

# Glossary

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H

**H:** Hundred

**h:** hundredth

**Half-life:** The time it takes for an isotope to lose half of its radioactivity.

**Halogen lamp:** A type of incandescent lamp that lasts much longer and is more efficient than the common incandescent lamp. The lamp uses a halogen gas, usually iodine or bromine, that causes the evaporating tungsten to be redeposited on the filament, thus prolonging its life. Also see [Incandescent lamp](#).

**Halogenated substances:** A volatile compound containing halogens, such as chlorine, fluorine or bromine.

**Hand loading:** An underground loading method by which coal is removed from the working face by manual labor through the use of a shovel for conveyance to the surface. Though rapidly disappearing, it is still used in small-tonnage mines.

**Haulage cost:** Cost of loading ore at a mine site and transporting it to a processing plant.

**HCFC:** See [Hydrochlorofluorocarbon](#)

**HDD:** See [Heating Degree Days](#).

**Head:** The product of the water's weight and a usable difference in elevation gives a measurement of the potential energy possessed by water.

**Heap leach solutions:** The separation, or dissolving-out from mined rock of the soluble uranium constituents by the natural action of percolating a prepared chemical solution through mounded (heaped) rock material. The mounded material usually contain slow grade mineralized material and/or waste rock produced from open pit or underground mines. The solutions are collected after percolation is completed and processed to recover the valued components.

**Heat content:** The amount of heat energy available to be released by the transformation or use of a specified physical unit of an energy form (e.g., a ton of coal, a barrel of oil, a kilowatthour of electricity, a cubic foot of natural gas, or a pound of steam). The amount of heat energy is commonly expressed in British thermal units (Btu). Note: Heat content of combustible energy forms can be expressed in terms of either gross heat content (higher or upper heating value) or

net heat content (lower heating value), depending upon whether or not the available heat energy includes or excludes the energy used to vaporize water (contained in the original energy form or created during the combustion process). The Energy Information Administration typically uses gross heat content values.

**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.

**Heat pump (air source):** An air-source heat pump is the most common type of heat pump. The heat pump absorbs heat from the outside air and transfers the heat to the space to be heated in the heating mode. In the cooling mode the heat pump absorbs heat from the space to be cooled and rejects the heat to the outside air. In the heating mode when the outside air approaches 32o F or less, air-source heat pumps loose efficiency and generally require a back-up (resistance) heating system.

**Heat pump (geothermal):** A heat pump in which the refrigerant exchanges heat (in a heat exchanger) with a fluid circulating through an earth connection medium (ground or ground water). The fluid is contained in a variety of loop (pipe) configurations depending on the temperature of the ground and the ground area available. Loops may be installed horizontally or vertically in the ground or submersed in a body of water.

**Heat pump efficiency:** The efficiency of a heat pump, that is, the electrical energy to operate it, is directly related to temperatures between which it operates. Geothermal heat pumps are more efficient than conventional heat pumps or air conditioners that use the outdoor air since the ground or ground water a few feet below the earth's surface remains relatively constant throughout the year. It is more efficient in the winter to draw heat from the relatively warm ground than from the atmosphere where the air temperature is much colder, and in summer transfer waste heat to the relatively cool ground than to hotter air. Geothermal heat pumps are generally more expensive (\$2,000-\$5,000) to install than outside air heat pumps. However, depending on the location geothermal heat pumps can reduce energy consumption (operating cost) and correspondingly, emissions by more than 20 percent compared to high-efficiency outside air heat pumps. Geothermal heat pumps also use the waste heat from air-conditioning to provide free hot water heating in the summer.

**Heat rate:** A measure of generating station [thermal efficiency](#) commonly stated as Btu per kilowatthour. Note: Heat rates can be expressed as either gross or net heat rates, depending whether the electricity output is gross or [net generation](#). Heat rates are typically expressed as net heat rates.

**Heated floorspace:** The area within a building that is space heated.

**Heating Degree Days (HDD):** A measure of how cold a location is over a period of time relative to a base temperature, most commonly specified as 65 degrees Fahrenheit. The measure is computed for each day by subtracting the average of the day's high and low temperatures from the base temperature (65 degrees), with negative values set equal to zero. Each day's heating

degree days are summed to create a heating degree day measure for a specified reference period. Heating degree days are used in energy analysis as an indicator of space heating energy requirements or use.

**Heating equipment:** Any equipment designed and/or specifically used for heating ambient air in an enclosed space. Common types of heating equipment include: central warm air furnace, heat pump, plug-in or built-in room heater, boiler for steam or hot water heating system, heating stove, and fireplace. Note: A cooking stove in a housing unit is sometimes reported as heating equipment, even though it was built for preparing food.

**Heating intensity:** The ratio of space-heating consumption or expenditures to square footage of heated floor space and heating degree-days (base 65 degrees Fahrenheit). This ratio provides a way of comparing different types of housing units and households by controlling for differences in housing unit size and weather conditions. The square footage of heated floor space is based on the measurements of the floor space that is heated. The ratio is calculated on a weighted, aggregate basis according to the following formula  $\text{Heating Intensity} = \text{Btu for Space Heating} / (\text{Heated Square Feet} * \text{Heating Degree-Days})$ .

**Heating stove burning wood, coal, or coke:** Any free-standing box or controlled-draft stove; or a stove installed in a fireplace opening, using the chimney of the fireplace. Stoves are made of cast iron, sheet metal, or plate steel. Free-standing fireplaces that can be detached from their chimneys are considered heating stoves.

**Heating value:** The average number of British thermal units per cubic foot of natural gas as determined from tests of fuel samples.

**Heavy gas oil:** Petroleum distillates with an approximate boiling range from 651 degrees Fahrenheit to 1000 degrees Fahrenheit.

**Heavy metals:** Metallic elements, including those required for plant and animal nutrition, in trace concentration but which become toxic at higher concentrations. Examples are mercury, chromium, cadmium, and lead.

**Heavy rail:** An electric railway with the capacity for a "heavy volume" of traffic and characterized by exclusive rights-of-way, multi-car trains, high speed and rapid acceleration, sophisticated signaling, and high platform loading. Also known as "subway," elevated (railway), "metropolitan railway (metro)."

**Heavy water:** Water containing a significantly greater proportion of heavy hydrogen (deuterium) atoms to ordinary hydrogen atoms than is found in ordinary (light) water. Heavy water is used as a moderator in some reactors because it slows neutrons effectively and also has a low cross section for absorption of neutrons.

**Heavy-water-moderated reactor:** A reactor that uses heavy water as its moderator. Heavy water is an excellent moderator and thus permits the use of inexpensive natural (unenriched) uranium as fuel.

**Hedging:** The buying and selling of futures contracts so as to protect energy traders from unexpected or adverse price fluctuations.

**Hedging contracts:** Contracts which establish future prices and quantities of electricity independent of the short-term market. Derivatives may be used for this purpose.

**Heliostat:** A mirror that reflects solar rays onto a central receiver. A heliostat automatically adjusts its position to track daily or seasonal changes in the sun's position. The arrangement of heliostats around a central receiver is also called a solar collector field.

**Henry Hub:** A pipeline hub on the Louisiana Gulf coast. It is the delivery point for the natural gas futures contract on the New York Mercantile Exchange (NYMEX).

**HFC:** See [Hydrofluorocarbon](#)

**HID:** High-Intensity Discharge

**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 high-intensity discharge (HID) lamps, which provides 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:** Lighting provided by high-intensity discharge (HID) lamps and/or fluorescent lamps.

**High Sulfur Diesel (HSD) fuel:** Diesel fuel containing more than 500 parts per million (ppm) sulfur.

**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. HID lamps have extremely long life and emit far more lumens per fixture than do fluorescent lights.

**High-mileage households:** Households with estimated aggregate annual vehicle mileage that exceeds 12,500 miles.

**High-temperature collector:** A solar thermal collector designed to operate at a temperature of 180 degrees Fahrenheit or higher.

**Highwall:** The unexcavated face of exposed over-burden and coal in a surface mine.

**Hinshaw pipeline:** A pipeline or local distribution company that has received exemptions from regulations pursuant to the Natural Gas Act. These companies transport interstate natural gas not subject to regulations under NGA.

**Holding company:** A company that confines its activities to owning stock in and supervising management of other companies. The Securities and Exchange Commission, as administrator of the Public Utility Holding Company Act of 1935, defines a holding company as "a company which directly or indirectly owns, controls or holds 10 percent or more of the outstanding voting securities of a holding company" (15 USC 79b, par. a (7)).

**Holding pond:** A structure built to contain large volumes of liquid waste to ensure that it meets environmental requirements prior to release.

**Horizontal axis wind turbine:** The most common type of wind turbine where the axis of rotation is oriented horizontally. Also see [Wind turbine](#).

**Horsepower:** A unit for measuring the rate of work (or power) equivalent to 33,000 foot-pounds per minute or 746 watts.

**Host government:** The government (including any government-controlled firm engaged in the production, refining, or marketing of crude oil or petroleum products) of the foreign country in which the crude oil is produced.

**Hot dry rock:** Heat energy residing in impermeable, crystalline rock. Hydraulic fracturing may be used to create permeability to enable circulation of water and removal of the heat.

**Hot tub:** Water-filled wood, plastic, or ceramic container in which up to 12 people can lounge. Normally equipped with a heater that heats the water from 80 degrees to 106 degrees Fahrenheit. It may also have jets to bubble the water. The water is not drained after each use. An average-size hot tub holds 200 to 400 gallons of water. All reported hot tubs are assumed to include an electric pump. These are also called spas or jacuzzis.

**Hours under load:** The hours the boiler is operating to drive the generator producing electricity.

**Household:** A family, an individual, or a group of up to nine unrelated persons occupying the same housing unit. "Occupy" means that the housing unit is the person's usual or permanent place of residence.

**Household energy expenditures:** The total amount of funds spent for energy consumed in, or delivered to, a housing unit during a given period of time.

**Housing unit:** A house, an apartment, a group of rooms, or a single room if it is either occupied or intended for occupancy as separate living quarters by a family, an individual, or a group of one to nine unrelated persons. Separate living quarters means the occupants (1) live and eat separately from other persons in the house or apartment and (2) have direct access from the outside of the buildings or through a common hall--that is, they can get to it without going through someone else's living quarters. Housing units do not include group quarters such as prisons or nursing homes where ten or more unrelated persons live. A common dining area used by residents is an indication of group quarters. Hotel and motel rooms are considered housing units if occupied as the usual or permanent place of residence.

**HTGR:** High Temperature Gas-cooled Reactor

**Hub height:** In a horizontal-axis wind turbine, the distance from the turbine platform to the rotor shaft.

**Humidifier:** A humidifier adds moisture to the air (often needed in winter when indoor air is very dry). It may be a portable unit or attached to the heating system.

**Humidity:** The moisture content of air. Relative humidity is the ratio of the amount of water vapor actually present in the air to the greatest amount possible at the same temperature.

**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.

**HVAC DSM program:** A DSM (demand-side management) program designed to promote the efficiency of the heating or cooling delivery system, including replacement. Includes ventilation (economizers; heat recovery from exhaust air), cooling (evaporative cooling, cool storage; heat recovery from chillers; high-efficiency air conditioning), heating, and automatic energy management systems.

**Hybrid transmission line:** A double-circuit line that has one alternating current and one direct circuit. The AC circuit usually serves local loads along the line.

**Hydraulic fracturing:** Fracturing of rock at depth with fluid pressure. Hydraulic fracturing at depth may be accomplished by pumping water into a well at very high pressures. Under natural conditions, vapor pressure may rise high enough to cause fracturing in a process known as hydrothermal brecciation.

**Hydraulic head:** The distance between the respective elevations of the upstream water surface (headwater) above and the downstream surface water (tailwater) below a hydroelectric power plant.

**Hydrocarbon:** An organic chemical compound of hydrogen and carbon in the gaseous, liquid, or solid phase. The molecular structure of hydrocarbon compounds varies from the simplest (methane, a constituent of natural gas) to the very heavy and very complex.

**Hydrocarbon gas liquids (HGL):** A group of hydrocarbons including [ethane](#), [propane](#), [normal butane](#), [isobutane](#), and [natural gasoline](#), and their associated [olefins](#), including [ethylene](#), [propylene](#), [butylene](#), and [isobutylene](#). As marketed products, HGL represents all natural gas liquids (NGL) and olefins. EIA reports production of HGL from refineries (liquefied refinery gas, or LRG) and natural gas plants (natural gas plant liquids, or NGPL). Excludes liquefied natural gas (LNG).

**Hydrochlorofluorocarbons (HCFCs):** Chemicals composed of one or more carbon atoms and varying numbers of hydrogen, chlorine, and fluorine atoms.

**Hydrocracking:** See [Catalytic hydrocracking](#).

**Hydroelectric power:** The use of flowing water to produce electrical energy.

**Hydrofluorocarbons (HFCs):** A group of man-made chemicals composed of one or two carbon atoms and varying numbers of hydrogen and fluorine atoms. Most HFCs have 100-year Global Warming Potentials in the thousands.

**Hydrogen:** The lightest of all gases, occurring chiefly in combination with oxygen in water; exists also in acids, bases, alcohols, petroleum, and other hydrocarbons.

**Hydrotreating:** See [Catalytic hydrotreating](#).

**Hydroxyl radical (OH):** An important chemical scavenger of many trace gases in the atmosphere that are greenhouse gases. Atmospheric concentrations of OH affect the atmospheric lifetimes of greenhouse gases, their abundance, and, ultimately, the effect they have on climate.

**Hypothetical resources (coal):** Undiscovered coal resources in beds that may reasonably be expected to exist in known mining districts under known geologic conditions. In general, hypothetical resources are in broad areas of coal fields where points of observation are absent and evidence is from distant outcrops, drill holes, or wells. Exploration that confirms their existence and better defines their quantity and quality would permit their reclassification as identified resources. Quantitative estimates are based on a broad knowledge of the geologic character of coalbed or region. Measurements of coal thickness are more than 6 miles apart. The assumption of continuity of coalbed is supported only by geologic evidence.

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