

Solar PV Panel Sizing Calculations

Step 1

$$I_{array} = \frac{E_{crit}}{\eta_{batt} * V_{sdc} * t_{psh}} = \frac{1080 \text{ wh/day}}{.85 * 12v * 4} = 26.5A$$

Step 2

$$N_{panels,series} = \frac{V_{sdc}}{V_{mp}} = \frac{12v}{17.4v} = .69 \text{ panels}$$

Step 3

$$N_{panels,parallel} = \frac{I_{array}}{I_{mp}} = \frac{26.5A}{10.92A} = 2.43 \text{ panels}$$