

23. The energy stored by a capacitor is given by  $U = \frac{1}{2}CV^2$ , where  $V$  is the potential difference across its plates. We convert the given value of the energy to Joules. Since a Joule is a watt-second, we multiply by  $(10^3 \text{ W/kW})(3600 \text{ s/h})$  to obtain  $10 \text{ kW} \cdot \text{h} = 3.6 \times 10^7 \text{ J}$ . Thus,

$$C = \frac{2U}{V^2} = \frac{2(3.6 \times 10^7 \text{ J})}{(1000 \text{ V})^2} = 72 \text{ F} .$$