



## Watts Defined

- **Microwatt**

- The **microwatt** (symbol:  $\mu\text{W}$ ) is equal to one millionth ( $10^{-6}$ ) of a watt.

- **Milliwatt**

- The **milliwatt** (symbol:  $\text{mW}$ ) is equal to one thousandth ( $10^{-3}$ ) of a watt. A typical [laser pointer](#) might output 5 milliwatts.

- **Kilowatt**

- The **kilowatt** (symbol:  $\text{kW}$ ), equal to one thousand watts, is typically used to state the power output of [engines](#) and the power consumption of tools and machines. A kilowatt is approximately equivalent to 1.34 [horsepower](#). An electric heater with one heating element might use 1 kilowatt.

- **Megawatt**

- The **megawatt** (symbol:  $\text{MW}$ ) is equal to one [million](#) ( $10^6$ ) watts.

Many things can sustain the transfer or consumption of energy on this scale; some of these events or entities include: [lightning](#) strikes, large electric motors, naval craft (such as [aircraft carriers](#) and [submarines](#)), engineering hardware, and some scientific research equipment (such as [supercolliders](#) and large [lasers](#)). A large residential or retail building may consume several megawatts in electric power and heating energy.

The productive capacity of [electrical generators](#) operated by [utility companies](#) is often measured in MW. Modern high-powered [diesel-electric](#) railroad [locomotives](#) typically have a peak power output of 3 to 5 MW, whereas U.S. [nuclear power plants](#) have net summer capacities between about 500 and 1300 MW.<sup>[2]</sup>

According to the [Oxford English Dictionary](#), the earliest citing for "megawatt" is a reference in the 1900 [Webster's International Dictionary of English Language](#). The OED also says "megawatt" appeared in a [28 November 1847](#), article in [Science](#) (506:2).

## ● Gigawatt

- The **gigawatt** (symbol: **GW**) is equal to one [billion](#) ( $10^9$ ) watts. This unit is sometimes used with large power plants or power grids.

## ● Terawatt

- The **terawatt** (symbol: **TW**) is equal to one [trillion](#) ( $10^{12}$ ) watts. The average power usage by humans (about 15 TW) is commonly measured in these units. The most powerful [lasers](#) from the mid 1960s to the mid 1990s produced power in terawatts, but only for [nanoseconds](#).

## ● Petawatt

- The **petawatt** (symbol: **PW**) is equal to one [quadrillion](#) ( $10^{15}$ ) watts.

## ● Electrical and thermal

- In the electric power industry, **Megawatt electrical** (abbreviation:  $MW_e$ <sup>[citation needed]</sup> or  $MW_e$ <sup>[3]</sup>) is a term that refers to [electric power](#), while **megawatt thermal** (abbreviations:  $MW_t$ ,  $MW_{th}$ ,  $MWt$ , or  $MW_{th}$ ) refers to thermal power produced. Other [SI prefixes](#) are sometimes used, for example *gigawatt electrical* ( $GW_e$ ).<sup>[4]</sup>

For example, the [Embalse nuclear power plant](#) in Argentina uses a [fission reactor](#) to generate 2109  $MW_t$  of heat, which creates steam to drive a turbine, which generates 648  $MW_e$  of electricity. The difference is due to the inefficiency of steam-turbine generators and the limitations of the theoretical [Carnot Cycle](#).

- **Confusion of watts and watt-hour**

- [Power](#) and [energy](#) are frequently confused in the general media. Power is the rate at which energy is used (or generated). A watt is one joule of energy per second. For example, if a 100 watt light bulb is turned on for one hour, the energy used is 100 [watt-hours](#) or 0.1 kilowatt-hour, or 360,000 joules. This same quantity of energy would light a 40-watt bulb for 2.5 hours. A power station would be rated in watts, but its annual energy sales would be in watt-hours (or kilowatt-hours or megawatt-hours). A kilowatt-hour is the amount of energy equivalent to a steady power of 1 kilowatt running for 1 hour, or 3.6 [megajoules](#).

Courtesy of Wikipedia