

# Glossary

**Air-Conditioning:** See **Cooling**.

**Air-Handling Units:** A method for channeling warm or cool air to different parts of a building. The process of moving the conditioned air often involves drawing 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 or chilled water to cool the air inside the duct work. In the "Detailed Tables," air-handling units are included in "Ducts for Heating" in the "Heating Distribution Equipment" stub and in "Ducts for Cooling" in the "Cooling Distribution Equipment" stub. (See **Cooling, Duct, and Space Heating**.)

**Alternative Rate Program Assistance:** A type of assistance that offers special rate structures or discounts on the consumer's monthly electric bill in exchange for participation in programs aimed at cutting peak demands or changing load shape. These rates are intended to reduce consumer bills and shift hours of operation of equipment from on-peak to off-peak periods through the application of time-differentiated rates. For example, utilities often pay consumers several dollars a month (refund on their monthly electric bill) for participation in a load control program. Large commercial and industrial consumers sometimes obtain interruptible rates, which provide a discount in return for the consumer's agreement to cut electrical loads upon request from the utility (usually during critical periods, such as summer afternoons when the system demand approaches the utility's generating capability). (See **Energy Conservation Program Assistance, Energy Conservation Programs, and Retrofit or Purchase of Any Equipment**.)

**Asphalt or Fiberglass Shingles:** See **Shingles**.

**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 distribution 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 **Electric Baseboard and 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, Heating, Ventilation, and Air-Conditioning (HVAC), and District Heat**.)

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

**British Thermal Unit:** See **Btu (British Thermal Unit)**.

**Btu (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 **Btu Conversion Factors and Metric Conversion Factors**.)

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

	Btu Equivalent	Unit
Electricity	3,412	Kilowatthour
Natural Gas	1,028	cubic foot
Distillate Fuel Oils (Nos. 1,2, and 4)	5.825 million	per Barrel
Residual Fuel Oils (Nos. 5 and 6)	6.287 million	per Barrel
Kerosene	5.670 million	per Barrel
District Heat (Steam and Hot Water)	1,000	pound

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

Sources: Energy Information Administration, *Monthly Energy Review* (August 1995), pp. 145, 147, 149 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.

**Building:** In this survey, a structure totally enclosed by walls extending from the foundation to the roof, containing over 10,000 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** and **Nonresidential Building**.)

**Building Envelope or Shell Energy Conservation Program:** An energy conservation program that promotes reduction of energy consumption through improvements to the building envelope. Includes installation of insulation, weatherstripping, caulking, window film, and window replacement. (See **Building Shell (Envelope)**.)

**Building Floorspace:** See **Floorspace**.

**Building Shell Conservation Features:** Building features designed to reduce the energy loss or gain through the shell or envelope of the building. In the "Detailed Tables," this category includes roof, ceiling or wall insulation; storm windows or double- or triple-paned glass (multiple glazing); tinted or reflective glass or shading films; and exterior or interior shadings or awnings. This category does not include participation in a building envelope or shell energy conservation program. (See **Roof or Ceiling Insulation**, **Wall Insulation**, **Storm Windows**, **Storm Doors**, **Storm or Multiple Glazing**, **Tinted or Reflective Glass or Shading Film**, and **Exterior or Interior Shadings or Awnings**.)

**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.

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

**Campus or Complex:** See **Multibuilding Facility**.

**Cases or Cabinets:** Refrigeration in cabinets (units) without covers or with flexible covers made of plastic or some other material, hung in strips or curtains (fringed material, usually plastic, that push aside like a bead curtain). Flexible covers stop the flow of warm air into the refrigerated space. (See **Commercial Refrigeration/Freezer Equipment**.)

**CATI:** See Computer-Assisted Telephone Interviewing (CATI).

**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 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. Chillers located at central plants are included under district chilled water. (See **Cooling, District Chilled Water, Central Physical Plant, and Heating, Ventilation, and Air-Conditioning (HVAC)**.)

**Central Cooling:** Cooling of an entire building with a refrigeration unit to condition the air. Typically, central chillers and ductwork are present in a centrally cooled building. (See **Cooling**.)

**Central Physical Plant:** A plant that is owned by, and on the grounds of, a multibuilding facility that provides district heating, district cooling, or electricity to one or more buildings on the same facility. 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, or District Chilled Water**.)

**Centralized Water-Heating System:** Equipment to heat and store water for purposes other than space heating, which provides hot water from a single location for distribution throughout a building. A residential-type tank water heater is a good example of a centralized water heater. (See **Water-Heating Equipment and Distributed/Point-of-Use Water-Heating System**.)

**Chiller:** See **Central Chiller**.

**Coal:** A black or brownish-black solid, combustible substance formed by the partial decomposition of vegetable matter without access to air. In this report, the term includes anthracite, bituminous and subbituminous coal, as well as the derivative of coal (formed by destructive distillation or imperfect combustion) known as coke. This survey 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. In this report, coal is included in the "Any Other" category for the energy sources, main space-heating energy sources, and space-heating energy sources categories. (See **Energy Source**.)

**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. Agricultural buildings, residences, and manufacturing buildings were excluded from the survey. For a more complete list of buildings in the survey, see Appendix B, "Types of Buildings."

**Commercial Refrigeration/Freezer Equipment:** These include: commercial refrigeration/freezer units for the sale or storage of perishable materials; residential-type refrigerators/freezers; 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 this report, data are collected on refrigeration/freezer equipment inside and/or adjacent to the building. (See **Cases and Cabinets and Walk-in Refrigeration Units**.)

**Compact Fluorescent Light Bulbs:** Designed to replace screw-in incandescent light bulbs, they are often found in table lamps, wall sconces and hall and ceiling fixtures of commercial buildings with residential type lights. They combine the efficiency of fluorescent lighting with the convenience of standard incandescent bulbs. Light is produced the same way as other fluorescent lamps. Compact fluorescent bulbs have either electronic or magnetic ballasts. (See **Light Bulbs and Fluorescent Light Bulbs**.)

**Computer-Assisted Telephone Interviewing (CATI):** A computer-assisted survey process that uses the telephone for voice communications between the interviewer and the respondent. This mode of data collection was used for the 1993 Federal Buildings Supplemental Survey (FBSS).

**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. (See **Precast Concrete Panel**.)

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

**Conditional Energy Intensity:** Total consumption of a particular energy source(s) or fuel(s) divided by the total floorspace of buildings that use the energy source(s) or fuel(s), i.e., the ratio of consumption to energy source-specific floorspace. This measure is used in the fuel-specific tables in the "Detailed Tables." (See **Energy Source-Specific Floorspace**.)

**Confidence Interval:** A range that is estimated to include the population value at a given confidence level, usually 95 percent. The range is calculated from the sample data. The confidence level is the expected fraction of such confidence intervals that actually do include the corresponding, unknown population value.

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

**Consumption:** The amount of energy used in, or delivered to, a building during a given period of time. For this report, unless otherwise noted, all consumption statistics are site energy consumption, which includes electric utility sales to commercial buildings but excludes electrical system and district heat energy losses. Statistics for this report are presented on an annual basis for the 365-day period of fiscal year 1993 (October 1, 1992 through September 30, 1993). Site consumption is the amount of energy delivered to the site (building); no adjustment is made for the fuels consumed to produce electricity or district sources. Site consumption is also referred to as net energy. However, primary consumption is the amount of site consumption plus losses that occur in the electricity generation process.

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**, **Conversion Losses**, and **Expenditures**.)

**Consumption per Square Foot:** The aggregate ratio of total consumption for a particular set of buildings to the total floorspace of those buildings. (See **Consumption**, **Energy Intensity**, and **Floorspace**.)

**Consumption per Worker:** The aggregate ratio of total consumption to total number of workers. (See **Consumption** and **Workers**.)

**Continuous-Delivery Energy Sources:** Those energy sources provided continuously to a building. In this report, continuous delivery energy sources are electricity, natural gas, and district heating and cooling. (See **Energy Source** and **Discrete-Delivery Energy Sources**.)

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

**Conversion Losses:** The amount of energy lost during generation, transmission, and distribution of energy sources particularly electricity, including plant and unaccounted-for uses. (See **Consumption**, **Site Electricity**, and **Primary Electricity**.)

**Cooking:** In this report, the use of energy for commercial or institutional food preparation. This survey asked specifically about "commercial or institutional cooking," which was intended to include any kitchen facility that was not part of a residence. This is one of six energy end uses specifically asked for in this survey. (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 a central cooling or district cooling system that circulates chilled water. Use of fans or blowers by themselves, without chilled air or water, is not included in this definition of cooling. This is one of six end uses specifically asked for in this survey. (See **Energy End Use**, **Central Cooling**, **Central Chiller**, **Heat Pump**, **Heating**, **Ventilation**, and **Air-Conditioning (HVAC)**, and **Residential-Type Central Air Conditioner**.)

**Cooling Distribution Equipment:** The part of a cooling system that distributes conditioned water and/or air by means of pipes, ducts, or fans. Often the distribution serves both heating and cooling. (See **Duct, Individual Room Air-Conditioners in Wall or Windows**, and **Fan-Coil Unit**.)

**Cooling Equipment:** The equipment used for cooling room air in the building for human comfort. (See **Cooling Distribution Equipment** and also descriptions of specific response categories collected in the FBSS: **Residential-Type Central Air-Conditioner, Heat Pump, Individual Room Air-Conditioners in Walls or Windows, Central Chillers**, and **Packaged Units**.)

**Cubic Foot (cf):** 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 Conversion Factors**.)

**Daylighting Controls:** See **Natural Lighting Control Sensors**.

**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. In the "Detailed Tables," decorative or construction glass is included in "Other" in the "Predominant Wall Materials" stub. (See **Window or Vision Glass**.)

**Direct Electricity Load Control Program:** A conservation program in which the utility system operator has direct control of the power supply to individual equipment on consumer premises and is able to interrupt consumer load at the time of peak load.

**Discrete-Delivery Energy Sources:** Energy sources that arrive at a building (site) in units or containers of a fixed size, rather than being available on a continuous basis. In this report, fuel oil is the only discrete delivery energy source. (See **Energy Source** and **Continuous-Delivery Energy Sources**.)

**Distributed/Point-of-Use Water-Heating System:** A system for heating hot water, for other than space-heating purposes, which is located at more than one place within a building. A point-of-use water heater is located at the faucet and heats water only as required for immediate use. Because water is not heated until it is required, this equipment is more energy efficient. (See **Water-Heating Equipment** and **Centralized Water Heating System**.)

**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 district system 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 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 reported together as district heat in most places. (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**.)

**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. (See **Air-Handling Units**.)

**Economizer Cycle:** An HVAC conservation feature, a method of operating a ventilation system to reduce the air-conditioning load. Wherever the temperature and humidity of the outdoor air are more favorable (lower heat content) than the temperature and humidity of the return air, more outdoor air is brought into the building. An economizer consists of indoor and outdoor temperature and humidity sensors, dampers, motors, and motor controls. (See **HVAC Conservation Features**.)

**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**.)

**Electric Utility Energy Conservation Program Sponsor:** An energy conservation program sponsored by an electric utility that suggests ways to increase the energy efficiency of buildings, to reduce energy costs, to change usage patterns, or to promote the use of a different energy source. (See **Energy Conservation Program Sponsor**, **Utility-Sponsored Energy Conservation Program**, and **Retrofit or Purchase of Any Equipment**.)

**Electricity:** 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**, **Multibuilding Facility**, **Primary Electricity**, and **Site Electricity**.)

**Electricity Generation:** The onsite production of electricity using electricity generators on either a regular or emergency basis. This is one of the end uses of energy specifically asked for in this survey. Not included in this survey were electricity-generating plants belonging to utility companies that produce electric power for sale to other buildings but are not part of the same multibuilding facility. (See **Energy End Use**, **Electricity**, and **Multibuilding Facility**.)

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

**Energy Audit:** In this report, an evaluation to provide information on the physical and operating characteristics of a building and its energy uses and processes that is collected at the premise or facility by trained auditors. Audit services vary from simple walk-throughs to building management training programs and site-specific process and efficiency evaluations. Audits can be initiated or sponsored and performed by a local utility, a Federal, State or local government, a building owner, or an energy service contractor. (See **Energy Management Practices**.)

**Energy Conservation Features:** In the "Detailed Tables," this includes building shell conservation features, HVAC conservation features, lighting conservation features, and other conservation features incorporated by the building. However, this category does not include participation in energy conservation programs. (See **Building Shell Conservation Features**, **HVAC Conservation Features**, and **Lighting Conservation Features**.)

**Energy Conservation Programs:** In this report, this is the planning and implementation of strategies designed to encourage consumers to improve energy efficiency, reduce energy costs, change the time of usage, or promote the use of a different energy source. This covers the complete range of load-shape objectives, including strategic conservation and load management, as well as strategic load growth.

The FBSS collected information on a variety of conservation strategies. This information included whether the building's electric or natural gas utility had sponsored any programs; whether the building had participated in, or planned to participate in, any programs sponsored by FEMP, in-house, by a utility, or by a third-party; which specific program areas the building had participated in, such as: the building envelope or direct electricity load control; identification of specific program sponsors; and what type of assistance was received through the program, such as: the Federal Energy Efficiency Fund (FEEF), general information, incentives, or alternative rates. (See **Energy Management Practices**.)

**Energy Conservation Program Assistance:** In this report, energy conservation program assistance consists of: the Federal Energy Efficiency Fund (FEEF), general information, site-specific information, incentives, alternative-rate programs, fuel-switching programs, and other programs. This assistance can be provided by FEMP, utilities, an in-house group, or third parties, such as an energy service company or contractor. Assistance for energy conservation programs may be monetary or nonmonetary awards to encourage consumers to buy energy-efficient equipment and to participate in programs designed to reduce energy usage. Examples of incentives are zero or low-interest loans, rebates, and direct installation of low-cost measures, such as water-heater wraps or compact fluorescent bulbs.

**Energy Conservation Program Sponsor:** An energy conservation program can be sponsored by FEMP, an electric or natural gas utility, in-house, or a third party, such as an energy service company or contractor. A sponsor suggests ways to increase the energy efficiency of buildings, to reduce energy costs, to change the usage patterns, or to promote the use of a different energy source through energy conservation programs.

**Energy-Efficient Motors:** These are also known as "high-efficiency motors" and "premium motors." They are virtually interchangeable with standard motors, but differences in construction make them more energy efficient.

**Energy End Use:** A use for which energy is consumed in a building. Information on six specific end uses was collected in this survey. (See **Cooking, Cooling, Space Heating, Electricity Generation, Manufacturing, and Water Heating.**)

**Energy Intensity:** The ratio of consumption to unit of measurement (floorspace, number of workers, etc.) 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 floorspace in those buildings. The energy intensity can also be computed for individual buildings. (See **Consumption, Conditional Energy Intensity, and Floorspace.**)

**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 **Energy Management Practices.**)

**Energy Management Practices:** In this report, involvement, as a part of the building's normal operations, in energy efficiency programs that are designed to reduce the energy used by specific end-use systems. In the "Detailed Tables," this includes the following: Energy Management and Control System, Energy Conservation Programs, Energy Audit, and HVAC Maintenance Staff. (See **Energy Management and Control System (EMCS), Energy Conservation Program, Energy Audit, and HVAC Maintenance Staff.**)

**Energy Source:** A type of energy or fuel consumed in the building. For this report, the major energy sources identified are electricity, natural gas, fuel oil, district heat, and district chilled water. In this survey, information about the use of propane, wood, coal, photovoltaic cells and solar thermal panels in commercial buildings was obtained from the building respondent. (See **Electricity, Natural Gas, Fuel Oil, District Heat, District Chilled Water, Liquefied Petroleum Gas (LPG), Propane, Wood, Coal, Photovoltaic Cells (PVC"s) and Solar Thermal Panels.**)

**Energy Source-Specific Floorspace:** Total floorspace of those buildings that use a particular fuel. (See **Conditional Energy Intensity.**)

**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."

**Evaporative Cooler (Swamp Cooler):** An air-cooling unit that turns air into moist, cool air by saturating the air with water vapor. It does not cool air by use of a refrigeration unit. This type of equipment is commonly found in warm, dry climates. (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 fiscal year 1993. 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. Data on energy expenditures were not collected by end uses separately. For example, although it might be known that electricity was used in some buildings for heating, the expenditures for electricity reported for those buildings would typically include other uses of electricity as well (such as lighting and water heating). (See **Consumption**.)

**Expenditures per Million Btu:** The aggregate ratio of a group of buildings' total expenditures for a given fuel to the total consumption of that fuel. (See **Expenditures** and **Consumption**.)

**Expenditures per Square Foot:** The aggregate ratio of a group of buildings' total expenditures for a given fuel to the total floorspace in those buildings. (See **Expenditures**, **Floorspace**, and **Square Footage**.)

**Exterior or Interior Shadings or Awnings:** A building shell conservation feature 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, horizontal or vertical shades, mini blinds, or any other means of covering a window from the inside to limit the amount of solar or thermal penetration. (See **Building Shell Conservation Features**.)

**Facility:** At the sampling stage, an establishment that encompasses more than one building at a single location. Examples include college campuses and large hospital complexes. The building represents the interviewed sampling unit for this survey. Listings for the area sample ordinarily identified each building individually. For all sample buildings, a survey question determined whether the building was part of a multibuilding facility. In many cases, a building was reported during the interview to be part of a multibuilding facility even though the building had not been identified as part of a facility at the sampling stage. More rarely, a building identified as part of a facility during sampling was reported not to be part of a multibuilding facility during the interview. (See **Building** and **Multibuilding Facility**.)

**Fan-Coil Unit:** A type of heating or cooling distribution equipment that circulates hot or chilled water with fans but without ducts. 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**.)

**Federal Energy Efficiency Fund (FEEF):** A fund established by the Energy Policy Act of 1992 to improve energy efficiency in Federal facilities by providing grants to Federal agencies to implement energy efficiency and water conservation projects. (See **Energy Conservation Program Assistance** and **Retrofit or Purchase of Any Equipment**.)

**Federal Energy Management Program (FEMP):** A Department of Energy program aiming to reduce the cost of government and make it work better through energy efficiency, use of renewable energy, and water conservation. (See **Energy Conservation Program Assistance** and **Retrofit or Purchase of Any Equipment**.)

**Floors:** The number of levels in the tallest section of a building that are actually considered a part of the 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. For aggregate floorspace statistics, floorspace was summed or aggregated over all buildings in a category (such as all office buildings in Federal Region 3). (See **Square Footage**.)

**Fluorescent Light Bulbs:** These are usually long, narrow, white tubes made of glass coated on the inside with fluorescent material that are connected to a fixture at both ends of the light bulb; the tubes may also be circular or U-shaped. The light bulb produces light by passing electricity through mercury vapor, causing the fluorescent coating to glow or fluoresce. Excluded are compact fluorescent light bulbs, which are a separate category. In the "Detailed Tables," these bulbs are included in the "Standard Fluorescent" category in the "Lighting Equipment" stub. (See **Light Bulbs**, and **Compact Fluorescent Light Bulbs**.)

**Forced Air Through Vents or Air-Handling Units:** See **Air-Handling Units**.



**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, 2, and 4), residual fuel oil (No. 5 and 6), and kerosene. Number 1 distillate fuel oil is used mostly as a blending stock to assure that heavier grades of fuel flow under severe cold weather conditions. Number 2 fuel oil is the most common form of heating oil. Number 2 distillate collectively refers to Number 2 heating oil and Number 2 diesel fuel. Although these products are not precisely identical, they are essentially interchangeable in most applications. Number 4 distillate is a blend of Numbers 2, 5 or Number 6 residual fuel oil, used in large stationary diesel engines and boilers equipped with fuel preheating equipment. (See **Energy Source**.)

**Fuel-Switching:** See **Replacement Energy Source for Main Heating**.

**Fuel-Switching Program Assistance:** A type of assistance where the sponsor encourages consumers to change from one fuel to another for a particular end-use service. For example, utilities might encourage consumers to replace electric water heaters with gas units or encourage industrial consumers to use electric microwave heaters instead of natural gas heaters. (See **Energy Conservation Program Assistance**, **Energy Conservation Program**, and **Retrofit or Purchase of Any Equipment**.)

**Furnace:** 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 for heating is distributed throughout the building, typically by air ducts. (See **Boiler**; **Duct**; **Space Heating**; and **Heating, Ventilation, Air Conditioning, and Heating (HVAC)**.)

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

**General Information Energy Conservation Program Assistance:** This type of program assistance refers to efforts of an energy conservation sponsor to inform consumers about program options through such mechanisms as brochures, bill stuffers, and workshops. (See **Energy Conservation Program Assistance** and **Energy Conservation Programs**.)

**Heating:** See **Space Heating** or **Water Heating**.

**Heating Distribution Equipment:** The part of a heating system that distributes conditioned water and/or air throughout a building by means of pipes, ducts, or fans. Often the distribution equipment serves both heating and cooling. (See **Radiators**, **Baseboard**, **Duct**, **Individual Space Heater**, and **Fan-Coil Unit**.)

**Heating Equipment:** The equipment used for heating ambient air in the building such as a heat pump, furnace, individual space heater, district steam or hot water piped in from outside the building, boiler and packaged-heating units. (See **Heating Distribution Equipment**, **Boiler**, **Furnace**, **Heat Pump**, **Individual Space Heater**, and **Packaged Units**.)

**Heating, Ventilation, and Air-Conditioning (HVAC):** The system or systems that condition air in a building.

**Heat Pump:** Heating and/or cooling equipment that 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 **Heating, Ventilation, and Air-Conditioning (HVAC)**.)

**HID:** See **High-Intensity Discharge (HID) Light Bulbs**.

**High-Intensity Discharge (HID) Light Bulbs:** 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- and low-pressure sodium lamps. HID lamps have an extremely long life and emit far more lumens per fixture than do fluorescent lights. (See **Light Bulbs**.)

**Hot-Deck Imputation:** An imputation procedure for deriving a probable response to a questionnaire item concerning the commercial building using random resampling from nonmissing cases to fill in values for missing cases. (See **Imputation**.)

**HVAC:** See **Heating, Ventilation, and Air-Conditioning (HVAC)**.

**HVAC Conservation Features:** A building feature designed to reduce the amount of energy consumed by the heating, cooling, and ventilating equipment. In the "Detailed Tables," this category includes the presence of variable air-volume (VAV) systems, an economizer cycle, and preventive maintenance programs for the heating and cooling equipment. (See **Variable Air-Volume (VAV) System, Economizer Cycle, and Preventive Maintenance Program for the Heating and/or Cooling Equipment**.)

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

**HVAC Maintenance Staff:** The building employs at least one person who spends at least half of their working hours maintaining the heating and/or cooling equipment. (See **Energy Management Practices**.)

**Imputation:** A statistical method used to fill in values for missing items, designed to minimize the bias of estimates based on the filled-in data set. (See **Hot-Deck Imputation, Regression**)

**Incandescent Light Bulbs:** A light bulb that produces a soft warm light by electrically heating a tungsten filament so that it glows. Because so much of the energy is lost as heat, these are highly inefficient sources of light. The halogen light bulb is a type of incandescent light bulb, made more efficient by the addition of a halogen gas. Included in this category are the familiar type of 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 **Light Bulbs**.)

**Incentives:** A type of program assistance that provides cash or non-cash awards to customers to encourage the purchase or sales of conservation programs. Appliance rebate programs are the most common example on incentive programs. Incentives can also include zero or low-interest loans. (See **Energy Conservation Program Assistance, Energy Conservation Programs, and Retrofit or Purchase of Any Equipment**.)

**Individual A/C:** See **Individual Room Air-Conditioners in Walls or Windows**.

**Individual Room 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. In the "Detailed Tables," these are labeled as "Individual A/C." (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 **Baseboard** and **Electric Baseboard**.)

**Industrial:** See **Manufacturing/Industrial**.

**In Scope:** Meeting the requirements for eligibility in the FBSS, and, therefore, included in the population covered by the survey. These eligibility requirements were (a) that the structure be a Federal building in Region 3, 6, or 9; (b) that the building be larger than 10,000 square feet; and (c) that more than 50 percent of the floorspace be used for commercial activities excluding buildings used for warehouse and storage. (See **Building, Commercial, and Floorspace.**)

**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 Features.**)

**Intensity:** The amount of a quantity per unit of measurement (floorspace, number of workers, etc.) This is a method of adjusting either the amount of energy consumed or expenditures spent, 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 **Conditional Energy Intensity, Energy Intensity, and Expenditures per Square Foot.**)

**Kerosene:** A petroleum distillate with properties similar to 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. One Kwh is equivalent to 3,412 Btu. (See **Btu and Electricity.**)

**Lamp:** See **Light Bulbs.**

**Light Bulbs:** A term generally used to describe a manmade source of light. The term is often used when referring to a "bulb" or "tube." The FBSS collected data only about light bulbs using electricity. (See **Incandescent Light Bulbs, Fluorescent Light Bulbs, Compact Fluorescent Light Bulbs and High-Intensity Discharge (HID) Light Bulbs.**)

**Lighting Conservation Features:** A building feature or practice designed to reduce the amount of energy consumed by the lighting system. In the "Detailed Tables," Lighting Conservation Features include natural lighting control sensors, manual dimmer switches, occupancy sensors, specular reflectors, and time clocks or timed switches. (See **Natural Lighting Control Sensors, Manual Dimmer Switches, Occupancy Sensors, Specular Reflectors, and Time Clocks or Timed Switches.**)

**Lighting Equipment:** These are light bulbs used to light the building's interior, such as incandescent light bulbs, fluorescent light bulbs, compact fluorescent light bulbs, and high-intensity discharge (HID) lights. (See **Incandescent Light Bulbs, Fluorescent Light Bulbs, Compact Fluorescent Light Bulbs, High-Intensity Discharge (HID) Light Bulbs, and Electronic Ballasts.**)

**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. (See **Energy Source, Propane, and Natural Gas.**)

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

**Main Space-Heating Energy Source:** The energy source used to heat most of the square footage in the building most of the time.

**Major Energy Sources:** The energy sources or fuels for which consumption and expenditures data were collected in the FBSS. 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. (See **Energy Sources.**)

**Major Fuels:** See **Major Energy Sources.**

**Manual Dimmer Switches:** A lighting conservation feature that changes the level of light in the building. These are like residential-style dimmer switches, which are not commonly used with fluorescent or HID lamps. (See **Lighting Conservation Features**.)

**Manufacturing:** As an energy end use, any of the energy-using operations required for manufacturing/industrial processes. Manufacturing is one of the six end uses of energy specifically requested in this survey. (See **Energy End Use** and **Manufacturing/Industrial**.)

**Manufacturing/Industrial:** As a building activity in this survey, activities involving the processing or procurement of goods, merchandise, raw materials, or food. These activities include: food processing; leather/textile mills; light assembly factories, such as those for apparel and electronic instruments; heavy assembly factories, such as those for machinery and other heavy equipment; paper processing; chemical or petroleum processing, metalwork, glasswork, and other similar manufacturing plants; printing and publishing; generation, transmission, or distribution of electricity, natural gas, steam, or other utility or sanitary service; and construction and natural resource procurement.

Commercial buildings (such as offices) that were associated with a manufacturing establishment were included, but the manufacturing and industrial buildings were excluded from the population covered. Such buildings could be included in the sample during the listing stage. However, buildings that had 50 percent or more of their square footage devoted to manufacturing or industrial activities were dropped from the sample during the interview stage. (See **Principal Building Activity** and Appendix B, "Types of Buildings.")

**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 is stucco. This category does not include concrete panels since concrete panels represent a different method of constructing buildings. Concrete panels are included in the "Other" category. (See **Precast Concrete Panel**.)

**Mean:** The simple arithmetic average for a population is the sum of all the values in a population divided by the size of the population. For this report, population means are estimated by computing the weighted sum of the sample values, then dividing by the sum of the sample weights. (See **Median** and **Weight**.)

**Mean Operating Hours:** The arithmetic average number of operating hours per building is the weighted sum of the number of operating hours divided by the weighted sum of the number of buildings.

**Mean Square Feet per Building:** The arithmetic average square feet per building is the weighted sum of the total square feet divided by the weighted sum of the number of buildings.

**Mean Square Feet per Worker:** The arithmetic average square feet per worker is the weighted sum of the total square feet divided by the weighted sum of the total number of main shift workers.

**Median:** The middle value in the population; half the population has a value above the median and half has a value below. The median is different from the mean in that its estimate is not influenced much by extremes in the sample. For example, an estimate of the mean square feet per building would be affected by the inclusion of some very large buildings and would not express square footage for a "typical" building. In contrast, the median square feet would not be so affected. (See **Mean**.)

**Metal Panels:** 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. These are included in the "Other" category in the "Predominant Exterior Wall Material" stub.

**Metal Surfacing:** Light-gauge metal sheets used for roofing. These are included in the "Other" category in the "Predominant Roof Material" stub.

**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.

One kilowatthour is exactly equal to 3,600,000 joules. One gigajoule (10<sup>9</sup> joules) is approximately 278 kilowatthours (kWh).) (For additional metric conversions, see Appendix D, "Metric Conversion Factors.")

**More than One May Apply:** In the "Detailed Tables," a row stub accompanied by this phrase indicates overlapping categories, so that a particular building may be represented 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.

**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 and Facility**.)

**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 (LPG) or to privately owned gas wells operated by a building owner. (See **Energy Source, Liquefied Petroleum Gas (LPG), and Propane**.)

**Natural Gas Transported for the Account of Others:** Natural gas physically delivered to a building by a local utility, but not bought from that utility. A separate transaction is made to purchase the volume of gas and the utility is paid for the use of its pipeline to deliver the gas. Included are quantities covered by long-term contracts and quantities involved in short-term or spot-market sales. Also called "Direct-Purchase Gas," "Spot- Market Gas," "Spot Gas," "Transported Gas," and "Self-Help Gas."

**Natural Gas Utility Energy Conservation Program Sponsor:** An energy conservation program sponsored by a natural gas utility that suggests ways to increase the energy efficiency of buildings, to reduce energy costs, to change the usage patterns, or to promote the use of a different energy source. (See **Energy Conservation Program Sponsor and Utility-Sponsored Energy Conservation Program**).

**Natural Lighting Control Sensors:** A lighting conservation feature that takes advantage of sunlight to cut the amount of electric lighting used in a building; a control system that varies the light output of an electric lighting system in response to variations in available daylight. It is sometimes referred to as "daylighting controls" or "photocells." (See **Lighting Conservation Features**.)

**Nonresidential Building:** A building used for some purpose other than residential. Nonresidential buildings comprise three groups: commercial, manufacturing/industrial, and agricultural. Commercial buildings are the focus of this report. Additionally, the FBSS excluded buildings that were used for warehouse and storage. (See **Commercial Building, Manufacturing/Industrial, Building, Residential, Principal Building Activity, Out of Scope**, and Appendix B, "Types of Buildings.")

**Occupancy Sensors:** A lighting conservation feature that uses motion or sound to switch lights on or off; also known as "ultrasonic switching." When movement is detected, the lights turn on and remain on as long as there is movement in the room. Occupancy sensors that detect sound work like ultrasonic switching; when sound is detected, the lights turn on. In this report, occupancy sensors refer to detecting movement, not sound. (See **Lighting Conservation Features**.)

**Off-Hour Equipment Reduction:** A method of conserving energy by changing the temperature setting or reducing the use of heating, cooling, domestic hot water heating, lighting or any other equipment either manually or automatically when the building is closed. (See **Conservation Features**.)

**Operating Hours:** See **Weekly Operating Hours**.

**Out of Scope:** Violating one or more of the requirements for eligibility in the survey, therefore not included in the population covered by the FBSS. (See **In Scope**.)

**Packaged A/C 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; Heating, Ventilation, and Air-Conditioning (HVAC)**; and **Space Heating**.)

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

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

**Percent of Floorspace Cooled:** The percentage of the building's square footage that is cooled to meet the comfort requirements of the occupants. (See **Square Footage** and **Cooling**.)

**Percent of Floorspace Heated:** The percentage of the building's square footage designed to be heated to at least 50 degrees Fahrenheit. (See **Square Footage** and **Space Heating**.)

**Percent Window Glass:** The percentage of the building's exterior wall construction material made of glass that can be seen through from the inside of the building. This percentage excludes glass covered or constructed of glass material that cannot be seen through. (See **Decorative or Construction Glass** and **Window or Vision Glass**.)

**Photovoltaic Cells (PVC's):** A device that produces electrical current by converting light or similar radiation. In the "Detailed Tables," PVC's are included in the "Any Other" category in the "Energy Sources," "Space-Heating Energy Sources," and "Main Space-Heating Energy Sources" stubs.

**Plastic, Rubber, or Synthetic Roofing:** A layer of heavy gauge plastic or rubber used for roofing. In the "Detailed Tables," plastic, rubber or synthetic roofing are included in the "Synthetic or Rubber" category in the "Predominant Roof Material" stub.

**Point-of-Use Water-Heating System:** See **Distributed/Point-of-Use Water-Heating System**.

**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. A conversion factor of 1,000 Btu per pound was used for steam. Hot water, always reported in Btu, was converted to equivalent pounds of steam using the same factor of 1,000 Btu per pound. (See **Btu, District Steam**, and **District Heat**.)

**Precast Concrete Panel:** Refers to concrete panels usually made in factories and delivered to the construction site where they are hoisted onto the structure. Sometimes concrete panels are poured at the site and then hoisted on the structure. The panels are either solid or insulated. They can have plain, colored or textured finishing. In the "Detailed Tables," pre-cast concrete panels are included in the "Other" category in the "Predominant Wall Material" stub. (See **Concrete Panel**.)

**Preventive Maintenance Program for Heating and/or Cooling Equipment:** As used in this report, an 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 Features**.)

**Primary Electricity:** The amount of electricity delivered to commercial buildings adjusted to account for the fuels used to produce the electricity. That is, site electricity plus the conversion losses in the generation process at the utility plant. (See **Consumption, Conversion Losses, Electricity** and **Site Electricity**.)

**Primary Energy Consumption:** See **Consumption**.

**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. Examples of various types of principal activity include office, health care, lodging, and mercantile and service. (See Appendix B, "Types of

Buildings.")

**Principal Facility Activity:** The main purpose for the activities across all buildings in a facility; for example, the principal building activity for a library on a school campus is "public assembly;" however, the principal facility activity is "school."

**Process Heating or Cooling Energy Conservation Program:** An energy conservation program designed to promote increased electric energy efficiency applications in industrial process heating or cooling. (See **Energy Conservation Programs** and **Waste-Heat Recovery**.)

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

**Quad:** Quadrillion ( $10^{15}$ ) Btu. (See **Btu**.)

**Radiator:** A heating unit usually visibly exposed within the room or space to be heated; it transfers heat from steam or hot water by radiation to objects within visible range and by conduction to the surrounding air, which in turn is circulated by natural convection. Typically, a radiator is a freestanding, cast-iron fixture. (See **Space Heating**.)

**Reflectors:** See **Specular Reflectors**.

**Regression:** A statistical procedure used in this report to estimate consumption of, or expenditures for, energy when data were unavailable. The procedure takes into account many characteristics of buildings (such as size, age, principal activity, heating fuels). (See **Imputation**.)

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

**Reheating Coils:** A part of some air-conditioning systems, these are 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 **Air-Handling Units, Cooling, and Space Heating**.)

**Relative Standard Error:** See **RSE or Relative Standard Error**.

**Replacement Energy Source for Main Heating:** In this report, the heating energy source to which the building could switch within one week without major modifications to the main heating equipment, without substantially reducing the area heated, and without substantially reducing the temperature maintained in the heated area.

**Residential:** As a building activity in this survey, activities related to use as a dwelling for one or more households. Residential buildings that contained commercial activities were included in the sample during the listing stage. However, buildings that had 50 percent or more of their square footage devoted to residential activities were considered out of scope and dropped from the sample during the interview stage. (See **Principal Building Activity, In Scope, and Commercial Building**.)

**Residential-Type Central Air-Conditioner:** There are four basic parts to a residential central air-conditioning system: (1) a condensing unit, (2) a cooling coil, (3) ductwork, and (4) a control mechanism such as a thermostat. There are two basic configurations of residential central systems: (1) a "split system" where the condensing unit is located outside and the other components are inside, and (2) a packaged-terminal air-conditioning (PTAC) unit that both heats and cools or cools only. This system contains all four components encased in one unit and is usually found in a "utility closet." If the residential type is a "PTAC," it is considered a "Packaged air-conditioning unit."

**Retrofit or Purchase of Any Equipment:** The FBSS determined whether the building had retrofitted or purchased any of the heating equipment, central chillers, water heating equipment, lighting equipment, or refrigeration equipment in the past ten years. The survey also collected the sponsor and type of assistance received for these retrofits or purchases. The sponsors included an electric utility, in-house, a third party, and FEMP. The type of assistance included the Federal Energy Efficiency Fund, incentives, alternative rates, and fuel switching.

**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 Features**.)

**RSE or Relative Standard Error:** A measure of the reliability or precision of a survey statistic. Variability occurs in survey statistics because the different samples that could be drawn would each produce different values for the survey statistics. The RSE is defined as the standard error (the square root of the variance,) of a survey estimate, divided by the survey estimate and multiplied by 100. For example, an RSE of 10 percent means that the standard error is one-tenth as large as the survey estimate.

**Sampling:** The procedure used to select cases (in this survey, buildings) for interview from the population (Federal buildings in Regions 3, 6, or 9). (See Appendix A, "How the Survey Was Conducted.")

**Secondary Heating Fuel:** Fuels used in secondary space-heating equipment. When no secondary space-heating equipment is used, a secondary space-heating fuel that is used in the main space-heating equipment is not included in the tabulations. This occurs when, for example, wood and coal are both used in a furnace but wood is named the main space-heating fuel. Coal, in this case, is not tabulated.

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

**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. These are included in the "Other" category in the "Predominant Wall Material" and "Predominant Roof Material" stubs (See **Shingles**, **Siding**, and **Wooden Materials**.)

**Sheet Metal Panels:** Includes metal panels made in factories and shipped to the building site where they are fastened to the building frame. They are usually aluminum or galvanized steel. These are included in the "Other" category in the "Predominant Wall Material" stub. (See **Metal Panels**.)

**Shingles:** Flat pieces of weatherproof material laid with others in a series of overlapping rows as covering for roofs and sometimes the walls of buildings. Shingles are manufactured in a variety of materials including fiberglass, wood, plastic, baked clay, tile, asbestos, asphalt, and aluminum. All types of shingles are included in the "Other" category in the "Predominant Roof Material" and "Predominant Wall Material" stubs. (See **Siding**, **Shakes**, **Slate or Tile Shingles**, and **Wooden Materials**.)

**Siding:** An exterior wall covering material made of wood, plastic (including vinyl), or metal. The structural walls may be masonry or wood. Siding is generally produced in the shape of boards applied to the outside of a building in overlapping rows. This is included in the "Other" category in the "Predominant Wall Material" stub. (See **Wooden Materials**.)

**Site Electricity:** The amount of electricity delivered to commercial buildings. (See **Consumption**, **Conversion Losses**, **Electricity** and **Primary Electricity**.)

**Site-Specific Energy Conservation Program Assistance:** A type of assistance that provides guidance on energy efficiency and load-management options tailored to a particular customer's facility; it often involves an on-site inspection of the customer facility to identify cost-effective energy conservation actions that could be taken. They include audits, engineering design calculations on information provided about the building, and technical assistance to architects and engineers who design new facilities. (See **Energy Conservation Program Assistance** and **Energy Conservation Programs**.)

**Slate or Tile Shingles:** 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. These are included in the "Other" category in the "Predominant Roof Material" stub. (See **Shingles**.)

**Solar Thermal Panels:** These are thermal panels that use sunlight to heat fluids, a system that actively concentrates thermal energy from the sun by means of solar collector panels. The panels typically consist of flat, sun-oriented boxes



with transparent covers, containing water tubes or air baffles under a blackened heat-absorbent panel. The energy is usually used for space heating, for water heating and/or for heating swimming pools. This is included in "Any Other" in the "Energy Sources" stub. (See **Energy Sources**.)

**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. This is one of the six end uses of energy specifically asked for in this survey. (See **Energy End Use**.)

**Specular Reflectors:** A lighting conservation feature, this is the mirror-like backing of a florescent lighting fixture specifically designed to reflect light into the room. The materials and shape of the reflector are designed to reduce absorption of light within the fixture, while delivering light in the desired angular pattern. The most common materials used are silver (highest reflectivity) and aluminum (lowest cost). (See **Lighting Conservation Features**.)

**Square Feet per Worker:** The ratio of the total square footage in each category to the total number of workers in the category.

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

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

**Standard Fluorescent:** See **Fluorescent Light Bulbs**.

**Standby Electricity Generation:** Involves use of generators during times of high demand on utilities to avoid extra "peak-demand" charges.

**Standby Electricity Generation Energy Conservation Program:** An energy conservation program that encourages consumers to use generators during times of high electricity demand to avoid "peak-demand" charges. In the "Detailed Tables," this is included in "Energy Conservation Program" category in the "Energy Management Practices" stub. (See **Energy Conservation Programs**.)

**Steam:** See **District Steam**.

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

**Storm Doors:** A building shell conservation feature consisting of a second door installed outside or inside a prime door creating an insulating air space. Included are sliding glass doors made of double glass or of insulating glass such as thermopane, double- or triple-pane glass as well as sliding glass doors with glass or plexiglass installed outside or inside of the door. Plastic materials covering doors or doors with storm window covering on just the glass portion of the door are counted only if they can be used year after year. (See **Storm or Multiple Glazing**.)

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

**Storm Windows:** A building shell conservation feature consisting of a window or glazing material placed outside or inside a window creating an insulating air space. Windows with double glass or thermopanes are considered storm windows as well as windows with glass or plexiglass placed on the outside or inside of the window. Plastic material over windows is counted as a storm window if the same plastic material can be used year after year. (See **Storm or Multiple Glazing**.)

**Swamp Coolers:** See **Evaporative Cooler (Swamp Cooler)** and **Cooling**.

**Synthetic or Rubber Roofing:** See **Plastic, Rubber or Synthetic Roofing**.

**Thermal Energy Storage (TES) or Pump Storage:** The temporary storage of energy for later use. Examples of thermal storage are the storage of solar energy for night heating, the storage of summer heat for winter use, the storage of winter ice for space cooling in the summer, and the storage of heat or coolness generated electrically during time when electricity is cheaper (off-peak hours) for later use when electricity rates are higher. There are four basic types TES systems: ice storage, water storage, storage in a thermal mass such as soil, rock or other solids, and storage in other material such as glycol. The most commonly installed types of thermal energy storage systems in commercial buildings are those using ice or chilled water for cooling the building.

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

**Third-Party Energy Conservation Program Sponsor:** An energy service company (ESCO), which promotes a program sponsored by a manufacturer or distributor of energy products such as lighting or refrigeration whose goal is to encourage consumers to improve energy efficiency, reduce energy costs, change the time of usage, or promote the use of a different energy source. (See **Energy Conservation Programs** and **Energy Conservation Program Sponsor and Retrofit or Purchase of Any Equipment**.)

**Time Clocks or Timed Switches:** Time clocks are automatic controls that turn lights off and on at predetermined times. (See **Lighting Conservation Features**.)

**Tinted or Reflective Glass or Shading 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 Features**.)

**Transported Gas:** See **Natural Gas Transported for the Account of Others**.

**Trillion Btu:** Equivalent to 1,000,000,000,000 (10<sup>12</sup>) Btu. (See **Btu**.)

**Utility-Sponsored Energy Conservation Program:** In this report, this is any energy conservation program sponsored by an electric and/or natural gas utility to review equipment and construction features in buildings and advise on ways, among other things, to increase the energy efficiency of buildings; such as, programs to encourage the use of more energy-efficient equipment. Also, 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 **Energy Conservation Program Sponsor**.)

**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 FBSS 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 for three or more consecutive months, and/or the number of months the building was in use. (See **Principal Building Activity**, and Appendix B, "Types of Buildings.")

**Variable Air-Volume (VAV) System:** An HVAC system that supplies varying quantities of conditioned (heated or cooled) air to different parts of the building according to the heating and cooling needs of those specific areas. This is an HVAC conservation feature and is usually referred to as "VAV." (See **HVAC Conservation Features**.)

**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 FBSS 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**.)

**VAV:** See **Variable Air-Volume (VAV) System**.

**Walk-In Refrigeration Units:** Refrigeration/freezer units within a building that are large enough to walk into. They may be portable or permanent, such as a meat storage locker in a butcher store. Walk-in units may or may not have a door, plastic strips, or other flexible covers. (See **Commercial Refrigeration/Freezer Equipment**.)

**Wall Insulation:** A building shell conservation feature consisting of insulation placed between the exterior and interior walls of a building. (See **Insulation** and **Building Shell Conservation Features**.)

**Warm-Air Furnace:** See **Furnace**.

**Waste-Heat Recovery:** Any conservation system whereby some space heating or water heating is done by actively capturing byproduct heat that would otherwise be ejected into the environment. In commercial buildings, sources of waste-heat recovery include refrigeration/air-conditioner compressors, manufacturing or other processes, data processing centers, lighting fixtures, ventilation exhaust air, and the occupants themselves. Not to be considered is the passive use of radiant heat from lighting, workers, motors, ovens, etc., when there are no special systems for collecting and redistributing heat. (See **Process Heating or Cooling Energy Conservation Program**.)

**Water Heating:** The use of energy to heat water for purposes other than space heating. This is one of the six end uses of energy specifically asked for in this survey. (See **Energy End Use**.)

**Water-Heating Equipment:** Automatically controlled, thermal insulated equipment designed for heating water at temperatures less than 180 degrees Fahrenheit for other than space heating purposes. This survey collected data to distinguish between two types of water heating equipment: centralized and distributed/point-of-use. (See **Centralized Water-Heating System** and **Distributed/Point-of-Use Water-Heating System**.)

**Weekly Operating Hours:** The number of hours per week that a building is used, excluding hours when the building is occupied only by maintenance, security, or other support personnel. For buildings with a schedule that varied during the year, "weekly operating hours" refers to the total weekly hours for the schedule most often followed. If operating hours varied throughout a building, the usual operating hours of the largest business in the building (based on square footage) determined the operating hours for the building.

**Weight:** The number of buildings in a certain Federal region that a particular sample building represents. To estimate the total value of an attribute (such as square footage) in the entire Federal region, each sample building's value is multiplied by the building's weight. Summing (aggregating) the weighted sample values provides an estimate of the Federal region total.

**Window or Vision Glass:** An exterior wall construction material made of glass that can be seen through from the inside of the building--the glass especially found in windows. Walls that are glass covered or constructed of glass material, but cannot be seen through, are excluded from this category. In the "Detailed Tables," window or vision glass is included in "Other" in the "Predominant Wall Materials" stub. (See **Decorative or Construction Glass**.)

**Wood:** As an energy source, wood logs, chips, or wood products that are used as fuel. In this survey, information about the use of wood as fuel in commercial buildings was obtained from the building respondent. Wood is included in the "Any Other" category in the "Energy Sources" stub. (See **Energy Source**.)

**Wooden Materials:** Wood shingles, wood shakes, or other wooden materials used as roofing materials. (The questionnaire also includes wood siding and shingles under exterior wall construction.) (See **Shingles** and **Shakes**.)

**Workers:** The number of people working in a building across all shifts on a typical workday during the year. The main

shift is the time when most people are in the building. 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.

**Year Constructed:** The year in which the major part or the largest portion of a building was constructed.