Glossary of Heating and Cooling Terms

The following are helpful, commonly used heating and cooling terms.

AFUE - Annual Fuel Utilization Efficiency - Indicated as a percentage, AFUE tells you how much energy is being converted to heat. An AFUE of 90 means that 90% of the fuel is being used to warm your home. The other 10% escapes as exhaust with the combustion gases.

Air Source - Heating and cooling derived from the variation in indoor and outdoor air temperatures.

Alternative Energy - Energy derived from alternative fuels which is usually environmentally sound, such as compressed natural gas, solar, hydroelectric, wind, biomass, compressed hardwood products, geothermal, air sourced, etc.

Alternative Fuels - fuels from sources cleaner than coal or petroleum products: ethanol, methanol, natural gas, solar, wind, geothermal, air sourced, biodiesel from vegetable oil, compressed wood products, etc.

Ambient Air - The air occurring at a particular time and place outside of structures. Often used interchangeably with "outdoor air."

Ash - the waste product left from burning wood fuels, and one of the major indicators of fuel quality. The lower the ash content, the less cleaning and maintenance you'll likely have to perform on your stove. Premium compressed hardwood products have less than 1.0% ash, and premium softwood products typically have less than 0.5% ash.

Auger – On pellet fueled equipment the auger delivers pellets from the hopper to the burn pot at various speeds, which in turn controls the amount of heat generated.

Bio - Prefix indicating the action of living organisms. Examples: biofiltration, biodecontamination, biotechnology, biodiversity.

Biodegradable - Material, including pollutants, that can be broken down into simpler substances (elements and compounds) by bacteria or other decomposers. Paper and most organic wastes such as animal manure are biodegradable. Wood, for example, is biodegradable, while plastics are not.

Bio-energy - Energy made available by the combustion of materials derived from biological sources.

Biomass - (1) The total mass of living matter within a given unit environmental area. (2) Plant material, vegetation, wood, or agricultural waste used as a fuel or energy source. Compressed wood fuels (wood pellets, bricks, blocks, and logs) are biomass heat sources.

Biomass Energy - Energy produced by combusting biomass materials. The carbon dioxide emitted from burning biomass produces a **closed carbon cycle** which will not increase total atmospheric

carbon dioxide if this combustion is done on a sustainable basis (i.e., if over a given period of time, regrowth of biomass takes up as much carbon dioxide as is released from biomass combustion).

Boiler - A vessel designed to transfer heat produced by combustion or electric resistance to water. Boilers may provide hot water or steam.

BTU / British Thermal Unit - The BTU is a measure of the heat given off when fuel is burned. For cooling it's a measure of heat extracted from your home. (One BTU is approximately equal to the heat given off by a wooden kitchen match), or more precisely, the quantity of heat required to raise the temperature of one pound of water from 60F to 61° F at a constant pressure of one atmosphere.

BTUs - One of the key indicators of wood fuel product quality. The higher the BTU rating, the more heat you will feel.

BTUH - BTUH is British Thermal Units per Hour.

Burn Pot – In a pellet stove or fireplace insert the pellets drop into the burn pot where they are fired to produce heat.

Calorie - A unit of heat energy equal to the amount of heat needed to raise the temperature of one gram of water from 14.5 to 15.5° degrees Celsius (C) at standard atmospheric pressure.

Carbon Cycle - the passage and recycling of carbon through the planetary biosphere (soil), lithosphere (sediments), hydrosphere (water), and atmosphere (air).

Carbon Dioxide (CO_2) - a naturally occurring greenhouse gas in the atmosphere, concentrations of which have increased (from 280 parts per million in preindustrial times to over 350 parts per million today) as a result of humans' burning of coal, oil, natural gas and organic matter (e.g., wood and crop wastes).

Carbon Neutral - Achieving net zero carbon emissions by balancing carbon (CO_2) released into the atmosphere with an equivalent amount being absorbed.

Capacity - The ability of a heating or cooling system to heat or cool a given amount of space. For heating, this is usually expressed in BTUs. For cooling, it is usually given in tons.

CFM - Stands for Cubic Feet per Minute. A measurement of airflow that indicates how many cubic feet of air pass by a stationary point in one minute. The higher the number, the more air is being forced through the system.

Clean fuel - Fuels which have lower emissions than conventional gasoline and diesel. This refers to *alternative fuels*, as well as to reformulated gasoline and diesel.

Clean Glass Airwash – A system that uses outside air to put a barrier between a stove's viewing glass and burn pot, creating a clean, clear view of the fire.

Climate Change - A regional change in temperature and weather patterns. Current science indicates a discernible link between climate change over the last century and human activity, specifically the burning of **fossil fuels.**

Closed Carbon Cycle - In a combustion system, biomass and fossil fuels release carbon dioxide (CO_2) into the atmosphere as they burn. Biomass also needs CO_2 to grow and absorbs it from the atmosphere. This creates a 'closed carbon cycle' and makes biomass fuel 'carbon neutral', where the same amount of CO_2 is absorbed from the atmosphere by the biomass as it releases when it is burnt.

Burning fossil fuel removes carbon 'locked away' underground and transfers it to the atmosphere in the form of CO_2. Burning fossil fuels breaks the carbon cycle, and so they are not 'carbon neutral'.

Compressed Wood Fuel - Highly efficient, compressed wood fuels are alternative heating fuels made from recycled and sustainable forest products that are dried and compressed hardwood or softwood sawdust, wood chips, and shavings formed into various shapes. **Wood pellets** are burned in a pellet stove, fireplace insert, boiler, or furnace. **Wood bricks, blocks, and logs** that burn as highly efficient cordwood alternatives, can be burned in a wood stove, fire pit, fireplace, or wood or biomass furnace or boiler.

Compressor - A split-system heat pump or air conditioner's outdoor unit. It controls the pressure applied to the refrigerant, and is necessary for supplying heat to warm your home, or getting rid of heat to keep your home cool.

Condenser Coil – The part of the outdoor portion of a split-system air conditioner or heat pump by converting refrigerant that is in a gas form back to a liquid. The coil sends heat carried by the refrigerant to the outside.

Convection Air – Cool room air is drawn in by a blower, and flows through heat exchange tubes to return to the room as heat.

Cord - A stack of wood with a gross volume of 128 cubic feet (4 feet by 4 feet by 8 feet).

Custom Delivery Service – With our forklift that rides on the truck, combined with a pallet jack, we can place and stack your wood, bricks blocks, or pellets just about anywhere.

Damper - A type of "valve" used in duct work that opens or closes to control airflow. Dampers are used in zoning to control the amount of warm or cool air entering certain areas of your home.

DB /Decibels (dB) - A unit measuring the intensity of noise.

Downflow Furnace/Boiler - A type of furnace that takes cool air from the top and blows warm air to the bottom-commonly used where furnaces must be located in a second-floor closet or utility area.

Duct Loss -

Ductwork - Hollow pipes used to transfer air from the Air Handler to the air vents throughout your home.

Ecosystem/Ecocommunity - A biotic community and its surroundings, part inorganic (abiotic) and part organic (biotic). An interconnected and symbiotic grouping of animals, plants, fungi, and microorganisms.

EER - Energy Efficiency Ratings (EER) measure the efficiency with which a product uses energy to heat. It is calculated by dividing a product's BTU output by its wattage.

Energy Conservation - using energy efficiently or prudently; saving energy.

Energy Efficiency - technologies and measures that reduce the amount of fuel required to do the same work, such as heating, cooling, or powering homes, offices and industries.

Energy Saver Switch - An energy-saver switch causes the air conditioner's fan and compressor to cycle on and off together, reducing energy use.

ENERGY STAR - ENERGY STAR® is a government-backed program helping businesses and individuals protect the environment through superior energy efficiency. Products with the ENERGY STAR rating will be efficient and save you money on energy bills.

Evaporator Coil – The part of a split-system air conditioner or heat pump that is located indoors. The evaporator coil cools and dehumidifies the air by converting liquid refrigerant into a gas (or vice-versa). A blower motor then moves air over the coil to either heat or cool your home.

FAILSAFE System – A four stage safety system found on Napoleon Pellet stoves and fireplace inserts that features an automatic blower over ride switch, a high temperature limit switch, a low air pressure switch, and a power failure safety shutdown for your peace of mind.

Fan Coil - An indoor component of an air conditioner or heat pump system, to change the refrigerant from a gas to a liquid (or vice-versa) and blow air over the coil to heat or cool your home.

Fossil Fuel - Fuel such as coal, oil and natural gas produced by the decomposition of ancient (fossilized) plants and animals. All told, use of fossil fuels puts 800 tons of carbon dioxide into the air every second: a sobering number given that oxygen-breathing life on Earth depends on carbon remaining locked in the ground. See Alternative Energy.

Furnace - A Furnace is a piece of equipment used to heat outside air and distribute it through ductwork throughout the home.

Geothermal - literally, heat from the earth; energy obtained from heat under the surface of the earth.

Global Warming - increase in the average temperature of the earth's surface because of greenhouse gases accumulating in the atmosphere. The scientific emphasis has swung from whether global warming exists to how to minimize the damage it will cause.

Green Design - a design, usually architectural, conforming to environmentally sound principles of building, material and energy use. A green building, for example, might make use of solar or other forms of alternative heating and cooling, skylights, and recycled building materials.

HSPF - The Heating Seasonal Performance Factor is a measure of the heating efficiency of a heat pump. The higher the HSPF number, the more efficiently the heat pump heats your home.

HVAC - Term used for Heating, Ventilation, and Air Conditioning.

Hardwood - Wood from flowering trees; usually deciduous and broad-leafed (maples, cottonwood, ash, oak, beech. See Softwood.

Heat Exchanger - The part of a furnace, boiler, or stove that is heated by burning fuel, and transfers heat into the room.

Heat Pump - A product that can work like an air conditioner and/or a heater.

Hopper - The part of a pellet heating appliance that holds the pellets.

Humidifier - A piece of equipment that adds water vapor to heated air as it moves out of the furnace. This adds necessary moisture to protect your furnishings and reduce static electricity.

Hybrid - A cross between two diverse plants, systems, ideas, or practices.

Hybrid Heat - Hybrid Heat systems deliver exceptional performance by combining the use of multiple heating and cooling systems and using the source that provides the most energy-efficient comfort.

Hydroelectric - relating to electric energy produced by moving water.

Hydropower - energy or power produced by moving water.

Indoor Coil - see Evaporator Coil

Load Estimate - A study performed to determine the heating or cooling requirements of your home. When referring to heating, this is often known as a **Heat Loss Analysis**, since a home's heating requirements are determined by the amount of heat lost through the roof, windows, entry ways and walls.

MERV - The Minimum Efficiency Reporting Value is the standard comparison of the efficiency of an air filter. The MERV scale ranges from 1 (least efficient) to 16 (most efficient), and measures a filter's ability remove particles from 3 to 10 microns in size.

Matched System - A heating and cooling system comprised of products that have been certified to perform at promised comfort and efficiency levels when used together, and used according to design and engineering specifications.

Mini Split Heat Pump - A heat pump that is designed to be used for both heating and cooling (not at the same time). In cooling mode refrigerant extracts heat from your home and moves it outside, while in heating mode, the refrigerant flow is reversed and heat is drawn from outside air to heat your home.

Operating Cost – The cost of running your home comfort equipment, based on energy use.

Outdoor Coil - see Condenser Coil

Pallet / Skid - A pallet is a wooden platform that products are stacked and wrapped on. Wood heat product skids are packaged in different weights, and can have anywhere from 3/4 ton to 1.5 tons per skid.

Particulate - Of or relating to minute discrete particles; a particulate substance.

Payback Analysis – aka **ROI** (Return On Investment). An overall measure of the efficiency and value of your home comfort system. By combining your purchase price and ongoing operating costs, a payback analysis determines the number of months or years required for energy savings to offset the purchase price.

Recycling - a key component of modern waste reduction, recycling is a system of collecting, sorting, and reprocessing old material into usable raw materials for the purpose of making them into new products. It is the third component of the "Reduce, Reuse, Recycle" waste hierarch.

Refrigerant -

Refrigerant Lines - Copper lines that connect the Condenser (Outdoor) Coil to the Evaporator (Indoor) Coil.

Renewable Energy - Energy obtained from sources that are essentially inexhaustible, unlike, fossil fuels, of which there is a finite supply. Renewable sources of energy include wood, waste, geothermal, wind, photovoltaic, and solar thermal energy. Energy resources such as that can keep producing indefinitely without being depleted.

SEER - The Seasonal Energy Efficiency Ratio is a measure of the cooling efficiency of your air conditioner or heat pump. The higher the SEER number, the more efficient the system is at converting electricity into cooling power.

Softwood - wood from non-flowering trees (redwood, pine, fir, spruce--conifers). See Hardwood.

Solar Energy - energy derived from sunlight to heat water or produce electricity, without any external power.

Soot - a fine, sticky powder, comprised mostly of carbon, formed by the burning of fossil fuels.

Split System - Refers to an air conditioner or heat pump that has components in two locations. Usually, one part of the system is located inside (evaporator coil) and the other is located outside your home (condenser coil).

Sustainable Resource - In ecology the word describes how biological systems remain diverse and productive over time. A sustainable resource is renewed at the same rate that it is used. Wood can be a sustainable resource, but fossil fuels cannot.

Thermostat - A state-of-the-art electronic thermostat with a built-in memory that can be programmed for different temperature settings at different times of the day.

Ton - A unit of measure; (1) for cooling capacity, One ton = 12,000 BTUs per hour; (2) for weight One ton = 2,000 lbs.

Toxic Emissions - poisonous chemicals discharged to air, water, or land.

Total Home Comfort System - The ultimate solution to providing you with consistent, customized home comfort, despite ever-changing weather.

UL - Underwriters Laboratory, is an objective, non-profit organization that tests and rates electrical products for public safety.

Upflow - A type of furnace that draws cool air from the bottom and blows the warmed air out the top into the duct work. This type of furnace is usually installed in a basement or an out-of-the-way closet.

Ventilator - A ventilator captures heating or cooling energy from stale indoor air and transfers it to fresh incoming air.

Windpower - power or energy derived from the wind (via windmills, sails, etc.).

Zoning - A way to increase your home comfort and energy efficiency by controlling when and where heating and cooling occurs in a home. Dampers are used to direct air flow to certain parts or "zones" of the home.