

**NFPA 70® - 2014 Edition**

*National Electrical Code®*

**TIA Log No:** 1234

**Reference:** 705.12(D)(2)(3)(e)(new)

**Comment Closing Date:** June 17, 2016

**Submitter:** William Brooks, Brooks Engineering, Representing Photovoltaic Industry Code Council

1. *Add new* 705.12(D)(2)(3)(e):

(e) A connection at either end, but not both ends, of a center-fed panel board in dwellings shall be permitted where the sum of 125 percent of the power source(s) output circuit current and the rating of the overcurrent device protecting the busbar does not exceed 120 percent of the current rating of the busbar.

**Substantiation:** Over the past two years there has been considerable confusion in the field related to the enforcement of requirements related to connecting solar PV system interconnection breakers to busbars of center-fed panelboards in dwellings. This has caused jurisdictions to require panelboard upgrades on several thousand homes with PV systems. These panelboards are otherwise in good mechanical condition and in no immediate need of replacement for any other reason than to comply with 705.12(D)(2)(3). In the 2017 NEC edition development, a specific allowance for the use of the 120% of busbar rating for center-fed panelboards in dwellings was approved. The language is duplicated from that approved revision and placed after the existing language in 705.12(D)(2)(3)(d) so that no further revisions would be necessary.

Here is a quote from the substantiation used for the 2017 revision:

“The allowance for panelboards in dwellings to have a PV breaker and the service breaker equal a total 120% of the busbar rating dates back to the 1980s. When this allowance was extended to commercial systems in the 2008 NEC, an additional stipulation was added to place the PV breaker at the opposite end of the busbar from the utility feed. The opposite end of the busbar was intended to ensure that the current density on the busbar would never exceed the rating of the busbar. For simplicity, this opposite end stipulation was broadly applied to all applications, including dwellings although there were no documented cases in dwellings that suggested the opposite end was needed. In recent years it has become apparent that numerous center-fed panels exist in dwellings in the Western United States. This fact underlined the need to state that the method used for dwellings from 1987 to 2008 in the NEC was fine and should be clearly allowed in 705.12(D). Because of the fact that so few continuous loads exist in dwellings, the 120% rule, as it has become known in the industry, has proven to be a reasonable and conservative allowance for these panelboards.”

**Emergency Nature:** The proposed TIA intends to correct a circumstance in which the revised NFPA Standard has resulted in an adverse impact on a product or method that was inadvertently overlooked in the total revision process or was without adequate technical (safety) justification for the action. The fact that several thousand center-fed panels in good repair have required replacement over the past two years when, in fact these upgrades are unnecessary, presents a real and unnecessary hazard to the field workers required to perform these replacements. Any time a service equipment replacement is

performed on a dwelling, utility service must be interrupted and significant electrical work must be performed to replace the equipment. This exposes the electrical worker to hazards of potentially live conductors and inadvertent errors that could even be fatal. The hazards of these upgrades is appropriate when the existing service equipment is damaged or has outlived its useful safe operating life. Performing these upgrades on perfectly good equipment that is not a safety hazard to the dwelling is an unnecessary risk. This TIA will make it clear to jurisdictions enforcing the 2014 NEC that these center-fed panelboards are not required to be upgraded if the PV system can be installed based upon the 120% busbar rule. This is consistent with how the NEC was enforced safely up to the 2008 NEC and now clearly allowed in the approved language of the 2017 NEC.

*Anyone may submit a comment by the closing date indicated above. To submit a comment, please identify the number of the TIA and forward to the [Secretary, Standards Council](#), 1 Batterymarch Park, Quincy, MA 02169-7471.*