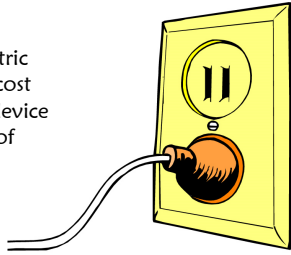


Electrical Energy

Electrical Energy

Objectives

Given the cost of electric energy, calculate the cost of operating a given device for a certain amount of time.



Electric Energy

measures energy used

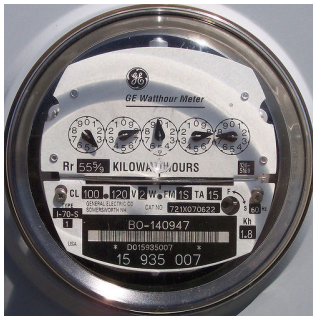
$$E = P \cdot t$$

Unit: kilowatt·hour

$$\begin{array}{l} | \quad | \\ W \cdot s = J \\ \frac{1}{1000} \cdot \frac{3600}{1} \end{array}$$

$$\frac{1 \text{ kWh}}{1} \cdot \frac{1000 \text{ W}}{1 \text{ kW}} \cdot \frac{3600 \text{ s}}{1 \text{ h}} = 3,600,000 \text{ W}\cdot\text{s} \text{ or } 3,600,000 \text{ J}$$

Electric Meter



2500 kWh
↓
3500 kWh

How much electrical energy was used in this month?

1000 kWh

Electric Energy Bill

Detach at perforation and return this part with your payment payable to Southeastern Electric Cooperative, Inc. Keep this part for your records.

Southeastern Electric Cooperative, Inc. Member Number: 16387-000
 Location Number: [REDACTED]
 Billing Date: 06-30-2006
 Service Address: [REDACTED]

tail Description of Charges

Meter #	Mult.	Prev. Read & Date	Prev. Read & Date	Usage	Demand
2-93-591-668	1	53913 06-24-2006	52967 05-23-2006	875	
1-98-904-596	1	22832 06-24-2006	22461 05-23-2006	371	

Description	Amount
Month's Billing	67.78
ment Received 06-19-2006	67.78 CRED
ount Balance	0.00
ility Charge	7.50
rgy (Kwh) Charges:	
1 Fuel Charge	46.00
1 Fuel Charge	11.13
1 Fuel Charge	1.24
1 Fuel Charge	2.59
ent Charges	68.46
al Due	68.46

Electric Cost

Cost = Electrical Energy · kilowatt/hour rate (\$.09)

$$\$ = E \cdot \text{rate}$$

Cost to burn 3 - 100 W light bulbs for 4 hours?

$$\begin{aligned} E &= P \cdot t \\ &= 300 \text{ W} \cdot 4 \text{ h} \\ E &= 1.2 \text{ kWh} \end{aligned}$$

$$\begin{aligned} \$ &= E \cdot \text{rate} \\ &= 1.2 \text{ kWh} \cdot .09 \end{aligned}$$

$$\boxed{10.8 \text{¢}}$$

$$\frac{300 \text{ W}}{1} \cdot \frac{1 \text{ kW}}{1000 \text{ W}}$$

Assignments . . .



- Chapter 15 Homework #9 - 10

