

CE53-19

IECC®: SECTION C202, (New), C401.2.2 (New), C406.5

Proposed Change as Submitted

Proponents: jim edelson, representing New Buildings Institute (jim@newbuildings.org)

2018 International Energy Conservation Code

SECTION C202 GENERAL DEFINITIONS

Add new definition as follows:

RENEWABLE ENERGY CERTIFICATE (REC).

An instrument that represents the environmental attributes of one megawatt-hour of renewable electricity; also known as an energy attribute certificate (EAC).

Add new text as follows:

C401.2.2 On-site renewable energy

Each building site shall have equipment for on-site renewable energy with a rated capacity of not less than 0.25 W/ft² (2.7 W/m²) multiplied by the sum of the gross conditioned floor area of the three largest floors. Documentation shall be provided to the code official that indicates that renewable energy certificates (RECs) associated with the on-site renewable energy will be retained and retired by or on behalf of the owner or tenant.

Exceptions:

1. Any building located where an unshaded flat plate collector oriented towards the equator and tilted at an angle from horizontal equal to the latitude receives an annual daily average incident solar radiation less than 3.5 kWh/m²·day (1.1 kBtu/ft²·day).
2. Any building where more than 80 percent 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.
3. Any building where more than 50 percent 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 2,500 annual hours between 8:00 AM and 4:00 PM.

Revise as follows:

C406.5 On-site renewable energy. The total minimum ratings of *on-site renewable energy* systems, not including on-site renewable energy system capacity used for compliance with Section C401.2.2, shall be one of the following:

1. Not less than 1.71 Btu/h per square foot (5.4 W/m²) or 0.50 watts per square foot (5.4 W/m²) of conditioned floor area.
2. Not less than 3 percent of the energy used within the building for building mechanical and service water heating equipment and lighting regulated in Chapter 4.

Reason: Onsite renewable energy installations are becoming widespread in many parts of the country, and mandatory in other parts. This proposal creates a mandatory requirement for a system that is approximately one-half of the capacity that has been a compliance package selection in Section 406 since the 2012 IECC.

This language is largely based on Addendum "by" now pending to modify ASHRAE 90.1-2016. The three exceptions are written to ensure that the requirement is not being applied to buildings without adequate space on the roof, to buildings that are in areas of the country where unblocked insolation levels do not provide enough energy to make the equipment cost-effective (according to ASHRAE cost-effective criteria), and to buildings where solar access is wholly or partially blocked. The economic analysis supporting the Addendum is what was used to derive the specifications in the measure's exceptions. The analysis included multi-variate calculations on the PNNL 3-Story Medium Office Bldg Prototype and modeled @ 0.25W/SF of renewable capacity for conditioned area on all 3 floors. The solar equipment on the prototype models passed the ASHRAE Economic Scalar in 5 of 6 insolation zones. The sixth zone aligns with the third exception in the proposal.

Section 406.5 is modified so that the renewable capacity used for compliance with the new minimum requirement is not also counted towards compliance with Section 406.

The proposal also ensures that renewable energy used for compliance with another obligation (eg. through the transfer of RECs then applied to a state Renewable Portfolio Standard) is not double counted towards compliance with the IECC. While this proposal does not cite Green-E, the Green-E Standard describes how double counting occurs when RECs associated with an on-site system have been transferred to another party in the transaction for the onsite renewable system (such as a lease or financing contract) and are then counted towards code compliance:

Examples of prohibited double uses include, but are not limited to:

- 1) When the same REC is sold by one party to more than one party, or any case where another party has a conflicting contract for the RECs or the renewable electricity;
- 2) When the same REC is claimed by more than one party, including any expressed or implied environmental claims made pursuant to electricity coming from a renewable energy resource, environmental labeling or disclosure requirements. This includes representing the energy from which RECs are derived as renewable in calculating another entity's product or portfolio resource mix for the purposes of marketing or disclosure;
- 3) When the same REC is used by an electricity provider or utility to meet an environmental mandate, such as an RPS, and is also used to satisfy customer sales under Green-e Energy; or
- 4) Use of one or more attributes of the renewable energy or REC by another party. This includes when a REC is simultaneously sold to represent "renewable electricity" to one party, and one or more Attributes associated with the same MWh of generation (such as CO2 reduction) are also sold, to another party.

Bibliography: Addendum by to Standard 90.1-2016, Energy Standard for Buildings Except Low-Rise Residential Buildings; ASHRAE, January 2018. (pending at the time of submittal)
Green-e Renewable Energy Standard for Canada and the United States, Version 3.2; March 20, 2018.

Cost Impact: The code change proposal will increase the cost of construction
The representative average price for onsite renewable energy systems as analyzed in 2018 by the ASHRAE 90.1 working group was \$2.50 per installed watt of capacity, before incentives. The workgroup also indicated that the required capacity levels were cost-effective, according to ASHRAE criteria, for buildings in the areas that were subject to the requirement (i.e. not excepted from the requirement).

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Public Hearing Results

Errata: This proposal includes published errata

Go to <https://www.iccsafe.org/wp-content/uploads/Group-B-Consolidated-Monograph-Updates.pdf>.

Committee Action:

Disapproved

Committee Reason: There are too many open ends on this, there is a chance to fix some of the problems identified in testimony such as including the modifications that did not get ruled in order Edwards 5, the other proposals referenced but not identified, and the REC issue. In addition reconsider item 2 there is concern that plans examiner would not read the it as intended. There are exceptions for high rise building need to be included, taking into such issues as recreational spaces, terracing, etc and the departments having ability to identify buildings for which not feasible (Vote: 13-2).

Assembly Action:

None

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Individual Consideration Agenda

Public Comment MAKELA-1:

IECC®: SECTION, (New), C401.2.2 (New), C407.3

Proponents: Eric Makela, representing New Buildings Institute (ericm@newbuildings.org) requests As Modified by Public Comment

Modify as follows:

2018 International Energy Conservation Code

SECTION G202 GENERAL DEFINITIONS

RENEWABLE ENERGY CERTIFICATE (REC): An instrument that represents the environmental attributes of one megawatt-hour of renewable electricity; also known as an energy attribute certificate (EAC).

C401.2.2 On-site renewable energy Each building site shall have ~~equipment for one or more~~ on-site renewable energy systems with a total rated capacity of not less than 0.25 W/ft² (2.7 W/m²) multiplied by the sum of the gross conditioned floor area of the three largest floors. ~~Documentation shall be provided to the code official that indicates that renewable energy certificates (RECs) associated with the on-site renewable energy will be retained and retired by or on behalf of the owner or tenant.~~

Exceptions:

1. Any building located where an unshaded flat plate collector oriented towards the equator and tilted at an angle from horizontal equal to the latitude receives an annual daily average incident solar radiation less than 3.5 kWh/m²-day (1.1 kBtu/ft²-day).
2. Any building where more than 80 percent of the roof area is covered by any combination of ~~equipment other than for on-site renewable energy systems~~, planters, vegetated space, skylights, walkways, or occupied roof deck area, mandatory access or set back as required by the International Fire Code, or equipment other than for on-site renewable energy systems.
3. Any building where more than 50 percent 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 2,500 annual hours between 8:00 AM and 4:00 PM.
4. New construction or additions in which the sum of the conditioned floor area of the three largest floors of the construction or addition
5. is less than 10,000 ft² (1,000 m²).
Alterations

C407.3 Performance-based compliance. Compliance based on total building performance requires that a proposed building (*proposed design*) be shown to have an annual energy cost that is less than or equal to the annual energy cost of the *standard reference design*. Energy prices shall be taken from a source *approved* by the *code official*, such as the Department of Energy, Energy Information Administration's *State Energy Price and Expenditure Report*. *Code officials* shall be permitted to require time-of-use pricing in energy cost calculations. The reduction in energy cost of the proposed design associated with *on-site renewable energy* shall be not more than 5 percent of the total energy cost and shall not include reduction in energy cost associated with on-site renewable energy system capacity used for compliance with Section C401.2.2. The amount of renewable energy purchased from off-site sources shall be the same in the *standard reference design* and the *proposed design*.

Exception: Jurisdictions that require site energy (1 kWh = 3413 Btu) rather than energy cost as the metric of comparison.

Commenter's Reason: Onsite renewable energy installations are becoming widespread in many parts of the country, and mandatory in other parts. This proposal creates a mandatory requirement for a system that is approximately one-half of the capacity that has been a compliance package selection in Section 406 since the 2012 IECC. This language is largely based on Addendum "by" now pending to modify ASHRAE 90.1-2016.

The proposed Public Comment addresses comments from the IECC Code Development Committee and opponents and brings the proposed change in line with Addendum BY for ASHRAE 90.1. The Public Comment also includes floor modifications that were developed to further bring CE53 in line with Addendum BY but that were ruled out of order at the Code Development Hearings.

This Public Comment does the following:

1. Strikes the definition and the requirement for Renewable Energy Credits.
2. Specifically calls out that buildings must have one or more on-site renewable systems instead of stating that the building must have equipment for on-site renewable systems. The term "system" is broader and implies that equipment be installed to generate energy and then transport that energy to the energy using features in the building.
3. Modified Exception 2 to better address high rise commercial construction and with the recognition that the roof area is limited in high rise construction. Language was reviewed for a similar provision from New York City. The proposed new language is consistent with ASHRAE Addendum BY.
4. Adds an exception for smaller commercial buildings (less than 10,000 ft²) for new construction and additions and also alternations.
5. Added language to C407.3 Performance-based compliance that only allows credit for renewables above what is required in C401.2.2.

Cost Impact: The net effect of the public comment and code change proposal will increase the cost of construction. The representative average price for onsite renewable energy systems as analyzed in 2018 by the ASHRAE 90.1 working group was \$2.50 per installed watt of capacity, before incentives. The workgroup also indicated that the required capacity levels were cost-effective, according to ASHRAE criteria, for buildings in the areas that were subject to the requirement (i.e. not excepted from the requirement).