

How to Read Electrical Meters

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Electric Meters

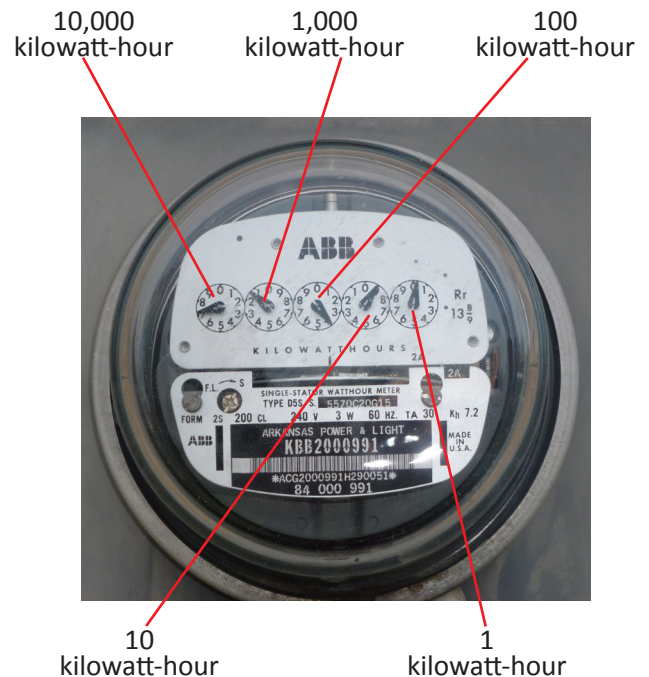
The most commonly used unit of measurement of electrical power is the watt. A thousand watts is called a kilowatt. If 1,000 watts of power is consumed during a period of one hour, one kilowatt-hour has been used.

Electric utility companies bill clients in kilowatt-hours, abbreviated kwh. The typical American electric meter is a device that looks like a clock. The clocklike device is driven by the electricity that moves through it.

As devices such as pump motors are connected to electrical power, current is drawn through the electric meter. As power moves through the meter, a set of small gears inside the meter move. The number of revolutions is recorded by the dials that can be seen on the front of the meter. The speed of the revolutions depends on the amount of current drawn. As the current draw increases, the speed of revolutions within the meter increases. If power consumption decreases, the opposite occurs – it slows down.

Reading Analog Meters

The traditional clocklike electric meters belong to the category of analog electric meters. They can be read by counting the number of revolutions of the rotating horizontal disk that is located in the meter face. As the rotations are counted (10 rotations work well), record the number of seconds for the rotations that are



counted. Two other values also are needed to determine the kilowatt-hour use of the pump. A Kh multiplier will be needed. This value usually is located on the meter face. An additional multiplier is required from the power company, too. The following formula can be used to determine power consumption:

$$\text{Kilowatt-hours} = \frac{3.6(K_h)(\text{number of revolutions})(\text{company multiplier})}{\text{Time in seconds}}$$

Once power is determined, the cost of power can be calculated simply by multiplying the power consumption by the cost per kilowatt-hour.

Reading Digital Meters

Digital meters are becoming more and more common and are available from a number of sources. Energy suppliers should be consulted when trying to verify digital readings from the meter, however. This will help determine if there are any multipliers are required for the energy calculation.



The majority of these digital meters have flashing bar changes that are equivalent to disk rotations on the analog meter. To determine the power consumption, count a number of flashing bar changes and record the time for these changes. The power use equation that is recorded above can be used to determine the kilowatt-hour use of a pump or other piece of equipment. Power cost also can be determined by multiplying the power consumption by the cost per kwh. Information on how to read digital meters can be obtained from the respective utility company.

Sources

“Energy Efficiency and Renewable Energy.” How to Read Residential Electric Meters. U.S. Department of Energy, 02/09/2011. Web. 20 May 2012. <http://www.energysavers.gov/your_home/electricity/index.cfm/mytopic=11150>.



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