# GUIDELINES FOR PLAN CHECK AND PERMIT REQUIREMENTS FOR SOLAR ENERGY DEVICES

The purpose of this Information Bulletin is to clarify the plan check and permitting process by the Los Angeles Department of Building and Safety (LADBS) for solar water heating and photovoltaic systems, hereby referred to as *solar energy devices*.

## I. BUILDING PLAN CHECK/PERMIT AND MATERIALS APPROVAL

**A. Zoning Requirements:** Structures that support solar energy devices shall conform to the same Zoning Code requirements such as height, yard, HPOZ, Specific Plans, and ICOs, as for a building. Water heater equipment accessory to the solar devices may be located with the same limitations as specified in the Information Bulletin P/ZC 2002-006: "Allowable Projections and Improvements in Required Yards". Allowable height projections shall comply with LAMC Section 12.21.1B3 (a), and Information Bulletin P/ZC 2002-008.

**B. Materials/Products Approval:**

1. **Solar Energy Devices Installed on Top of a Roof:** Solar energy devices installed immediately above a roof of any building shall be non-combustible or shall have at least a "Class C" fire rating classification per UL 1703 / UL 790. Testing and listing must be done by an approved listing agency. The roof where solar energy devices are installed shall have the code required fire rating classification. Access to the roof shall be provided in accordance with Information Bulletin P/MC 2011-006.

2. **Solar Energy Devices used as roofing material:** Solar energy devices installed as roofing material of any building shall have the same required fire rating classification as the roof.

3. **When Solar Energy Devices are Installed on Grade**: Structural support for ground-mounted panels shall comply with the same zoning and building code requirements of a building.

**C. Grading Information:** For ground-mounted installations, a grading pre-inspection is required for sites within the Special Grading Area (BOE Basic Grid Map A-13372) and where grading is involved or where the drainage pattern is changed. Plans must indicate location of ground-mounted devices with respect to slopes. See http://zimas.lacity.org/ to find out if the property is located within the Special Grading Area (BOE Basic Grid Map A-13372).

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**D. Permits:** A building permit is required for the structural support of all solar energy device installations.

**Exception**: A building permit is not required when all of the following requirements are met:

1. Solar device(s) is/are roof mounted and do not exceed the existing building height at the highest point.

2. The solar energy device system weight does not exceed four pounds per square foot (4 psf),

3. The solar energy device is installed within 18" of the roof immediately below,

4. The maximum concentrated load imposed by a solar energy device support onto the roof structure is a maximum of 60 pounds (0.18 kN); and

5. For wood construction, the maximum spacing for supports of the solar energy devices shall be 48" on center, and shall be anchored to solid roof rafters or to solid blocking with a minimum of one $^{5}/_{16}$" diameter lag screw embedded a minimum of $2^{1}/_{2}$" or as recommended by the manufacturer, whichever is more stringent. For other type of construction, the support shall be approved by the Department.

**E. Building Plan Check:** Structural support of solar energy devices requiring a building permit shall be submitted to building plan check for approval.

1. Complete plans shall be submitted showing dimensions and location of the supporting structure in relation to the property lines and any adjacent building.

2. Substantiating design calculations are required for supporting member sizes, connection details, and design loads imposed on the roof or other support.

3. Where the solar panel/collector surface inhibits superimposed concentrated loads, the weight of the collector may replace part of the code required live load. Regardless of the weight of the solar panel or collector, a minimum of one half of code required live load shall be used for design.

4. The wind load on the vertical projection of the collector shall be included in the analysis.

5. Provide a note on the plan, "No guardrails are required for installed solar energy devices pursuant to LAMC 91.1013.5."

6. All roof penetrations shall be sealed using approved methods and products to prevent water leakage.

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## II. MECHANICAL PERMIT AND LABORATORY APPROVAL

**A. Permits:** A plumbing permit is required for solar water heating systems.

**B. Product Approval:** Solar water heating systems shall be tested and listed by a recognized testing agency. A list of approved testing agencies is available @ http://www.ladbs.org/LADBSWeb/LADBS_Forms/TestLab/MTL_Testing_Agencies.pdf.

**C. Process for Obtaining a Plumbing Permit:** Prior to permit issuance, the Express Permit Counter staff shall initialize the permit application for the solar water heating system, create a clearance summary sheet for Zoning Approval, and direct the customer to LADBS Zoning Counter to obtain clearance approval.

## III. ELECTRICAL PLAN CHECK/PERMIT AND LABORATORY APPROVAL

**A. Permits:** An electrical permit is required for installation of solar photovoltaic systems.

**B. Product Approval:** The solar photovoltaic system shall be tested and listed by a recognized electrical testing laboratory. A list of approved testing agencies is available @ http://ladbs.org/LADBSWeb/LADBS_Forms/TestLab/ETL_field_lab.pdf.

**C. Materials:** Electrical wiring shall comply with the applicable provisions of the 2011 Los Angeles Electrical Code (2011 LAEC).

**D. Electrical Plan Check:** Electrical plan check is required for all photovoltaic system installations.

**Exception:** Plan check for solar installation is not required if all of the conditions listed below are met. Permits for these systems, which do not require plan review, will be issued by the Express Permit Counter following the procedure outlined in Section III-E.

1. The installation is in a one or two family dwelling.
2. A maximum of 2 strings are installed per inverter.
3. The total capacity of the photovoltaic system being installed is 10 KW or less.
4. No DC combiner box is installed (other than the box that is part of and is listed with the inverter).
5. System contains only inverters with isolation transformers.
6. No GFCI or AFCI over current devices are installed in the Alternate Current (AC) output of the inverter.

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7. Modules shall be roof mounted crystalline or multi-crystalline material.

8. AC Power system shall be 120/240 volts single phase.

9. The minimum service panel size shall meet one of the following:

   - 100 amps for systems with a maximum 20 amperes dedicated AC branch circuit, or
   - 150 amps for systems having a maximum 30 (or two 15) amperes dedicated AC branch circuit(s), or
   - 200 amps for systems having a maximum 40 (or two 20) amperes dedicated AC branch circuit(s).

10. The rating of service panel shall not exceed 225 amperes.

11. No AC modules, storage batteries, hybrid systems, or micro-inverters are installed.

For Express Permits, the applicant is required to complete forms E and $E_{PV}$ (attached). The Express Counter staff shall ensure the completed $E_{PV}$ form is returned to the applicant, along with the issued permit, to present to the field inspector.

**Counter Plan Check:** Solar installations, up to 14KW, in 1 & 2 family dwellings, will be reviewed at the Electrical Plan Check Counter provided a completed LADBS Photovoltaic Standard Plan and related specifications are submitted.

**Regular Plan Check:** Systems that do not qualify for the Express Permit or Counter Plan Check process will be required to be submitted through the regular plan check process. Two (2) complete sets of plans in accordance with Section 93.0207 of the Los Angeles Electrical Code shall be required at the time of submittal.

For both counter and regular plan check, prior to plan approval, the Electrical Plan Check staff shall refer all permit applications for photovoltaic systems to the Los Angeles Fire Department (LAFD) for approval. In addition, the staff shall create a clearance summary sheet for Zoning Approval, and direct customers to LADBS Zoning Counter to obtain clearance approval.

## E. Process for Obtaining an Electrical Permit:

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1. **Permit for Photovoltaic Systems which do not require an Electrical Plan Check (Express Permits):** Prior to permit issuance, the Express Permit Counter staff shall refer all permit applications for photovoltaic systems to the Los Angeles Fire Department (LAFD) for approval. In addition, the Express Permit Counter staff shall initialize the permit application for photovoltaic system(s); create a clearance summary sheet for Zoning Approval, and direct customers to the Zoning counter to obtain clearance approval.

2. **Photovoltaic Systems requiring Plan Check:** Photovoltaic systems that require electrical plan check will be processed by the Electrical Plan Check Counter.

## IV. REQUIRED APPROVAL/ CLEARANCES:

**A. Fire Department (LAFD) Approval:** An approval from LAFD is required for all permits pertaining to solar photovoltaic systems. LAFD's installation guidelines are available @ http://www.lafd.org/prevention/pdfforms/solar_pwr_req.pdf.

**B. Zoning Clearance(s):** Approval from the Zoning counter, by means of a clearance, is required for all Express permits and electrical plan check applications pertaining to solar energy devices. The Zoning Counter staff shall determine if the site is within a Specific Plan, HPOZ, ICO, CRA, or if it involves a historical monument (i.e. CEQA review) and refer customers to the appropriate agency by creating the required clearances, if clearance approval is required. Once all the clearances are approved by the appropriate agency, the Zoning Plan Check Counter staff shall approve the zoning clearance in PCIS and direct customers to the Express Permit Counter (for Express permits) or to the Electrical Plan Check counter (for electrical plan check applications) to complete the process.

## V. LOS ANGELES DEPARTMENT OF WATER AND POWER (LADWP):

For LADWP's requirements and information regarding solar installation, refer to http://www.ladwp.com/solar.

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