

Delete Section C405.15.2-C405.15.4 (2375)

IECC: C405.15, C405.15.1, C405.15.2, TABLE C405.15.2, C405.15.2.1, C405.15.2.2, C405.15.3, C405.15.4

Proponents: Gary Heikkinen, Gary W Heikkinen Energy Consulting, American Gas Association (gary.heikkinen@nwnatural.com)

2024 International Energy Conservation Code [CE Project]

C405.15 Renewable energy systems. *Buildings* in Climate Zones 0 through 7 shall comply with Sections C405.15.1 through C405.15.4.

C405.15.1 On-site renewable energy systems. *Buildings* shall be provided with on-site renewable electricity generation systems with a direct current (DC) nameplate power rating of not less than 0.75 watts per square foot (8.1 W/m²) multiplied by the sum of the gross *conditioned floor area* of all floors, not to exceed the combined gross *conditioned floor area* of the three largest floors.

Exceptions: The following *buildings* or building sites shall ~~comply with Section C405.15.2:~~ earn additional energy efficiency requirements as shown in Table C406.1.1(1) multiplied by 1.2.

1. A *building site* 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 per day (3.5 kWh/m²/day).
2. A *building* where more than 80 percent of the roof area is covered by any combination of permanent obstructions such as, but not limited to, mechanical equipment, vegetated space, access pathways or occupied roof terrace.
3. Any *building* where more than 50 percent of the 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 a.m. and 4:00 p.m.
4. A *building* with gross *conditioned floor area* less than 5,000 square feet (465 m²).

Delete without substitution:

~~**C405.15.2 Off-site renewable energy.** *Buildings* that qualify for one or more of the exceptions to Section C405.15.1 or do not meet the requirements of Section C405.15.1 with an on-site renewable energy system shall procure off-site renewable electrical energy, in accordance with Sections C405.15.2.1 and C405.15.2.2, that shall be not less than the total off-site renewable electrical energy determined in accordance with Equation 4-11.~~

~~$$TRE_{off} = (REN_{off} - 0.75 W/m^2 \times FLRA - IRE_{on}) \times 15$$~~

Equation 4-11

where:

~~TRE_{off} = Total off-site renewable electrical energy in kilowatt hours (kWh) to be procured in accordance with Table C405.15.2.~~

~~REN_{off} = Annual off-site renewable electrical energy from Table C405.15.2, in units of kilowatt hours per watt of array capacity.~~

~~$FLRA$ = The sum of the gross conditioned floor area of all floors not to exceed the combined floor area of the three largest floors.~~

~~IRE_{on} = Annual on-site renewable electrical energy generation of a new on-site renewable energy system, to be installed as part of the building project, whose rated capacity is less than the rated capacity required in Section C405.15.1.~~

TABLE C405.15.2 ANNUAL OFF-SITE RENEWABLE ENERGY REQUIREMENTS

| CLIMATE ZONE | ANNUAL OFF-SITE RENEWABLE ELECTRICAL ENERGY (kWh/W) |
|---------------------------|---|
| 1A, 2B, 3B, 3C, 4B and 5B | 1.75 |
| 6A, 6B, 1B, 2A, 3A and 6B | 1.55 |
| 4A, 4C, 5A, 5C, 6A and 7 | 1.35 |

C405.15.2.1 Off-site procurement. The building owner, as defined in the *International Building Code*, shall procure and be credited for the total amount of off-site renewable electrical energy, not less than required in accordance with Equation 4-11, with one or more of the following:

1. *Physical renewable energy power purchase agreement.*
2. *Financial renewable energy power purchase agreement.*
3. *Community renewable energy facility.*
4. Off-site renewable energy system owned by the building property owner.
5. *Renewable energy investment fund.*
6. *Green retail tariff.*

The generation source shall be located where the energy can be delivered to the *building site* by any of the following:

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

C405.15.2.2 Off-site contract. The renewable energy shall be delivered or credited to the *building site* under an energy contract with a duration of not less than 10 years. The contract shall be structured to survive a partial or full transfer of ownership of the building property.

C405.15.3 Renewable energy certificate (REC) documentation. The property owner or owner's authorized agent shall demonstrate that where renewable energy certificates (RECs) or energy attribute certificates (EACs) are associated with on-site and off-site renewable energy production required by Sections C405.15.1 and C405.15.2, all of the following criteria for RECs and EACs shall be met:

1. The RECs and EACs are retained and retired by or on behalf of the property owner or tenant for a period of not less than 15 years or the duration of the contract in Section C405.15.2.2, whichever is less.
2. The RECs and EACs are created within a 12-month period of the use of the REC.
3. The RECs and EACs are from a generating asset placed in service not more than 5 years before the issuance of the certificate of occupancy.

C405.15.4 Renewable energy certificate purchase. A *building* that qualifies for one or more of the exceptions to Section C405.15.1, and where it can be demonstrated to the *code official* that the requirements of Section C405.15.2 cannot be met, the building owner shall contract the purchase of renewable electricity products before the certificate of occupancy is issued. The purchase of renewable electricity products shall comply with the Green e-Energy National Standard for renewable electricity products equivalent to five times the amount of total off-site renewable energy calculated in accordance with Equation 4-11.

Reason: Confirming and enforcing the installation of on-site renewable energy systems is relatively easy to accomplish. However, the enforcement of long-term contracts for off-site renewable energy is problematic at best and not possible at worst. This code should cover the construction of buildings and not after-occupancy and operational issues. Therefore, move the off-site renewable energy systems provisions into an appendix.

Cost Impact (Detailed): Increase

Estimated Immediate Cost Impact:

Earning additional energy efficiency credits will increase the cost of construction. Since so many options are available, it is difficult to provide accurate estimates.

Estimated Immediate Cost Impact Justification (methodology and variables):

Estimated that construction cost increase will be less than 10%.