

ORDINANCE NO.

An ordinance amending the Land Development Code, Article II, Section 20-2.3, "Definitions" and Article III, Section 20-3.6 "Supplemental Regulations" adding subsection (W) "Solar Requirements" and providing definitions relating to and criteria and regulations for solar collectors in the City of South Miami

WHEREAS, the South Miami City Commission expressly declares that the following amendments to the South Miami Land Development Code are reasonable and necessary because of local climatic, topological, and geological conditions as listed below; and

WHEREAS, as a coastal city located on the tip of a peninsula, the Miami region is vulnerable to sea level rise, and human activities releasing greenhouse gases into the atmosphere increases in worldwide average temperature, which contribute to melting of glaciers, thermal expansion of ocean water, and shifting or slowing of the Gulf Stream, all resulting in rising sea levels; and

WHEREAS, South Florida is already experiencing the repercussions of excessive CO2 emissions as rising sea levels threaten shorelines and infrastructure, have caused significant erosion, increased impacts to infrastructure during extreme tides, and have caused the City to expend funds to modify the sewer system; and

WHEREAS, some people in South Miami, such as the elderly, may be particularly vulnerable to higher temperatures resulting from climate changes; and

WHEREAS, installing solar will help South Miami meet its goals under Res. No. 23-09-12832, dated February 9, 2009, stating: "The City of South Miami commits to a Carbon Neutral Initiative to lead the community by example and to implement policies to eliminate net emission of carbon dioxide and other greenhouse gases by the end of 2030"; and

WHEREAS, it is reasonably necessary to require building owners to take steps to reduce the energy consumed by inefficient building operations and produce renewable, low-carbon electricity, or capture solar energy, in order to reduce pollution, benefit biodiversity, improve resilience to climate change by reducing localized heat islands, and reduce the global warming effects of energy consumption; and

WHEREAS, installing solar heating or solar energy systems benefits the health, welfare, and resiliency of South Miami and its residents; and

WHEREAS, the 2008 Florida legislature enacted Section 163.04, Fla. Stat., with the legislative intent of protecting the public health, safety, and welfare by encouraging the development and use of renewable resources; and

WHEREAS, Section 163.08 (1)(a), Fla. Stat., found that chapter 2008-227, Laws of Florida, amended the energy goal of the state comprehensive plan to provide, in part, that the state shall reduce its energy requirements and reduce atmospheric carbon dioxide by

1 **promoting** an increased use of renewable energy resources. That chapter also declared it the  
2 public policy of the state to play a leading role in developing and instituting energy management  
3 programs that promote energy conservation, energy security, and the reduction of greenhouse  
4 gases. In chapter 2008-191, Laws of Florida, the Legislature adopted new energy conservation  
5 and greenhouse gas reduction comprehensive planning requirements for local governments. In  
6 the 2008 general election, the voters of this state approved a constitutional amendment  
7 authorizing the Legislature, by general law, to prohibit the increase of assessed value of  
8 residential real property due to change or improvement made for the purpose of improving a  
9 property's resistance to wind damage or the installation of a renewable energy source device; and

10  
11 **WHEREAS**, Section 163.08 (1)(b), Fla. Stat., found that the installation and operation of  
12 improvements not only benefitted the affected properties for which the improvements were  
13 made, but also assisted the state in fulfilling the goals of the state's energy mitigation policies;  
14 and

15  
16 (b) "Qualifying improvement" includes any energy conservation and efficiency  
17 improvement, which is a measure to reduce consumption through conservation of electricity and  
18 the installation of any system in which the electrical or thermal energy is produced from a  
19 method that uses solar energy.

20  
21  
22 **WHEREAS**, requiring solar water heating and/or solar photovoltaics at the time of new  
23 construction is more cost-effective than installing the equipment after construction because  
24 workers are already on-site, permitting and administrative costs are lower, and it is more cost-  
25 effective to include such systems in existing construction financing; and

26  
27 **WHEREAS**, the installation of a solar collector with pay for itself over time with a  
28 decrease in the cost of electricity and even if the property is sold before the value is recovered,  
29 the solar collector will add to the value of the property; and

30  
31 **WHEREAS**, a recent study by Lawrence Berkeley National Laboratory concluded that  
32 home buyers consistently have been willing to pay more for a property with PV across a variety  
33 of states, housing and PV markets, and home types. "Average market premiums across the full  
34 sample of homes analyzed here are about \$4/W or \$15,000 for an average-sized 3.6-kW PV  
35 system (Figure 6)." See "SELLING INTO THE SUN: PRICE PREMIUM ANALYSIS OF A  
36 MULTI-STATE DATASET OF SOLAR HOMES" prepared for the Office of Energy Efficiency  
37 and Renewable Energy Solar Energy Technologies Office U.S. Department of Energy, January  
38 13, 2015. <http://newscenter.lbl.gov/?s=selling>.

39  
40 **WHEREAS**, the Planning board has or will have reviewed this ordinance before it is  
41 enacted; and

42  
43 **WHEREAS**, the Mayor and City Commission desire to amend Section 20-4.7 to clarify  
44 its applicability and to provide for screening of vacant commercial properties.

45  
46 **NOW, THEREFORE, BE IT ORDAINED BY THE MAYOR AND CITY**  
47 **COMMISSION OF THE CITY OF SOUTH MIAMI, FLORIDA:**

1  
2 **Section 1.** South Miami Land Development Code Article II, "Definitions" is hereby  
3 amended to read as follows:

4  
5 **20-2.3 Definitions.**

6 \* \* \*

7 Living Area. Shall mean gross floor area.

8 Nameplate capacity. Also known as the rated capacity, nominal capacity, installed capacity, or  
9 maximum effect, nameplate capacity shall mean the intended full-load sustained output of a  
10 facility such as a photovoltaic system.

11 Photovoltaic System (PV). Shall mean a type of solar collector that uses photovoltaic cells to  
12 directly convert sunlight into electricity.

13 Potential Solar Zone. Shall mean the total area of any low-sloped roofs (9.5 degrees or less)  
14 where the annual solar access is 70 percent or greater and the area of any steeper-sloped roofs  
15 oriented within 110 degrees of true south where the annual solar access is 70 percent or greater.

16 Solar Access. Shall mean the ratio of solar insolation (including shade) to the solar insolation  
17 without shade. Shading from obstructions located on the roof or any other part of the building  
18 shall not be included in the determination of annual solar access, since construction shall be  
19 designed to avoid shading of the Potential Solar Zone.

20 Solar Collectors. Shall mean any photovoltaic or solar-thermal collectors or any combination  
21 thereof.

22 Solar Insolation. Shall mean the measure of solar radiation energy received on a given surface  
23 area in a given time. It is commonly expressed as average irradiance in watts per square meter  
24 (W/m<sup>2</sup>) or kilowatt-hours per square meter per day (kWh).

25 Solar Thermal Collectors. Shall mean either, low-, medium-, or high-temperature collectors.  
26 Low temperature collectors are flat plates generally used to heat swimming pools. Medium-  
27 temperature collectors are also usually flat plates but are used for creating hot water for  
28 residential and commercial use. High temperature collectors concentrate sunlight using mirrors  
29 or lenses and are generally used for electric power production. Hybrid photovoltaic-thermal  
30 systems are also included.

31 Photovoltaic Thermal Collectors. Shall mean photovoltaic, thermal hybrid solar collectors,  
32 sometimes known as hybrid PV/T systems or PVT, which are systems that convert solar  
33 radiation into thermal and electrical energy.

34 Solar Zone. Shall mean space on a roof that is unshaded, un-penetrated, and free of obstructions  
35 erving as a suitable place for the installation of solar panels. For single-family residences and  
36 townhouses, the solar zone shall be located on the roof or suitable overhang of the building. For  
37 qualifying multi-family buildings, the solar zone can be located on any of the following  
38 locations: roof of building, overhang of building, roof and/or overhang of another structure

1 located on the same property within 250 feet of the primary building, covered parking installed  
2 with the building, other structures including trellises, arbors, patio covers, carports, gazebos, and  
3 similar accessory structures as may be sufficiently strong to support a solar array.

4  
5 **Section 2. South Miami Land Development Code Article III, "Zoning Regulations", Section 20-**  
6 **3.6, "Supplemental Regulations" is hereby amended to read as follows:**

7  
8 **(W) Solar Requirements**

9 **(1) Applicability. All new construction of single-family residences, townhouses, and any**  
10 **multi-story residential building where a section of roof can be reasonably allocated, as**  
11 **determined by the Director of the Building Department or the Planning and Zoning Department,**  
12 **to a separately metered dwelling unit (hereinafter referred to as "qualifying multi-story**  
13 **residential building"), that apply for either preliminary or final approval by the Environmental**  
14 **Review and Preservation Board on or after [insert date] shall install solar photovoltaic systems**  
15 **and/or solar thermal systems or a combination of both in the solar zone or another space of**  
16 **equivalent capacity. Additions and alterations of existing buildings are exempt from this**  
17 **requirement if they leave at least 50% of the square footage of the existing sub-roof and outside**  
18 **walls intact.**

19  
20 **(2) Minimum required installation. The area to be occupied by solar collectors shall be no**  
21 **less than the minimum of:**

- 22 **i. the Solar Zone area (calculated in subparagraph 4 below); or**  
23 **ii. 2.75 kW of nameplate photovoltaic capacity per 1,000 square feet of living area;**  
24 **or**  
25 **iii. 175 square feet of solar collector panel per 1,000 square feet of roof area.**

26  
27 **(3) Minimum specifications for solar collectors.**

28 **i. Solar photovoltaic systems: The total nameplate capacity of photovoltaic**  
29 **collectors shall be at least ten (10) watts DC per square foot of roof area allocated to the**  
30 **photovoltaic collectors.**

31 **ii. Solar thermal systems: Single-family residential solar domestic water heating**  
32 **systems shall be OG-300 System Certified by either the Solar Rating and Certification**  
33 **Corporation (SRCC) or the International Association of Plumbing and Mechanical Officials**  
34 **(IAPMO).**

35 **iii. Solar photovoltaic systems and solar thermal systems shall be installed in accord**  
36 **with all applicable State code requirements, including access, pathway, smoke ventilation, and**  
37 **spacing requirements, all applicable local code requirements, and manufacturer's specifications.**

38  
39 **(4) Calculation of Solar Zone Area size. The minimum solar zone area shall be calculated**  
40 **using one of the following methods:**

41 **i. Method 1. Minimum Solar Zone Area Based on Total Roof Area**

42 **This Method should be used if shading is not significant, for instance if trees**  
43 **(existing and planned) and adjacent buildings do not shade the roof. The solar zone area shall be**  
44 **no less than fifteen (15) percent of the total roof area after subtracting the area of any skylights**  
45 **chimneys and other similar structures located on the roof. The solar zone may be composed of**  
46 **multiple sub-areas; however, no dimension of a sub-area can be less than five (5) feet in length.**  
47 **If the total roof area is equal to or less than 10,000 square feet, each sub-area must be at least**

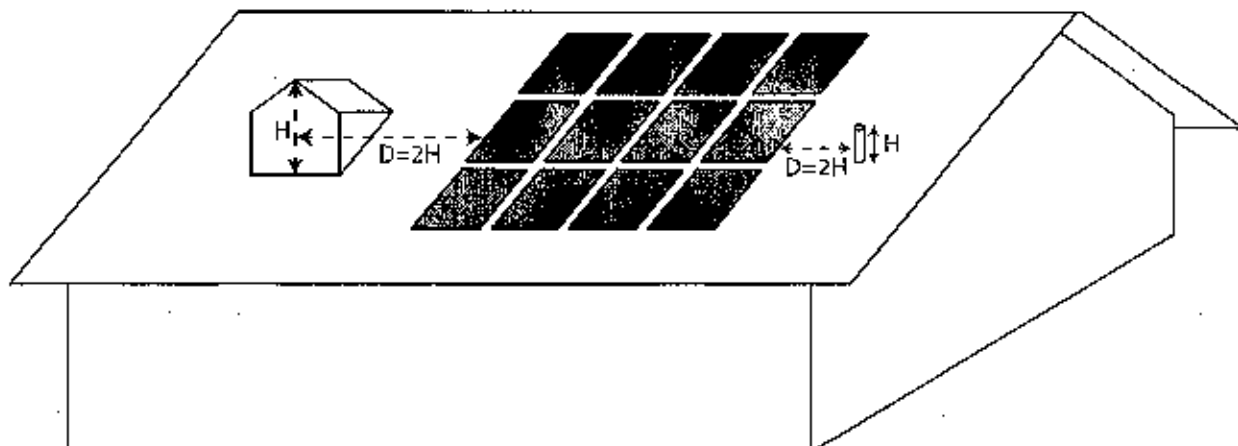
1 eighty (80) square feet in area (or of sufficient size to accommodate at least four (4) regular sized  
2 PV panels). If the total roof area is greater than 10,000 square feet, each sub-area must be at  
3 least one-hundred sixty (160) square feet (or of sufficient size to accommodate at least eight (8)  
4 regular sized PV panels).

5 ii. Method 2: Minimum Solar Zone Area Based on Potential Solar Zone

6 If the building site has significant shading, either from trees or from built objects  
7 that are not located on the roof or any other part of the same building, the Potential Solar Zone  
8 shall be used as the Solar Zone subject to certain reductions. If the potential solar zone is smaller  
9 than 250 square feet or smaller than 15% of the roof area of the building excluding any skylights,  
10 chimneys and other similar structures, then the solar zone can be reduced to half the area of the  
11 potential solar zone. If the roof is shaded such that there is no potential solar zone area, then no  
12 solar zone is required.

13  
14 (5) Safety Access. In calculating the solar zone, a walkway three (3) feet in width shall be  
15 left vacant on each side of each collector array segment (except the lower edge) for foot access  
16 by emergency responders. The solar zone shall comply with access, pathway, smoke ventilation,  
17 and other requirements as specified in the Florida Building Code or local code.

18  
19 (6) Avoiding the Creation of Shade. The solar zone shall be free from roof penetrations and  
20 shall not have any obstructions such as vents, chimneys, architectural features, or roof mounted  
21 equipment located in the solar zone. This requirement ensures that the solar zone remains clear  
22 and open for the future installation of a solar-energy system. Obstructions located on the roof or  
23 any other part of the building that projects above the solar zone shall be located at a sufficient  
24 horizontal distance away from the solar zone in order to reduce the resulting shading of the solar  
25 zone. For any obstruction where the arc of the sun during the middle six (6) hours of the day  
26 could cast a shadow on the solar zone, the horizontal distance ("D") from the obstruction to the  
27 solar zone shall be at least twice the height difference ("H") between the highest point of the  
28 obstruction and the horizontal projection of the nearest point of the solar zone (Figure 20-  
29 2.3.W.1). Obstructions which are not located on the roof or another part of the building, such as  
30 landscaping or a neighboring building are not subject to these placement requirements.



32 **Figure 20-2.3.W.1** Structures protruding from the roof that would otherwise  
33 shade the solar zone should be offset laterally by twice their height.  
34  
35

1 (7) Alternative to installing PV. As an alternative to installing all or part of the PV capacity  
2 required in this section, for each square foot of PV required but not installed, a payment may be  
3 made into the City's Solar Trust Fund at a rate of \$40 per square foot of PV, or as amended in  
4 the City's Schedule of Fees and Fines.

5  
6 **(8) Solar Trust Fund**

7 (i) There is hereby created a Solar Trust Fund, the purpose of which is to fund  
8 installation solar power and solar water heating facilities on City property.

9 (ii) Disbursement from Solar Trust Fund. Monies obtained for the Solar Trust Fund  
10 shall be distributed for the installation and maintenance of photovoltaic power and solar  
11 water heating on City-owned buildings and properties.

12  
13 (iii) Sources of monies for the Solar Trust Fund. Said fund shall consist of  
14 contributions in lieu of, or in conjunction with, required solar installations required under  
15 this ordinance.

16  
17 **Section 3. Codification.** The provisions of this ordinance shall become and be made  
18 part of the Land Development Code of the City of South Miami as amended.

19 **Section 4. Severability.** If any section, clause, sentence, or phrase of this ordinance  
20 is for any reason held invalid or unconstitutional by a court of competent jurisdiction, this  
21 holding shall not affect the validity of the remaining portions of this ordinance or the Guidelines  
22 adopted hereunder.

23 **Section 5. Ordinances in Conflict.** All ordinances or parts of ordinances and all  
24 sections and parts of sections of ordinances in direct conflict herewith are hereby repealed.

25 **Section 6. Effective Date.** This ordinance shall become effective upon enactment.

26 PASSED AND ENACTED this \_\_\_\_ day of \_\_\_\_\_, 2017.

27 ATTEST:

APPROVED:

28  
29  
30 \_\_\_\_\_  
CITY CLERK

\_\_\_\_\_  
MAYOR

31 1<sup>st</sup> Reading

32 2<sup>nd</sup> Reading

33  
34 READ AND APPROVED AS TO FORM:  
35 LANGUAGE, LEGALITY AND  
36 EXECUTION THEREOF

COMMISSION VOTE:  
Mayor Stoddard:  
Vice Mayor Welsh:  
Commissioner Edmond:  
Commissioner Harris:  
Commissioner Liebman:

37  
38  
39 \_\_\_\_\_  
40 CITY ATTORNEY