
SUMMARY OF 2011 *NEC*[®] CHANGES

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Solar ABCs Stakeholder Meeting

October 15, 2010

Los Angeles, CA



Solar America Board for Codes and Standards



Acknowledgements

2011 NEC Changes for PV

The authors wish to acknowledge the participation, collaboration and expertise of nearly 150 dedicated engineers, installers, designers, technicians and PV industry associates that participated in the “Industry Forum” for Article 690-Solar Photovoltaic Systems and Article 705-Interconnected Electrical Power Production Sources, of the 2011 Edition of the *National Electrical Code*. John Wiles served as secretary and submitter of forum proposals. The Solar ABCs provided the important portal for dissemination of related activities.



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Statistics on Articles 690 & 705 Proposals for the 2011 NEC

- **79 Proposals for Article 690**
 - 43 from the PV Industry Forum
 - 36 from public
- **Article 690 Proposal types**
 - 15 Proposals for New Language
 - 53 Proposals for Revision
 - 6 Proposals to Move
- **39 Proposals for Article 690 Were Accepted for the ROC. (44 Comments)**
 - 53% of Industry Forum
 - 44% of Public Proposals
- **18 Proposals for Article 705**
 - 10 from the PV Industry Forum
 - 8 from public



NEC® PV Links

“Industry Forum”
Public Input
NFPA Coordination



International Standards
IEC



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Article 690 Changes for 2011

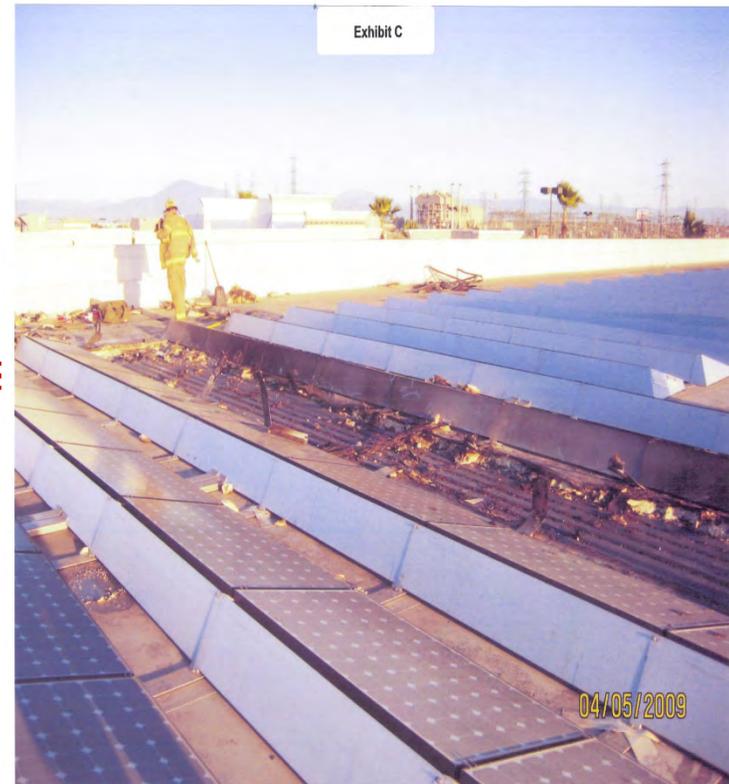
- 690.2 - Definition for PV Subarray and Monopole to clarify other parts of Article 690
- 690.4(B-G) - Identification/grouping of conductors of different systems
- 690.4(E) – Installation of conductors etc by qualified persons!
- 690.4(G) – Requirements for system wiring and separations for bipolar.
- 690.7(E) – grounding of bi-polar PV arrays GFD can interrupt ground



Article 690 Changes for 2011

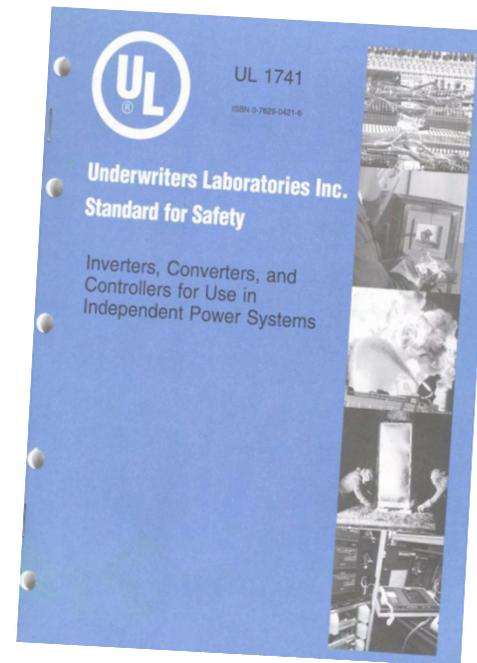
- 690.8(B) – Good clarification on ampacity ratings for conductors and overcurrent devices
- 690.9(B) – Removed need for overcurrent devices between an inverter and transformer
- 690.11 – Language for requirements for arc-fault detectors in PV array circuits
- 690.13 – Major clarifications for disconnects for current carrying conductors
- 690.16(A-B) – Servicing fuse and disconnects

*Red indicates major impact change



Article 690 Changes for 2011

- 690.31(B) – PV wire and conduit fill
- **690.31(E) – Major change for DC source circuits in metal conduit in buildings**
- 690.43 – Requirements for PV equipment grounding/bonding
- 690.47(B) – Single grounding electrode with multiple inverters and alternate clamps for circuit breakers
- 690.47(C) – Systems with ac and dc grounding requirements
- 690.62 – Ampacity of neutral conductor for 3 ϕ Y systems
- 690.63 – Unbalanced interconnections/POC moved to 705
- 690.72(C) Requirements for Buck-Boost converters



*Red indicates major impact change



Article 705 Changes for 2011

- 705.4 System install by qualified persons
- 705.12(A) – Supply side sum of ratings shall not exceed the service
- 705.12(D) – Exception to allow 125% for calculation of bus current
- 705.60 – Rating of Overcurrent Devices
- 705.65 – Overcurrent protection fixes on wholesale transfer of 690 language to 705. Deleted PV specific language and replaced PV source circuit with inverter output circuit.



2011 NEC Activities appear on the Solar ABCs Website

- The full ROP and ROC the full draft of the 2011 NEC can be downloaded from the NFPA web site.
<http://www.nfpa.org/aboutthecodes/AboutTheCodes.asp?DocNum=70>
- The activities are also available on the Solar ABCs web site at



The 2011 NEC Schedule

- A public comment period closed 10/23/2009
- The CMP4 reviewed and balloted the public comment 12/9-12/2009.
- Formal Paper Ballots submitted 1/12/2010
- Correlating Committee reviewed changes 2/22-26/10
- Standards Council Issuance completed in August 2010
- 2011 *NEC* published in Sep 2010

