SOLAR ENERGY ACTION COMMITTEE
List of 60 Challenges – June 2015

Date: Jun 2015	**Groups:**
Format:	**AHJs**
	Members: Behzad Eghtesady Hadi Tabatabaee Mostafa Kashe Patrick Healy Pete Jackson Steve Jones
Description of issue: Impact on public,private,customers and communities: Recommendation to address the issue: Detailed background on the issue: Who would benefit by implementing the recommendation: What are the benefits to be derived by implementing the recommendation:	Steve Jones: 1. The lack of experience and training on the part of the designer, installers and inspectors 2. Understanding, permitting and approving new technologies 3. Lack of uniformity with the submittal and inspection process on large commercial projects 4. Improper racking and flashing installations 5. The lack of understanding of the 120 % rule of NEC 690.64 and 705.12 (D)(2). 6. The lack of communication that takes place between Solar company representatives and their designers and plan reviewers. 7. Companies sending out unqualified people to meet with the inspector at the time of inspection. 8. The use of unlisted listed and labeled equipment 9. Inconsistent AHJ rules, requirements not found in the code and applied to projects. 10. Lack of proper labeling applied to the equipment
	Patrick Healy 1. Ambiguity in code language, Discrepancies in interpretation 2. Delays in adopting new and better codes – California Solar Code or more California amendments clarifying NEC requirements 3. Local ordinances and solar stub-out or pre-wire best practices. 4. Solar farm requirements – Consistency among AHJs for applicable requirements, Guidelines for AHJs to follow 5. Consistency about fire setbacks, disconnect requirements, roof mounted disconnects for micro-inverters, center fed-panels, 3rd party field evaluations 6. UL Standards keeping up? 7. Poor racking manufacturer installation instructions 8. Plan submittal - Plans not accurate for job conditions – No pre-visiting of site, Plan changes – too many, Incorrect information provided, Maximum number of plans able to be submitted at one time 9. Inspection - Not being ready for inspection, Nobody on site for inspection, Poorly installed systems 10. Certified solar plan checker/inspector/installer

	Pete Jackson 1. Inexperience & lack of quality training. 2. Unaware of the existence and purpose of installation codes. 3. Unaware or no appreciation that installation codes and product standards are consensus documents created by the industry stakeholders. 4. Unaware of the existence and purpose of product standards, NRTL's & listing. 5. Unaware of the existence and purpose of manufacturers installation instructions. 6. Unaware or do not appreciate the proper roles of the AHJ, designer, installer, manufacturer, NRTL &…owner. 7. A conflict of cultures between the PV and traditional electrical industry as the PV world is being integrated into the mainstream electrical industry. 8. There seems to be somewhat of a "cult of personalities" with the PV world. In other words, something is true or correct only when stated by a certain person or group as opposed to being true/correct based strictly on the merits of the science/technology/code language involved. *The lack of knowledge, experience and training on the part of the designer, installers and inspectors appears to be a major issue. Definitely one of the top 10 issues.*

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Date: Jun 2015	**Groups:**
Format:	**Installers**
	Members: Jon Clark Frank Kneller Jim Cahill Ron Mulick Micah Fromlin
Description of issue: Impact on public,private,customers and communities: Recommendation to address the issue: Detailed background on the issue: Who would benefit by implementing the recommendation: What are the benefits to be derived by implementing the recommendation:	Jon Clark 1. Single Inspection Scenario: Standardize a checklist across jurisdictions to increase the single inspection pass rate. Target a 50% adoption rate by the end of 2015 2. AB 2188 Execution: Push forward on AB 2188 with a strong preference to online submissions. Include KPI data for performance monitoring/disclosure (cycle times, etc.) 3. Meter Spots: a) Allow contractor to perform MSP upgrades in accordance with ESR requirements at the contractor's own risk. b) Provide open source data for all meter spots completed so that contractors could effectively target sales/marketing efforts. This would also reduce overall meter spots for work that never gets performed. 4. Commercial Process Documentation: Provide written process documentation and points of contract for commercial installations. Competitive market, with thin margins require details/cost to be flushed out. Unknowns prohibit delivering solar to the community. 5. HOA Approvals Permit Requirement: Solar Rights Act should protect the homeowner. Disputes should be resolved between the homeowner and HOA 6. ITC Extension: Extend the Solar Investment Tax Credit at 30% for a period not less than 4 years. 7. AB 327: Extend the same consumer protections from anti-solar taxes and charges that current NEM customers benefit from 8. UL2703: Needs full adoption
	Ron Mulick I believe that a distinction should be made between large commercial and utility projects and projects that are under say 10KW. As Osama Younan knows, LA City has basically an "over the counter approach" to systems that are under 10KW. This of course leaves NEC compliance, grounding, location of array and many other factors up to the field inspector to enforce and/or approve. This puts a larger burden on the inspectors in the field, but it really streamlines and reduces man hours for both contractors and B&S permit processing personnel. For obvious reasons, systems over 10K go through a submittal process and are plan checked by an B&S engineer. I think that it would behoove us to get as much information from Osama on their process for systems under 10K and use/modify their program. We don't need to re-invent the wheel. This would allow us to focus more on the larger system approval process's (and enforcement).

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Date: Jun 2015	**Groups:**
Format:	**Manufacturers**
	Members: Craig Carni David Rowland Frank Berring Jeff Spies Mark Baldassari Robert Vinje Steve Reed
Description of issue: Impact on public,private,customers and communities: Recommendation to address the issue: Detailed background on the issue: Who would benefit by implementing the recommendation: What are the benefits to be derived by implementing the recommendation:	Rob Vinje SunPower does Utility, Commercial, and Residential, but has focused on Utility in LA County with the 750MW Solar Star project, so the below suggestions are utility oriented for now (but some are applicable towards other smaller projects). The teamwork that we experienced with Mostafa's team was great, but clearly was work-in-motion as we (SunPower) and LA County worked together through many "firsts" of a large utility project. Together the SunPower and LA County team continually kept in mind that we both had common goals – safe and quality projects that finish within the customer's budget and schedule, and can be planned by the EPC firms doing them. The results, while they took more internal contingency than planned, achieved our customer's goals of a safe, quality, on budget and schedule project that we and our customer were able to communicate publicly. We look forward to doing more with the SEAC team to help the industry and Counties get better together. Some comments and suggestions below for the team; For LA County and EPC Contractors to improve together: 1. Establish a documented and consistent permitting process, with review durations/turnaround times, and with formalized review comments documented, that are aligned between LA County groups. a. Example: It was difficult to anticipate the schedule to receive AHJ review comments. Formalize review comments. Comments were collected during live review meetings with the county, and recorded by SPWR via meeting minutes. This made this hard to track & keep accountability. b. Example: The civil reviewers wanted minimal grading, but the hydrology group required extensive grading (water quality basins) to meet flood control requirements. How can the process align the individual groups of the LA County district? c. Establish a variance process for issues with NEC, UL standard interpretation differences for plan check process i. Example: If a variance process existed, we could address some of the issues/questions with some NEC code interpretation ahead of plan check issuance, recorded/documented appropriately. Other AHJs have a standard variance process where the contractor can request a closer look/interpretation. 2. Establish a clear list of inspection requirements and determine what can be done before construction - includes both electrical & material inspection

	i. Example: LA County wanted reports by 3rd parties for most aspects of the installation. This came in form of NRTL UL reports, additional material inspection and tracking requirements etc…. It would be good to have these requirements formalized/documented by LA County ahead of mobilization & formally documented Currently, there is a general statement "as requested by the inspector…." But specific requirements in a formal document would be best and would allow a better plan by the contractors to anticipate the needs, schedules, and costs of these items. c. Include planning for LA Co inspector workload per construction schedules (or a 3rd party group that expands per the needs, and clearly allows the inspectors to handle their workload) i. Example: SunPower paid for additional LA County inspectors on site to accommodate the accelerated SPWR construction schedule. This was great to have this flexibility with Mostafa and Scott's teams. 3. How can we help LA Co have more confidence in NRTLs that are not UL? What are the expectations of the NRTL v. SPWR? a. Example: LA County is pushing for better quality NRTL reports, How can we work together to allow for any report by a NRTL to be acceptable to LA Co? 4. Consider separate interpretation for 'behind the fence' PV Plants – should utility (within closed fences) be held to commercial (public accessible) standards? a. Examples include the bollards, e-stop and additional grounding. Are these features that one would see in a parking lot or other places that the general public or untrained people have access to? When SCE or others build a generating facility or substation, they take into consideration that only trained people will be in the facility, therefore they design to a relaxed standard. 5. Solar Handbook for commercial/utility scale- can SunPower and others get involved? a. Example: LA Co pioneered the CA residential handbook to help make permitting faster & the requirements clearer. How can we (engaged SEAC members) start the same process for commercial (& utility) and how can we get involved now?
	Patrick Healy (AHJ) I would like to see area wide input on the topic of solar farms. We have had a few utility grade projects down here too. The NEC requirements and/or UL standards can sometimes seem out of place for utility grade installations. However by the same token these are privately held installations that can be sold to other non-utility based companies. Who knows the extent of their employee training, so perhaps typical consumer-grade requirements should apply. By the same token there has been discussion to take utility grade projects away from the local AHJs altogether mainly due to the strict and varied requirements they may impose. This topic is interesting, but it certainly doesn't apply to all AHJs and all agencies involved with SEAC.

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Date: Jun 2015	**Groups:**
Format:	**Test Laboratories**
	Members: John Taecker Sunny Rai
Description of issue: Impact on public,private,customers and communities: Recommendation to address the issue: Detailed background on the issue: Who would benefit by implementing the recommendation: What are the benefits to be derived by implementing the recommendation:	John Taecker 1. The ready acceptance by jurisdictions of third-party certifications of photovoltaic equipment in accordance with Outlines of Investigation. Background – Photovoltaic equipment is evolving faster than the formal development of consensus standards. Standardized certification requirements, used in all third party certifications, are necessary in the interim between the development of these products and the finalization of a consensus standard. These interim requirements take the form of "Outlines of Investigation". The development of a consensus standard can take a considerable amount of time because of the rules of due process. 2. Appropriate and applicable requirements need to be consistently applied for third-party certifications of photovoltaic equipment. Background – Photovoltaic equipment is expected to perform for extended period of time in providing power safely to the building. Many factors need to be taken into consideration, such as fire, electric shock, and mechanical hazards. Specific requirements applicable to this equipment are necessary in order to achieve the level of safety expected by the model installation codes. Appropriate and applicable requirements are not always applied consistently. 3. Aligning local jurisdiction requirements with the product certification requirements. Background – Local jurisdictions have concerns and issues that may or may not be addressed in the product certification requirements. Some requirements may not be able to be included into a national standard, but need to be addressed locally. How can these local requirements be communicated before the installation of the products? How can these local requirements be considered for inclusion in the national standard? 4. Receiving timely information to provide the opportunity for third party certifiers to address field issues. Background – Understanding current field conditions can assist in resolving field issues, as well as provide input for future changes to certification requirements.

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Date: Jun 2015	**Groups:**
Format:	**Utilities**
	Members: Tiffany MayCumber
Description of issue: Impact on public,private,customers and communities: Recommendation to address the issue: Detailed background on the issue: Who would benefit by implementing the recommendation: What are the benefits to be derived by implementing the recommendation:	Tiffany MayCumber 1. An electrical panel rewire/upgrade without a permit and without an inspection from the AHJ. 2. Sub-standard performance by some contractors putting the customers in harm's way. 3. Some PV installers are not qualified electrical workers. 4. Some PV installers installing or modifying service equipment that lacks basic knowledge of SDG&E service requirements and procedures. 5. Some PV installers disregarding working space requirements and/or electrical clearance requirements from foreign equipment. 6. Some PV installers that fail to include electrical service work and material requirement in their plans, and are slow to accept responsibility for their mistake. With untimely work and unplanned added cost to the customer at the end when the job was thought to be done. 7. A customer needing an electrical panel rewire/upgrade (trenching maybe required) and not contacting SDG&E for a Service Order. 8. Some PV installers refusing to accept current lead times for acquiring Service Orders and scheduling a "disconnect/reconnect" from SDG&E. 9. Some contractors perform an "unauthorized entry" into SDG&E's pull-can, pull-section and hand-hole to perform their own "disconnect/reconnect". 10. High volume of Service Order requests from some solar contractors that do not materialize into actual solar installations (some solar contractors are requesting Service Orders from SDG&E in order to have the advantage of selling their solar products and services to the potential customer). 11. An inspection from the AHJ on the electrical panel rewire/upgrade (trenching maybe required) without a Service Order. 12. The AHJ performing an inspection on an energized electrical panel rewire/upgrade without a "disconnect" from the utility. 13. Taps and wiring for some PV installations non-compliant with the NEC that task local Jurisdictions with detailed and cautious inspections to avoid missing something. 14. Some PV installers apply an artificial sense of urgency seeking quick turnaround for personal gain at the expense of responsible behavior and due diligence. 15. Some PV installers misrepresent their product to their customers and the public. For an example, a customer who is in Tiers 1 & 2 billing would most likely not benefit from purchasing/leasing a solar system.