

Understanding Your Electric Meter



How do electric meters work?



To understand how an electric meter works, you must first have a basic understanding of electricity. Electric energy is measured in watts and metered and billed in kilowatt-hours. A watt equals the voltage multiplied by the amperage or current. If electric energy was a stream, the voltage would be the width and depth of the stream. The amperage would be how fast the stream is flowing. Wattage is simply how much water is in the stream at a given time. Watt-hours is how much water passes through the stream in an hour's time. For example, if a 120v electric motor draws 10 amps, the connected load would be 1200 watts or 1.2 kilowatts. The motor would consume 1.2 kWh over a one-hour period and 12 kWh over a ten-hour period.

Electric meters work very much like an electric motor. The energy entering the home is passed through a set of small wires surrounding a shaft. The current passing through the wires creates an electric field that "induces" the shaft to turn. The shaft is connected to a graduated disk and a set of gears that turn a set of numbers much like an odometer in a car. A set number of revolutions of the large disk corresponds to one kilowatt-hour.



How is my meter read?

Your meter is read approximately every 30 days. Electric utility personnel come onto your premises to read the meter and write the reading onto a meter reading sheet. The past month's reading is subtracted from the current reading to determine the monthly kWh usage. You can always compare your usage against the monthly readings provided on your utility bill.

How accurate is my meter?

Because an electric meter is a mechanical device with a constant ratio of revolutions to kWh registered, it is an extremely accurate device. Federal standards require every meter to have an accuracy of 98% or better. Most meters are at least 99.5% accurate.

While customers who receive a higher-than-normal bill sometimes question the accuracy of the meter, in reality, the only factors that effect energy usage are the appliances and other electric devices used in the home, how they are used by the occupants, and the weather. To demonstrate how little meter accuracy affects energy usage, a meter that is 2% fast, the maximum inaccuracy allowable, will cause a home averaging 2000 kWh per month to register an additional 40 kWh. While 2% is an extreme amount of inaccuracy and is very rare, it would amount to less than \$4.00 of electricity in the summer and less than \$2.50 in the winter.

Can the accuracy of my meter be tested?

While it is highly recommended that you search for the cause of high bills inside your home, Merrilan Electric Utility does offer meter-testing services. A meter is tested by applying light, medium, and full electric loads to the meter while a computer compares these carefully calibrated loads to the actual revolutions of the meter. There is a \$25.00 charge to have a meter tested. This fee is waived if the meter is found to be faster than allowed tolerances (100% plus 2%).

The Merrilan Electric Utility does have on hand, for loaning out, a Kill-A-Watt EZ testing device that is used for testing and measuring usage of the appliances in your home. There is no fee for this service.

