

ORDINANCE NO. 2018-15

THE BOARD OF SUPERVISORS OF THE COUNTY OF ALAMEDA

AN ORDINANCE OF THE COUNTY OF ALAMEDA AMENDING CHAPTER 15.08 TO THE GENERAL ORDINANCE CODE TO ADD SECTION 500 RELATED TO MANDATORY REQUIREMENTS FOR THE INSTALLATION OF PHOTOVOLTAIC SOLAR ENERGY SYSTEMS

WHEREAS, the proposed amendments will result in designs that consume less energy than they would under the existing State Energy Code; and

WHEREAS, there is no possibility that the proposed amendments will have a significant negative effect on the environment and the amendments are therefore categorically exempt from the requirements of the California Environmental Quality Act; and

WHEREAS, the proposed amendments have been determined to provide positive net benefits to new single family and low-rise multifamily residential construction within the County of Alameda based on a study of the specific requirements as they apply to the County of Alameda's particular climate zones; and

WHEREAS, the Board expressly declares that the following amendments to the building code are reasonably necessary because of local climatic, topological, and geological conditions; and

WHEREAS, due to changes in rainfall patterns expected with climate change, the County of Alameda may be subject to more severe weather events, including droughts, as well as more intense storms that increase the risks of wildfire, erosion, overland local flooding and landslides; and

WHEREAS, it is expected that climate change will result in more severe and frequent extreme heat events, intensifying local heat islands and putting vulnerable populations at health risk; and

WHEREAS, greenhouse gas (GHG) emissions contribute to climate change, and creating on-site renewable energy resources may optimize energy performance and reduce GHG emissions; and

WHEREAS, the State of California enacted Senate Bill (SB) 32 to require greenhouse gas emissions to be reduced to 40 percent below 1990 levels by 2030; and

WHEREAS, the California Energy Code, 2016 Edition, Title 24, Part 6 of the California Code of Regulations was adopted by the County of Alameda with local amendments on November 22, 2016 under Ordinance O-2016-63; and

NOW, THEREFORE, THE BOARD OF SUPERVISORS OF THE COUNTY OF ALAMEDA ORDAINS AS FOLLOWS:

Section I. Section 500 Added

Title 15 (Buildings and Construction), Chapter 15.08 (Building Code) of the Alameda County Ordinance Code is amended to add Section 500, as follows:

15.08.229 - CBC Ch. 4 Special Detailed Requirements Based on Use and Occupancy, Section 500, Mandatory Requirements for the Installation of Photovoltaic Solar Energy Systems [BID]

500.1 Purpose

It is the purpose and intent of this Section to provide standards for builders and developers of new residential buildings of three stories or fewer to improve energy performance by installing solar photovoltaic (PV) systems and by designing for high efficiency. This will achieve energy savings and increase deployment of renewable energy technology such that 80% of the buildings' annual electric requirements are to be provided by on-site solar power.

500.2 DEFINITIONS

CALGreen is the 2016 California Green Building Standards, California Code of Regulations, Title 24, Part 11.

COVERED STRUCTURE includes any Newly Constructed Structure of three stories or less of Occupancy Group R-1, R-2, and R-3 where occupants are primarily permanent in nature. This excludes any buildings classified as Group R-2.1, R-3.1, R-4 and I, specifically

- 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 Ill 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.

MODULE NAMEPLATE OUTPUT is the nameplate DC power rating of the solar module, measured under a panel manufacturer's Standard Test Conditions.

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

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

TIME DEPENDENT VALUATION or TDV is the time varying energy caused to be used by the building, specifically as defined in CALGreen. The concept of TDV is that energy savings should be valued differently depending on which hours of the day, and over an annual timeframe, the savings occur, to better reflect the actual costs of energy to consumers, to the utility system, and to society.

500.3 REQUIREMENT

Construction of any Covered Structure for which permit applications are submitted on or after the Effective Date of this Ordinance shall:

1. Be designed to include the green building measures specified as mandatory under CALGreen Chapter 4.
2. Have a solar photovoltaic system installed that meets the minimum system requirement. The minimum system requirement shall be satisfied using either of two methods, prescriptive or performance:
 - a. Prescriptive Method. The method shall be applicable only to buildings with less than 4,500 square feet 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 (ZONE 12)*

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

Table 2: *Minimum Nameplate System Size (kW_{DC}) Required (ZONE 3)*

Conditioned Space (ft ²)	Minimum kW (DC) Required
Less than 1000	1.5
1000 – 1499	1.7
1500 – 1999	2.1
2000 – 2499	2.4
2500 – 2999	2.7
3000 – 3499	3.0
3500 – 3999	3.2
4000 – 4499	3.5

- 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 3. The system sizing requirement shall be based upon total building TDV energy use including both conditioned and unconditioned space and calculated using modeling software or other methods approved by the Building Official. Buildings with 4,500 square feet or more of conditioned floor area must use the performance method.

Buildings with less than 4,500 square feet of conditioned floor space may use the performance method or the prescriptive method.

Table 3: *Minimum Percent Reduction of Total Annual TDV Energy Use by Bay Area Climate Zone*

Climate Zone	PV % Total TDV
CZ 12	45%
CZ 3	55%

3. Have a solar photovoltaic system installed that:
- Is interconnected with at least one electric service meter that services the building.
 - Is oriented between 110 degrees and 270 degrees of true north, for fixed orientation systems located on a Steep-Sloped Roof only. There is no tilt requirement for the solar photovoltaic system.

- c. Meets the minimal shading criterion. The minimal shading criterion requires that no obstruction is closer than a distance (“D”) of twice the height (“H”) as it extends above the PV array. “D” is the horizontal distance from the closest point on the array to the vertical projection from the point on the obstruction. “H” is the height of the shading obstruction point above the horizontal projection to the closest point on the array. Any obstruction located north of all points on the array need not be considered as shading obstructions. When an obstruction is north of some parts of an array but is east, south, or west of other parts of the array, the minimal shading criterion shall be determined to the closest point on the array that is west, north, or east of the obstruction. Obstructions that are subject to this criterion include:
 - i. Any vent, chimney, architectural feature, mechanical equipment, or other obstruction that is on the roof or any other part of the building.
 - ii. Any part of the neighboring terrain.
 - iii. Any tree that is mature at the time of installation of the photovoltaic system.
 - iv. 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).
 - v. Any existing neighboring building or structure.
 - vi. Any planned neighboring building or structure that has been approved or, in the opinion of the Building Official, is likely to be approved, for construction.
 - vii. Any telephone or other utility pole that is closer than 30 feet from the nearest point of the array.
4. Provides for an interconnection pathway as detailed in 2016 CEC Subchapter 2, Section 110.10, which shall be equipped with conduit or wiring sized to provide solar readiness for any area of the required solar zone not already covered by the installed system.
5. Complies 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.

500.4 OTHER CONSIDERATIONS

1. At the earliest feasible time after the prospective purchaser is identified, the developer or builder shall provide the option of an expanded solar photovoltaic system size beyond the minimum mandatory system sizing requirements, up to a size that will fully offset the annual electricity consumption of the building.
2. 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.

3. To accommodate for future system expansion, the applicant is encouraged to design systems and utilize technologies that minimize the cost of expansion.
4. Applicant is encouraged to consider an all-electric building energy system design and to include solar thermal for domestic hot water.
5. To further reduce greenhouse gas emissions, the applicant is encouraged to include energy storage.

500.5 ALTERNATIVES

1. Alternative on-site renewable electric energy systems (other than roof mounted solar energy systems) including ground-mounted solar structures, roof-mounted wind turbines, or ground-mounted wind turbines of equivalent capacity or TDV production, may be substituted for the solar energy generation requirement.
2. Except for multifamily residences in climate zone 3, in the case of practical challenges such as building site location, limited rooftop availability, shading from nearby structures, topography or vegetation, or other conditions, the Building Official may waive or reduce the requirement and/or impose the building be designed to meet the CALGreen Tier 1 energy performance standard as specified under CALGreen Section A4.203.1.2.1.
3. Other methods as determined, providing the Building Official finds that the proposed alternative is satisfactory and complies with the intent of this section.

The applicant is responsible for justifying the above-described alternative systems, standards, or methods.

500.6 EXCEPTIONS

The Building Official may exempt a covered building from the provisions of this Chapter if she/he determines that 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 exception.

500.7 SEVERABILITY

If any section, subsection, clause or phrase of this Ordinance is for any reason held to be invalid, such decision shall not affect the validity of the remaining portion or sections of the Ordinance. The Board hereby declares that it would have adopted the Ordinance and each section, subsection, sentence, clause or phrase thereof irrespective of the fact that any one or more sections, subsections, sentences, clauses or phrases be held invalid.

Section II.

Before the expiration of fifteen (15) days after its passage, this ordinance shall be published once with the names of the members voting for and against the same in the Inter-City Express, a newspaper published in the County of Alameda. This ordinance shall take effect upon approval by the California Energy Commission, but in no event shall it become effective in fewer than thirty (30) days from and after the date of its passage.

Adopted by the Board of Supervisors of the County of Alameda, State of California, on April 17, 2018, by the following called vote:

AYES: Supervisors: Carson, Haggerty, Miley, Valle & President Chan - 5

NOES: None

EXCUSED: None



President of the Board of Supervisors
County of Alameda, State of California

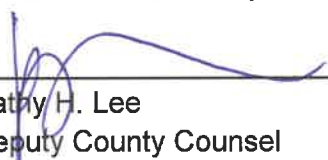
ATTEST:

Clerk of the Board of Supervisors

By:  _____

Approved as to form:

DONNA R. ZIEGLER, County Counsel

By:  _____
Kathy H. Lee
Deputy County Counsel