



# CITY OF LAKEWOOD PERMIT PROCESS ASSISTANCE HANDOUT

Public Works - Permits – Civic Center North – 470 S Allison Pkwy – 303.987.7500

## SOLAR PANEL INSTALLATIONS

This handout is applicable to active solar photovoltaic (PV) and solar hot water systems.

Printable copies of permit applications and contractor registration applications are available at [www.lakewood.org](http://www.lakewood.org) or you may pick up copies at the address above.

### Contractors and Homeowners as General Contractors:

- Homeowners may obtain the building permit for solar systems when they are performing the work on their owner-occupied single-family lot.
- Any person hired to perform work must have the required City of Lakewood contractor registration to do work within the city limits.

### Submittal Requirements:

- Provide a completed permit application. Separate permits must be obtained for the associated electrical or plumbing systems.
- Plans for solar systems may be reviewed while-you-wait if the plan includes all of the following information:
  1. Provide two complete sets of the plans
  2. Provide layout of solar panels with structural connection footprint, total number of structural connections, and the total square feet of the panel array.
  3. Specify the existing roof covering materials, number of layers of roof covering, the roof pitch, and the pitch of the proposed solar panels.
  4. Provide details of structural attachment including the number and size of attachments, or the amount and location of ballasts.
  5. Provide cut sheets for all manufactured products including the solar panels, structural attachment system, standoff or other attachment and flashing, and all electrical equipment.
  6. PV electrical one-line diagram showing panel array electrical production in KW, conductor size, equipment ground and grounding electrode size. Designate inverter type and disconnecting equipment locations.
  7. Use the 2011 National Electrical Code for electrical design and specify on the plan.
  8. Electrical systems that involve an electrical service panel of over 200 amps must be designed and bear the seal and signature of a registered Colorado Professional Engineer.
  9. Solar water systems must include the location and type of storage tank, total installed and water-filled weight of the solar panels per square foot, the heat exchanger, a description of the heat transfer medium, all controls, shutoff valves, and the backflow protection device.
- 10. For ground mounted solar systems you must also provide:
  - Plot Plan drawn to 1" = 30' or larger standard engineering scale. See page 3 of this handout for an example of the required plot plan.
  - You may draw a plot plan or you may use an Improvement Location Certificate (ILC) as your Plot Plan submittal. Make a copy of the ILC and add the required information. Draw the proposed solar panel location on the copy of the ILC using the same scale as the original.
  - Include north arrow and scale used.
  - Provide the property address and names of all adjacent streets.
  - Show all property lines and easements with dimensions.
  - Show footprint of existing home and the new solar panels.
  - Show all existing accessory buildings and label type and dimensions (e.g. 10' x 12' shed).
  - Show all walks, drives and patios.
  - Provide dimensions on all sides from the new solar panels to property lines and other structures on the lot.



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Structural analysis of the existing roof and calculations for the new installation must be performed by a registered Colorado Professional Engineer when:

- The new panel system exceeds 3.5 pounds per square foot
- The existing roof has multiple layers of roof covering
- Panels are not installed parallel to the roof surface (they are installed at a slope that is not parallel to the existing roof)
- The system is installed greater than 12" above the existing roof surface
- The roof structure is a flat roof system
- The system is to be installed on a commercial building.

### General:

- Structural connections must be directly connected to the roof framing through not more than one-layer of asphalt shingles. Special connection details will be considered by the Building Official as an alternate connection method. Connections cannot be made through tile or wood shingle roofs.
- The roof connection must be flashed with an approved system.
- A minimum of one lag screw 5/16" in diameter with 2" of thread embedded into the wood framing is required per structural connection.
- Connection to the roof sheathing only is not allowed. Structural connections must be to solid framing.
- There must be no fewer than 2 connections per solar panel.
- The panel systems cannot obstruct any plumbing or mechanical vents.

### Inspections:

For most installations, the following inspections will be required:

- Framing inspection of the roof structural connections including the flashing systems before panels are installed.
- Rough electrical inspection is not required if all wiring is readily accessible.
- Rough plumbing for hot water systems.
- Final inspection is required for all associated systems permits and the building permit. Safe access must be provided to the roof and applicable attic areas for inspections. Owner or contractor must provide a ladder to the attic and when the roof eave line is greater than 10' above the ground.
- All equipment must be accessible for inspections.
- The building permit inspection record card and all approved plans must be available for all inspections.

In some commercial applications special inspections may be required. The City of Lakewood plan review staff will inform you whenever special inspection is necessary.

We are happy you are building in Lakewood and we want to provide you whatever information you require. Please call 303-987-7500 with any questions.



**SAMPLE PLOT PLAN**

