MPUA PUBLIC OUTREACH RESOURCES
AUGUST 2015

- ***BACK TO SCHOOL—UNDERSTANDING YOUR ELECTRIC COSTS***

***

BACK TO SCHOOL – UNDERSTANDING YOUR ELECTRIC COSTS

For many communities, it is time, or it soon will be, for children to start a new school year. In the spirit of the "back to school" season, here are a few quick "homework problems", for you to help understand your monthly electric bill, and a few simple calculations to tell you about your electric costs and usage:

- Take a look at your last electric bill. Among the figures there, can you find the number of 'kilowatt-hours' (or kWh) of electricity that you used in the last month?

- Kilowatt-hours: Electrical energy is sold in kilowatt-hours. A kilowatt-hour is the amount of energy you'd use if you ran some 100-watt appliance (like an old-fashioned 100-watt incandescent light bulb) for a ten-hour period. (100 Watts X 10 hours = 1,000 Watt hours, or a kilowatt-hour). Similarly, an appliance rated at 5000 watts, like some clothes dryers or electric space heaters, would use five (5) kWh in one hour.

- Looking at the same bill, can you find or calculate how much your electricity costs per kilowatt hour? (Be aware that the monthly bill generally includes a monthly service fee or charge just for having a connection and access to electricity.) Some city bills actually list the cost per kWh. It should be somewhere around 10-14 cents.

- How much energy and cost does it take to run home electric equipment like your TV, clothes dryer, microwave or toaster? Use this formula to calculate an appliance's electrical use:
    - Wattage (Watts) × Hours Used Per Day ÷ 1000 = Daily Kilowatt-hour (kWh) consumption

- To work this out for a specific electrical appliance, look at the label or nameplate on the electric equipment (TV, dryer, toaster, or whatever it may be) to find its wattage. This is often the same label that shows the appliance's serial number. To determine a number of watt-hours used for a typical task, multiply the equipment's wattage amount by the number of hours the equipment is used. If you use the appliance or machine for one hour, the 'watt-hours' of energy used will equal the number of watts used by the appliance.. To convert the watt-hours to kilowatt-hours, divide by 1000.
    - EXAMPLE: One 100 watt bulb run for ten hours = 1000 watt hours ÷ 1000 = 1 kWh
    - OTHER EXAMPLES: an electric heater rated at 1000 watts (1 kilowatt), operating for one hour also uses one kilowatt-hour of energy. A television rated at 100 watts takes 10 hours of continuous running to use one kilowatt-hour. A 40-watt light bulb operating continuously for 25 hours uses one kilowatt-hour.

***

- Once you know how much energy is used for a typical task, you can work out the cost of the energy to perform that task by converting watt-hours to kilowatt-hours, and multiplying the kilowatt-hours (kWh) used by your cost per kWh.

- To estimate an **average monthly cost** for using your electric equipment, estimate how many hours of a 24-hour period the appliance or equipment runs. Multiply that by the cost per hour times thirty days (an average month). This will be your average cost per month for that appliance.

[UTILITIES: IF YOU WISH TO USE YOUR OWN RESIDENTIAL RATE PER kWh IN EXAMPLES BELOW, CHANGE AND RECALCULATE IN PLACES HIGHLIGHTED BELOW]

- Examples below use a 2015 average Missouri retail electric cost of $ .1186 (11.86 cents) per kilowatt-hour.

Example A:

- A 1,450 watt microwave oven is used for 30 minutes a day.
- 1,450 watts ÷ 1000 = 1.450 kW
- 1.450 kW x .5 hours = .725 kWh per day
- .725 kWh x $ .1186 (11.86 cents) (cost per kWh) = ~$.086 (about 8.6 cents) for 30 minutes
- Using microwave 30 minutes every day x 30 days = $.086 per day x 30 = $2.58 per month.

Example B:

- A 22 watt LED computer monitor is left on for 10 hours.
- 22 watts ÷ 1000 = .022 kW
- Multiply .022 kW by 10 hours = .22 kWh per day
- Multiply .22 kWh by $ .1186 (11.86 cents) (cost per kWh) = ~$0.026 (about 2.6 cents) for 10 hours
- Leaving the monitor on 10 hours a day for 30 days: $0.026 per day x 30 days = $0.78 (78 cents) per month.

Example C:

- A 1000 watt (medium-sized) window-unit air conditioner is run for 8 hours.
- 1000 watts ÷ 1000 = 1 kW
- Multiply 1 kW by 8 hours = 8 kWh per day
- Multiply 8 kWh by $ .1186 (11.86 cents) (cost per kWh) = $0.9488 (94.88 cents) for 8 hours

***

- Leaving the unit on 8 hours a day x 30 days: $.9488 a day x 30 days = $28.46 per month.

Once you've challenged yourself on some of these problems, try challenging some of your family or friends to understand or figure out an amount based on a real-life wattage-rating label on some home electric equipment of your own. You may find that the cost of using many of your electrical appliances and tools are much less expensive than you thought, but that simple changes in patterns of your household use can help reduce your monthly bill.