

Appalachian Power Home Performance Program

Glossary

Air Barrier: a barrier that prevents infiltration of outdoor air into the conditioned space and exfiltration of indoor air to the outside. Also known as “pressure boundary.” The air barrier should be continuous and aligned with the thermal boundary

Air Conditioner: a system that uses only electricity as a fuel source and an air-to-refrigerant heat exchanger to extract heat from inside the thermal boundary to cool and dehumidify the conditioned area of a dwelling

Air Source Heat Pump: a type of all-electric heat pump that uses an air-to-refrigerant heat exchanger to extract heat from the heat source, including air-to-air, variable capacity, and dual fuel

All-Electric Heat Pump: a heat pump system made up of one or more unitary heat pumps with associated ductwork and controls, that uses only electricity as a fuel source to heat and cool the conditioned area of a dwelling or business

Backer: any material that is used to bridge openings and provide structural support for a sealant that cannot support itself

Baffle Trim: a part installed into a recessed lighting fixture from the bottom of the fixture (i.e., from the living space of the dwelling) to finish the hole in the ceiling around the recessed light. Baffle trims trap and shape the light and are sometimes available in varieties designed to convert a leaky recessed light into an air sealed recessed light. An airtight baffle trim will include a gasket that seals the trim to the ceiling surface, and another inner gasket that seals the baffle trim to the base of the installed light bulb, resulting in a continuous air barrier

Balance Point: the outdoor temperature at which the maximum heating capacity of the installed heat pump’s compressor, without strip heat, equals the heating load of the dwelling. As the temperature drops below balance point, an additional heat source, such as resistance heat, is required to maintain the indoor design heating temperature (design thermostat set point)

Building Envelope (or Building Enclosure): the physical separator between the interior and the exterior environments of a building. Any part of the building that creates a boundary between indoor and outdoor space. It includes the outer-most surface of the foundation, roof, walls, doors and windows. Sometimes referred to the components defining the “dried-in” areas of a home

Bypass: a gap in the air barrier between the conditioned space and unconditioned space that allows heat to go around the insulation rather than through it. The heat is transported on air that is infiltrating or exfiltrating through the gap in the air barrier

Carbon Monoxide (CO): colorless, odorless, tasteless, and poisonous combustion byproduct that is lighter than air

Chase: a framed and enclosed vertical passage in a wall, or through a ceiling, for ducts, pipes, or wires to lie in or pass through

Closed Loop System: a ground heat exchanger for a geothermal heat pump in which the heat transfer fluid is permanently contained in a closed system

Coefficient of Performance (COP): the ratio of heat output to the amount of energy input of a heat pump. COP is an instantaneous efficiency rating calculated by dividing the heat produced (Btu/h) by the product of electrical energy input (watts) times 3,413

Conditioned: areas or zones within a house that are heated or cooled for comfort

Customer: an individual that receives electric service from IPL, owns or rents a dwelling, but has not yet become a program participant

Direct Exchange Ground Source Heat Pump: a geothermal heat pump model in which the refrigerant is circulated in pipes buried in the ground or submerged in water that exchanges heat with the ground, rather than using a secondary heat transfer fluid, such as water or antifreeze solution in a separate closed loop. Equipment listed in ANSI/AHRI-870

Dual-fuel Heat Pump: a heat pump used in combination with a fossil-fueled furnace, such that auxiliary heat through the furnace is enabled when the heat pump compressor's heating capacity falls below the balance point of the home

Dwelling: means a single self-contained housekeeping unit comprised of one or more rooms providing complete independent facilities for one or more persons, including permanent provisions for living, sleeping, eating, cooking, and sanitation, that receives permanent electric service from local power company. Each housekeeping unit must have (1) a dedicated water heating system, (2) a thermostat or thermostats that control a dedicated unitary heating system, (3) a full kitchen with range, oven, and refrigerator, (4) a minimum conditioned living floor area of 500 square feet, and (5) for rental units, a minimum one month term of tenant occupancy

Earth Coupled Heat Pump: an all-electric heat pump that uses an earth coil and circulates water or a water-antifreeze solution through a closed loop water-to-refrigerant heat exchanger to extract heat from the heat source, including closed loop water-to-air and closed loop water-to-water. Equipment is listed in ARI-330 or CAN/CSA-C446-M90

Energy Efficiency Ratio (EER): the cooling efficiency of a heat pump or air conditioner. EER is an instantaneous efficiency rating and is calculated by dividing the heat removed per hour (Btu/h) by electrical power (watts) input at that point in time

ENERGY STAR: a national program by the US government's Environmental Protection Authority that promotes energy efficiency and environmental stewardship. Refer to www.energystar.gov for additional information

Envelope: see Building Envelope

Energy Advisor: a person trained in building science curricula and certified by CLEARResult as being adequately knowledgeable and capable of performing Assessments

Fiberglass: a common insulation material made from glass fibers

Fire barrier: a material that covers foam insulation or other building material to prevent the building material from igniting. See Qualified Materials and Products for a number of materials can serve as fire barriers. ½-inch wall board is the most commonly used fire barrier and is rated for 15 minutes of protection

Geothermal Heat Pump: a heat pump type that uses the thermal energy of the ground or ground water to provide residential space conditioning and/or domestic water heating, including an Earth Coupled Heat Pump or Ground Water Source Heat Pump

Ground Vapor Barrier: a material installed over the dirt floor of a crawlspaces or under a concrete slab to stop moisture from evaporating from damp ground into the home. Polyethylene plastic is a common ground vapor barrier

Ground Water Source Heat Pump: a heat pump that circulates ground water through an open loop water-to-water refrigerant heat exchanger to extract heat from the heat source, including open loop water-to-air and open loop water-to-water. Equipment is listed in the ARI 325 or CAN/CSA-C446-M90

Heating Season Performance Factor (HSPF): a measure of the overall heating efficiency of a heat pump during an entire heating season. HSPF is calculated as the total BTU delivered in a heating season divided by the product of the kWhs consumed times 3413

Heat Gain: transfer of heat from outdoors to indoors by means of conduction, convection, radiation through all envelope surfaces of the house (e.g., walls, roof), and heat radiated inside the house by other sources such as lights, equipment, or people. The rate of heat gain during the cooling season depends on the thermal resistance of the house's envelope and the outdoor temperature. Many homes have excessive heat gain and use excessive cooling energy because of inadequate shading, excessive air leakage, inadequate insulation and internally generated heat

Heat Loss: transfer of heat from indoors to outdoors by means of conduction, convection and radiation through all envelope surfaces of the house (e.g., walls, roof). The rate of heat loss during the heating season depends on the thermal resistance of the house's envelope and the outdoor temperature

Heat Pump Water Heater: an electric water heater that heats the water stored in the tank by means of an air source heat pump device that is either integrated with the tank or installed separately onto an existing water storage tank. This refrigeration cycle technology heats the water at an increased efficiency, for about half the cost of a conventional storage water heater. A heat pump water heater is the only water heater technology that is eligible for an rebate.

Impermeable: air, vapor, and/or moisture (individually or in any combination, as specified) is unable to pass through a material

Infiltration: the uncontrolled process where air or water enters a structure through cracks and gaps in the envelope. Air infiltration is caused by depressurization with respect to the outside (replaced by an equal amount of air leaving the home)

Inspection: a review and verification of a program installation of HVAC and/or weatherization upgrades by a program Energy Advisor to determine that the installation meets program requirements.

Insulation Baffle: a thin spacer typically installed between rafters to maintain ventilation space between the insulation and roof deck

Insulation Dam: any material that is used to contain insulation and prevent it from moving out of or away from its intended location

Kneewall: a short wall, often 3 to 4 feet high, in the upper floor of a home, anchored with plates between the floor joists and the roof joists. Sheathing can be attached to these walls to enclose an attic space. Commonly found in houses with finished attics and dormer windows, such as in 1½ story designs

Manufactured Home: a self-contained residential living unit (dwelling) which has been manufactured to the Department of Housing and Urban Development Federal Manufactured Home Construction and Safety Standards

Mechanical Ventilation: intentionally induced fresh air exchange that allows the homeowner some control in the amount and timing of air exchange in the home

Mineral Wool: a fibrous material made from steam blasting and cooling molten rock or iron ore slag that is sometimes used as insulation in buildings. Mineral wool has higher temperature ratings and greater fire resistance than fiberglass insulation because of its high melting point

Mini-Split Heat Pump: a variable capacity heat pump that has one out door unit and one or more indoor units with separate thermostats. Equipment listed in ANSI/AHRI 1230

MSDS: Material Safety Data Sheet. Product information, provided by the manufacturer, detailing potential health/safety hazards and required precautions for dealing with a specific material

NFRC: National Fenestration Ratings Council. Provides accurate information to measure and compare energy performance of windows, doors and skylights

OEM: Original Equipment Manufacturer. The company that originally manufactured the equipment

One-Part Foam: a pre-mixed foam product in a single container that does not require any on-site mixing. One-part foam can be either closed-cell or open-cell, and the R-value per inch will vary based on the foam's density

Open Loop System: A ground heat exchanger for a geothermal heat pump in which the heat transfer fluid is part of a larger environment. The most common open loop systems use ground water or surface water as the heat transfer medium

Package Heat Pump/AC System: a self-contained, factory assembled heat pump or air conditioning module that contains all of the refrigeration system components, including (1) compressor, (2) both heat exchangers, (3) fans and controls, and (4) supplemental heating (heat pump only)

Package Terminal Air Conditioner: a through-the-wall ductless air conditioner that uses an air-to-refrigerant heat exchanger to extract heat from inside the thermal boundary. Equipment listed in ANSI/AHRI-310/380 or CAN/CSA-C744

Package Terminal Heat Pump: a through-the-wall ductless heat pump that uses an air-to-refrigerant heat exchanger to extract heat from the heat source. Equipment listed in ANSI/AHRI-310/380 or CAN/CSA-C744

Participant: an individual that receives electric service from IPL, owns or rents a dwelling, and participates in a CLEAResult administered energy efficiency program

Pascal: a metric unit of measure equaling about one pound of pressure per square foot. 250 Pascals is about 1-inch of water column

Permeable: air, vapor or moisture (individually or in any combination, as specified) is able to pass through a material

Quality Contractor Network (QCN): the heating and cooling and weatherization contractors that have been listed by CLEAResult to install central air conditioners, heat pumps and heat pump water heaters.

Recommendation(s) or Recommended Upgrade(s): one or more upgrades to a dwelling that have been recommended to the participant by an Energy Advisor in an Assessment as a course of action that the homeowner should implement to improve the overall energy efficiency of the dwelling. Recommendations may or may not be eligible for rebates.

RESNET: The Residential Energy Services Network, a not-for-profit, membership corporation that makes standards and quality assurance procedures for building energy efficiency rating and certification systems

Room Air Conditioner: a self-contained air conditioner with interior controls that sits in a window or wall opening and uses an air-to-refrigerant heat exchanger to extract heat from inside the thermal boundary. Equipment listed in ANSI/AHRI 210/240 or ANSI/AHAM RAC-1

Room Heat Pump: a room air conditioner equipped with a reverse cycle that uses an air-to-refrigerant heat exchanger to extract heat from the exterior and transfer it inside the thermal boundary. Equipment listed in ANSI/AHRI 210/240 or ANSI/AHAM RAC-1

R-Value: the measured resistance of a material to heat transfer

Seasonal Energy Efficiency Ratio (SEER): the total cooling output of an air conditioner during its normal annual usage period for cooling (in Btu/hr) divided by the total electric energy (in Watt-hours) input during the same period

Self-Contained Through-the-Wall Air Conditioner: an air conditioner that is self-contained in a wall unit and uses an air-to-refrigerant heat exchanger to extract heat from inside the thermal boundary. A self-contained through-the-wall air conditioner may or may not use duct. Equipment listed in ARI-240

Self-Contained Through-the-Wall Heat Pump: an all-electric heat pump that is self-contained in a wall unit and uses an air-to-refrigerant heat exchanger to extract heat from the heat source. A self-contained through-the-wall heat pump may or may not use duct. Equipment listed in ARI-240

Solar Heat Gain Coefficient (SHGC): the percentage of solar heat that is absorbed vs. reflected when it contacts a window

Split Heat Pump/AC System: an all-electric heat pump or air conditioning system consisting of two or more factory-made modules designed and rated to work together when assembled in the field: (A) an outdoor unit containing (1) the outdoor heat exchanger, (2) fan, (3) fan motor, (4) compressor, and (5) reversing valve (heat pump only); and (B) an indoor unit or air handler containing a (1) blower, (2) blower motor, (3) indoor heat exchanger, and (4) electric resistance heating element (heat pump only)

Stabilized Cellulose: stabilized cellulose is used most often in attic/roof insulation. It is applied with a very small amount of water to activate an adhesive. The adhesive reduces settling and decreases the amount of cellulose needed. This can prove advantageous at reducing the overall weight of the product on the ceiling wall board helping prevent possible sag. Stabilized cellulose is useful in horizontal applications such as attics. Installers often choose to use stabilized cellulose because the moisture controls the dust, and the product is less expensive

Stack Effect: occurs when a building is heated, and the warm air inside the building is less dense than the colder air outside. The inside air rises up and out of any holes in the upper portions of the envelope and this escaping air is replaced with outside air that enters through holes in the lower portion of the envelope

Thermal Boundary (or Thermal Envelope): the components of a building that form a surrounding boundary, separating the conditioned space of a dwelling from unconditioned space. The thermal envelope of a dwelling typically incorporates both an air barrier and insulation and is normally defined by the dwelling's insulated ceilings, floors, and wall areas, including the windows and doors in wall areas

Two-Part Foam: a foam product with two separate components that must be mixed on-site in the correct ratio, temperature, and pressure to produce foam of appropriate quality. Two-part foam can be either closed-cell or open-cell, and the R-value per inch will vary based on the foam's density

U-Factor (or U-Value): a measure of thermal transmittance; how fast heat moves through a material

Upgrade: an energy efficiency improvement installed in a dwelling by a QCN member

Unconditioned: an area or zone in a building that is not intentionally conditioned

Vapor Barrier: a material that has low vapor permeability that is used to reduce moisture migration through building components

Variable Capacity Air Conditioner: an air conditioner that incorporates a variable speed compressor, that adjusts its cooling output to closely match the amount of air conditioning that home needs at time of operation. This feature saves both electrical energy and reduces compressor wear. Equipment listed in ANSI/AHRI 1230

Variable Capacity Heat Pump: an all-electric heat pump that incorporates a variable speed compressor, that adjusts its heating and cooling output to closely match the amount of heating and/or air conditioning that home needs at time of operation. This feature saves both electrical energy and reduces compressor wear. A mini-split heat pump is a common type of variable capacity heat pump which is often installed without ducts or auxiliary backup heat. Equipment listed in ANSI/AHRI 1230

Vermiculite: vermiculite is a natural mineral that expands when rapidly heated. Expanded vermiculite is used in construction materials such as loose-fill insulation, acoustic finishes and spray-on insulation. Expanded vermiculite granules are shaped like small accordions and vary in color from silver/gold to gray/brown. Some varieties of vermiculite are contaminated with asbestos. Workplace exposure to vermiculite may be hazardous if it is contaminated with asbestos fibers

Wet Wall: a wet wall is a wall that has plumbing pipes running vertically through it to unconditioned space. These walls are often framed using higher dimension framing (e.g. 2-inch x 6-inch) or a double 2-inch x 4-inch stud wall. From the attic this wall is easy to locate. It is the one that the waste vent comes through

Wind Washing: reductions in R-value of insulation, or physical displacement of insulation material, caused by air movement through insulation

Zoned: defined areas within a dwelling where the design conditions and/or operating characteristics of the zone differ from adjoining areas in the same dwelling. Areas within a dwelling may have multiple zones whereby each is conditioned uniquely with respect to the other area (zones). Zoned areas typically each have their own thermostat and may be conditioned by a separate heating and cooling system