Energy Definitions & Conversions

DEFINITIONS

Current:	the flow of electrons—the number of electrons flowing past a fixed point. (measured in amperes–A)
Energy:	the ability to do work. Work involves a change in movement. Energy is, therefore, the ability to cause change. (measured in joules–J)
Electricity:	the energy associated with moving electrons. (measured in kilowatt-hours–KwH)
Force:	a push or pull that gives energy to an object, causing it to start moving, stop moving, or change direction.
Power:	rate at which work is done; the amount of work done per unit time.
Voltage:	electric potential or pressure—the energy available to move electrons. (measured in volts–V)
Watt:	unit of electric power: the number of electrons moving past a fixed point in a second multiplied by the potential (or push) of the the electrons. (W= A x V)
Work:	the product of a force applied to an object and the distance through which the force is applied. Work equals force times distance.
Lumen:	a measure of light intensity.

CONVERSIONS

1 cal =	Calorie—a measure of heat energy—the amount of heat energy needed to raise the temperature of one gram of water by one degree Celsius.
1 cal =	4.187 joules
1 Btu =	British thermal unit—a measure of heat energy—the amount of heat energy needed to raise the temperature of one pound of water by one degree Fahrenheit. One Btu is approximately the amount of energy released by the burning of one wooden kitchen match.
1 Btu =	1,054 joules
1 Btu =	252 calories
1 therm =	100,000 Btu; approximately the amount of heat energy in one CCF of natural gas.
1 kWh =	Kilowatt-hour—one kilowatt of electricity over one hour. One kilowatt-hour of electricity is the amount of energy it takes to burn a 100 watt light bulb for 10 hours. The average cost of one kilowatt-hour of electricity in the U.S. is about eight cents.
1 kWh =	3.6 million joules (3.6 Mj).
1 kWh =	3,412 Btu
1 Q =	Quad—1 quadrillion Btu. Quads are used to measure very large quantities of energy. The U.S. uses one quad of energy about every 3.9 days.
1 CF =	Cubic foot—a measure of volume—one CF of natural gas contains about 1,020 Btu.
1 CCF =	One hundred cubic feet—one CCF of natural gas contains about one therm of heat energy.
1 MCF =	One thousand cubic feet—one MCF of natural gas costs $5–$10.