs*) associated with the *on-site renewable energy system* will be retained and retired by the *owner*. Where the building *owner* does not have ownership of the *RECs* associated with the *on-site renewable energy system*, the *owner* shall obtain and retire an equal or greater quantity of *RECs*.

Exceptions to 7.4.1.1.1: Buildings that demonstrate compliance with both of the following are not required to contain *on-site renewable energy systems*:

1. An annual daily average incident solar radiation available to a flat plate collector oriented due south at an angle from horizontal equal to the latitude of the collector location less than 4.0 kWh/m^2·day (1.2 kBtu/ft^2/day), accounting for existing buildings, permanent infrastructure that is not part of the *building project*, topography, and trees.
2. A commitment to purchase renewable electricity products, complying with the Green-e Energy National Standard for Renewable Electricity Products, of at least 7 kWh/ft^2 (75 kWh/m^2) of *conditioned space* each year until the cumulative purchase totals 70 kWh/ft^2 (750 kWh/m^2) of *conditioned space*.

7.4.1.1.2 Alternate Renewables Approach: Reduced On-Site Renewable Energy Systems and Higher-Efficiency Equipment. *Building projects* complying with this 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, and shall contain *on-site renewable energy systems* that provide the annual energy production equivalent of not less than 4.0 kBtu/ft^2 (13 kWh/m^2) multiplied by the horizontal projection of the *gross roof area* in feet squared (metres squared) for single-story buildings, and not less than 7.0 kBtu/ft^2 (22 kWh/m^2) multiplied by the horizontal projection of the *gross roof area* in feet squared (metres squared) for all other buildings. The annual energy production shall be the combined sum of all *on-site renewable energy systems.* 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.

Documentation shall be provided to the *AHJ* that indicates that the *RECs* associated with the *on-site renewable energy system* will be retained and retired by the *owner*. Where the building *owner* does not have ownership of the *RECs* associated with the *on-site renewable energy system*, the *owner* shall obtain and retire an equal or greater quantity of *RECs*.

Note to reviewers:
Section 7.4.1.1 is also modified by addendum j which is not yet published. Addendum j replaces Sections 7.4.1.1 with Sections 7.4.1.1 through 7.4.1.3. The combined text of this addendum and addendum j is shown below for the convenience of the reviewer. Modifications that reflect the combined impact of addendum j and this addendum, but which do not appear explicitly in either, are shown below in strikethrough/underline.

7.4.1.1 Renewable Energy Systems. The adjusted renewable energy provided to the project shall be equal to or greater than the gross conditioned and semi-heated floor areas of the *building project* in feet squared (meters squared) multiplied by the renewable energy requirement from Table 7.4.1.1.
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. ~~Section 7.4.1.1.2~~ The Alternate Renewables Approach shall apply only to *building projects* where the sum of the *gross conditioned* and *semi-heated floor areas* of the *building project* are less than 25,000 ft^2 (2300 m^2).

Exception to 7.4.1.1: *Building projects* that demonstrate to the *AHJ* that they cannot comply with Section 7.4.1.1 shall contract for renewable electricity products complying with the Green-e Energy National Standard for Renewable Electricity products of not less than 1.2 MWh/ft^2 (12.6 MWh/m^2) of gross area of *conditioned spaces and semiheated spaces,* or an amount equal to 100% of the modeled annual energy usage multiplied by 20 years, whichever is less. A combination of renewable electricity products and renewable energy systems shall be permitted to demonstrate compliance.

Table 7.4.1.1 Renewable Energy Requirement

	Standard Renewables Approach		Alternate Renewables Approach	
Building Type	**kBtu/ft²-y**	**kWh/m²-y**	**kBtu/ft²-y**	**kWh/m²-y**
Office	14	44	13	40
Retail	24	74	21	67
School	19	61	17	55
Healthcare	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

7.4.1.2 Adjusted Renewable Energy. Each source of renewable energy delivered to or credited to the *building project* shall be multiplied by the factors in Table 7.4.1.2 when determining compliance with Section 7.4.1.1.

Where multiple buildings in a *building project* are served by the same *on-site renewable energy system*, the *owner* shall allocate for not less than 20 years the energy production of the system to the buildings served by the system. On-site renewable energy production that is not allocated, but that is reserved for future use, shall be documented as part of the *building project.*

Documentation of allocation shall be retained by the building *owner* and made available for inspection by the *AHJ* upon request.

Qualifying renewable energy sources are as follows:

a. *On Site Renewable Energy System*

b. Directly Owned Off-Site Renewable Energy System – an offsite renewable energy system compliant with Section 7.4.1.3, owned by the *building project owner*.

c. *Community Renewable Energy Facility* –The system shall comply with Section 7.4.1.3.

d. Virtual PPA – a power purchase agreement for offsite renewable energy compliant with Section 7.4.1.3, where the *owner* agrees to purchase renewable energy output at a fixed price schedule.

Table 7.4.1.2 Multipliers for Renewable Energy Procurement Methods

Location	Renewable Energy Source	Renewable Energy Factor
On-Site	*On Site Renewable Energy System*	1.00
Off-Site	Directly Owned Off-Site Renewable Energy System	0.75
	Community Renewable Energy System	0.75
	Virtual PPA	0.75

7.4.1.3 Off-Site Renewable Energy Requirements.

Off-site renewable energy delivered or credited to the *building project* to comply with 7.4.1.1 shall be subject to a legally binding contract to procure qualifying off-site renewable energy.

Where the renewable energy producer ceases operation, the building *owner* shall procure alternative qualifying renewable energy. Qualifying off-site renewable energy shall meet the following requirements:

1. Documentation of off-site renewable energy procurement shall be submitted to the *AHJ*.
2. The procurement contract shall have a duration of not less than 20 years. The contract shall be structured to survive a partial or full transfer of ownership of the property.
3. *RECs* and other environmental attributes associated with the procured off-site renewable energy shall be assigned to the *building project* for a period of not less than 20 years.
4. The energy source shall produce electricity from solar, wind, or *geothermal energy*.
   Exception to 7.4.1.3 Part 4: Captured methane from feed-lots and landfills are permitted to be used to generate electricity for the purposes of this section.
5. The generation source shall be located where the energy can be delivered to the building *site* by any of the following:
   a. By direct connection to the off-site renewable energy facility
   b. By the local utility or distribution entity
   c. By an interconnected electrical network where energy delivery capacity between the generator and the building *site* is available (***Informative Note****:* Examples of interconnected electrical networks include regional power pools and regions served by Independent System Operators or Regional Transmission Organizations.)
6. Records on power sent to or purchased by the *building project* from the off-site renewable energy producer that specifically assign power production to the *building project* shall be retained by the building *owner* and made available for inspection by the *AHJ* upon request.
7. Where multiple buildings in a *building project* are allocated energy procured by a contract subject to this Section, the owner shall allocate for not less than 20 years the energy procured by the contract to the buildings in the *building project*. Procured energy not allocated before issuance of the certificate of occupancy is permitted to be reserved for allocation to new or existing buildings included in the *building project*. This documentation shall be retained by the building *owner* and made available for inspection by the *AHJ* upon request.