

GLOSSARY

Barrel (petroleum): A unit of volume equal to 42 U.S. gallons.

Biomass: Any organic matter available on a renewable or a recurrent basis, including agricultural crops and residues, wood and wood residues, urban and animal residues, and aquatic plants.

Bioenergy: Energy derived from biomass as electricity or heat, or combinations of heat and power; in the form of liquid or gaseous fuels, it is often referred to as biofuels.

British Thermal Unit (Btu): One British thermal unit, or BTU, is roughly equivalent to burning one kitchen match. It is the quantity of heat required to raise the temperature of one pound of water one degree Fahrenheit. (one Btu = 1055 Joules)

Carbon Dioxide (CO₂): A colorless, odorless, non-poisonous gas that is a normal part of the ambient air. Carbon dioxide is a product of fossil fuel combustion.

Climate Change: The change in weather patterns and surface temperatures that appears to be occurring as the result of large increases in greenhouse gas concentrations in the earth's atmosphere.

Cogeneration: The production of electrical energy and another form of useful energy (such as heat or steam) through the sequential use of energy.

Combined Cycle: An electric generating technology in which electricity is produced from otherwise lost waste heat exiting from one or more gas (combustion) turbines. The exiting heat is routed to a conventional boiler or to a heat recovery steam generator for utilization by a steam turbine in the production of electricity. Such designs increase the efficiency of the electric generating unit.

Criteria Pollutant: A pollutant determined to be hazardous to human health and regulated under the Environmental Protection Agency's (EPA) National Ambient Air Quality Standards. The 1970 amendments to the Clean Air Act require EPA to describe the health and welfare impacts of a pollutant as the "criteria" for inclusion in the regulatory regime.

Crude Oil: A mixture of hydrocarbons that exists in the liquid phase in natural underground reservoirs and remains liquid at atmospheric pressure after passing through surface separating facilities. Crude oil production is measured at the wellhead and includes lease condensate.

Discount Rate: The interest rate used to assess the value of future cost and revenue streams; an essential factor in assessing true returns from an investment in energy efficiency, as well as opportunity costs associated with not making that investment. In this report, we always use real discount rates that do not include inflation. To obtain the equivalent nominal discount rate including inflation, simply add the percentage annual inflation rate to the real discount rate

Distillate Fuel Oil: The lighter fuel oils distilled off during the refining process. Included are products known as ASTM grades numbers 1 and 2 heating oils, diesel fuels, and number 4 fuel oil. The major uses of distillate fuel oils include heating, fuel for on- and off-highway diesel engines, and railroad diesel fuel.

Electric Utility Restructuring: With some notable exceptions, the electric power industry historically has been composed primarily of investor-owned utilities. These utilities have been predominantly vertically integrated monopolies (combining electricity generation, transmission, and distribution), whose

prices have been regulated by State and Federal government agencies. Restructuring the industry entails the introduction of competition into at least the generation phase of electricity production, with a corresponding decrease in regulatory control. Restructuring may also modify or eliminate other traditional aspects of investor-owned utilities, including their exclusive franchise to serve a given geographical area, assured rates of return, and vertical integration of the production process.

Energy: The capacity for doing work as measured by the capability of doing work (potential energy) or the conversion of this capability to motion (kinetic energy). Energy has several forms, some of which are easily convertible and can be changed to another form useful for work. Most of the world's convertible energy comes from fossil fuels that are burned to produce heat that is then used as a transfer medium to mechanical or other means in order to accomplish tasks. Electrical energy is usually measured in kilowatthours, while heat energy is usually measured in British thermal units.

Energy Services Company: A company which designs, procures, finances, installs, maintains, and guarantees the performance of energy conservation measures in an owner's facility or facilities.

Energy Saving Performance Contract: An agreement with a third party in which the overall performance of installed energy conservation measures is guaranteed by that party.

Ethanol: A denatured alcohol (C_2H_5OH) intended for motor gasoline blending.

Externalities: Benefits or costs, generated as a byproduct of an economic activity, that do not accrue to the parties involved in the activity.

Fluorescent Lamps: Fluorescent lamps produce light by passing electricity through a gas, causing it to glow. The gas produces ultraviolet light; a phosphor coating on the inside of the lamp absorbs the ultraviolet light and produces visible light. Fluorescent lamps produce much less heat than incandescent lamps and are more energy efficient. Linear fluorescent lamps are used in long narrow fixtures designed for such lamps. Compact fluorescent light bulbs have been designed to replace incandescent light bulbs in table lamps, floodlights, and other fixtures.

Fossil Fuel: Any naturally occurring organic fuel formed in the Earth's crust, such as petroleum, coal, and natural gas.

Fuel Cells: One or more cells capable of generating an electrical current by converting the chemical energy of a fuel directly into electrical energy. Fuel cells differ from conventional electrical cells in that the active materials such as fuel and oxygen are not contained within the cell but are supplied from outside.

Gas-Turbine Electric Power Plant: A plant in which the prime mover is a gas turbine. A gas turbine typically consists of an axial-flow air compressor and one or more combustion chambers which liquid or gaseous fuel is burned. The hot gases expand to drive the generator and then are used to run the compressor.

Global Warming: Global warming is the increase in global temperatures that the earth has been experiencing this century. Gases that are thought by many to contribute to global warming through the greenhouse effect include carbon dioxide, methane, nitrous oxides, chlorofluorocarbons (CFCs), and halocarbons (the replacements for CFCs). Carbon dioxide emissions are primarily caused by the use of fossil fuels for energy.

Greenhouse Gas: Any gas that absorbs infrared radiation in the atmosphere.

Heat Pump: A device that extracts available heat from one area (the heat source) and transfers it to another (the heat sink) to either heat or cool an interior space. Geothermal heat pumps can operate more efficiently than the standard air-source heat pumps, because during winter the ground does not get as cold as the outside air (and during the summer, it does not heat up as much).

Independent Power Producer: A wholesale electricity producer (other than a qualifying facility under the Public Utility Regulatory Policies Act of 1978), that is unaffiliated with franchised utilities. Unlike traditional utilities, IPPs do not possess transmission facilities that are essential to their customers and do not sell power in any retail service territory where they have a franchise.

Kerosene: A petroleum distillate that is used in space heaters, cook stoves, and water heaters; it is suitable for use as an illuminant when burned in wick lamps (see Watthour).

Kilowatt (kW): One thousand watts of electricity (see Watt).

Kilowatthour (kWh): One thousand watthours.

Light Truck: Two-axle, four-tire trucks with a gross vehicle weight less than 10,000 pounds.

Liquefied Natural Gas: Natural gas (primarily methane) that has been liquefied by reducing its temperature to -260°F at atmospheric pressure.

Liquefied Petroleum Gas: Ethane, ethylene, propane, propylene, normal butane, butylene, and isobutane produced at refineries or natural gas processing plants.

Megawatt (MW): One million watts of electricity (see Watt).

Methanol: A light volatile alcohol (CH_3OH) used for motor gasoline blending.

Natural Gas: A mixture of hydrocarbons (principally methane) and small quantities of various nonhydrocarbons existing in the gaseous phase or in solution with crude oil in underground reservoirs.

Nitrogen Oxides (NO_x): A product of combustion of fossil fuels whose production increases with the temperature of the process. It can become an air pollutant if concentrations are excessive.

Nuclear Electric Power: Electricity generated by an electric power plant whose turbines are driven by steam generated in a reactor by heat from the fissioning of nuclear fuel.

Oxygenates: Any substance which, when added to motor gasoline, increases the amount of oxygen in that motor gasoline blend.

Ozone: Three-atom oxygen compound (O_3) found in two layers of the Earth's atmosphere. One layer of beneficial ozone occurs at 7 to 18 miles above the surface and shields the Earth from ultraviolet light. Several holes in this protective layer have been documented by scientists. Ozone also concentrates at the surface as a result of reactions between byproducts of fossil fuel combustion and sunlight, having harmful health effects.

Particulates: Visible air pollutants consisting of particles appearing in smoke or mist.

Petroleum: A generic term applied to oil and oil products in all forms.

Photovoltaic Cell: An electronic device consisting of layers of semiconductor materials fabricated to convert incident light directly into electricity (direct current).

Photovoltaic Module: An integrated assembly of interconnected photovoltaic cells designed to deliver a selected level of working voltage and suited for incorporation in photovoltaic power systems.

Primary Energy: The energy that is embodied in resources as they exist in nature (e.g., coal, crude oil, natural gas, or sunlight). For the most part, primary energy is transformed into electricity or fuels such as gasoline or charcoal. These, in turn, are referred to as secondary or site energy.

Propane: A normally gaseous straight-chain hydrocarbon (C₃H₈). It is a colorless paraffinic gas that is extracted from natural gas or refinery gas streams.

Quadrillion Btu (Quad): Equivalent to 10 to the 15th power Btu (1 quad = 1.055 x 10¹⁸ joules).

Renewable Energy: Energy obtained from sources that are essentially inexhaustible (unlike, for example, the fossil fuels, of which there is a finite supply). Renewable sources of energy include conventional hydroelectric power, wood, waste, geothermal, wind, photovoltaic, and solar thermal energy.

Standard Industrial Classification (SIC): A set of codes developed by the Office of Management and Budget which categorizes industries according to groups with similar economic activities.

Turbine: A machine for generating rotary mechanical power from the energy of a stream of fluid (such as water, steam, or hot gas). Turbines convert the kinetic energy of fluids to mechanical energy through the principles of impulse and reaction, or a mixture of the two.

Watt (Electric): The electrical unit of power. The rate of energy transfer equivalent to one ampere of electric current flowing under a pressure of one volt at unity power factor.

Watt-hour (Wh): The electrical energy unit of measure equal to 1 watt of power supplied to, or taken from, an electric circuit steadily for one hour.

Wind Energy: The kinetic energy of wind converted into mechanical energy by wind turbines (i.e., blades rotating from a hub) that drive generators to produce electricity.