

Glossary

A

AIR CONDITIONER

An assembly of equipment for air treatment consisting of a means for ventilation, air circulation, air cleaning, and heat transfer (either heating or cooling). The unit usually consists of an evaporator or cooling coil, and an electric-driven compressor and condenser combination.

AIR-TO-AIR HEAT EXCHANGER

A device with separate air chambers that transfers heat between the conditioned air being exhausted and the outside air being supplied to a building.

ASHRAE

Acronym for American Society of Heating, Refrigerating and Air-Conditioning Engineers.

B

BALLAST

A device that provides starting voltage and limits the current during normal operation in electrical discharge lamps (such as fluorescent lamps).

BOILER

A closed vessel in which water is converted to pressurized steam.

BRITISH THERMAL UNIT (Btu)

The standard measure of heat energy. It takes one Btu to raise the temperature of one pound of water by one degree Fahrenheit at sea level. For example, it takes about 2,000 Btus to make a pot of coffee. One Btu is equivalent to 252 calories, 778 foot-pounds, 1,055 joules, and 0.293 watt-hours. Note: In the abbreviation, only the B is capitalized.

BUILDING ENVELOPE

The assembly of exterior partitions of a building which enclose conditioned spaces, through which thermal energy

may be transferred to or from the exterior, unconditioned spaces, or the ground. [See California Code of Regulations, Title 24, Section 2-5302]

C

CARBON DIOXIDE (CO₂)

A colorless, odorless, non-poisonous gas that is a normal part of the air. Carbon dioxide is exhaled by humans and animals and is absorbed by green growing things and by the sea. CO₂ is the greenhouse gas whose concentration is being most affected directly by human activities. CO₂ also serves as the reference to compare all other greenhouse gases (see carbon dioxide equivalent). The major source of CO₂ emissions is fossil fuel combustion. CO₂ emissions are also a product of forest clearing, biomass burning, and non-energy production processes such as cement production. Atmospheric concentrations of CO₂ have been increasing at a rate of about 0.5% per year and are now about 30% above preindustrial levels. [See Environmental Protection Agency (EPA): <https://www.epa.gov/climate-research>]

CARBON DIOXIDE EQUIVALENT (CDE)

A metric measure used to compare the emissions from various greenhouse gases based upon their global warming potential (GWP). Carbon dioxide equivalents are commonly expressed as "million metric tons of carbon dioxide equivalents (MMTCDE)" or "million short tons of carbon dioxide equivalents (MSTCDE)". The carbon dioxide equivalent for a gas is derived by multiplying the tons of the gas by the associated GWP. MMTCDE= (million metric tons of a gas) * (GWP of the gas). For example, the GWP for methane is 24.5. This means that emissions of one million metric tons of methane is equivalent to emissions of 24.5 million metric tons of carbon dioxide. Carbon may also be used as the reference and other greenhouse gases may be converted to carbon equivalents. To convert carbon to carbon dioxide, multiply the carbon by 44/12 (the ratio of the molecular weight of carbon dioxide to carbon). (See EPA: <https://www.epa.gov/climate-research>)



CHILLER

A device that cools water, usually to between 40 and 50 degrees Fahrenheit for eventual use in cooling air.

CLIMATE ZONE

A geographical area, across multiple states, that has a similar weather pattern. These zones are used to determine the type of building standards that are required by law.

COEFFICIENT OF PERFORMANCE (COP)

Used to rate the performance of a heat pump, the COP is the ratio of the rate of useful heat output delivered by the complete heat pump unit (exclusive of supplementary heating) to the corresponding rate of energy input, in consistent units and under specific conditions. [See California Code of Regulations, Title 24, Section 2-1602(c)(4)]

CUBIC FEET PER MINUTE (CFM)

A measure of flow rate.

CUBIC FOOT (ft³)

The most common unit of measurement of natural gas volume. It equals the amount of gas required to fill a volume of one cubic foot under stated conditions of temperature, pressure and water vapor. One cubic foot of natural gas has an energy content of approximately 1,000 Btus. One hundred (100) cubic feet equals one therm (100 ft³ = 1 therm).

D**DAYLIGHTING**

The use of sunlight to supplement or replace electric lighting.

DAYLIGHTING CONTROL

A control system that varies the light output of an electric lighting system in response to variations in available daylight.

DEMAND

The rate at which energy is delivered to loads and scheduling points by generation, transmission or distribution facilities.

DEMAND-SIDE MANAGEMENT (DSM)

These programs consist of the planning, implementing, and monitoring activities of electric utilities that are designed to encourage consumers to change their level and pattern of electricity usage.

DEMAND (Utility)

The level at which electricity or natural gas is delivered to users at a given point in time. Electric demand is expressed in kilowatts.

DEMAND RESPONSE

Providing wholesale and retail electricity customers with the ability to choose to respond to time-based prices and other incentives. This is done by reducing or shifting electricity usage, particularly during peak demand periods, so that changes in customer demand become a viable option for addressing pricing, system operations and reliability, infrastructure planning, operation and deferral, and other issues.

DIESEL OIL

Fuel for diesel engines obtained from the distillation of petroleum. It is composed chiefly of aliphatic hydrocarbons. Its volatility is like that of gas oil. Its efficiency is measured by cetane number.

E**ECONOMIC EFFICIENCY**

A term that refers to the optimal production and consumption of goods and services. This generally occurs when prices of products and services reflect their marginal costs. Economic efficiency gains can be achieved through cost reduction, but it is better to think of the concept as actions that promote an increase in overall net value (which includes, but is not limited to, cost reductions).

ECONOMIZER AIR

A ducting arrangement and automatic control system that allows a heating, ventilation and air conditioning (HVAC) system to supply up to 100 percent outside air to satisfy cooling demands, even if additional mechanical cooling is required.

ECONOMIZER WATER

A system which uses either direct evaporative cooling or a secondary evaporatively-cooled water loop and cooling coil to satisfy cooling loads, even if additional mechanical cooling is required.



EFFICACY (Lighting)

The ratio of light from a lamp to the electrical power consumed, including ballast losses, expressed as lumens per watt.

EFFICIENCY

The ratio of the useful energy delivered by a dynamic system (such as a machine, engine, or motor) to the energy supplied to it over the same period or cycle of operation. The ratio is usually determined under specific test conditions.

EFFICIENCY SERVICE COMPANY (ESCO)

A company that offers to reduce a client's electricity consumption with the cost savings being split with the client.

ELECTRIC UTILITY

A corporation, person, agency, authority, or other legal entity or instrumentality aligned with distribution facilities for delivery of electric energy for use primarily by the public. Included are investor-owned electric utilities, municipal and state utilities, federal electric utilities, and rural electric cooperatives. A few entities that are tariff-based and corporately aligned with companies that own distribution facilities are also included. [See U.S. Energy Information Administration (EIA): <https://www.eia.gov/tools/glossary/index.php?id=E>]

ENERGY

The capacity to do work. Forms of energy include thermal, mechanical, electrical and chemical. Energy may be transformed from one form into another.

ENERGY CONSUMPTION

The amount of energy consumed in the form in which it is acquired by the user. The term excludes electrical generation and distribution losses.

ENERGY EFFICIENCY

Using less energy/electricity to perform the same function. Programs designed to use electricity more efficiently - doing the same with less. For the purpose of this toolkit, energy efficiency is distinguished from DSM programs in that the latter are utility-sponsored and financed, while the former is a broader term not limited to any sponsor or funding source. "Energy conservation" is a term which has also been used, but it has the connotation of doing without in order to save

energy, rather than using less energy to do the same thing, and so is not used as much today.

ENERGY MANAGEMENT SYSTEM

A control system (often computerized) designed to regulate the energy consumption of a building by controlling the operation of energy consuming systems, such as the heating, ventilation and air conditioning (HVAC), lighting and water heating systems.

ENVIRONMENTAL PROTECTION AGENCY (EPA)

A federal agency created in 1970 to permit coordinated governmental action for the protection of the environment by systematic abatement and control of pollution through integration or research, monitoring, standards setting and enforcement activities.

F**FOOT-CANDLE**

A unit of illuminance on a surface that is one foot from a uniform point source of light of one candle and is equal to one lumen per square foot.

FURNACE

A combustion chamber; an enclosed structure in which fuel is burned to heat air or material.

G**GENERAL LIGHTING**

Lighting designed to provide a substantially uniform level of illumination throughout an area, exclusive of any provision for special visual tasks or decorative effects.

H**HEATING VENTILATION AND AIR CONDITIONING (HVAC)**

A system that provides heating, ventilation and/or cooling within or associated with a building.

HEAT LOSS

A decrease in the amount of heat contained in a space, resulting from heat flow through walls, windows, roof and other building surfaces and from ex-filtration of warm air.



HEAT PUMP

An air-conditioning unit which is capable of heating by refrigeration, transferring heat from one (often cooler) medium to another (often warmer) medium, and which may or may not include a capability for cooling. This reverse-cycle air conditioner usually provides cooling in summer and heating in winter.

HEAT TRANSFER

Flow of heat energy induced by a temperature difference. Heat flow through a building envelope typically flows from a heated or hot area to a cooled or cold area.

HEATING LOAD

The rate at which heat must be added to a space in order to maintain the desired temperature within the space.

HEATING SEASONAL PERFORMANCE FACTOR

A representation of the total heating output of a central air-conditioning heat pump in Btus during its normal usage period for heating, divided by the total electrical energy input in watt-hours during the same period, as determined using the test procedure specified in the California Code of Regulations, Title 20, Section 1603(c).

HORSEPOWER (HP)

A unit for measuring the rate of doing work. One horsepower equals about three-fourths of a kilowatt or 745.7 watts.

I**INCANDESCENT LAMP**

An electric lamp in which a filament is heated by an electric current until it emits visible light.

K**KILOWATT (kW)**

One thousand (1,000) watts. A unit of measure of the amount of electricity needed to operate given equipment. On a hot summer afternoon, a typical home, with central air conditioning and other equipment in use, might have a demand of four kW each hour.

KILOWATT-HOUR (kWh)

The most commonly used unit of measure telling the amount of electricity consumed over time. One kWh equates to one kilowatt of electricity supplied for one hour.

L**LIGHT-EMITTING DIODE (LED)**

A semiconductor diode that emits light when a voltage is applied to it and that is used in a variety of applications including commercial, residential and traffic signal lighting.

LUMEN

A measure of the amount of light available from a light source equivalent to the light emitted by one candle.

LUMENS/WATT

A measure of the efficacy of a light fixture; the number of lumens output per watt of power consumed.

M**MARGINAL COST**

In the utility context, the cost to the utility of providing the next (marginal) kilowatt-hour of electricity, irrespective of sunk costs.

METHANE

A light hydrocarbon that is the main component of natural gas and marsh gas. It is the product of the anaerobic decomposition of organic matter, enteric fermentation in animals and is one of the greenhouse gases. Chemical formula is CH₄.

MMBTU

A unit of heat measurement containing one million Btu (See British thermal unit).

N**NATURAL GAS**

Hydrocarbon gas found in the earth, composed of methane, ethane, butane, propane and other gases.



O

OCCUPANCY SENSOR

A control device that senses the presence of a person in each space, commonly used to control lighting systems in buildings.

P

PEAK LOAD OR PEAK DEMAND

The electric load that corresponds to a maximum level of electric demand in a specified time period.

POUNDS PER SQUARE INCH (PSI)

A unit of pressure or of stress based on avoirdupois units. It is the pressure resulting from a one pound-force applied to an area of one square inch.

POWER

Electricity for use as energy.

PROGRAMMABLE CONTROLLER

A device that controls the operation of electrical equipment (such as air conditioning units and lights) according to a preset time schedule.

PROPANE

A gas that is both present in natural gas and refined from crude oil. It is used for heating, lighting and industrial applications.

R

R-VALUE

A unit of thermal resistance used for comparing insulation values of different material. It is basically a measure of the effectiveness of insulation in stopping heat flow. The higher the R-value number of a material, the greater its insulating properties and the slower the heat flow through it. The specific R-value needed to insulate a home depends on climate, type of heating system and several other factors.

S

SEASONAL ENERGY EFFICIENCY RATIO (SEER)

The total cooling output of a central air conditioning unit in Btus during its normal usage period for cooling divided by the total electrical energy input in watt-hours during the same period, as determined using specified federal test procedures.

SPECIFIC HEAT

In English units, the quantity of heat, in Btu, needed to raise the temperature of one pound of material one degree Fahrenheit.

STANDARD CUBIC FEET PER MINUTE (SCFM)

The molar flow rate of a gas corrected to standardized conditions of temperature and pressure thus representing a fixed number of moles of gas regardless of composition and actual flow conditions.

STANDARD CUBIC FOOT (SCF)

One cubic foot of gas at standard temperature and pressure (60° F at sea level). Since both temperature and air pressure affect the energy content of a cubic foot of natural gas, the SCF is a way of standardizing. One SCF = 1,020 Btus.

W

WATT

A unit of measure of electric power at a point in time, as capacity or demand. One watt of power maintained over time is equal to one joule per second. The Watt is named after Scottish inventor James Watt and is capitalized when abbreviated as W and used with other abbreviations, as in kWh.

WATT-HOUR

One watt of power expended for one hour. One thousandth of a kilowatt-hour.

WEATHER STRIPPING

A process using specially designed strips, seals and gaskets, which are installed around doors and windows to limit air leakage.

