

Glossary

Absolute Humidity - Air moisture content expressed in grains (or pounds) of water vapor per pound of dry air.

Absorptance - The ratio of the radiation absorbed by a surface to the total energy falling on that surface described as a percentage.

Active Solar Energy - Solar radiation used by special equipment to provide space heating, hot water or electricity.

Air Barrier - Any part of the building shell that offers resistance to air leakage. The air barrier is effective if it stops most air leakage. The primary air barrier is the most effective of a series of air barriers.

Air Change - The replacement of a quantity of air in a space within a given period of time, typically expressed as air changes per hour. If a building has one air change per hour, this is equivalent to all of the air in the building being replaced in a one-hour period.

Air Changes At 50 Pascals - The number of times that the complete volume of a home is exchanged for outside air when a blower door depressurizes the home to 50 pascals.

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 electrically-driven compressor and condenser combination.

Air Film - A layer of air adjacent to a surface which provides thermal resistance.

Air Film Coefficient - A measure of the heat transfer through an air film.

Air Handler - A steel cabinet containing a blower with cooling and/or heating coils connected to ducts.

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.

Ambient Air Temperature - Surrounding temperature, such as the outdoor air temperature around a building.

Ambient Lighting - Lighting spread throughout the lighted space for safety, security, and aesthetics.

Alternating Current (AC) - Flow of electricity that constantly changes direction between positive and negative sides. Almost all power produced by electric utilities in the United States moves in current that shifts direction at a rate of 60 times per second.

Ampere (Amp) - The unit of measure that tells how much electricity flows through a conductor. It is like using cubic feet per second to measure the flow of water. For example, a 1,200 watt, 120-volt hair dryer pulls 10 amperes of electric current (watts divided by volts).

Angle of Incidence - The angle that the sun's rays make with a line perpendicular to a surface. The angle of incidence determines the percentage of direct sunshine intercepted by a surface.

AFUE (Annual Fuel Utilization Efficiency) - A measure of heating efficiency, in consistent units, determined by applying the federal test method for furnaces. This value is intended to represent the ratio of heat transferred to the conditioned space by the fuel energy supplied over one year.

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

Backdraft Damper - A damper, installed near a fan, that allows air to flow in only one direction.

Backdrafting - Continuous spillage of combustion gases from a combustion appliance.

Backer Rod - Polyethylene foam rope used as a backer for caulking.

Baffle - A plate or strip designed to retard or redirect the flow of gases.

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

Band Joist - See Rim joist.

Batt - A narrow blanket of fiberglass insulation, often 14.5 or 22.5 inches wide.

Beam - A strong horizontal building support used to carry the weight of a floor or roof.

Bimetal Element - A metal spring, lever, or disc made of two dissimilar metals that expand and contract at different rates as the temperature around them changes. This movement operates a switch in the control circuit of a heating or cooling device.

Black Body - A (theoretical) material that absorbs all radiation that hits it. It has an emissivity of 100% or 1.0. Black bodies are used by thermal imaging camera manufacturers to calibrate their temperature measuring cameras.

Blower - The fan in a furnace or air handler, typically a squirrel-cage type fan.

Blower Door - A device that consists of a fan, a removable panel, and gauges used to measure and locate air leaks.

Boot - A duct section that connects between a duct and a register.

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 Btu to make a pot of coffee. One Btu is equivalent to 252 calories, 778 foot-pounds, 1055 joules, and 0.293 watt-hours. Note: In the abbreviation, only the B is capitalized.

Btuh - British thermal units per hour.

Building Cavities - The spaces inside walls, floors, and ceilings between the interior and exterior sheeting.

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.

Building Science - A branch of science dealing with construction, maintenance, safety, and the energy efficiency of buildings.

Calorie - (energy calorie - small "c" - as opposed to food Calorie - capital "C") Any of several approximately equal values of heat, each measured as the quantity of heat required to raise the temperature of 1 gram of water by 1 degree Celsius from a standard initial temperature, esp. from 3.98° Celsius, 14.5° Celsius, or 19.5° Celsius, at 1 atmosphere pressure. A calorie is the unit of heat equal to 4.184 joules. One food calorie equals 1,000 energy calories.

Capillary Action - The ability of water to move through materials, even upward against gravity, through small tubes or spaces.

Capillary Barrier - A material or air space designed to stop capillary action from carrying water into a building.

Carbon Dioxide (CO₂) - A colorless, odorless, non-poisonous gas that is a normal part of the air. Carbon dioxide, also called, is exhaled by humans and animals and is absorbed by green growing things and by the sea.

Carbon Monoxide (CO) - A colorless, odorless, highly poisonous gas made up of carbon and oxygen molecules formed by the incomplete combustion of carbon or carbonaceous material, including gasoline. It is a major air pollutant on the basis of weight.

Caulking - Material used to make an air-tight seal by filling in cracks, such as those around windows and doors.

Cellulose Insulation - Insulation, packaged in bags for blowing, made from newspaper or wood waste and treated with a fire retardant.

Centigrade - See Celsius

Celsius - A temperature scale based on the freezing (0°C) and boiling (100°C) points of water. Abbreviated as C in second and subsequent references in text-formerly known as Centigrade.

CFM50 - The number of cubic feet per minute of air flowing through the fan housing of blower door when the house pressure is 50 pascals (0.2 inches of water). This figure is the most common and accurate way of comparing the air tightness of buildings that are tested using a blower door.

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

Circuit - One complete run of a set of electric conductors from a power source to various electrical devices (appliances, lights, etc.) and back to the same power source.

Circuit Breaker - A device that disconnects an electrical circuit from electricity when it senses excessive current.

Clerestory - A wall with windows that is between two different (roof) levels. The windows are used to provide natural light into a building.

COP (Coefficient of Performance) - 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.

Coil - A piece of copper tubing through which a working fluid passes in order to transfer heat to a second medium (air, water, or soil). The coil may be surrounded by rows of aluminum fins that clamp tightly to the tubing in order to aid in heat transfer.

Color Temperature - A measurement of the color of light provided by a light source. The color temperature is determined by the temperature, in Kelvin, at which an ideal black body emits light of the same color.

Color Rendering Index - A measurement of a light source's ability to render colors the same as sunlight. CRI has a scale of 0 to 100. A lower CRI means that some colors will not appear as vibrant as in natural sunlight.

Combustion - Rapid oxidation, with the release of energy in the form of heat and light.

Combustion Analyzer - A device used to measure steady-state efficiency of combustion heating units.

Combustion Chamber - The area inside the heat exchanger where the flame burns.

Combustion Efficiency - A simple measure of the heating efficiency of a boiler. It is equal to 100 percent minus the percentage of heat lost up the vent (called "flue loss" or "stack loss").

Commissioning - The process of testing and adjusting building mechanical systems after building construction or as a retrofit measure.

Comfort Zone - The range of temperatures over which the majority of persons feel comfortable (neither too hot nor too cold).

Condensate - Liquid formed by condensing vapor.

Condense - When a gas turns into a liquid as it cools, we say it condenses. Condensation is the opposite of evaporation.

Condenser - A heat exchanger in which the refrigerant, compressed to a hot gas, is condensed to liquid by rejecting heat.

Conditioned Space - Enclosed space that is either directly conditioned space or indirectly conditioned space.

Conductance – A measure of the ability of a material to transfer heat. Typically, it is the quantity of heat, in Btu's, that will flow through one square foot of material in one hour, when there is a 1 degree F temperature difference between both surfaces. Conductance values are given for a specific thickness of material, not per inch thickness.

Conduction - The transfer of heat energy through a material (solid, liquid or gas) by the motion of adjacent atoms and molecules without gross displacement of the particles.

Conductivity (*k*) - The quantity of heat that will flow through one square foot of homogeneous material, one inch thick, in one hour, when there is a temperature difference of one degree Fahrenheit between its surfaces.

Convection - Heat transfer by the movement of fluid.

Conventional Gas - Natural gas occurring in nature, as opposed to synthetic gas.

Cooling Capacity, Latent - Available refrigerating capacity of an air conditioning unit for removing latent heat from the space to be conditioned.

Cooling Capacity, Sensible - Available refrigerating capacity of an air conditioning unit for removing sensible heat from the space to be conditioned.

Cooling Capacity, Total - Available refrigerating capacity of an air conditioner for removing sensible heat and latent heat from the space to be conditioned.

Cooling Degree Day - A unit of measure that indicates how heavy the air conditioning needs are under certain weather conditions.

Cooling Load - The rate at which heat must be extracted from a space in order to maintain the desired temperature within the space.

Cooling Load Temperature Difference (CLTD) - A value used in cooling load calculations for the effective temperature difference (ΔT) across a wall or ceiling, which accounts for the effect of radiant heat as well as the temperature difference.

Cord - A measure of volume, 4 by 4 by 8 feet, used to define amounts of stacked wood available for use as fuel. Burned, a cord of wood produces about 5 million calories of energy.

Cubic Foot - 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

Curtain wall: A wall between columns and beams that supports no weight but its own.

CFM (cubic feet per minute) - A measure of flow rate.

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.

Degree Days - A measure of the temperature element of climate produced by multiplying temperature difference by time.

Delta - A Greek letter used as a mathematical term meaning the difference in one thing and another. Also it is called the remainder of a subtraction problem between two numbers. Often used in the context of the difference between the temperature of one area and another.

Demand – Power consumption.

Density - The mass per volume of a substance.

Depressurize - Cause to have a lower pressure or vacuum with respect to a reference of a higher pressure.

Desiccant - A liquid or solid material used to absorb water or water vapor.

Design Temperature - A high or low outdoor temperature used for designing heating and cooling systems.

Desuperheater - A heat exchanger that removes the superheat from a compressed refrigerant and transfers that heat to another fluid, usually water.

Dew Point - The warmest temperature of an object in an environment where water condensation from the surrounding air would form on that object.

Diffuse Radiation - Solar radiation, scattered by water vapor, dust and other particles as it passes through the atmosphere, so that it appears to come from the entire sky. Diffuse radiation is higher on hazy or overcast days than on clear days.

Direct Current (DC) - Electricity that flows continuously in the same direction because of constant polarity.

Direct Expansion (refrigeration) - Any system that, in operation between an environment where heat is absorbed (heat source), and an environment into which unwanted heat is directed (heat sink) at two different temperatures, is able to absorb heat from the heat source at the lower temperature and reject heat to the heat sink at the higher temperature. The cooling effect is obtained directly from a fluid called a refrigerant that absorbs heat at a low temperature and pressure, and transfers heat at a higher temperature and higher pressure.

Direct Radiation - Radiation that has traveled a straight path from the sun, as opposed to diffuse radiation.

Direct Solar Heat Gain - Solar energy collected from the sun (as heat) in a building through windows, walls, skylights, etc.

Distribution System (Electric utility) - The substations, transformers and lines that convey electricity from high-power transmission lines to ultimate consumers.

Dormer - A vertical window projecting from a roof.

Double Glazing - Windows having two sheets of glass with airspace between.

Dry Bulb Temperature - is the temperature of air measured by a thermometer freely exposed to the air but shielded from radiation and moisture.

Drywall - Gypsum interior wallboard used to produce a smooth and level interior wall surface and to resist fire. Also called sheetrock.

Duct - A passageway made of sheet metal or other suitable material used for conveying air or other gas at relatively low pressures.

Duct Blower - A device used for testing duct leakiness and air flow by pressuring the duct system.

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.

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 paper, 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 particular 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. Many people use these terms interchangeably.

EER (Energy Efficiency Ratio) - the ratio of cooling capacity of an air conditioning unit in Btus per hour to the total electrical input in watts under specified test conditions.

Electric Resistance Heater - A device that produces heat through electric resistance. For example, an electric current is run through a wire coil with a relatively high electric resistance, thereby converting the electric energy into heat which can be transferred to the space by fans.

Electric Radiant Heating - A heating system in which electric resistance is used to produce heat which radiates to nearby surfaces. There is no fan component to a radiant heating system.

Electricity - A form of energy, caused by the behavior of electrons and protons, properly called "electrical energy".

Elevation - 1) The height above sea level (altitude); 2) A geometrical projection, such as a building, on a plane perpendicular to the horizon.

Emissivity - The measure of an amount of radiation produced by a material that transfers energy from itself to the surrounding environment; expressed in a percentage. It consists a combination of three factors related to the material's surface texture, and transmissive characteristics. These factors are expressed in terms of its reflectivity, its transmissivity, and its absorptivity. Each factor, expressed as a percentage, when added together equals a sum that is less than 1.0.

Emittance - The emissivity of a material, expressed as a fraction. Emittance values range from 0.05 for brightly polished metals to 0.96 for flat black paint.

Energy - The capacity for doing work. Forms of energy include: thermal, mechanical, electrical and chemical. Energy may be transformed from one form into another.

Energy Recovery Ventilator - A ventilator that recovers latent and sensible energy from the exhaust air stream and transfers it to the incoming air stream.

Enthalpy - The quantity of heat necessary to raise the temperature of a substance from one point to a higher temperature. The quantity of heat includes both latent and sensible.

Envelope - The building shell. The exterior walls, floor, and roof assembly of a building.

Equivalent Full Load Compressor Hours (EFLCH) add up the total minutes a typical air conditioner would operate per year and divide by 60 minutes per hour.

Evaporation - The change that occurs when a liquid becomes a gas. Evaporation is the key process in the operation of air conditioners and evaporative coolers.

Evaporative Cooling - Cooling by exchange of latent heat from water sprays, jets of water, or wetted material.

Evaporator - The heat transfer coil of an air conditioner or heat pump that cools the surrounding air as the refrigerant inside the coil evaporates and absorbs heat.

Exfiltration - Air flow outward through a wall, building envelope, etc.

Expansion Valve - A valve that meters refrigerant into the evaporator.

Exhaust - Air removed deliberately from a space, by a fan or other means, usually to remove contaminants from a location near their source.

Fahrenheit - A temperature scale in which the boiling point of water is 212 degrees and its freezing point is 32 degrees.

Fan Coil - A component of a heating, ventilation and air conditioning (HVAC) system containing a fan and heating or cooling coil, used to distribute heated or cooled air.

Fenestration - In simplest terms, windows or glass doors. Technically fenestration is described as any transparent or translucent material plus any sash, frame, mullion or divider. This includes windows, sliding glass doors, French doors, skylights, curtain walls and garden windows.

Fiberglass - A fibrous material made by spinning molten glass.

Fire Stop - Framing member designed to stop the spread of fire within a wall cavity.

Flat Plate - A device used to collect solar energy. It is a piece of metal painted black on the side facing the sun, to absorb the sun's heat.

Flammable - The rating for building materials that will burn readily when exposed to a flame.

Flashing - Waterproof material used to prevent leakage at intersections between the roof surface at walls or penetrations.

Floor Joists - The framing members that support the floor.

Flue - A channel within an appliance or chimney for combustion gases.

Flue Gas - Gas that is left over after fuel is burned and which is disposed of through a pipe or stack to the outer air.

Fluorescent Lamp - A tubular electric lamp that is coated on its inner surface with a phosphor and that contains mercury vapor whose bombardment by electrons from the cathode provides ultraviolet light which causes the phosphor to emit visible light either of a selected color or closely approximating daylight.

Foamboard - Plastic foam insulation manufactured most commonly in 4'x8' sheets in thicknesses of 1/4" to 3".

Footcandle - 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.

Footing - The part of a foundation system that actually transfers the weight of the building to the ground.

Forced Air Unit (FAU) - A central furnace equipped with a fan or blower that provides the primary means for circulation of air.

Framing Effects - The effect of framing (wood or metal studs, joists, beams, etc.) on the overall U-value of a wall, roof, floor, window or other building surface. Framing generally increases the U-Value and decreases the R-Value of insulated surfaces.

Framing Percentage - The area of actual framing in an envelope assembly divided by the overall area of the envelope assembly. This percentage is used to calculate the overall U-value of an assembly.

Frequency - The number of cycles which an alternating current moves through in each second. Standard electric utility frequency in the United States is 60 cycles per second, or 60 Hertz.

Frost Line - The maximum depth of the soil where water will freeze during the coldest weather.

Furring - Wood strips providing a space for insulation.

Gable - The triangular section of an end wall formed by the pitch of the roof.

Gallon - A unit of volume. A U.S. gallon has 231 cubic inches or 3.785 liters.

Gas - Gaseous fuel (usually natural gas) that is burned to produce heat energy. The word also is used, colloquially, to refer to gasoline.

Gasket - Elastic strip that seals a joint between two materials.

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.

Geothermal Gradient - The change in the earth's temperature with depth. As one goes deeper, the earth becomes hotter.

Grid - A system of interconnected power lines and generators that is managed so that the generators are dispatched as needed to meet the requirements of the customers connected to the grid at various points. Gridco is sometimes used to identify an independent company responsible for the operation of the grid.

Glass Load Factor - A number combining glass' solar heat transmission and its heat conduction. Used for cooling load calculations.

Glazing - Glass installation-pertaining to glass assemblies or windows.

Gross Area - The area of a surface including areas not belonging to that surface (such as windows and doors in a wall).

Head - Foot pounds of mechanical energy per pound of fluid created by a pump.

Heat Capacity - The amount of heat necessary to raise the temperature of a given mass one degree. Heat capacity may be calculated by multiplying the mass by the specific heat.

Heat Gain - an increase in the amount of heat contained in a space, resulting from direct solar radiation, heat flow through walls, windows, and other building surfaces, and the heat given off by people, lights, equipment, and other sources.

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 Rate - A number that tells how efficient a fuel-burning power plant is. The heat rate equals the Btu content of the fuel input divided by the kilowatt-hours of power output.

Heat-Recovery Ventilator - A central ventilator that transfers heat from exhaust to intake air, or vice versa.

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.

Heat-Transfer Coefficient - See U-value.

Heating Degree Day - A unit that measures the space heating needs during a given period of time.

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

Heating Season 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.

Home Heating Index - The number of Btus of energy used by a home divided by its area in square feet, then divided by the number of heating degree days during the time period.

House Pressure - The difference in pressure between the indoors and outdoors measured by a manometer.

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

Humidistat - An automatic control that switches a fan, humidifier, or dehumidifier on and off to control relative humidity.

HVAC (Heating Ventilation and Air Conditioning) - A system that provides heating, ventilation and/or cooling within or associated with a building.

Hydronic Heating - A system that heats a space using hot water which may be circulated through a convection or fan coil system or through a radiant baseboard or floor system.

Illumination - The light level measured on a horizontal plane in footcandles.

Incandescent Lamp - The common light bulb found in residential lamps and light fixtures and sold in stores everywhere. They produce light by passing an electric current through a filament (resistor), which also produces significant heat.

Inch of Water Column - Small air pressure differences are measured in inches of water column in the American measurement system. The linear measurement (inches of water) is determined by the height of water column that can be supported by the pressure force.

Infiltration - The inflow of outdoor air into the indoors, which is accompanied by an equal outflow of air from indoors to the outdoors.

Infrared - Pertaining to the wavelengths of light that is longer than the visible spectrum of light emitted by the sun or warm objects on Earth. Although sometimes referred to as heating rays, in fact all wavelengths of light produce heat. The infrared spectrum encompasses wavelengths from 750 nanometers or microns to 1 millimeter.

Insolation - The amount of solar radiation striking a surface.

Insulated Glass - Two or more glass panes spaced apart and sealed in a factory.

Insulation - Material with relatively high thermal resistance.

Intermediate Zone - A zone located between the building's conditioned spaces and outdoors, like a crawl space or attic.

Intermittent-Ignition Device - A device that lights the pilot light on a gas appliance when the control system calls for heat, thus saving the energy wasted by a standing pilot.

Internal Gains - The heat generated by bathing, cooking, and operating appliances, that must be removed during the summer to promote comfort.

Jamb - The side or top piece of a window or door frame.

Joist - A horizontal wood framing member that supports a floor or ceiling.

Kilowatt - A unit of electric power equal to 1000 joules per second or 3412 Btus per hour.

Kilowatt-Hour - A unit of electric energy equal to 3600 kilojoules or 3412 Btus.

Kinetic Energy - Energy in transition or motion.

Lamp - A generic term for a man-made light source often called a bulb or a tube. Sometimes refers to the portable luminaires on tables and floors of homes.

Latent Heat - The heat absorbed or released by a substance when it changes state-for instance, from a liquid to a gas.

Lath - Perforated base for plaster or stucco, formerly wood, now metal.

Low-E - Short for low emissivity, which means the characteristic of a metallic glass coating to resist the flow of radiant heat.

Low-Water Cutoff - A float-operated control for turning the burner off if a steam boiler is low on water.

Lumen - A unit of light output from a lamp.

Luminaire - A light fixture.

Main Panel Box - The service box containing a main switch, and the fuses or circuit breakers located inside the home.

Make-Up Air - Air drawn into a space to replace exhausted air.

Manometer - Measuring device for fluid pressures.

Mastic - A thick creamy substance used to seal seams and cracks in building materials.

Metering Device - In refrigeration, an orifice or capillary tube that meters refrigerant into an evaporator.

Natural Ventilation - Ventilation using natural air movement, without fans.

Net Free Area - The area of a vent after that area has been adjusted for insect screen, louvers, and weather coverings. The net free area is always less than the actual area.

Open-Combustion Heater - A heater that takes its combustion air from the surrounding room.

Output - The useful energy that a device produces after accounting for waste involved in the energy transfer.

Oxygen Depletion Sensor - A safety device for unvented combustion heaters that shuts gas off when oxygen is depleted.

Packaged Air Conditioner - An air conditioner that contains the compressor, evaporator, and condenser in a single cabinet.

Pascal - A unit of measurement of air pressure. (See Inch of water.)

Payback Period - The number of years that an investment in energy conservation will take to repay its cost in energy savings.

Perlite - A heat-expanded mineral used for insulation.

Permeability - A measurement of how much water vapor a material will let pass through it per unit of time.

Photoresistor - Electronic sensing device used to sense flame, daylight, artificial light.

Plate - A piece of lumber installed horizontally to which the vertical studs in a wall frame are attached.

Plenum - The piece of ductwork that connects the air handler to the main supply duct.

Polyethylene - Polymer plastic used for vapor barriers, air barriers, and foam backer rod.

Polyisocyanurate - Plastic foam insulation sold in sheets, similar in composition to polyurethane.

Polystyrene - Rigid plastic foam insulation, usually white or blue in color.

Polyurethane - Versatile plastic foam insulation, usually yellow in color.

Potential Energy - Energy in a stored or packaged form.

Pressure - A force encouraging flow by virtue of a difference in some condition between two areas.

Pressure Boundary - An air barrier--usually the primary air barrier.

Pressure Pan - A device used to block a duct register, while measuring the static pressure behind it, during a blower door test.

Psychometrics - The science of the relationship between air, water vapor, and heat.

Purlins - Framing members that sit on top of rafters, perpendicular to them, designed to spread support to roofing materials.

R-Value - A measurement of thermal resistance.

Radiant Barrier - A foil sheet or coating designed to reflect heat rays or retard their emission.

Radiant Temperature - The average temperature of objects in a home such as walls, ceiling, floor, furniture, and other objects.

Radiant - Heat energy, which originates on a hot body like the sun, and travels from place to place through the air.

Radon - A radioactive gas that decomposes into radioactive particles.

Rafter - A roof beam that follows the roof's slope.

Recovery Efficiency - A water heater's efficiency at actually heating incoming water.

Reflectance - The ability of a material's surface to reflect radiant heat-also called reflectivity.

Refrigerant - A special fluid used in air conditioners and heat pumps that heats air when it condenses and cools air when it evaporates.

Register - A grille covering a duct outlet.

Relative Humidity - The percent of moisture absorbed in the air compared to the maximum amount possible. Air that is saturated has 100% relative humidity.

Reset Controller - A device that adjusts fluid temperature or pressure in a central heating system according to outdoor air temperature.

Resistance - The property of a material resisting the flow of electrical energy or heat energy.

Retrofit - An energy conservation measure that is applied to an existing building. Also means the action of improving the thermal performance or maintenance of a building.

Return Air - Air circulating back to the furnace from the house, to be heated by the furnace and supplied to the rooms.

Rim Joist - The outermost joist around the perimeter of the floor framing.

Room Air Conditioner - A unitary air conditioner installed through a wall or window, which cools the room by removing heat from the room and releasing it outdoors.

Room Heater - A heater located within a room and used to heat that room.

Sash - A movable or stationary part of a window that frames a piece of glass.

Saturation - The point at which a material has absorbed its maximum amount of a liquid.

Savings-to-Investment Ratio - Measures how many times an energy retrofit pays for itself during its lifetime.

Scale - Dissolved minerals that precipitate inside boilers and storage tanks.

Sealed Combustion Heater - A heater that draws combustion air from outdoors and has a sealed exhaust system.

Seasonal Energy Efficiency Rating - A measurement of energy efficiency for central air conditioners. The SEER is computed by dividing cooling capacity, measured in Btuh, by the watts.

Sensible Heat - The heat absorbed by a substance which raises its temperature.

Sequencer - A bimetal switch that turns on the elements of an electric furnace in sequence.

Service Equipment - The electric meter and main switch, usually located outside the building.

Shading Coefficient - A decimal describing how much solar energy is transmitted through a window opening, compared to clear single glass, which has an SC of 1.0.

Sheathing - Structural sheeting, attached on top of the framing, underneath siding and roofing of a building.

Sheeting - Any building material used for covering a building surface.

Sheetrock - See drywall

Shell - The building's exterior envelope—consisting of walls, floor, and roof of a building.

Short Circuit - A dangerous malfunction in an electrical circuit, where electricity is flowing through conductors without going through an electric resistor, like a light or motor.

Sill - The bottom of a window or door frame.

SIR - See savings-to-investment ratio.

Sling Psychrometer - A device holding two thermometers that is slung through the air to measure relative humidity.

Soffit - The underside of a roof overhang or a small lowered ceiling, as above cabinets or a bathtub.

Solar Gain - Heat from the sun that is absorbed by a building and contributes to the need for cooling.

Solar Heat - Radiant energy from the sun with wavelengths between 0.7 and 1 micrometers.

Solar Heat Gain Coefficient - The ratio of solar heat gain through a window to incident solar heat. Includes both transmitted heat and absorbed and reradiated heat.

Solar Transmittance - The percent of total solar energy transmitted by a material.

Space Conditioning - Heating, cooling, or ventilation of an indoor space.

Space Heating - Heating the living spaces of the home.

Specific Heat - The ratio of a material's heat storage capacity to the heat storage capacity of water.

Split-System Air Conditioner - An air conditioner that has the condenser and compressor outdoors and the evaporator indoors.

Stack Effect - The draft established in a building from air infiltrating low and exfiltrating high.

Standing Losses - Losses from a hot water storage tank through its shell.

State Point - Air at a particular temperature and humidity occupies a single point on the psychrometric chart called a state point.

Steady-State Efficiency - The efficiency of a heating appliance, after an initial start-up period, that measures how much heat crosses the heat exchanger. The steady-state efficiency is measured by a combustion analyzer.

Steam Trap - An automatic valve that closes to trap steam in a radiator until it condenses.

Steam Vent - A bimetal-actuated air vent that allows air to leave steam piping and radiators, but closes when exposed to steam itself.

Stop - A thin trim board for windows and doors to close against or slide against.

Strike Plate - The metal plate attached to the door jamb that the latch inserts into upon closing.

Stucco - Plaster applied to the building's exterior walls.

Stud - A vertical framing member used to build a wall.

Subcooling - The number of degrees Fahrenheit that a condenser and nearby piping cools the liquid refrigerant below its saturation temperature.

Subfloor - The sheathing over the floor joists and under the flooring.

Substrate - A layer of material to which another layer is applied.

Superheat - The number of degrees Fahrenheit that an evaporator and nearby piping heats gaseous refrigerant above its saturation temperature.

Supply Air - Air that has been heated or cooled and is then moved through the ducts and out the supply registers of a home.

Task Lighting - Lighting provided at the area where a visual task is performed.

Therm - A unit of energy equaling 100,000 Btus or 29.3 kilowatt-hours.

Thermal Break - A piece of relatively low conducting material between two high conducting materials.

Thermal Bridging - Rapid heat conduction resulting from direct contact between very thermally conductive materials like metal and glass.

Thermal Conductance - General term applied to K-value, meaning conduction heat-flow rate.

Thermal Resistance - Same as R-value, expressing ability to retard heat flow.

Thermal Transmittance - Expressed as U-value, thermal transmittance is heat flow by conduction, convection, and radiation through a non-uniform layered building component like a wall.

Thermistor - An electronic resistor used to sense temperature.

Thermocouple - A bimetal-junction electric generator used to keep the safety valve of an automatic gas valve open.

Thermodynamics - is the study of the conversion of heat energy into different forms of energy.

Threshold - The raised part of a floor underneath a door that acts as an air and dust seal.

Tracer Gas - A harmless gas used to measure air leakage in a building.

Transformer - A double coil of wire that increases or decreases voltage from a primary circuit to a secondary circuit.

Truss - A lightweight, rigid framework designed to be stronger than a solid beam of the same weight.

U-Factor - The amount of heat that will flow through a square foot of a building assembly consisting of multiple sections of materials.

U-Value - See U-factor

Ultraviolet Radiation - Solar radiation having wavelengths shorter than visible light.

Unconditioned Space - An area within the building envelope that is not intentionally heated or cooled.

Underlayment - Sheeting installed to provide a smooth, sound base for a finish material.

Vapor Barrier - A material that retards the passage of water vapor.

Vapor Diffusion - The flow of water vapor through a solid material.

Vapor Diffusion Retarder - See vapor barrier.

Vaporize - Change from a liquid to a gas.

Vent Connector - The vent pipe carrying combustion gases from the appliance to the chimney.

Vent Damper - An automatic damper powered by heat or electricity that closes the chimney while a heating device is off.

Ventilation - The movement of air through an area for the purpose of removing moisture, air pollution, or unwanted heat.

Venting - The removal of combustion gases by a chimney or other type of combustion vent.

Vermiculite - A heat-expanded mineral used for insulation. Sometimes contains asbestos.

Visible Transmittance (VT) - The percent of visible light transmitted by a glass assembly.

Volt - The electrical potential contained in each unit of charge in joules per coulomb.

Watt - A unit of electrical power equivalent to one joule per second or 3.4 Btuh.

Watt-Hour - A unit of electrical energy equivalent to 3600 joules or 3.4 Btus.

Weatherization - The process of reducing energy consumption and increasing comfort in buildings by improving energy efficiency of the building.

Weatherstripping - Flexible gaskets, often mounted in rigid metal strips, for limiting air leakage.

Webbing - A reinforcing fabric used with mastics and coatings to prevent patches from cracking.

Weep Holes - Holes drilled for the purpose of allowing water to drain out of an area in a building where it has collected.

Wet-Bulb Temperature - The temperature of a dampened thermometer of a sling psychrometer used to determine relative humidity, dew point, and enthalpy.

Window Films - Plastic films, coated with a metallized reflective surface that are adhered to window glass to reflect heat rays from the sun.

Window Frame - The sides, top, and sill of the window which forms a box around window sashes and other components.

Worst-Case Depressurization Test - A safety test, performed by specific procedures, designed to assess the probability of chimney backdrafting.

WRT - Acronym meaning “with reference to” used to show that the air pressures between two areas are being measured and compared.

Zone - A room or portion of a building separated from other rooms by an air barrier--not usually an effective air barrier.

Additional Terms: