1. **Issue Statement:**

The growing number of re-roofing projects on buildings that have photovoltaic panel systems installed is prompting AHJ’s to search for sensible guidelines to ensure safety codes are followed. SEAC has developed the following permitting and inspection guidelines in an effort to support the inspection community and the growing number of re-roofing projects that involve an existing photovoltaic panel system:

These guidelines pertain to the following activities:

1) Removing a previously installed, inspected, and approved photovoltaic panel system. Followed by...

2) Repairing or replacing the roof surface below the photovoltaic panel system. Followed by...

3) Reinstallation of the previously installed, inspected, and approved photovoltaic panel system.

2. **Background:**

Photovoltaic panel systems can have a longer lifespan than the roof underneath the system. In many cases, roofing systems needs repair or replacement during the productive life of the photovoltaic panel system. This work requires the existing permitted photovoltaic panel system be removed so the roofing work can be completed. Existing installations of electrical equipment, approved under previous code rules, are permitted to remain in use per 80.11 (Annex H) of the California Electrical Code, Section 102.6 of the California Building Code and 102.7 of the California Residential Code. However, Articles 690 and 705 of the 2016 California Electrical Code do not address specific requirements for reinstallation of existing photovoltaic panel systems.

3. **Current Status:**

SEAC has reviewed existing AHJ policies, and worked with local building official, inspectors, and first responders to identify the main concerns. In addition, SEAC is providing recommendations to allow AHJ’s to implement a “reinstallation of a previously permitted photovoltaic panel system” procedure and checklist for use within their building and safety department.

The Solar Energy Action Committee (SEAC) has developed the following guidelines to assist local jurisdictions assure code compliant reinstallation of the photovoltaic panel system, while allowing property owners to make roofing repairs without imposing unnecessary burdens.
4. **Key considerations:**

The following guidelines were developed to assist AHJ’s in developing an efficient and effective process for the property owner, contractor(s), and jurisdiction.

**A. Goals:**

1) Establish verification process to assure the reinstalled photovoltaic panel system is reasonably safe.

2) If possible, utilize pre-existing jurisdiction fee schedules to minimize or eliminate the need to create a new category for a reestablishment permit.

3) Eliminate added burden for the AHJ by minimizing or eliminating additional plan checks, multiple inspections, and/or excessive paperwork for a system which was previously permitted and inspected.

4) Remove unnecessary barriers for property owners and contractors to assure re-roofing under photovoltaic panel systems is performed safely and the final installation is verified to be reasonably safe.

5) Create a process for inspectors to easily verify the reinstalled system is in compliance with the applicable code requirements.

**B. Primary Safety Concerns:**

The following questions/concerns need to be addressed when removing and reinstalling a solar photovoltaic panel system:

1) Is the reinstalled system in compliance with all applicable code requirements in effect when originally permitted?

2) Are qualified personnel performing the removal and reinstallation of the system?

3) Is the roof covering the same type as originally installed (like for like)?

4) Is the photovoltaic panel system installed in accordance with the manufacturer’s installation instructions?

5) Are there means to disconnect all ungrounded dc conductors of a PV system from all other conductors in a building or other structure?

6) Is the photovoltaic panel system properly labeled for first responders and technicians?

7) Can the structure support the additional weight and uplift of the existing system?

All above items can be addressed by a standard field inspection except for structural requirements, however, if the system was originally permitted and inspected to be installed on structure in question, compliance is met provided the roof attachments are securely fastened per manufacturer installation instructions and properly flashed/sealed.

**C. Additional/Secondary Safety Concerns:**

The applicable code requirements for the installation of photovoltaic panel systems have changed noticeably over the past several major and intervening code cycles. Newer codes and safety standards have been adopted in an effort to improve safety, however, systems installed in previous code cycles may not be in compliance with current code requirements and safety standards. Depending on the age of the system, the photovoltaic solar panels, racking systems, inverters, and other sys-

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tem hardware may not be able to comply with the latest codes and standards. Below is a list of some of the requirements older systems may not meet due to these requirements being developed and adopted after the equipment was installed:

1) UL 1741
2) UL 1703 or UL 2703 Fire Classification
3) CECv2016 690.12 (Rapid Shutdown)
4) CECv2016 690.5
5) CECv2016 690.35©
6) FCC Part 15, Class B / ICES-0003 Class B
7) CAN/CSA-C22.2 No. 107.1-01
8) PV wire instead of USE-2 conductors.
9) Rule 21 advanced inverter functionality

5. Current Code Section similar in applicability:

Re-rooﬁng requirements are covered in CBC Section 1511. The code does not provide speciﬁc requirements when a photovoltaic panel system is mounted on the roof and does not address a re-installation of that system.

CBCv2016, 1511.5 Reinstallation of materials regarding reuse of materials during a re-rooﬁng. “Existing slate, clay or cement tile shall be permitted for reinstallation, except that damaged, cracked or broken slate or tile shall not be reinstalled. Existing vent ﬂashing, metal edgings, drain outlets, collars and metal counter ﬂashings shall not be reinstalled where rusted, damaged or deteriorated. Aggregate surfacing materials shall not be reinstalled.”

6. Recommendation(s):

A photovoltaic panel system removed for roof repair or replacement is allowable under this policy, provided:

1) The original photovoltaic system was permitted and approved. The year of the original permit must be known.
2) (This requirement can be added at the discretion of the AHJ). At time of application submission, applicant can provide one of the options below to assist the AHJ in assuring re-installation complies with the minimum safety requirements applicable to the original system.
   a. A copy (digital or paper) of original approved PV system plans.
   b. If plans are unavailable, pre-removal photographs of the existing system.
   c. A pre-removal inspection of the existing system.
3) The photovoltaic system must be reinstalled on the original structure.
4) A roofing permit is obtained for the re-rooﬁng.
5) A standard “non-plans” electrical permit is obtained by a qualiﬁed person for the removal and re-installation.
6) A ﬁnal inspection is performed after reinstallation.
7. **Applicable to whom:**

These recommendations will benefit all photovoltaic panel system stakeholders and the local authority having jurisdiction tasked with safety and code compliance when re-roofing under an existing photovoltaic panel system is performed.

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