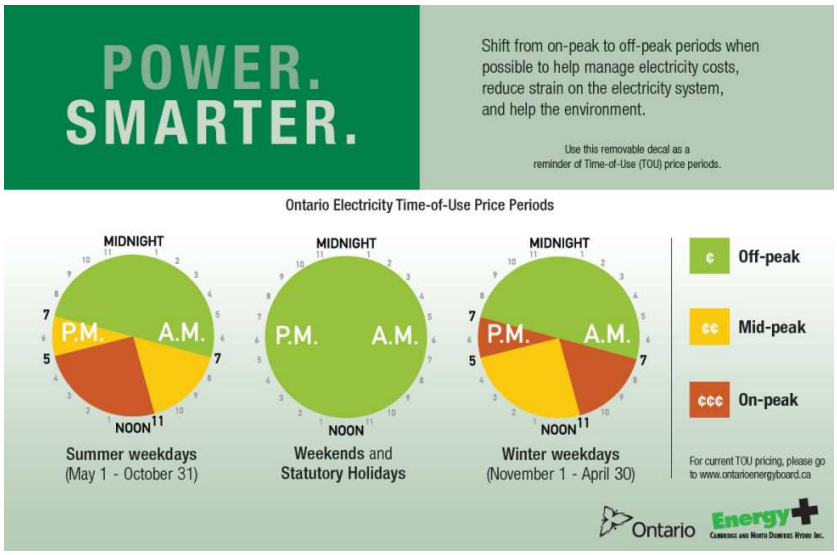
The Cost of Electricity

The need and use of electrical energy comes at a cost. Electrical energy is sold to consumers in kilowatt hours (kWh). Like everywhere else in Ontario, our region has switched to Time-of-Use (TOU) rates for electricity. Under TOU, the price you pay for electricity depends on the time of the day and day of the week that you use it.

How does TOU Pricing Work?

Time-of-Use divides the day into three rate periods: off-peak, mid-peak and on-peak. The rate you pay for electricity in each of these periods reflects the costs associated with generating electricity at that time of day. By shifting some of your activities from on-peak to off-peak periods – after 7 pm on weekdays, all weekend long and on holidays – you will pay a lower price for electricity. The peak periods change in the summer and winter, as usage of electricity tends to change.



Time-Of-Use Prices, as of May 1, 2014:

Period	Cost (¢/kWh)
On-Peak	13.5
Mid-Peak	11.2
Off-Peak	7.5

Sample Question:

A typical clothes dryer may take 1 hour to complete its drying cycle. How much does it cost to use a clothes dryer during each of the TOU periods if the dryer consumes 5 kWh?

Calculating Percent Efficiency

With electrical costs rising, most people consider the efficiency of an appliance to be of utmost importance when making a new purchase.

Even some simple choices, like changing a light bulb, can save money. Examine the chart below to compare the different power required for each bulb.

Light bulb Options	Light Emitting Diodes (LEDs)	Incandescent Light Bulbs	Compact Fluorescent Light Bulbs
What they look like			
Life Spans	50000 hours	1200 hours	8000 hours
Watts of electricity used	6-8 watts	60 watts	13-15 watts

The efficiency of an electrical device is an important item to consider. Incandescent light bulbs use only about 5% of their input light to create light and the remaining 95% is lost as heat. Compact Fluorescent bulbs transform about 20% of their input energy into light. They are more efficient then incandescent lights.

The more input energy that a device converts into usable output energy, the more efficient the device is. Efficiency is calculated as a percentage:

$$\text{Percent Efficiency} = \frac{E\ out}{E\ in} \times 100\%$$

Sample Calculation:

> Suppose a light bulb uses 480 J of input energy to produce 31 J of light energy. What is its percent efficiency?

Cost and Efficiency Practice Worksheet:

1. Compare the cost of using a television for 50 hours a month during peak hours to using it during off-peak hours. Assume the television uses 0.5 kW of energy. Hint: You will have to calculate its power use first, then the cost of usage.

2. Complete the chart to calculate the cost of using each appliance over the course of a year. Use a utility charge of 11.2 cents per kWh.

Appliance	Average Use (hours/day)	Calculated Average Use Per Year	Power Consumption (kW)	Calculated Annual Cost ($ per year)
Vacuum Cleaner	0.1		8	
Hair dryer	0.25		9	

3. Do practice problems #1-3 on page 493 of the textbook.