

# Certifications and Standards related to NEC 690.12 Rapid Shutdown Components and Systems



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# 2014 Rapid Shutdown NEC 690.12

- PV system circuits installed on or in buildings shall include a rapid shutdown function that controls specific conductors in accordance with 690.12 as summarized below:
  - A. Controlled conductors apply only to PV system conductors as follows:
    - More than 1.5 meters in length inside a building, or
    - More than 3 meters (10 feet) from a PV array.
  - B. Controlled conductors shall be less than or equal to 30 volts and 240 VA within 10 seconds of rapid shutdown initiation and are to be measured between any conductor and ground.
  - C. Equipment that performs the rapid shutdown shall be listed and identified.
- This is a new section for protection of fire fighters. UL has published a new CRD including the requirements for these rapid shutdown systems.

# What is the intent of 690.12?

- To provide a means to shut down, limit or attenuate the output power of a PV array to a low level in the event of an emergency and
- To be used by fire fighters to reduce hazards of working around live PV wiring.



# What is a CRD and what is it used for?

- CRD stands for:

Certification Requirement Decision

- It establishes a published set of requirements to address safety concerns in the absence of existing requirements in a published standard.
- Upon publication the CRD is required to be submitted to the STP for review and comment with intention to be included into the published standard.
- CRDs are useful tools for standards with fast growth like in distributed generation.



# UL 1741 CRD for Rapid Shutdown Equipment

- **Published on April 2<sup>nd</sup> 2015 and covers the following:**
  - A. Electrical Isolation Systems (EIS).**
  - B. Electrical Output Attenuation Systems (EOAS).**
  - C. PVRSS which include PV Disconnect Functionality.**
  - D. Functionality can be built into many pieces of PV equipment – Inverters, Combiners, Disconnects.**



# New UL PV RSS Certification Options

- UL Listing of PV Rapid Shutdown Systems
- UL Listing of PV Rapid Shutdown System Equipment  
*(Complete products used within a system)*
- UL Recognition of PV Rapid Shutdown System  
Equipment Components



# The High Reliability Option

- This PV RSS equipment may also be investigated to functional safety standards for a higher level of fault tolerance.
- This equipment may be additionally marked "High Reliability Equipment."
- The interconnection of various rapid shutdown equipment evaluated individually for high reliability once integrated in a rapid shutdown system does not necessarily result in a high-reliability system.
- Only rapid shutdown **systems** rated and marked as "High Reliability" have been investigated and found compliant as a high-reliability system.



# Current Status of Rapid Shutdown Requirements

- Once the CRD was published a UL 1741 revision proposal was sent to the UL 1741 STP to start the consensus development process.
- The industry task group has been working on revising and modifying the revision proposal in preparation for the STP to vote for inclusion of the document into UL 1741.
- The task group is scheduled to complete its work in October 2015 and then the draft will be submitted to the STP for balloting and if necessary additional commenting.

# STP Process Time Line





# Thank you for your time

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