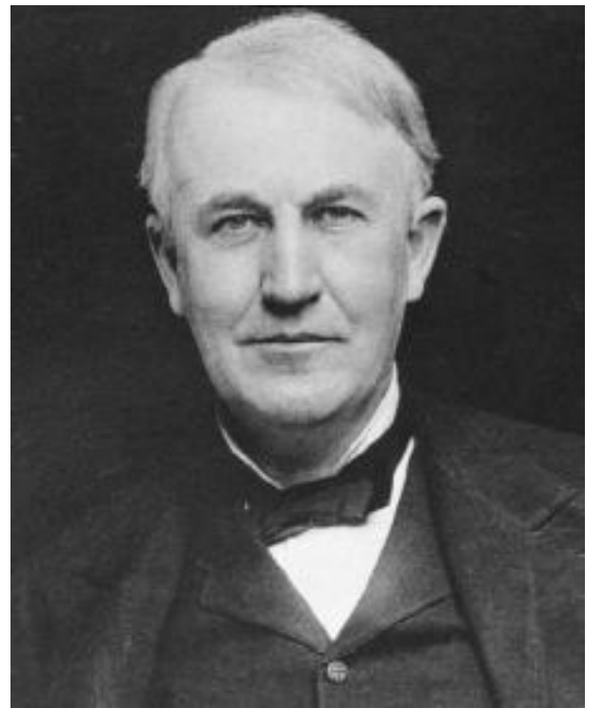
I’d put my money on the sun and solar energy. What a source of power! I hope we don’t have to wait until oil and coal run out before we tackle that.

Thomas Edison, 1931



Arizona State University
SES 194

Energy in Everyday Life

Power & Energy Scales

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So far we have discussed work and energy. In our everyday lives, not only how much work is done, but fast it is done, is also relevant.

A 1200 watt toaster singes bread twice as fast as a 600 watt toaster.

Power as the energy transferred (work done) divided by the time needed to do the work.

$$\text{power} = \frac{\text{energy}}{\text{time to do the work}}$$

Power is the rate at which energy changes with time.

Power is measured in Watts, one Watt being the power needed to use one joule of energy in one second.

Since power = energy/time, we can also say energy = power × time.

This is what the electric company measures, kilowatt-hours, for your monthly bill.

Energy: 110 Orders of Magnitude