The monthly cost of a floodlight, and other appliances

How much does it cost to watch a TV show? To bake bread in an electric oven? To charge a laptop? To dry your clothes? Or, from an even broader perspective, how does all of that add up to the usage charge you see on your electric bill?

Determining how much it costs to operate a given electrical appliance requires a few data points and some math. Here we go through the calculation for an exterior light, but you can always use an online calculator to save time or avoid the math. You can find one on our website at http://www.cchrc.org/calculators.

Each electrical appliance uses a different amount of electricity, from a coffee pot to a space heater. For this article, we’ll look at an outdoor floodlight used to light the driveway in the winter. Let’s assume the light is on a timer, and provides light from 4 pm to 10 pm and 6 am to 10 am every day for a daily total of 10 hours.

Next, find the power used by the appliance. The power is measured in watts or kilowatts (one kilowatt is equal to 1000 watts). Some appliances include this information on their casing or in the appliance manual – look for W or kW. In this example, the bulb for the outdoor floodlight uses 120 watts, or 0.12 kW.

Electricity is sold by GVEA in units of kilowatt-hours (kWh). The charge depends both on how much power an appliance requires (kilowatts) and on how long it is operated (hours). Electrical energy is calculated by multiplying the power by the length of time the appliance is on.

Electrical Energy = Power in kW x time in hours

It’s important to use the correct units - kilowatts and hours – in order to match the unit used by GVEA (kWh). For instance, if your appliance uses 50 watts, divide by 1000 to convert to kilowatts (0.05 kW). Or, if you operate an appliance for 15 minutes, convert this to hours (0.25 hours).

The outdoor floodlight uses 0.12 kW and is operated for 10 hours per day, so it uses 1.2 kWh of energy a day (0.12 kW x 10 hours), or 36 kWh a month (1.2 kWh a day multiplied by 30 days).

The last step is to translate energy into dollars. To get the current cost of electricity, check GVEA’s website for its rates: http://www.gvea.com/rates. For Fall 2014, the residential rate is approximately $0.21 for every 1 kWh.

Cost to run appliance = Energy in kWh x $0.21

The outdoor floodlight thus costs $0.25 each day to run, or $7.56 to operate each month.

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