

## Answer on Question #76256 – Chemistry – General Chemistry

A window air conditioner requires approximately  $1.5 \times 10^3$  W of power. How many square meters of PV cells would it require to provide power? Assume that solar power is  $1.0 \times 10^3$  W/m<sup>2</sup> and that the cells are 15% efficient in converting sunlight to electrical energy.

### **Solution:**

$$\text{Solar power needed} = 1.0 \times 10^3 \text{ W/m}^2 / 0.15 = 6.7 \times 10^3 \text{ W/m}^2$$

$$S (\text{PV cells}) = 1.5 \times 10^3 \text{ W} / 6.7 \times 10^3 \text{ W/m}^2 = 0.22 \text{ m}^2$$