

Glossary

Active Solar: As an energy source, energy from the sun collected and stored using mechanical pumps or fans to circulate heat-laden fluids or air between solar collectors and the building. Examples include the use of solar collectors for water or space heating. The 1989 CBECS did not gather consumption and expenditures data for active solar. Data on the passive collection of solar energy, such as by trombe walls, were not collected on the 1989 CBECS. (See **Energy Source**.)

Air Conditioning: See **Cooling**.

Air Ducts or Air-Handling Units: A vehicle for channeling warm or cool air to different parts of a building. The process of moving the conditioned air often involves passing air over heating or cooling coils and forcing it from a central location through ducts or air-handling units. Air-handling units are hidden in the walls or ceilings, where they use steam or hot water to heat the air or chilled water to cool the air, inside the duct work. (See **Cooling, Duct,** and **Space Heating**.)

Authorization Form: A form signed by the respondent from a building, authorizing energy supplier companies that serve the building to release information on the amounts and costs of energy consumed in the building during a specified period. (See **Energy Supplier**.)

Ballast: See **High-Efficiency Ballast**.

Barrel: A volumetric unit of measure for crude oil and petroleum products equivalent to 42 U.S. gallons. (See **Gallon**.)

Baseboard: As a type of heating equipment, a system in which either electric resistance coils or finned tubes carrying steam or hot water are mounted behind shallow panels along baseboards. Baseboards rely on passive convection to distribute heated air in the space. Electric baseboards are an example of an "Individual Space Heater." (See **Individual Space Heater**.)

Boiler: A type of space-heating equipment consisting of a vessel or tank where heat produced from the combustion of fuels such as natural gas, fuel oil, or coal is used to generate hot water or steam. Many buildings have their own boilers, while other buildings have steam or hot water piped in from a central plant. For this survey, only boilers inside the building (or serving only that particular building) are counted as part of the building's heating system. Steam or hot water piped into a building from a central plant is considered district heat. (See **Furnace, HVAC,** and **District Heat**.)

Bottled Gas: See **Liquefied Petroleum Gas (LPG)** and **Propane**.

British Thermal Unit: A unit of energy consumed by or delivered to a building. A Btu is defined as the amount of energy required to increase the temperature of 1 pound of water by 1 degree Fahrenheit, at normal atmospheric pressure. Energy consumption is expressed in Btu in this report to allow for consumption comparisons among fuels that are measured in different units. (See **Metric Conversion Factors**.)

Btu: See **British Thermal Unit**.

Btu Conversion Factors: The Btu conversion factors for this survey are as follows:

	Btu Equivalent	Unit
Electricity	3,412	kilowatthour
Natural Gas	1,030	cubic foot
Distillate Fuel Oils (Nos. 1,2, and 4)	138,690	gallon
Residual Fuel Oils (Nos. 5 and 6)	149,690	gallon
Kerosene	135,000	gallon
District Heat (Steam and Hot Water)	1,000	pound

Note: Btu of district hot water have been converted into equivalent pounds of steam by using the conversion 1,000 Btu hot water \approx 1 pound steam.

Sources: Energy Information Administration, *Monthly Energy Review* (June 1991), pp. 125-129, for electricity, natural gas, distillate, residual, and kerosene; and *Methodological Issues In the Nonresidential Buildings Energy Consumption Survey* (September 1983), pp. 173-175, for district steam.

These are the Btu conversion factors for site energy consumption. For primary energy consumption, kilowatthours were converted to Btu at the rate of 10,236 Btu per kilowatthour, three times the site energy Btu. For district heat, pounds were converted to primary energy at the rate of 1,500 Btu per pound.

Building: For this survey, a structure totally enclosed by walls extending from the foundation to the roof, containing over 1,000 square feet of floorspace, and intended for human occupancy. Structures that were included in the survey as a specific exception were parking garages not totally enclosed by walls and a roof, as well as structures erected on pillars to elevate the first fully enclosed level, but leaving the sides at ground level open.

Excluded from the survey as nonbuildings were the following: structures (other than the exceptions just noted) that were not totally enclosed by walls and a roof (such as oil refineries, steel mills, and water towers); street lights, pumps, billboards, bridges, swimming pools, and construction sites; mobile homes and trailers, even if they housed commercial activity; and oil storage tanks. (See **Commercial Building**.)

Building Floorspace: See **Floorspace**.

Building Shell (Envelope): The thermal envelope of the building, that is, the roof, exterior walls, and bottom floors that enclose conditioned space through which thermal energy may be transferred to or from the exterior.

Building Shell Conservation Feature: A building feature designed to reduce the energy loss or gain through the shell or envelope of the building. The 1989 CBECS collected data on the following specific building shell energy conservation features: roof, ceiling or wall insulation; storm windows or double- or triple-paned glass (multiple glazing); tinted or reflective glass or shading films; exterior or interior shadings or awnings; and weather stripping or caulking. (See **Roof or Ceiling Insulation, Wall Insulation, Reflective or Shading Glass or Film, Storm or Multiple Glazing, Building Shell (Envelope), Exterior or Interior Shadings or Awnings, and Weather Stripping or Caulking**.)

Built-Up Roof: A roof covering consisting of several successive layers (each of which is called a ply) usually of roofing felt with moppings of hot asphalt between layers and topped by a mineral-surfaced layer or by gravel embedded in a heavy coat of asphalt.

Caulking: See **Weather Stripping or Caulking**.

CDD: See **Cooling Degree-Days (CDD)**.

Census Division: A geographic area consisting of several States defined by the U.S. Department of Commerce, Bureau of the Census. (See the Census Regions and Divisions map in Appendix C.) The States are grouped into nine divisions and four regions:

Region	Division	States
Northeast	New England	Connecticut, Maine, Massachusetts, New Hampshire, Vermont, and Rhode Island
	Middle Atlantic	New Jersey, New York, and Pennsylvania
Midwest	East North Central	Illinois, Indiana, Michigan, Ohio, and Wisconsin
	West North Central	Iowa, Kansas, Minnesota, Missouri, Nebraska, North Dakota, and South Dakota
South	South Atlantic	Delaware, the District of Columbia, Florida, Georgia, Maryland, North Carolina, South Carolina, Virginia, and West Virginia
	East South Central	Alabama, Kentucky, Mississippi, and Tennessee
	West South Central	Arkansas, Louisiana, Oklahoma, and Texas
West	Mountain	Arizona, Colorado, Idaho, Montana, Nevada, New Mexico, Utah, and Wyoming
	Pacific	Alaska, California, Hawaii, Oregon, and Washington

Census Region: See **Census Division** and the Census Regions and Divisions map in Appendix C of this report.

Central Chiller: Any centrally located air-conditioning system that produces chilled water in order to cool air. The chilled water or cold air is then distributed throughout the building by using pipes or air ducts, or both. These systems are also commonly known as "chillers," "centrifugal chillers," "reciprocating chillers," or "absorption chillers." Chillers are generally located in or just outside the building they serve. Buildings receiving district chilled water are served by chillers located at central physical plants. (See **Cooling, District Chilled Water, Central Physical Plant**, and **HVAC**.)

Central Physical Plant: A plant that is owned by, and on the grounds of, a multibuilding facility and that provides district heating, district cooling, or electricity to other buildings on the same facility. To qualify as a central plant for this survey, the plant must provide district heat, district chilled water, or electricity to at least one other building. The central physical plant may be by itself in a separate building or may be located in a building where other activities occur. (See **Multibuilding Facility; District Heat; and District Chilled Water**.)

Chiller: See **Central Chiller**.

Climate Zone: One of five climatically distinct areas defined by long-term weather conditions affecting the heating and cooling loads in buildings. The zones were developed by the Energy End Use and Integrated Statistics Division

(EEUUSD) from seven distinct climate categories originally identified by the American Institute of Architects (AIA) for the U.S. Department of Energy and the U.S. Department of Housing and Urban Development.

The zones were determined according to the 45-year average (1931-1975) of the annual heating and cooling degree-days (base 65 degrees Fahrenheit). An individual building was assigned to a climate zone according to the 45-year average annual degree-days for its NOAA Division. (See **Heating Degree-Days (HDD)**, **Cooling Degree-Days (CDD)**, **Degree-Days 45-Year Average** and **NOAA Division**.)

The zones are defined as follows:

<u>Climate Zone</u>	<u>Average Annual Cooling Degree-Days</u>	<u>Average Annual Heating Degree-Days</u>
1	Less than 2,000	More than 7,000
2	Less than 2,000	5,500 to 7,000
3	Less than 2,000	4,000 to 5,499
4	Less than 2,000	Less than 4,000
5	2,000 or more	Less than 4,000

Coal: In this report, the term includes anthracite, bituminous, and subbituminous coal, as well as the derivative of coal known as coke. The 1989 CBECS determined if coal was used in the commercial building but did not collect consumption and expenditure data on the use of coal as an energy source. (See **Energy Source**.)

Commercial: Neither residential, manufacturing, nor agricultural. (See **Commercial Building**.)

Commercial Building: A building with more than 50 percent of its floorspace used for commercial activities. Commercial buildings include, but are not limited to, stores, offices, schools, churches, gymnasiums, libraries, museums, hospitals, clinics, warehouses, and jails. Government buildings were included except for buildings on site with restricted access, such as some military bases or reservations. Farms and buildings located on farms (such as silos, grain elevators, and barns) were excluded from the survey. (See **Building, Commercial**, and **Principal Building Activity**.)

Commercial Freezer: See **Refrigeration Equipment**.

Commercial Refrigeration Unit: See **Refrigeration Equipment**.

Computer Area with Separate Air-Conditioning System: In this survey, this term is used to denote space specifically designed and equipped to meet the needs of computer equipment for controlled temperatures and/or humidity. The air-conditioning system for this area is separate from that used to control the environment in other parts of the building.

Computerized Energy Management and Control System: See **Energy Management and Control System (EMCS)**.

Concrete Panel: A wall construction panel made of concrete, which is either prefabricated in a factory or poured at the site and then hoisted onto the structure.

Concrete Roof: For this survey, a poured concrete roof, often intended to bear the load of a parking garage that occupies the roof area of a building.

Conservation Feature: A feature in the building designed to reduce the usage of energy. (See **Building Shell Conservation Feature**, **HVAC Conservation Feature**, and **Lighting Conservation Feature**.)

Consumption: The amount of energy used by, or delivered to, a building during a given period of time. For this report, all consumption statistics, unless otherwise noted, are site energy consumption, which excludes electrical system and district heat energy losses. In contrast, primary energy consumption takes into account the fuels that are required to produce and distribute electricity and district heat. Statistics for this report are presented on an annual basis for the 365-day period of calendar year 1989. Data on energy consumption were not collected by end uses separately. For example, although it might be known that electricity was used in some buildings for heating, the consumption of electricity reported for those buildings would typically include other uses of electricity as well (such as lighting and water heating). (See **Btu**, **Energy Supplier**, and **Expenditures**.)

Conversion Factors: See **Btu Conversion Factors** and **Metric Conversion Factors**.

Cooking: In this report, the use of energy for commercial or institutional food preparation. The 1989 CBECS asked specifically about "commercial or institutional cooking," which was intended to include any kitchen facility that was not part of a residence. (See **Energy End Use**.)

Cooling: Conditioning of room air for human comfort by a refrigeration unit (such as an air-conditioner or heat pump) or by circulating chilled water through a central cooling or district cooling system. Use of fans or blowers by themselves, without chilled air or water, is not included in this definition of cooling. (See **Energy End Use**, **Central Cooling**, **Heat Pump**, and **HVAC**.)

Cooling Degree-Days (CDD): A measure of how hot a location was over a period of time, relative to a base temperature. In this report, the base temperature is 65 degrees Fahrenheit (approximately 18 degrees Celsius), and the period of time is 1 year. The cooling degree-days for a single day is the difference between that day's average temperature and the base temperature if the daily average is greater than the base and zero if the daily average temperature is less than or equal to the base temperature. The cooling degree-days for a longer period of time is the sum of the daily cooling degree-days for the days in that period. One cooling degree-day Fahrenheit equals five-ninths of a degree-day Celsius. (See **Heating Degree-Days (HDD)** and **Climate Zone**.)

Cubic Foot: As a natural gas measure, the volume of gas contained in a cube with an edge that is 1 foot long at standard temperature and pressure (60 degrees Fahrenheit and 14.73 pounds standard per square inch.) The thermal content varies by the composition of the gas. (See **Natural Gas** and **Btu**.)

Decorative or Construction Glass: An exterior building wall material of glass decorative coverings such as glass blocks or spandrels, that are not window or vision (see-through) glass. Structural glass or glass curtain walls used on the outside of buildings are also included in this category. For this report, decorative or construction glass was included in the "Other" exterior wall material category. (See **Window or Vision Glass**.)

Degree-Days 1989: The total annual heating and cooling degree-days (base 65 degrees Fahrenheit) during calendar year 1989. For this report, each building was assigned to a National Oceanic and Atmospheric Administration (NOAA) Division, and the division's daily temperature averages were used to compute degree-days for 1989. The daily temperature data were obtained from NOAA. (See **Heating Degree-Days (HDD)**, **Cooling Degree-Days (CDD)**, **Degree-Days 45-Year Average**, and **NOAA Division**.)

Degree-Days 45-Year Average: The average of the 45 total annual heating and cooling degree-days (base, 65 Degrees Fahrenheit) in each NOAA Division, for the years 1931 through 1975. Computed from the Division's daily temperature averages for each year in question. Used to assign individual buildings to climate zones. (See **Heating Degree-Days (HDD)**, **Cooling Degree-Days (CDD)**, **Degree-Days 1989**, **NOAA Division**, and **Climate Zone**.)

Demand-Side Management (DSM) Programs: These are organized utility-sponsored activities that are intended to affect the amount and timing of customer electricity use.

District Chilled Water: Chilled water from an outside source used as an energy source for cooling in a building. The water is chilled in a central plant and piped into the building. Chilled water may be purchased from a utility or provided by a central physical plant in a separate building that is part of the same multibuilding facility (for

example, a hospital complex or university). (See **Energy Source, Central Physical Plant, and Multibuilding Facility.**)

District Heat: Steam or hot water from an outside source used as an energy source for space heating or another end use in a building. The steam or hot water is produced in a central plant and piped into the building. The district heat may be purchased from a utility or provided by a central physical plant in a separate building that is part of the same multibuilding facility (for example, a hospital complex or university). For this report, district steam and district hot water are usually reported together as district heat. (See **Energy Source, Central Physical Plant, and Multibuilding Facility.**)

District Hot Water: District heat in the form of hot water. (See **District Heat.**)

District Steam: District heat in the form of steam. (See **District Heat.**)

DSM: See **Demand-Side Management Programs.**

Duct: A passageway made of sheet metal or other suitable material to convey air from the heating, ventilating, and cooling systems to and from the point of utilization.

Electric Baseboard: An individual space heater with electric resistance coils mounted behind shallow panels along baseboards. Electric baseboards rely on passive convection to distribute heated air to the space. (See **Individual Space Heater and Baseboard.**)

Electricity: Electric energy, usually measured in kilowatthours. As an energy source for this report, electric energy supplied to a building by a central utility via power lines or from a central physical plant in a separate building that is part of the same multibuilding facility. Electric power generated within a building for exclusive use in that building is specifically excluded from the definition of electricity as an energy source. (See **Energy Source, Central Physical Plant, and Multibuilding Facility.**)

Electricity Generation: The onsite production of electricity using electricity generators on either a regular or emergency basis. (See **Electricity.**)

EMCS: See **Energy Management and Control System (EMCS)**

Energy End Use: A use for which energy is consumed in a building. End-use estimates for nine end uses are provided in this report. The 1989 CBECS also collected data on the whether any manufacturing or electricity generation took place in the building, but separate energy consumption estimates are not available for these two end uses. (See **Cooking, Cooling, Space Heating, Electricity Generation, Lighting, Manufacturing, Refrigeration, Ventilation and Water Heating.**)

Energy Intensity: The ratio of energy consumption to some measure of the demand for services provided by energy. In this report, energy intensity is usually given on an aggregate basis, as the ratio of the total consumption for a set of buildings to the total service demand in those buildings. This report uses both floorspace and more complicated measures, such as floorspace-hours, to measure the demand for energy services. Energy intensities are calculated to adjust the amount of energy consumed for the effects of various building characteristics, such as size of the building, number of workers, or number of operating hours, to facilitate comparisons of energy across time, fuels, and buildings. (See **Consumption.**)

Energy Management and Control System (EMCS): An energy conservation feature that uses mini/microcomputers, instrumentation, control equipment, and software to manage a building's use of energy for heating, ventilation, air conditioning, lighting, and/or business-related processes. These systems can also manage fire control, safety, and security. Not included as EMCS are time-clock thermostats. (See **Occupant Control of Heating and Occupant Control of Cooling.**)

Energy Source: A type of energy or fuel consumed in the building. For this report, the energy sources for which consumption and expenditures statistics are presented are electricity, natural gas, fuel oil, district heat, and district chilled water. The 1989 CBECS also collected information on the use, but not on the amounts consumed of, or spent for, these energy sources: propane, wood, coal, and active solar. (See **Electricity, Natural Gas, Fuel Oil, District Heat, District Chilled Water, Liquefied Petroleum Gas (LPG), Propane, Wood, Coal, and Active Solar.**)

Energy Supplier: A company that provides electricity, natural gas, fuel oil, or other sources of energy to a building. In the 1989 CBECS, only suppliers of electricity, natural gas, fuel oil, and district heat or chilled water were sent the Supplier Survey. (See **Energy Source.**)

Envelope: See **Building Shell (Envelope).**

Establishment: As defined by the Standard Industrial Classification Manual developed by the Office of Management and Budget, "an economic unit, generally, at a single physical location where business is conducted or where services or industrial operations are performed." However, "establishment" is not synonymous with "building." In this survey, respondents were asked how many establishments or organizations occupy the building (i.e., hold or lease space in it on a full-time basis).

Evaporative Cooler ("Swamp" Cooler): A type of cooling equipment using the evaporation of water to cool air. This type of equipment is commonly found in warm, dry climates. In this report, evaporative coolers are included under "Other Cooling Equipment." (See **Cooling.**)

Expenditures: Funds spent for the energy consumed in, or delivered to, a building during a given period of time. For this report, all expenditure statistics are presented on an annual basis, for calendar year 1989. The total dollar amount includes State and local taxes, fuel adjustment charges, system charges, and demand charges. The total dollar amount excludes merchandise, repair charges, and service charges. (See **Consumption, and Energy Supplier.**)

Exterior or Interior Shadings or Awnings: A covering designed to reduce the flux of light into a building. Exterior shadings or awnings include any type of shading (including architectural) or awning on the outside of the building designed to limit solar penetration. Interior shadings are drapes, venetian blinds, shades or any other means of covering a window from the inside to limit the amount of solar or thermal penetration. (See **Building Shell Conservation Feature.**)

Fan-Coil Unit: A type of heating and cooling distribution equipment using circulating hot or chilled water with fans. Fan-coil units have thermostatically controlled built-in fans that draw air from the room and then across finned tubes containing hot water, steam, or chilled water. The hot water, steam or chilled water can be produced by equipment within the building or be piped into the building as part of a district heating or cooling system. (See **Space Heating and Cooling.**)

Floors: The number of levels in the tallest section of a building, including parking areas, basements, or other floors below ground level.

Floorspace: All the area enclosed by the exterior walls of a building, including indoor parking facilities, basements, hallways, lobbies, stairways, and elevator shafts. (See **Energy Source-Specific Floorspace, Gross Floorspace, and Square Footage.**)

Fluorescent Lamp: A lamp made of a glass tube coated on the inside with fluorescent material. The lamp produces light by passing electricity through mercury vapor, which causes the fluorescent coating to glow or fluoresce. (See **Lamp.**)

Fuel: See **Energy Source.**

Fuel Oil: A liquid petroleum product less volatile than gasoline, used as an energy source. In this report, fuel oil includes distillate fuel oil (No. 1, No. 2, and No. 4.), residual fuel oil (No. 5 and No. 6), and kerosene. (See **Energy Source**.)

Furnace: Space heating equipment consisting of an enclosed chamber where fuel is burned or electrical resistance is used to heat air directly, without using steam or hot water. The warm air is for heating, which is distributed throughout the building, typically by air ducts. (See **Boiler, Ducts, Space Heating, and HVAC**.)

Gallon: A volumetric measure equal to 4 quarts (231 cubic inches) used to measure fuel oil. One barrel equals 42 gallons. (See **Barrel**.)

Government Owned: Owned by a Federal, State, or local government agency. The building may be occupied by agencies of more than one government and may also be shared with nongovernment establishments.

HDD: See **Heating Degree-Days (HDD)**.

Heat Pump: Heating and/or cooling equipment that, during the heating season, draws heat into a building from outside and, during the cooling season, ejects heat from the building to the outside. Heat pumps are vapor-compression refrigeration systems whose indoor/outdoor coils are used reversibly as condensers or evaporators, depending on the need for heating or cooling. (See **Cooling, Space Heating, Central Cooling, and HVAC**.)

Heating: See **Space Heating**.

Heating or Reheating Coils: See **Reheating Coils**.

Heating Degree-Days (HDD): A measure of how cold a location was over a period of time, relative to a base temperature. In this report, the base temperature used is 65 degrees Fahrenheit (approximately 18 degrees Celsius), and the period of time is 1 year. The heating degree-days for a single day is the difference between the base temperature and the day's average temperature if the daily average is less than the base, and zero if the daily average temperature is greater than or equal to the base temperature. The heating degree-days for a longer period of time is the sum of the daily heating degree-days for days in that period. One degree-day Fahrenheit equals five-ninths of a degree-day Celsius. (See **Cooling Degree-Days (CDD), Climate Zone, and NOAA Division**.)

HID: See **High-Intensity Discharge (HID) Lamp**.

High-Efficiency Ballast: A lighting conservation feature consisting of an energy-efficient version of a conventional electromagnetic ballast. The ballast is the transformer for fluorescent and HID lamps providing the necessary current, voltage, and wave-form conditions to operate the lamp. A high-efficiency ballast requires lower power input than a conventional ballast to operate HID and fluorescent lamps.

High-Efficiency Lighting: As used in this report, lighting provided by high-intensity discharge (HID) lamps and/or fluorescent lamps. (See **High-Intensity Discharge (HID) Lamp** and **Fluorescent Lamp**.)

High-Intensity Discharge (HID) Lamp: A lamp that produces light by passing electricity through gas, which causes the gas to glow. Examples of HID lamps are mercury vapor lamps, metal halide lamps, and high-pressure sodium lamps. (See **Lamp**.)

Hours of Operation: See **Weekly Operating Hours**.

HVAC: An abbreviation for the heating, ventilation, and air-conditioning system; the system or systems that condition air in a building.

HVAC Conservation Feature: A building feature designed to reduce the amount of energy consumed by the heating, cooling, and ventilating equipment. The 1989 Building Characteristics Survey collected data on the presence

of two HVAC conservation features: preventive maintenance program for the heating and cooling equipment and energy management and control systems. (See **Preventive Maintenance Program for the Heating and/or Cooling Equipment, Occupant Control of Heating, Occupant Control of Cooling, Reduced Use--Off Hours, and Energy Management and Control System (EMCS).**)

Ice-Making Machines: See **Refrigeration Equipment.**

Incandescent Lamp: A lamp that produces light by electrically heating a filament so that it glows. Included in this category are the familiar household light bulbs which screw into sockets, as well as energy-efficient incandescent bulbs such as Tungsten Halogen (spotlights), Reflector or R-Lamps (accent and task lighting), Parabolic Aluminized Reflector (PAR) lamps (flood and spot lighting), and Ellipsoidal Reflector (ER) lamps (recessed lighting). (See **Lamp.**)

Individual Air Conditioners in Walls or Windows: Self-contained air-conditioning units installed in either walls or windows (with heat-radiating condensers exposed to the outdoor air). These units are characterized by a lack of pipes or duct work for distributing the cool air; the units condition air only in the room or areas where they are located. (See **Cooling.**)

Individual Space Heater: A free-standing or self-contained unit that generates and delivers heat to a local zone within the building. The heater may be permanently mounted in a wall or floor, or may be portable. Examples of individual space heaters include electric baseboards, electric radiant or quartz heaters, heating panels, gas- or kerosene-fired unit heaters, wood stoves, and infrared radiant heaters. These heaters are characterized by a lack of pipes or duct work for distributing hot water, steam, or warm air through the building. (See **Electric Baseboard.**)

Insulation: A building shell conservation feature consisting of material placed between the interior of a building and the outdoor environment to reduce the rate of heat loss to the environment or heat gain from the environment. Examples include glass-wool fill and foam board. (See **Roof or Ceiling Insulation, Wall Insulation, and Building Shell Conservation Feature.**)

Intensity: See **Energy Intensity.**

Kerosene: A petroleum distillate with properties similar to those of No. 1 fuel oil, used primarily in space heaters, cooking stoves, and water heaters. In this report, no distinction is made between kerosene and fuel oil. (See **Fuel Oil.**)

Kilowatthour (kWh): A unit of work or energy, measured as 1 kilowatt (1,000 watts) of power expended for 1 hour. (See **Btu, Electricity, and Consumption.**)

Lamp: A term generally used to describe a manmade source of light. The term is often used when referring to a "bulb" or "tube." The CBECS collects data only about lamps that use electricity. (See **Incandescent Lamp, Fluorescent Lamp, and High-Intensity Discharge (HID) Lamp.**)

Lighting: The illumination of the interior of a building by use of artificial sources of light. (See **Energy End Use.**)

Lighting Conservation Feature: A building feature or practice designed to reduce the amount of energy consumed by the lighting system. The 1989 CBECS collected data on one lighting conservation feature--high-efficiency ballasts. (See **High-Efficiency Ballast.**)

Liquefied Petroleum Gas (LPG): Gas fuel in liquid form supplied to a building as an energy source. The fuel is usually delivered by tank trucks and stored near the building in a tank or cylinder until used. LPG contains mostly propane, but can contain such gases as butane, propylene, butylene, or ethane. For this report, any LPG reported was assumed to be propane. The 1989 CBECS did not collect consumption and expenditures data for LPG. (See **Energy Source, Propane, and Natural Gas.**)

LPG: See **Liquefied Petroleum Gas (LPG)**.

Major Energy Sources: The energy sources or fuels for which consumption and expenditures data were collected on the 1989 CBECS. These fuels or energy sources are electricity, fuel oil, natural gas, district steam, district hot water, and district chilled water. District chilled water is not included in any totals for the sum of major energy sources or fuels; all other major fuels are included in these totals.

Manufacturing: As an energy end use, any of the energy-using operations required for manufacturing/industrial processes. (See **Energy End Use**.)

Masonry: A general term covering wall construction using masonry materials such as brick, concrete block, stone, and tile that are set in mortar; also included in this category is stucco. This category does not include concrete panels because use of concrete panels represents a different method of constructing buildings. Concrete panels are reported separately. (See **Concrete Panel**.)

Metal Panel: An exterior wall construction material made of aluminum or galvanized steel panels fabricated in factories and fastened to the frame of the building to form outside walls. Pre-engineered metal buildings are also included in this category.

Metal Surfacing: Light-gauge metal sheets used for roofing.

Metric Conversion Factors: In this report, estimates are presented in customary U.S. units. Floorspace estimates may be converted to metric units by using the relationship, 1 square foot is approximately equal to .0929 square meters. Energy estimates may be converted to metric units by using the relationship, 1 Btu is approximately equal to 1,055 joules. (See **Btu**.)

Metropolitan: Buildings located within Metropolitan Statistical Areas (MSA's) as defined in the 1980 Census. Except in New England, an MSA is a county or a group of contiguous counties that contains at least one city of 50,000 inhabitants or more, or "twin cities" with a combined population of at least 50,000. The contiguous counties are included in an MSA if they are essentially metropolitan in character and are socially and economically integrated with the central city. In New England, MSA's consist of towns and cities rather than counties. (See **Nonmetropolitan**.)

Metropolitan Status: A building classification, either metropolitan or nonmetropolitan. (See **Metropolitan** and **Nonmetropolitan**.)

MSA: See **Metropolitan**.

Multibuilding Facility: A group of two or more buildings on the same site owned or operated by a single organization, business, or individual. Examples include university campuses and hospital complexes. (See **Building**.)

Multistage Area Probability Sample: A sample design executed in stages with geographic "clusters" of sampling units selected at each stage. This procedure reduces survey expense while maintaining national coverage.

Natural Gas: Hydrocarbon gas (mostly methane) supplied as an energy source to individual buildings by pipelines from a central utility company. Natural gas does not refer to liquefied petroleum gas or to privately owned gas wells operated by a building owner. (See **Energy Source**, **Liquefied Petroleum Gas (LPG)**, and **Propane**.)

NOAA Division: One of the 356 weather divisions designated by the National Oceanic and Atmospheric Administration (NOAA), encompassing the United States and the District of Columbia. These divisions usually follow county borders to encompass counties with similar weather conditions. However, the NOAA Division does not follow county borders when weather conditions vary considerably within a county, as is likely to be the case when a county borders the ocean or contains high mountains. (See **Climate Zone**, **Cooling Degree-Days (CDD)**, and **Heating Degree-Days (HDD)**.)

Nonmetropolitan: Buildings not located within Metropolitan Statistical Areas as defined in the 1980 Census. (See **Metropolitan.**)

Number of Workers in the Building: The number of people working in a building during the main shift on a typical workday during the year. Included in this definition are self-employed workers and volunteers. Excluded from this definition are customers, patients, and students, unless they are working for establishments in the building. Also excluded are employees who work out of the office, such as salespeople who report in, delivery people with routes, and messengers.

Occupant Control of Cooling: Control by individuals, other than maintenance personnel, of the cooling equipment in a building.

Occupant Control of Heating: Control by individuals, other than maintenance personnel, of the heating equipment in a building.

Office Equipment: A class of energy-using equipment including typewriters, copiers, cash registers, computer terminals, personal computers, printers, mainframe computer systems, and other miscellaneous office equipment. (See **Energy End Use.**)

Other End Uses: All energy end uses other than those specifically mentioned. (See **Energy End Use.**)

Owner Occupied: Having the owner or the owner's business represented at the site. A building is considered owner occupied if an employee or representative of the owner (such as a building engineer or building manager) maintains office space in the building. Similarly, a chain store is considered owner occupied even though the actual owner may not be in the building but headquartered elsewhere. Other examples of the owner's business occupying a building include State-owned university buildings, elementary and secondary schools owned by a public school district, and a post office where the building is owned by the U.S. Postal Service.

Packaged Cooling Units: See **Packaged Units.**

Packaged Heating Units: See **Packaged Units.**

Packaged Units: Units built and assembled at a factory and installed as a self-contained unit to heat or cool all or portions of a building. Packaged units are in contrast to engineer-specified units built up from individual components for use in a given building. "Packaged Units" is a term that can apply to heating equipment, cooling equipment, or combined heating and cooling equipment. Some types of electric packaged units are also called "Direct Expansion" or DX units. (See **Cooling, HVAC, and Space Heating.**)

Percent Cooled: The percentage of the building's square footage that is cooled to meet the comfort requirements of the occupants. For the 1989 CBECS, the point of reference for the percent cooled was the cooling season during the 12 months prior to the interview. (See **Square Footage and Cooling.**)

Percent Heated: The percentage of the building's square footage designed to be heated to at least 50 degrees Fahrenheit. For the 1989 CBECS, the percent heated was for the heating season during the 12 months prior to the interview. (See **Total Square Footage and Space Heating.**)

Percent Lit When Closed: The percentage of the building's square footage that was lit electrically during all hours other than the usual operating hours during the 12 months prior to the interview. (See **Percent Lit When Open, Square Footage, and Weekly Operating Hours.**)

Percent Lit When Open: The percentage of the building's square footage that was lit electrically during usual operating hours during the 12 months prior to the interview. (See **Percent Lit When Closed, Square Footage, and Weekly Operating Hours.**)

Pounds (District Heat): A weight quantity of steam, also used in this report to denote a quantity of energy in the form of steam. The amount of usable energy obtained from a pound of steam depends on its temperature and pressure at the point of consumption and on the drop in pressure after consumption. (See **Btu, District Steam, and District Heat.**)

Preventive Maintenance Program for Heating and/or Cooling Equipment: As used in this report, a HVAC conservation feature consisting of a program of routine inspection and service for the heating and/or cooling equipment. The inspection is performed on a regular basis, even if there are no apparent problems. (See **HVAC Conservation Feature.**)

Primary Electricity: The energy embodied in site electricity. (See **Consumption.**)

Primary Energy: See **Consumption.**

Primary Sampling Unit (PSU): The sampling units selected at the first stage in a multistage area probability sample. A PSU typically consists of one to several contiguous counties--for example, a metropolitan area with surrounding suburban counties. (See **Multistage Area Probability Sample, and Metropolitan.**)

Principal Building Activity: The activity or function occupying the most floorspace in the building. The categories were designed to group buildings that have similar patterns of energy consumption. (See **Building and Floorspace.**)

The principal building activity categories used in this report are described below.

Assembly: signifies buildings used for the gathering of people for social, recreational, or religious activities whether in private or nonprivate meeting halls.

Education: refers to buildings that house academic or technical classroom instruction.

Food Sales: involves the retail or wholesale sale of food, such as grocery stores.

Food Service: activities that involve preparation and sale of food and beverages for consumption, such as restaurants.

Health Care: covers diagnostic and treatment facilities for both inpatient and outpatient care. Excluded from this group are skilled nursing or other residential care facilities (nursing homes). These buildings are classified as "Lodging" buildings.

Lodging: refers to buildings that offer multiple accommodations for short-term or long-term residents (including nursing homes).

Mercantile and Service: refers to buildings containing sales and displays of goods or services (excluding food).

Office: refers to buildings used for general office space, professional offices, and administrative offices.

Other: covers buildings that do not fit into any of the other named categories.

Parking Garage: refers to buildings used to park cars or other vehicles. Buildings in this category need not be totally enclosed by walls.

Public Order and Safety: describes buildings used in the preservation of law and order or safety.

Warehouse: describes buildings used to store goods, manufactured products, merchandise, or raw materials. This category includes both refrigerated and nonrefrigerated warehouses.

Vacant: designates buildings in which more floorspace was vacant than was used for any single activity (as defined above) at the time of interview. A vacant building may have some occupied floorspace.

In graphs presentations throughout this report, the category "other buildings" includes parking garages, public order and safety buildings, and vacant buildings.

Propane: A gaseous petroleum product that liquefies under pressure; propane is a major component in liquefied petroleum gas, or LPG. Any LPG usage reported in the CBECS was assumed to be propane. (See **Liquefied Petroleum Gas (LPG)**.)

PSU: See **Primary Sampling Unit (PSU)**.

Quadrillion Btu: Equivalent to 1,000,000,000,000,000 (10¹⁵) Btu. (See **Btu**.)

Radiator: Space-heating equipment that transfers heat from steam or hot water to air by a combination of direct radiation, conduction, and convection. Typically, a radiator is a freestanding, cast-iron fixture exposed in the space it heats. (See **Space Heating**.)

Reduced Use--Off Hours: A conservation feature consisting of manually or automatically reducing the amount of heating or cooling produced during the hours a building is not in full use. (See **Space Heating, Cooling, and Conservation Feature**.)

Reflective or Shading Glass or Film: A building shell energy conservation feature consisting of tinted or reflective glass or shading films installed on the exterior glazing of a building to reduce the rate of solar penetration into the building. (See **Building Shell Conservation Feature**.)

Refrigerated Vending Machines: See **Refrigeration Equipment**.

Refrigeration: The use of energy to maintain perishable goods at a cool temperature for sale or storage. (See **Energy End Use** and **Refrigeration Equipment**.)

Refrigeration Equipment: A type of equipment such as commercial refrigeration/freezer units for the sale or storage of perishable materials; residential-type refrigerators/freezers; ice-making machines; soda or any other refrigerated vending machines; water coolers; or any other refrigeration equipment, excluding air conditioning. Freezers are designed to keep their contents below the freezing point (32 degrees Fahrenheit), and refrigeration equipment is designed to maintain the stored items below room temperature, but above the freezing point. In the 1989 CBECS, data were collected on refrigeration/freezer equipment inside and/or adjacent to the building.

Regular HVAC Maintenance: See **Preventive Maintenance Program for Heating and/or Cooling Equipment**.

Reheating Coils: A part of some air-conditioning systems. Electric coils in air ducts used primarily to raise the temperature of circulated air after it was over cooled to remove moisture. Some buildings report reheating coils as their sole heating source. (See **Space Heating, Cooling, and Air Duct or Air-Handling Units**.)

Relative Standard Error: A measure of the reliability or precision of a survey statistic. The Relative Standard Error, or RSE, is defined as the standard error of a survey estimate, expressed as a percent of the estimate. For example, an RSE of 10 percent means that the standard error is one-tenth as large as the survey estimate. (See **Standard Error**.)

Residential Freezers: See **Refrigeration Equipment**.

Residential Refrigerators: See **Refrigeration Equipment**.

Roof or Ceiling Insulation: A building shell conservation feature consisting of insulation placed in the roof (below the waterproofing layer) or in the ceiling of the top floor in the building. (See **Insulation** and **Building Shell Conservation Feature**.)

RSE: See **Relative Standard Error**.

RSE Column Factor: An adjustment factor used to compute RSE's. For a survey estimate in a particular row and a column of a table (that is, a particular "cell"), the approximate RSE is obtained by multiplying the RSE row factor by the RSE column factor for that cell. (See **Relative Standard Error** and **RSE Row Factor**.)

RSE Row Factor: A factor used to compute RSE's. The row factor is equal to the geometric mean of the RSE's in a particular row of the main tables. For a survey estimate in a particular row and column of a table (that is, a particular "cell"), the approximate RSE is obtained by multiplying the RSE row factor by the RSE column factor for that cell. (See **Relative Standard Error** and **RSE Column Factor**.)

Sampling: The procedure used to select cases (in this survey, buildings) for interview from the population (commercial buildings in the United States). (See **Multistage Area Probability Sampling**.)

Shadings or Awnings: See **Exterior or Interior Shadings or Awning**.

Shakes: Flat pieces of weatherproof material laid with others in a series of overlapping rows as covering for roofs and sometimes the sides of buildings. Shakes are similar to wood shingles, but instead of having a cut and smoothly planed surface, shakes have textured grooves and a rough or "split" appearance to give a rustic feeling. (See **Shingles, Siding, and Wooden Materials**.)

Shingles: Flat pieces of weatherproof material laid with others in a series of overlapping rows as covering for roofs and sometimes the sides of buildings. Shingles are manufactured in a variety of materials including fiberglass, wood, plastic, baked clay, tile, asbestos, asphalt, and aluminum. (See **Siding, Shakes, and Wooden Materials**.)

Siding: An exterior wall covering material made of wood, plastic (including vinyl), or metal. Siding is generally produced in the shape of boards and is applied to the outside of a building in overlapping rows.

Site Electricity: The amount of electricity delivered to the site (building), without adjustment for the fuels consumed in generation. (See **Consumption**.)

Site Energy: The amount of energy delivered to the site (building); no adjustment was made for the fuels consumed to produce electricity or district sources. (See **Consumption**.)

Slate or Tile: A type of roofing material. Tile refers to any thin, square, or rectangular piece of baked clay, stone, or concrete used as a roofing material. Slate refers to a particular stone used for roofing.

Solely or in Combination: In the CBECS tables, a row stub accompanied by this phrase indicates overlapping categories, so that a particular building may be included in more than one line under this stub. In general, row stubs without this designation are exclusive; that is, they divide the population of buildings into distinct groups so that a particular building is represented in no more than one line under this stub.

Space Conditioning: See **Space Heating, Cooling, and Ventilation**.

Space Heating: The use of mechanical equipment (including wood stoves and active solar heating devices) to heat all, or part, of a building to at least 50 degrees Fahrenheit. (See **Energy End Use**.)

Square Footage: Floorspace, in units of square feet. One square foot is approximately equal to 0.0929 square meters. (See **Floorspace** and **Metric Conversion**.)

Standard Error: A measure of the precision of an estimate, equal to the square root of the variance. (See **Variance, Relative Standard Error (RSE)**, and Appendix B, "Detailed Tables.")

Steam: See **District Steam**.

Steam or Hot Water Radiators: See **Baseboard** and **Radiator**.

Storm or Multiple Glazing: A building shell conservation feature consisting of storm windows, storm doors, or double- or triple-paned glass that are placed on the exterior of the building to reduce the rate of heat loss. (See **Building Shell Conservation Feature**.)

Synthetic or Rubber Roofing: A layer (either single- or multi-ply) of heavy gauge plastic or rubber used for roofing.

Thermostat: A device that adjusts the amount of heating and cooling produced and/or distributed by automatically responding to the temperature in the environment.

Tinted Glass: See **Reflective or Shading Glass or Film**.

Total Square Footage: Square footage of floorspace summed or aggregated over all buildings in a category (such as all office buildings in the United States). In this survey, aggregate square footage was estimated by multiplying each building's square footage by its weight, then summing over all sample buildings of interest to represent nationwide totals. (See **Floorspace** and **Weight**.)

Trillion Btu: Equivalent to 1,000,000,000,000 (10^{12}) Btu. (See **Btu**.)

Utility-Sponsored Conservation Program: Any program sponsored by an electric and/or natural gas utility to review operating practices, equipment and construction features in buildings and advise on ways to increase the energy efficiency of buildings. Also included are utility-sponsored demand-side management programs to encourage the use of more energy-efficient equipment or practices. Included in this survey were programs to improve the energy efficiency in the lighting system or building equipment, or the thermal efficiency of the building shell. (See **Demand-Side Management (DSM) Programs**.)

Vacant: As a principal building activity, the designation for a building in which most of the floorspace was not occupied by any tenant or establishment. A vacant building may contain occupants who are using up to 50 percent of the floorspace. The CBECS also measures vacancy in terms of the fraction of space vacant within an individual building and the fraction of time the building was in use. For all buildings, data were collected on the percent of floorspace vacant three or more months, and on the number of months the building was in use. (See **Principal Building Activity**.)

Variance: A measure of the variability of a set of observations that are subject to some chance variation, equal to the expected squared difference between a single observation and the average of all possible observations obtained in the same manner. The variance is the square of the standard error of estimates. For statistics presented in this report, the variance indicates the likely difference between the value computed from the CBECS sample and the average of the values that could have been computed from all possible samples that might have been obtained by the same sample selection process. (See **Standard Error** and Appendix B, "Detailed Tables.")

Ventilation: The circulation of air through a building to provide fresh air to the occupants, and to deliver heating and cooling to the occupied spaces.

Vintage: The year of origin or age. As used in the CBECS report, the year of construction for the building, as in "building vintage," or the age of the central chillers or packaged refrigeration units, as in "vintage of refrigeration equipment." (See **Year Constructed, Central Chillers, and Packaged Units**.)