

# SB1 Guideline Document Comments

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I would like to make the following comments on the "Guidelines for California's Solar Electric Incentive Programs Pursuant to Senate Bill 1 -- Second Edition". My comments are regarding sections of Appendix 2.

## Comment 1

There is a discrepancy in the SB1 requirements document on page 55 and 56 regarding minimal shading. For the definition of H, the text reads

"Any obstruction that projects above any portion of the PV array must meet this criterion for the PV array to be considered minimally shaded."

And further reads:

"It is the responsibility of the PV installer and the verifier to determine the worst condition by determining the point on the array and the point on the obstruction that would result in the smallest ratio"

and further:

"Generally, the portion of the array that will most likely be shaded and thus represents the worst condition is the lower corner of the array"

However, the figure 5 shows something different than what these three texts state. In the figure, the height of the dormer obstruction is shown as the height above the array at the point where the second row of modules starts and the height of the pipe is shown as the height above the point in the middle of row 2. Based on the text, they should both be shown as the height above the bottom edge of the array since this would be the height "above any portion of the PV array". This would give the "smallest ratio" and also more accurately reflects the fact that shading from the dormer or pipe can impact the modules in the bottom row. Since most people will pay more attention to the figure, than the text, I suggest it be corrected.

I suggest changing figure 5 as shown in the figure below to clear this up:

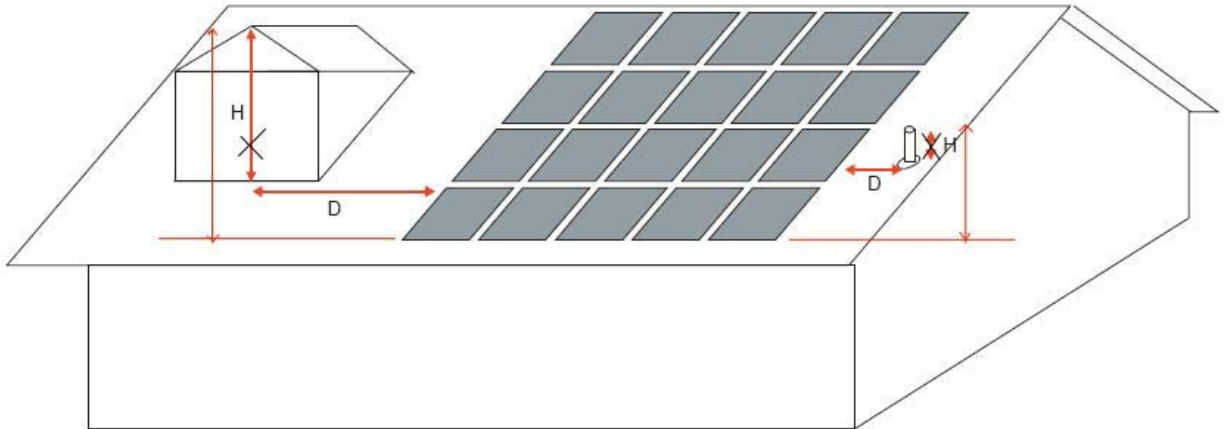


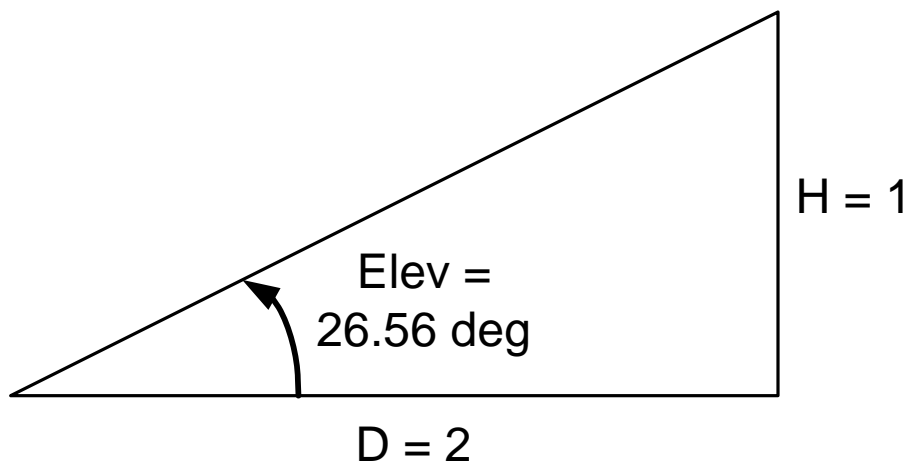
Figure 5 – The Minimal Shading Criterion - Artistic Depiction of “H” and “D”

**Comment 2**

Page 55 reads:

“The “minimal shading” criterion is that no obstruction is closer than a distance (“D”) of twice the height (“H”) it extends above the PV array (see Figure 5 for an artistic depiction of “H” and “D”). “

This defines minimal shading as a D to H ratio of 2:1. It should also mention that the equivalent altitude angle to the 2:1 ratio is 26.56 degrees. This is demonstrated in the figure below and by the equation  $\text{ARCTAN}(1/2) = 26.56$  degrees.



It should be made clear that having an angle less than 26.56 degrees also qualifies for minimal shading. The angle measurement should be made from the location giving the largest angle

which is usually the lowest point on the array closest to the obstruction (the same location where the H distance is measured from).

Later, page 56 reads:

“For obstructions that visual inspection indicates potentially do not meet the criterion, the PV installer and verifier shall measure the height and distance of the obstruction(s) relative to the PV array as described above to verify that the 2:1 shading criterion is met.”

Again it should mention that the altitude angle can be measured instead of the D and H.

### **Comment 3**

Table 3 on page 64 shows the solar availability as decimal numbers between 0 and 1. The convention in the industry has typically been to represent these numbers as percentages between 0% and 100%. I suggest the percentage number format be used.

### **Comment 4**

page 48 reads:

**EXCEPTIONS:** The program administrator may waive the installer requirement to follow the field verification protocol under any one of the following conditions:

1. The program requires field verification on 100 percent of the systems (without using sampling approach).
2. The installer follows the alternate protocol described in Installer System Checkout and Inspection, later in this Appendix and signs a certificate of having completed the same.

I couldn't find the section referred to in item 2 called "Installer System Checkout". Was this intended to say "Installer System Inspection"? I found a section called that at the end of the appendix 2.