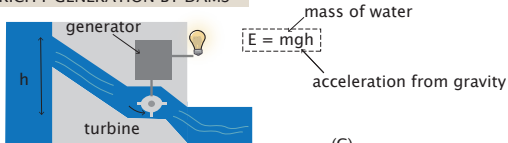



# (A) ELECTRICITY GENERATION BY DAMS



## (B) ESTIMATING HYDROELECTRICITY WATER USE



$$\begin{aligned}
 V_{\text{global}}^{(\text{reservoir})} &\approx f \times 10^{15} \text{ L} \\
 g &\approx 10 \text{ m} / \text{s}^2 \\
 h_{\text{dam}} &\approx 10^2 \text{ m} \\
 E_{\text{H}_2\text{O}} &\approx 1 \text{ kg} \times \frac{10 \text{ m}}{\text{s}^2} \times 10^2 \text{ m} \\
 &\approx 10^3 \text{ kg} \times \text{m}^2 / (\text{s}^2 \times \text{L}) \\
 &\approx 10^3 \text{ J} / \text{L} \\
 E_{\text{hydroelectricity}} &\approx 10^{19} \text{ J} / \text{year} \\
 V_{\text{global}}^{(\text{estimated})} &\approx \frac{1 \text{ L}}{10^3 \text{ J}} \times \frac{10^{19} \text{ J}}{\text{year}} \\
 &\approx 10^{16} \text{ L} \\
 V_{\text{global}}^{(\text{estimated})} &\approx f \times V_{\text{global}}^{(\text{reservoir})}
 \end{aligned}$$

## (C) ESTIMATING LARGE DAM WATER USE

$$\begin{aligned}
 g &\approx 10 \text{ m} / \text{s}^2 \\
 h_{\text{dam}} &\approx f \times 10^2 \text{ m} \\
 E_{\text{H}_2\text{O}} &\approx f \times 10^3 \text{ J} / \text{L}
 \end{aligned}$$

### THREE GORGES

$$\begin{aligned}
 V^{(\text{reservoir})} &\approx f \times 10^{13} \text{ L} \\
 E &\approx f \times 10^{17} \text{ J} \\
 V^{(\text{estimated})} &\approx \frac{\text{L}}{f \times 10^3 \text{ J}} \times f \times 10^{17} \text{ J} \\
 &\approx 10^{14} \text{ L} \\
 V^{(\text{estimated})} &\approx f \times V^{(\text{reservoir})}
 \end{aligned}$$



### KOLNBREIN

$$\begin{aligned}
 V^{(\text{reservoir})} &\approx f \times 10^{11} \text{ L} \\
 E &\approx f \times 10^{15} \text{ J} \\
 V^{(\text{estimated})} &\approx \frac{\text{L}}{f \times 10^3 \text{ J}} \times f \times 10^{15} \text{ J} \\
 &\approx 10^{12} \text{ L} \\
 V^{(\text{estimated})} &\approx f \times V^{(\text{reservoir})}
 \end{aligned}$$

### GRAND COULEE

$$\begin{aligned}
 V^{(\text{reservoir})} &\approx 10^{13} \text{ L} \\
 E &\approx 10^{17} \text{ J} \\
 V^{(\text{estimated})} &\approx \frac{\text{L}}{f \times 10^3 \text{ J}} \times 10^{17} \text{ J} \\
 &\approx f \times 10^{13} \text{ L} \\
 V^{(\text{estimated})} &\approx f \times V^{(\text{reservoir})}
 \end{aligned}$$