Inspection and Maintenance Overview Photovoltaic Systems for PV System Owners

Prepared by
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Disclaimer

- This presentation is provided as an overview to provide a basic understanding of PV inspection and maintenance considerations for homeowners.
- This overview is not to be used to perform inspection or maintenance services by anyone.
- The presentation is an overview and therefore does not necessarily include every aspect of inspection and maintenance of photovoltaic systems.
- All inspection and maintenance should be performed by a professional licensed contractor.
Major components

- Modules
- Rack
- Combiner box
- Conduit and conductors
- Inverter(s)
Do you need an inspection?

- How old is your system?
- Was your system installed by a professional licensed contractor?
- If you are not the first owner
  - Many systems were installed by do-it-yourselfers.
  - Some systems were installed by unlicensed individuals or companies.
- When was your system last inspected?
- Annual or every-other-year inspections are recommended, or if energy output changes significantly during clear weather.
You should not inspect the system yourself.

- Ladders and ladder safety
- Tethering
- Potential fall hazard
- Potential slip or trip hazard
- Potential shock hazard

System maintenance should only be performed by a licensed professional solar contractor.
When was the last time you looked at your system records?

- Is the installation warranty still in effect?
- Is the manufacturer warranty (modules and inverter(s)) still in effect?
- Was the system installed according to the manufacturer installation instructions?
Inspection

- Do not attempt to inspect or maintain your own system – hire a professional.
- Do you own your system or is your system owned by a leasing company or a Power Purchase Agreement provider?

Maintenance may be provided in these contracts. Read your contract for specific terms and conditions.

System maintenance should only be performed by a licensed professional solar contractor.
What to look for in a professional solar contractor

- Do they have a valid contractors’ license?
- Are there any complaints pending at the Contractors’ State License Board?
- Are they a member of CALSEIA?
- Do they have any BBB or on-line reviews?
- How long have they been installing photovoltaic systems like yours?
- Have they installed systems in your area?
- Do they have a business in your community?
- Did they install your system?
- Do they have workers compensation insurance?
- Do they warranty their workmanship?
- Did they receive manufacturer or other training for the type of system you own?
Do you need a written contract?

- California Contractors State License Law establishes terms and conditions for construction contracts when the labor component of the contract exceeds $500.
- Always get agreements in writing.
  - Be as specific as possible to improve communication and prevent misunderstandings.
Module
Inspectors should look for:

- Are the modules dirty?
- Is there any debris (twigs, leaves, nests) under the modules?
- Do any of the wires on the back of the modules appear loose?
- Do any of the screws holding the modules to the rack look loose?
- Do the backs of the modules look stained?
- Are any of the individual module cells or glass cracked?
- Are the modules shaded (trees grow)?
- If you have BP modules installed between 2002-2005: BP Solar 3, 4, and 5 series and SX line, contact bpsolarwarranty@bp.com for inspection of the system to ensure scorching behind the modules has not occurred
Roof, Rack, and Roof Penetrations Inspectors should look for:

- How old is your roof?
  - If you are going to re-roof, you should hire a solar contractor to remove and replace the modules after the roof is replaced.
- Does the roof material beneath your modules appear to be in good condition?
- Do you have modules over a shake roof?
- Has the recent weather been unusual (more rain, windier than usual, more snow than normal)?
- Are all of the roof fasteners properly tightened and sealed with a roof sealant?
- In the attic, is there any sign of water seepage?
Wiring
Conduit, conductors, and combiner box
Inspectors should look for:

- Do connections from the modules to the roof appear to be tight (i.e., water resistant)?
- Is there any exposed wiring?
- Are there any loose fasteners or conduit clamps?
- Is the combiner box water resistant?
- Is the grounding system in good condition?
- Are the wiring lugs properly tightened?
Inverter
Inspectors should look for:

- How old is the inverter? (Many inverters need to be replaced sometime between 6 and 11 years.)
- Do you have an inverter that was recalled?
  - Xantrex Technology under the brand names Xantrex, Sunpower, and General Electric manufactured between September 2005 and August 2010
  - If so, call Xantrex 1-800-714-7176
  - No reports of injury or property damage but should be replaced promptly.
- Are there any signs that water has entered the inverter box?
Well Maintained = Happy Customer

- Please, do not do your own inspection and maintenance.
  - It’s a safety risk if you are not experienced with working on a roof.
  - It’s a safety risk if you are not experienced working with electrical wiring (dc or ac, polarity and reverse polarity)
  - It may void your manufacturer warranty if you modify the system in a manner that does not meet installation requirements.

System maintenance should only be performed by a licensed professional solar contractor
Example: Self Installed System

- Roof sealant questionable
Example: Self Installed

- Inverter wiring arced, smoked, no property damage except for PV system itself
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