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MANDATORY REQUIREMENTS FOR THE INSTALLATION OF PHOTOVOLTAIC SOLAR ENERGY SYSTEMS [DRAFT]

(A) DEFINITIONS

LOW-RISE RESIDENTIAL STRUCTURE is a building that is of Occupancy Group R and is three stories or less.

MODULE NAMEPLATE OUTPUT is the nameplate DC power rating of the solar module, measured under Standard Test Conditions.

NEWLY CONSTRUCTED BUILDING is a building that has never been used or occupied for any purpose.

R-3 RESIDENTIAL OCCUPANCIES where the occupants are primarily permanent in nature and not classified as Group R-l, R-2, R-2.1, R-3.1, R-4 or I, including:

- Buildings that do not contain more than two dwelling units.
- Townhouses not more than three stories above grade in height with a separate means of egress.
- Adult facilities that provide accommodations for six or fewer persons of any age for less than 24-hours. Licensing categories that may use this classification include, but are not limited to:
    - Adult Day Programs.
- Child care facilities that provide accommodations for six or fewer persons of any age for less than 24-hours. Licensing categories that may use this classification include, but are not limited to:
- Day-care Center for Mildly III Children, Infant Care Center and School Age Child Day-care Center.
- Family Day-care Homes that provide accommodations for 14 or fewer children, in the provider's own home for less than 24-hours.
- Congregate living facilities or congregate residences with 16 or fewer persons.

SINGLE-FAMILY BUILDING is a single dwelling unit of occupancy group R-3, as defined in the California Building Code, which stands separate and unattached from other dwelling units but may have an attached garage.

STEEP-SLOPED ROOF has a ratio of rise to run of greater than 2:12

TDV is time dependent valuation.

(B) PURPOSE AND INTENT

It is the purpose and intent of this section to provide standards for builders and developers of newly constructed single-family buildings and low-rise residential structures to install solar photovoltaic systems

at the time of construction in an effort to achieve energy savings and increase deployment of renewable energy technology.

(C) REQUIREMENT

Newly constructed buildings that are single-family buildings of group R-3 occupancy or low-rise residential structures in [NAME OF CITY OR COUNTY] constructed on or after [DATE] shall:

(1) Be designed to include the green building measures specified as mandatory under the California Green Building Standards Code (CalGreen) section [4.201] and the efficiency requirements of section [A4.203.1.1.2] with the following amendments to section [4.201];

(2) Have a solar photovoltaic system installed. The minimum system requirement shall be satisfied using either of two methods, prescriptive or performance:

(a) Prescriptive Method. The method shall be applicable to those buildings less than 4,500 square foot of conditioned floor space. The nameplate system size shall be calculated as the sum of each solar module's nameplate output. The minimum capacity shall be:

Table 1: *Minimum Nameplate System Size (kW_{DC}) Required* **[SAMPLE CZ12]**

Conditioned Space (ft^2)	**Minimum kW (DC) Required**
Less than 1000	1.5
1000 - 1499	1.9
1500 - 1999	2.3
2000 - 2499	2.7
2500 - 2999	3.1
3000 - 3499	3.4
3500 - 3999	3.8
4000 - 4499	4.2

(b) Performance Method. Install a solar photovoltaic system sized to meet the minimum percentage of the building's total TDV energy on an annual basis, as defined in Table 2. The system sizing requirement shall be based upon total building TDV energy use including both conditioned and unconditioned space in and calculated using modeling software or other methods approved by the Building Official. Buildings with 4,500 square foot or greater of conditioned floor area must use the performance method.

Table 2: *Minimum Percent Reduction of Total Annual TDV Energy Use by Climate Zone*

Climate Zone	PV % Total TDV

CZs 14, 16	35%
CZs 1, 2, 4, 9-13, 15	45%
CZs 3, 5-8	55%

(3) The system shall be located on-site;

(4) Fixed orientation systems located on a steep-sloped roof shall be oriented between 110 degrees and 270 degrees of true north. There is no tilt requirement for the solar photovoltaic system;

(5) All systems must meet the minimal shading criterion to satisfy the installation requirement. The minimal shading criterion requires that no obstruction is closer than a distance "D" of twice the height "H" of the obstruction (the distance "D" must be at least two times greater than the height "H"). All obstructions that project above the point on the array that is closest to the obstruction must meet this criterion for the array to be considered minimally shaded. Obstructions that are subject to this criterion include:

(a) Any vent, chimney, architectural feature, mechanical equipment, or other obstruction that is on the roof or any other part of the building.
(b) Any part of the neighboring terrain.
(c) Any tree that is mature at the time of installation of the photovoltaic system.
(d) Any tree that is planted on the building lot or neighboring lots or planned to be planted as part of the landscaping for the building (the expected shading must be based on the mature height of the tree).
(e) Any existing neighboring building or structure.
(f) Any planned neighboring building or structure that is known to the applicant or building owner.
(g) Any telephone or other utility pole that is closer than 30 feet from the nearest point of the array;

(6) Solar energy systems that are leased by the end-use customer (tenant or owner) or that supply electricity to the end-use customer through a power purchase agreement (PPA) may be used to satisfy the requirement provided the system meets all other requirement criteria; and

(7) Shall comply with the 2016 Title 24 Building Energy Code without claiming the solar compliance credit described in Section 2.2.3 of the 2016 Title 24, Part 6, Residential Alternative Calculation Method.

(D) <u>EXCEPTIONS</u>

(1) The Building Official may exempt a covered building from the provisions of this Chapter if the Official determines there are sufficient practical challenges to make satisfaction of the

requirements infeasible. Practical challenges may be a result of the building site location, limited rooftop availability, or shading from nearby structures, topography or vegetation. The applicant is responsible for demonstrating requirement infeasibility when applying for an exemption.

(2) The building Official may exempt a covered building from the provisions of this Chapter if the Official determines the building has satisfied the purpose and intent of this provision through the use of alternate on-site renewable systems such as wind energy systems.