HAWAII ENERGY CONNECTION®
sustainable energy solutions

Main Breaker Derating for Solar Installations

As a licensed and bonded electrical contractor, the City and County permitting department holds us to very high standards. One of those standards is to adhere to strict electrical safety guidelines that are published as part of the National Electric Code (NEC). One particular rule makes certain that the meter enclosure installed on your home is capable of handling the maximum amount of utility and solar power to your home at the same time. Adding a solar photovoltaic system to your home is like adding a second utility connection on the opposite side of the meter. We must now consider the rating of the meter equipment located between these two power sources, more specifically the buss bar rating. This is commonly referred to as the NEC 120% rule.

The Code:
In the 2011 National Electrical Code (NEC), the language in 705.12(D)(2) is straightforward:

"Bus or Conductor Rating. The sum of the ampere ratings of overcurrent devices in circuits supplying power to a busbar or conductor shall not exceed 120% of the rating of the busbar or conductor."

In the 2014 code, this one sentence has been revised to be several paragraphs long with different scenarios. However the philosophy holds true, and once you understand the philosophy of the simpler 2011 version of 705.12(D)(2) you will be able to understand NEC 2014's more sophisticated version.

A short video that explains this rule can be found at the link here:
https://www.youtube.com/watch?v=q_u4diFV3vQ

As an alternative to a meter enclosure replacement / upgrade that may be necessary to meet the rule described above, your main breaker amperage rating can be reduced to allow for the additional headroom necessary for your solar PV installation. Be advised that by using this method it will reduce your homes total amperage capacity, but will is still be adequate for most coincidental home power draws.

Below are a few examples of typical main breaker derate scenarios. Please have your electrician contact us directly at (808) 524-7336 for more information.

Enclosure Rating	Main Breaker	Maximum PV Amps	Additional PV Amps
200A	200A	40A	0
200A	175A	65A	+25A
200A	150A	90A	+50A
125A	125A	25A	0
125A	100A	50A	+25A