



## South Central Regional Construction Code Council

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### COMMERCIAL SOLAR PHOTOVOLTAIC SYSTEMS

#### Permit Plan Submittal & Code Requirements

Applicable Building Codes:

IBC	2012 International Building Code
NEC	2011 National Electrical Code (Excluding Article 690)
NEC	2014 National Electrical Code Article 690 "Solar Photovoltaic Systems"

\_\_\_ Electrical Plans with the following shall be included:

- a. \_\_\_ Location of main service or utility disconnect [NEC 80.21(Annex H)];
- b. \_\_\_ Total number of modules, number of modules per string and the total number of strings [NEC 80.21 (Annex H)];
- c. \_\_\_ Make and model of inverter(s) and/or combiner box if used [NEC 690.4(B)];
- d. \_\_\_ One-line diagram of system [NEC 215.5];
- e. \_\_\_ Specify grounding/bonding, conductor type and size, conduit type and size and number of conductors in each section of conduit [NEC 80.21 (Annex H)];
- f. \_\_\_ If batteries are to be installed include them in the diagram and show their locations and venting;
- g. \_\_\_ Equipment cut sheets including inverters, modules, AC and DC disconnects and combiners [NEC 80.21 (Annex H)];
- h. \_\_\_ Labeling of equipment as required by NEC Sections 690 and 705 [NEC 110.3(B)];
- i. \_\_\_ Site diagram showing the arrangement of panels on the roof or ground, north arrow, lot dimensions, and the distance from property lines to adjacent buildings/structures (existing and proposed) [NEC 80.21(Annex H)];
- j. \_\_\_ Plans shall include, up until September 1<sup>st</sup> 2015, an approved manual disconnect located within 5 feet of the array structure to disconnect all DC conductors from the power source. Upon September 1<sup>st</sup> 2015, "Rapid Shutdown of PV systems on Buildings" per NEC 2014 Article 690.12 shall be applicable as follows:
  - \_\_\_ Requirements for controlled conductors shall apply only to PV system conductors of more than 5ft in length inside a building, or more than 10ft from a PV array;
  - \_\_\_ Controlled conductors shall be limited to not more than 30 volts and 240 volt-amperes within 10 seconds of rapid shutdown initiation;
  - \_\_\_ Voltage an power shall be measured between any two conductors and between any conductor and ground;
  - \_\_\_ The rapid shutdown initiation methods shall be labeled in accordance with 690.56(B);
  - \_\_\_ Equipment that performs the rapid shutdown shall be listed and identified.

\_\_\_ Structural analysis by a "Licensed Engineer" shall be provided for solar panels, components and their loading on existing and new roofs. [LSUCCC Amend 1607.12.5]

\_\_\_ Structural Plans and/or analysis shall include the following:

- a. \_\_\_ The type of roof covering and (if existing) the number of roofing layers installed;
- b. \_\_\_ Type of roof framing, size of members and spacing;
- c. \_\_\_ Weight of panels, support locations and method of attachment;

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- d. \_\_\_ Framing plan and details for any work necessary to strengthen the existing roof structure;
- e. \_\_\_ Any relevant calculations (when required);
- f. \_\_\_ Location of PV equipment on the building;
- g. \_\_\_ Where an approved racking system is used, provide documentation showing the manufacturer of the rack system, maximum allowable weight the system can support, attachment method to the roof or ground and product evaluation information or structural design for the rack system.

\_\_\_ Roof Plan showing location of Modules/panels

\_\_\_ Roof Plan with marked location of all adjacent openings such that roof access points are located in areas that do not require the placement of ground ladders over openings such as windows or doors and located at strong points of building construction in locations where the access point does not conflict with overhead obstructions such as tree limbs, wires or signs [LSUCCC Add 1511.2.1.1] - OR -

\_\_\_ Elevation drawing or photo depicting opening location in wall in reference to location of on-roof module placements for compliance with “Roof Access Points” [LSUCCC Add 1511.2.1.1]

NOTE: **Group R-3:** Residential occupancies where the occupants are primarily permanent in nature and not classified as Group R-1, R-2, R-4 or I, including Boarding houses, Care facilities, and congregate living facilities. Although Group R-3 also includes One & Two Family Dwellings and Townhouses, PV requirements for this type occupancy can be regulated in accordance with the International Residential Code provided this type dwelling is NOT connected to any of the other Group R or Commercial occupancies (See separate check list for One & Two Family Dwellings and Townhouses).

**All Other Groups:** All other commercial occupancy Groups not classified as Group R-3 or regulated per the International Residential Code.

\_\_\_ Group R-3 – Size of PV array (max 150’ x 150’); multiple arrays shall be separated by 3-foot wide pathway [LSUCCC Add 1511.3.1]

\_\_\_ Group R-3 – Hip roof layout: 3-foot clear access pathway from eave to ridge on each roof slope where panels and modules are located [LSUCCC Add 1511.3.2] (Exception: N/A where roof slope is 2:12 or less)

\_\_\_ Group R-3 – Single-Ridge Roofs (Gables only): Minimum of two 3-foot clear access pathways from eave to ridge on each roof slope where panels or modules are located [LSUCCC Add 1511.3.3] (Exception: N/A where roof slope is 2:12 or less)

\_\_\_ Group R-3 – Roofs with hips and valleys: PV panels/modules shall not be closer than 18 inches of hips or valleys where panels/modules are located on both sides of a hip or valley. No restrictions when panels/modules placed on only one side of the hip or valley [LSUCCC Add 1511.3.4] (Exception: N/A where roof slope is 2:12 or less)

\_\_\_ Group R-3 Smoke Ventilation Requirements: PV panels/modules shall not be less than 3 feet from ridge to allow for fire department smoke ventilation operations [LSUCCC Add 1511.3.5]

\_\_\_ Other than Group R-3 (All other Groups): Access to systems other than Group R-3 shall be in accordance with 1511.4.1 through 1511.4.2.1. Exception: Where determined by code official that the roof configuration is similar to that of a group R-3 occupancy, then Group R-3 requirements may be used [LSUCCC Add 1511.4]

\_\_\_ Other than Group R-3 (All other Groups): Roof Access: Minimum 6-foot wide clear perimeter around the edges of the roof [LSUCCC Add 1511.4.1]. Exception: Where either axis of the building is 250 feet or less, the clear perimeter around the edges of the roof shall be permitted to be reduced to a minimum 4 foot wide.

\_\_\_ Other than Group R-3 (All other Groups): Pathways: centerline axis pathways shall be provided in both axes of the roof. Pathways shall be in a straight line not less than 4 feet clear to roof standpipes or ventilation hatches, roof access hatches, and not less than one roof access hatch with a singular pathway not less than 4 feet clear to a parapet or roof edge [LSUCCC Add 1511.4.2]

\_\_\_ Other than Group R-3 (All other Groups): Smoke Ventilation: PV arrays shall not be greater than 150’ x 150’ on

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either axis. Smoke ventilation options between array sections shall be one of the following [LSUCCC Add 1511.4.2]:

- a. \_\_\_ A pathway 8 feet or greater in width;
- b. \_\_\_ A 4-foot or greater in width pathway and bordering roof skylights or gravity-operated dropout smoke and heat vents on at least one side;
- c. \_\_\_ A 4-foot or greater in width pathway and bordering all sides of nongravity-operated dropout smoke and heat vents;
- d. \_\_\_ A 4-foot or greater in width pathway and bordering 4-foot by 8-foot “venting cutouts” every 20 feet on alternating sides of the pathway.

\_\_\_ Note: Roof Access Pathway requirements are not applicable for detached non-habitable Group U structures including, but not limited to, parking shade structures, carports, solar trellises and similar structure.