

Regulation GB – 2.0: Definitions and Abbreviations

Definitions

- 2.1 Active Solar Heating Systems that collect and absorb solar radiation, then transfer the solar heat directly to the interior space or to a storage system, from which the heat is distributed. There are two types of systems: liquid-based systems and air-based systems. If a system cannot provide adequate space heating, an auxiliary or back-up system provides the additional heat. Both air and liquid systems can supplement forced air systems.
- 2.2 Active Solar Power A solar electric (photovoltaic or "PV") system, not passive solar design, that converts the sun's energy into electricity for the home. It is usually done with PV panels installed on the roof.
- 2.3 Air-sealing Air-sealing is the practice of filling gaps, holes, or cracks in a building's envelope in an effort to tighten the home's pressure boundary. Air sealing is one of the most significant energy efficiency improvements you can make to your home. Air sealing will not just reduce energy costs; it will also improve your home's comfort and durability. Some common air-sealing products include latex or silicone caulk, expanding foam products, weather-stripping, and even dense-packed cellulose in exterior walls.
- 2.4 ASHRAE 62.2 A standard for residential mechanical ventilation systems established by the American Society of Heating, Refrigerating, and Air-Conditioning Engineers. Among other requirements, the standard requires a home to have a mechanical ventilation system capable of ventilating at a rate of 1 cfm for every 100 square feet of occupiable space plus 7.5 cfm per occupant.
- 2.5 Biodiversity The tendency in ecosystems, when undisturbed, to have a great variety of species forming a complex web of interactions. Human population pressure and resource consumption tend to reduce biodiversity dangerously; diverse communities are less subject to catastrophic disruption.

- 2.6 Bioremediation A process that uses biological organisms to clean up contaminated water or soil; often used in oil-spill cleanup.
- 2.7 Bioswale A landscape element, often a planted strip along a street or parking lot, for the purpose of capturing surface water runoff and filtering out silt and pollution before the storm water enters the drainage system or groundwater.
- 2.8 Blower Door A diagnostic tool designed to measure the air tightness of buildings and to help locate air leakage sites. A blower door consists of a calibrated fan for measuring an air flow rate and a pressure sensing device to measure the pressure created by the fan flow. The combination of pressure and fan flow measurements is used to determine the building air tightness. The air tightness of a building is useful knowledge when trying to increase energy conservation or decrease indoor air pollution or control building pressures.
- 2.9 Brownfield Abandoned or under-used industrial and commercial sites, sometimes characterized by environmental degradation and contamination, available for re-use.
- 2.10 Building Commissioning (Cx) The startup phase of a new or remodeled building. This phase includes testing and fine-tuning of the HVAC and other systems to assure proper functioning and adherence to design criteria. Commissioning also includes preparation of the system operation manuals and instruction of the building maintenance personnel.
- 2.11 Building Envelope The separation between the interior and exterior environment of a building. Usually consisting of the roof, doors, windows, foundation, and walls.
- 2.12 Building Pressurization The air pressure within a building relative to the air pressure outside. Positive building pressurization is usually desirable to avoid infiltration of unconditioned and unfiltered air. Positive pressurization is maintained by providing adequate outdoor makeup air to the HVAC system to compensate for exhaust and leakage.

- 2.13 Carbon Dioxide (CO₂) The most prevalent of the greenhouse gases. Emitted by burning fossil fuels. Naturally occurring from sources such as human and animal respiration, ocean-atmosphere exchange, and volcanic eruptions.
- 2.14 Carbon Calculator A tool to estimate a person's carbon emissions, based on how much energy and what kind of energy is used in daily activities. The result of the calculation is an estimated emission figure in terms of tons of CO₂ that is a person's Carbon Footprint.
- 2.15 Carbon Footprint An individual's carbon footprint is the direct effect one's actions and lifestyle have on the environment in terms of carbon dioxide emissions. This is usually estimated by using a Carbon Calculator. From our home electricity use, to travel, to our diet, to the clothes we wear, all of our actions involve emission of carbon dioxide and have direct or indirect impact in accelerating climate change.
- 2.16 Climate Change Also called climate destabilization or greenhouse effect, this term represents the adverse effects of greenhouse gasses on long term weather patterns.
- 2.17 Coefficient of Performance Energy-efficiency measurement of heating, cooling, and refrigeration appliances. COP is the ratio of useful energy output (heating or cooling) to the amount of energy put in, e.g., a heat pump with a COP of 10 puts out 10 times more energy than it uses. A higher COP indicates a more efficient device. COP is equal to the energy efficiency ratio (EER) divided by 3.415.
- 2.18 Commissioning A quality assurance process intended to confirm that all systems of a building—heat, air conditioning, electrical, plumbing, safety, security—are operating as intended by the building owner and designed by the architect and engineer.
- 2.19 Composting A process whereby biodegradable material (such as food waste or yard waste) is converted, in the presence of oxygen from the air, into a stable granular material which, applied to land, improves soil structure and enriches nutrient content.

- 2.20 CFL s Compact fluorescent light bulbs, which are more energy efficient than standard incandescent light bulbs and last longer.
- 2.21 Day Lighting Designing a building to take advantage of natural sunlight illumination.
- 2.22 Damaged or Lost Stream A stream bed may be lost (dry up) if too much water is taken from it or the stream's course has been changed to divert it for other uses, such as irrigation.
- 2.23 Daylight factor (DF) The ratio of daylight illumination at a given point on a given plane, from an obstructed sky of assumed or known illuminance distribution, to the light received on a horizontal plane from an unobstructed hemisphere of this sky, expressed as a percentage. Direct sunlight is excluded for both values of illumination. The daylight factor is the sum of the sky component, the external reflected component, and the internal reflected component. The interior plane is usually a horizontal work plane. If the sky condition is the CIE standard overcast condition, then the DF will remain constant regardless of absolute exterior illuminance.
- 2.24 Decibel (dB) Unit of sound level or sound-pressure level. It is ten times the logarithm of the square of the sound pressure divided by the square of reference pressure, 20 micro Pascals.
- 2.25 Degree-day Measure of how cold or warm a location is over a period of time relative to a base temperature, typically 65°F (although other base temperatures, such as 75°F, can be used for cooling). To calculate the number of heating degree-days (HDD) of a given day, average the maximum and minimum outdoor temperatures and subtract that from 65°F. The annual number of heating degree-days is a measure of the severity of the climate and is used to determine expected fuel use for heating. Cooling degree-days (CDD), which measure air conditioning requirements, are calculated by subtracting the average outdoor temperature from an indoor base temperature.

2.26 Demand controlled ventilation (DCV) CO2-based

A ventilation-control strategy in which the concentration of CO2 is the measured variable. This is controlled to a set point by modulating outdoor airflow. With this strategy, only human source contaminants are considered. CO2DCV will not comply with either procedure of ASHRAE Standard 62-1989.

2.27 Demand Limit Controller

The way the demand controller controls loads is called the load control strategy. It is the definition of each load's importance in relation to all other loads being controlled by the system. Generally, there are three load control strategies: priority (fixed), rotating or combination.

2.28 Double Pane Windows

Double or triple pane glass windows often contain argon, krypton, or other gases between panes to reduce heat flow and improve insulation.

2.29 Drought Tolerant Plants

Species of plants, shrubs and vines which generally do not require additional watering in order to thrive in their native habitats. Landscapes with drought tolerant plants usually require little or no watering.

2.30 Dual Flush Toilets

Toilets with two buttons for two flush options, one for liquid and another for solid waste. The button for liquid waste uses less water per flush.

2.31 Duct Blaster

A test that measures the air tightness of heating and cooling ducts.

2.32 Electric Thermostat Timer

Referred to as programmable thermostats. Programmable thermostats save energy by permitting occupants to set temperatures according to whether the house is occupied. These thermostats can automatically store and repeat settings daily with allowance for manual override. By eliminating manual setback, they allow the setting of more comfortable temperatures in the morning before occupants wake. Temperature setback can be

- adjusted for both heating and cooling seasons. Programmable thermostats can be set to adjust the temperature setting according to a user's schedule. These thermostats typically have a digital interface that allows more precise temperature control and a wider range of options or features.
- 2.33 Emissions Trading A system created by the Kyoto Protocol, which allows countries that are under-target on emissions to swap spare emissions with over-target countries with the goal of limiting carbon emissions worldwide.
- 2.34 Embodied energy Embodied Energy is the total energy sequestered from a stock within the earth in order to produce a specific good or service including extraction, manufacture, and transportation to market. Energy that goes into making a product; includes energy required for growth, extraction, and transportation of the raw material as well as manufacture, packaging, and transportation of the finished product. Embodied energy is often used to measure ecological cost.
- 2.35 Emissivity Amount of heat radiation emitted from a particular body or material. Emissivity is expressed in a fraction or ratio, with the lowest values indicating low emissivity and the highest indicating the high emissivity of flat black surfaces.
- 2.36 Energy Assessment A written report prepared by a qualified party evaluating energy usage, highlighting weak points in energy efficiency, and identifying cost-savings measures. A less rigorous process than an energy audit.
- 2.37 Energy Audit A special inspection performed to determine where there are energy inefficiencies in a home or building. A qualified tester uses methods and measurements that comply with industry standards and involves collection of detailed data and an engineering analysis. A written report should include recommendations and a detailed cost and savings analysis.

- 2.38 Energy-efficient Used to describe property or products that exhibit special features designed to save electrical and heat power — for example, special light fixtures or double-insulated windows.
- 2.39 Energy Efficient Appliances Products that use less energy than conventional models. The ENERGY STAR® label is a credible third-party certification of a product's energy efficiency. Consumers can also refer to the FTC's Energy Guide label, a yellow label affixed to most appliances today. Clothes washers, dishwashers, refrigerators, freezers, water heaters, window air conditioners, central air conditioners, furnaces, boilers, heat pumps, and pool heaters can get the label. Televisions, ranges, ovens, clothes dryers, humidifiers, and dehumidifiers do not receive such labels.
- 2.40 Energy Efficient Lights The fixture or the type of bulbs used in a fixture. Compact fluorescent lights (CFLs) and light emitting diodes (LEDs) are becoming more common in homes and buildings and they are more efficient and last longer than incandescent bulbs.
- 2.41 Energy Recover Ventilator A type of ventilation system wherein the heated (or cooled) air being vented out of the home is used to heat (or cool) the supply air being pulled in from outdoors. The approach decreases the amount of energy needed to heat or cool the supply air.
- 2.42 Evapotranspiration The natural atmospheric processes of water entering the atmosphere after plants and soil have soaked up the moisture.
- 2.43 Fenestration Any opening, or arrangement of openings, in a building (normally filled with glazing) that admits daylight and any devices in the immediate proximity of the opening that affect light distribution (such as baffles, louvers, draperies, overhangs, light shelves, jambs, sills, and other light-diffusing materials). Fiber optics. Design and construction of windows and doors.
- 2.44 Fertilizer management plan Managing the amount, source, placement, form and timing of the application of nutrients and soil amendments so over application and loss of nutrients to surface and ground water does not occur.

- 2.45 Floodplain Is a land area adjacent to a river, stream, lake, estuary, or other water body that is subject to flooding. This area, if left undisturbed, acts to store excess floodwater and dissipate the destructive energy of a flood.
- 2.46 Flush out A process used to remove VOCs from a building by operating the building's HVAC system at 100 percent outside air for a specific period of time.
- 2.47 Fly ash The fine ash waste collected from the flue gases of coal combustion, smelting, or waste incineration.
- 2.48 Formaldehyde A gas used widely in production of adhesives, plastics, preservatives, and fabric treatments and commonly emitted by indoor materials that are made with its compounds. It is highly irritating if inhaled and is now listed as a probable human carcinogen.
- 2.49 Fresh Air Ventilation A mechanical ventilation component of the HVAC system that draws in fresh air rather than recirculation and filtering air within a home.
- 2.50 Geothermal Is a renewable technology. Obtaining heat from underground hot water or, more commonly, employing a heat pump to warm or cool air by utilizing the constant temperature of the earth.
- 2.51 Glazing When referring to windows or doors, the transparent or translucent layer that transmits light. High-performance glazing may include multiple layers of glass or plastic, low-e coatings, and low-conductivity gas fill.
- 2.52 Green Building: Also known as sustainable building or environmental building, this definition varies depending on the agency or group. Generally it means to construct a building to the highest environmental standards by minimizing the use of energy, water and materials. A green building, for example, might have skylights, recycled building materials and solar panels.

2.53 Green Infrastructure

An adaptable term used to describe an array of products, technologies, and practices that use natural systems – or engineered systems that mimic natural processes – to enhance overall environmental quality and provide utility services. As a general principal, Green Infrastructure techniques use soils and vegetation to infiltrate, evapotranspire, and/or recycle storm water runoff.

2.54 Greenhouse Effect

The Greenhouse Effect is a natural warming process of the earth. When the sun's energy reaches the earth some of it is reflected back to space and the rest is absorbed. The absorbed energy warms the earth's surface which then emits heat energy back toward space as long wave radiation. This outgoing long wave radiation is partially trapped by greenhouse gases such as carbon dioxide, methane and water vapor which then radiate the energy in all directions, warming the earth's surface and atmosphere. Without these greenhouse gases the earth's average surface temperature would be about 33 degrees Celsius cooler.

2.55 Greenhouse Gases (GHG)

Some Greenhouse Gases (or GHG) occur naturally in the atmosphere, while others result from human activities. Naturally occurring greenhouse gases include water vapor, carbon dioxide, methane, nitrous oxide, and ozone. Certain human activities, however, add to the levels of most of these naturally occurring gases. Carbon dioxide is released to the atmosphere when solid waste, fossil fuels (oil, natural gas, and coal), and wood and wood products are burned. Methane is emitted during the production and transport of coal, natural gas, and oil. Methane emissions also result from the decomposition of organic wastes in municipal solid waste landfills, and the raising of livestock. Nitrous oxide is emitted during agricultural and industrial activities, as well as during combustion of solid waste and fossil fuels. Very powerful greenhouse gases that are not naturally occurring include hydro fluorocarbons (HFCs), per fluorocarbons (PFCs), and sulfur hexafluoride (SF6), which are generated in a variety of industrial processes. Emitted gases that are trapped in the atmosphere and contribute to climate change.

- 2.56 Green Roofs
Rooftops planted with vegetation. Intensive green roofs have thick layers of soil (6 to 12 inches or more) that can support a broad variety of plant or even tree species. Extensive roofs are simpler green roofs with a soil layer of 6 inches or less to support turf, grass, or other ground cover. They provide evaporative cooling, convert carbon dioxide to oxygen, and reduce storm water runoff.
- 2.57 Green Seal
Independent, nonprofit organization that certifies a variety of products as environmentally responsible based on established criteria. Certified products include coffee filters, air chillers, paints and coatings, papers and newsprint, various cleaning products and services, windows and doors, and lodging properties.
- 2.58 Green Guard
Third-party certification program that identifies building products and materials which produce relatively low levels of emissions. Green Guard is administered by the nonprofit Green Guard Environmental Institute (GEI). Other GEI programs include the Children & Schools standard, which addresses emission standards for educational facilities, and the Green Guard for Building Construction Program, a mold risk-reduction program that certifies the design, construction, and ongoing operations of new multifamily and commercial properties.
- 2.59 Green walls
Walls, either free-standing or part of a building, that are partially or completely covered with vegetation and, in some cases, soil or an inorganic growing medium. They are also referred to as living walls, biowalls, or vertical gardens.
- 2.60 Green washing
A term playing off "whitewash" that is used to describe projects that are labeled as energy-efficient and sustainable when they're really not. It's also a term sometimes used to describe the distribution of misleading information by a business or an organization to conceal its abuse of the environment
- 2.61 Grey Field
Previously developed properties that are not contaminated. They are usually, but not exclusively, former commercial properties that may be underutilized, derelict or vacant.

- 2.62 Grey Water Waste water from sinks and washing machines, used to flush toilets or irrigate landscaping.
- 2.63 Grey Water System Wastewater from bathtubs, shower drains, sinks, washing machines, and dishwashers. Grey water can be recycled for irrigation, toilets, and exterior washing, and such recycling conserves water. Incorporating plumbing systems that separate grey water from black water (toilet water) can result in water cost savings.
- 2.64 Ground-Source Heat Pump Home heating and cooling system that relies on the mass of the earth as the heat source and heat sink. Temperatures underground are relatively constant. Using a ground-source heat pump, heat from fluid circulated through an underground loop is transferred to and/or from the home through a heat exchanger. The energy performance of ground-source heat pumps is usually better than that of air-source heat pumps; ground-source heat pumps also perform better over a wider range of above-ground temperatures.
- 2.65 Groundwater Recharge Recharge is the process by which ground water is replenished. A recharge area is where water from precipitation is infiltrated downward to an aquifer. Most areas, unless composed of solid rock or covered by development, allow a certain percentage of total precipitation to be infiltrated. Areas which transmit the most precipitation are often referred to as "high" or "critical" recharge areas. Recharge is promoted by natural vegetation cover, flat topography, permeable soils, a deep water table and the absence of confining beds.
- 2.66 Halocarbon Class of man-made chemicals, including chlorofluorocarbons (CFCs), hydrochlorofluorocarbons (HCFCs), and hydrofluorocarbons (HFCs), whose heat-trapping properties are among the most damaging of the greenhouse gases. This, coupled with their tendency to remain in the atmosphere for hundreds of years, has resulted in limits on their use. Halocarbons are most commonly used in refrigeration, air conditioning, and

electrical systems, and as blowing agents in some foam insulation products.

2.67 Healthy Soils

Soil performs valuable functions: nourishing plants, absorbing and cleaning storm water. These functions are often degraded during development when soil is removed or compacted. No matter what type of soil you have the addition of organic matter will work wonders for its health. Organic matter is plant and animal residues in varying forms of decomposition. It will replenish the nutrients in your soil and improve its texture. You may have heard countless times about adding your leftovers and glass clippings to a compost heap. This is a great idea as your compost is the best form of organic matter. Compost in an advanced stage of decomposition (dark and without smell) is magic for your soil. It encourages microorganism activity causing soil particles to clump together and form aggregates. The aggregates allows for spaces in the soil therefore increasing its drainage. This is especially beneficial for clay soils, which have poor drainage. Other forms of organic matter are animal manure and peat moss.

2.68 Heat-Island Effect

As cities replace natural landscaping with streets, buildings and other infrastructure, the average ambient temperatures within these areas begin to rise, as much as 10 degrees F higher than in less developed rural areas. This increases the need for cooling energy; can exacerbate pollution problems; and may contribute to the problem of global warming. Heat islands can be effectively reduced by shading streets with trees and improving the urban forest overall. Ironically, heat islands can be beneficial in cold climates in the winter by reducing heating demands; however, the overall effect is much more on the negative side

2.69 Impervious Surfaces

Surfaces where water cannot infiltrate back into the ground such as roads, sidewalks, driveways, parking lots and rooftops that are covered by impenetrable materials. Soils compacted by urban development are also highly impervious.

2.70 Indoor Air Quality (IAQ)

A measurement of the overall cleanliness of the air within a building or home. According to the U.S. Environmental Protection Agency and National Institute of Occupational Safety and Health, the definition of good indoor air quality includes (1) introduction and distribution of adequate ventilation air; (2) control of airborne contaminants; and (3) maintenance of acceptable temperature and relative humidity. According to ASHRAE Standard 62-1989, indoor air quality is defined as air in which there are no known contaminants at harmful concentrations as determined by cognizant authorities and with which a substantial majority (80 percent or more) of the people exposed do not express dissatisfaction.

2.71 Indoor Air Quality Procedure

One of two procedures listed in ASHRAE Standard 62-1989 to determine appropriate ventilation rates for buildings. The IAQ Procedure provides a method of measuring and controlling outdoor airflow in order to keep harmful substances diluted to acceptable levels. It is inherently a more rigorous strategy than the Ventilation Rate Procedure because it considers all contaminants. Implementation of this procedure is difficult because of monitoring costs and insufficient knowledge about acceptable concentration levels for the thousands of combinations of potential indoor contaminants.

2.72 Infiltration

Infiltration is the unintentional or accidental introduction of outside air into a building, typically through cracks in the building envelope and through use of doors for passage. Infiltration is sometimes called air leakage. Infiltration is caused by wind, building pressurization and by air buoyancy forces known commonly as the stack effect.

2.73 Invasive Species -

An invasive non-native plant is one that is not natural to the ecosystem under consideration, and when introduced cause or are likely to cause harm to the economy, to the environment, or to human health. Invasive plants can be trees, shrubs, vines, grasses, or flowers, and they can reproduce rapidly by roots, seeds, shoots, or all three.

- 2.74 Irradiance (E) The amount (or density) of light energy incident on a surface.
- 2.75 Kyoto Protocol A United Nations agreement signed in Kyoto, Japan in the 1990s. The agreement set country-targets for reduction of carbon emissions and created a method for offsetting (trading) carbon emissions.
- 2.76 LEED Leadership in Energy & Environmental Design (LEED) Green Building Rating System™: is a voluntary, consensus-based standard to support and certify successful green building design, construction and operations. For a project to become LEED certified it is required that the project follows energy efficiency, environmentally conscious methods, as defined by the LEED Green Building Rating System, Version 2.1, November 2002, in the following areas:
1. Sustainable Sites (SS)
 2. Water Efficiency (WE)
 3. Energy & Atmospheric (EA)
 4. Materials & Resources (MR)
 5. Indoor Environmental Quality (EQ)
- 2.77 Leakage Area Leakage area estimates are a useful way to visualize the cumulative size of all leaks or holes in the building enclosure. Estimated leakage areas can also be used in infiltration models to estimate natural infiltration rates (i.e. the air change rate under natural weather conditions). In order to accurately estimate leakage areas, it is best to conduct the blower door test over a wide range of building pressures (e.g. 60 Pa to 15 Pa). There is variety of standard calculation methods used to calculate leakage areas.
- 2.78 Life-Cycle The consecutive, interlinked stages of a product, beginning with raw materials acquisition and manufacture and continuing with its fabrication, manufacture, construction, and use, and concluding with any of a variety of recovery, recycling, or waste management options.

2.79 Life-Cycle Analysis (LCA)

Life-Cycle-Analysis or Assessment (or LCA) is the study of the environmental impacts of a product or service over its entire life cycle, from the extraction of raw materials, through to the consumption and final disposal of the product. It is a concept and a method to evaluate the environmental effects of a product or activity holistically, by analyzing the entire life cycle of a particular product, process, or activity. Life-cycle assessment is typically described in three complementary phases: inventory analysis, impact assessment, and improvement assessment.

2.80 Life-Cycle Cost (LCC)

The costs accruing throughout the service life of a material. Life-cycle costs address the capital costs involved in production, maintenance, and disposal, and can also include other environmentally related capital costs and societal costs.

2.81 Light Pollution

Light pollution comes from many sources, but generally from unshielded lighting that allows light on a site to escape. Shielding cannot effectively reduce some lighting, such as parking-lot or street lights that reflect off structures and bounce light away from the site. However, simple hooding of the "naked" light source directing the light to the ground or limiting its outward influence can significantly reduce light pollution.

2.82 Light shelf

A horizontal device positioned (usually above eye level) to reflect daylight onto the ceiling and to shield direct sunlight from the area immediately adjacent to the window. The light shelf may project into the room, beyond the exterior wall plane, or both. The upper surface of the shelf may be specular or nonspecular but should be highly reflective (that is, having 80 percent or greater reflectance).

2.83 Louver

A series of baffles used to shield a light source from view at certain angles or to absorb unwanted light. The baffles are usually arranged in a geometric pattern.

2.84 Low-e

Low-emissivity coating. Very thin metallic coating on glass or plastic window glazing that permits most of the sun's short-wave (light) radiation to enter, while blocking up to 90% of the long-

	wave (heat) radiation. Low-e coatings boost a window's R-value and reduce its U-factor.
2.85 Low-e Coating	Very thin metallic coating on glass or plastic window glazing that reduces heat loss through the window; the coating emits less radiant energy (heat radiation), which makes it, in effect, reflective to that heat; boosts a window's R-value and reduces its U-factor.
2.86 Low Flow Toilet	A toilet that combines efficiency and high performance. Design advances enable these toilets to save water with no trade-off in flushing power. Such toilets often have the EPA's Water Sense label.
2.87 Low Flow Fixture	A faucet with aerator installed to reduce the flow of water but not reduce water pressure.
2.88 Lumen (lm)	The luminous flux emitted (within a unit solid angle or one steradian) by a point source having a uniform luminous intensity of one candela.
2.89 Lumen method (day lighting)	A method of estimating the interior illuminance from window day lighting at three locations within a room, based on empirical studies.
2.90 Luminaire	A complete electric lighting unit, including housing, lamp, and focusing and/or diffusing elements; informally referred to as fixture.
2.91 Luminance	Luminous intensity of a surface in a given direction.
2.92 Luminous flux	The rate of flow of light, analogous to the rate of flow of a fluid.
2.93 Mixed air	The mixture of outdoor air and return air in an HVAC system. When filtered and conditioned, mixed air becomes supply air.
2.94 Native vegetation	Native plants are those that were growing naturally in an area.
2.95 Naturescaping	A landscaping method that uses native plants to conserve and create natural habitats that provides nurturing environments for wildlife.

- 2.96 Net metering A method of gaining a credit for excess electricity produced by a consumer, often by means of a wind turbine or solar paneling.
- 2.97 Ozone depletion Destruction of the earth's ozone layer by the photolytic breakdown of chlorine and/or bromine containing compounds (chlorofluorocarbons or CFCs) which catalytically decompose ozone molecules. Commonly used as refrigerants, CFCs have been found to damage the stratospheric ozone layer, creating holes and allowing harmful ultraviolet radiation to leak through.
- 2.98 Passive solar design Designing a buildings architectural elements to collect, store, and distribute solar resources for heating, cooling, and day lighting.
- 2.99 Permeable paving "Permeable" is a term used to describe paving methods for roads, parking lots and walkways that allow the movement of water and air around the paving material. Although some porous paving materials appear nearly indistinguishable from nonporous materials, their environmental effects are qualitatively different. Whether porous asphalt, concrete, paving stones or bricks, all these pervious materials allow precipitation to percolate through areas that would traditionally be impervious and instead infiltrates the storm water through to the soil below.
- 2.100 Photovoltaic (PV) This system captures light from the sun and converts it into electricity through solar panels usually installed on roofs.
- 2.101 Porous paving A paving material that allows rainfall to percolate through and infiltrate the ground, rather than contributing to storm water runoff; can be asphalt, concrete, or porous grid paver
- 2.102 Post-Industrial Recycled Content Post Industrial Recycled Content is waste that is produced during the manufacturing process that is recycled back into the industrial process. In many cases, industry was already recycling this material back into the process and thus post industrial recycled content is not as significant as post consumer. See post consumer recycled content.

2.103 Pre-Consumer Recycled Material

A material that is removed from source gathering or production processes (such as scrap, breakage, or returned inventory) and returned to the original manufacturing process or an alternative process. Pre-consumer recycled materials have not yet reached a consumer for the intended use.

2.104 Programmable Thermostat

A thermostat that allows homeowners to set the temperature at different levels at different times of day. For example, in winter, it could be set to be colder while occupants sleep and warmer as occupants awaken.

2.105 Rain gardens

Gardens that act like a native forest by collecting, absorbing, and filtering storm water runoff from roof tops, driveways, patios, and other areas that don't allow water to soak in. Rain gardens are designed as shallow depressions that: can be shaped and sized to fit your yard, are constructed with soil mixes that allow water to soak in rapidly and support healthy plant growth, and can be landscaped with a variety of plants to fit the surroundings. Rain gardens provide multiple benefits, including: Filter oil and grease from driveways, pesticides and fertilizers from lawns, and other pollutants before they reach the storm drain and eventually streams, wetlands, lakes and marine waters. Reduce flooding on neighboring property, overflow in sewers, and erosion in streams by absorbing water from impervious surfaces. Provide habitat for beneficial insects and birds. Increase the amount of water that soaks into the ground to recharge local groundwater.

2.106 Recycled material

Material that would otherwise be destined for disposal but is diverted or separated from the waste stream, reintroduced as material feed-stock, and processed into marketed end-products.

2.107 Reflectance

The ratio of reflected light flux to incident light flux.

2.108 Renewable energy

Energy generated from natural resources—such as sunlight, wind, water and geothermal heat which are all naturally replenished. While most renewable energy projects and production is large-

	<p>scale, renewable technologies are also suited to small off-grid applications, sometimes in rural and remote areas.</p>
2.109 Renewable Energy Sources	<p>Materials and natural resources that can be replaced, such as wind, solar, or hydroelectric power.</p>
2.110 Retrofitting	<p>The process of rethinking a development plan after completion to include newer features, such as green or eco-friendly features.</p>
2.111 Riparian	<p>A riparian zone or riparian area is the interface between land and a stream. Riparian zones may be natural or engineered for soil stabilization or restoration. These zones are important natural biofilters, protecting aquatic environments from excessive sedimentation, polluted surface runoff and erosion. They supply shelter and food for many aquatic animals and shade that is an important part of stream temperature regulation. When riparian zones are damaged by construction, agriculture or silviculture, biological restoration can take place, usually by human intervention in erosion control and revegetation.</p>
2.112 Sealed Ducting	<p>A way to save energy and avoid moisture damage by repairing improperly installed ducts or by sealing the seams in ductwork.</p>
2.113 Seasonal Energy Efficiency Ratio	<p>Seasonal Energy Efficiency Ratio (SEER) is the total cooling output (in BTU) of an air conditioner or heat pump during its normal annual usage period divided by its total energy input (in Watt-hours) during the same period. The units of SEER are Btu/W·h. SEER measures how efficiently a residential central cooling system operates over an entire cooling season. The relationship between SEER and EER depends on location, because equipment performance varies with climate factors like air temperature and humidity.</p>
2.114 Seasonal pools	<p>Also known as vernal pools, temporary ponds, woodland pools, ephemeral wetlands, among other names, are isolated aquatic habitats that undergo periodic drying. Melting snow, run-off, and spring rains fill these small depressions to their maximum water</p>

levels in early spring ("vernal" is derived from the Latin word for spring). These same pools may completely dry out by late summer. The isolation of seasonal pools (lack of permanent surface water connections to other water bodies) and their periodic drying keep them free from populations of predatory fish. This reduced-predator environment is essential for the breeding success of many amphibian species in mid-Atlantic and northeastern United States. Seasonal pools support local and regional biodiversity by serving as important breeding, nursery, and feeding grounds for wildlife, including amphibians, invertebrates, turtles, snakes, mammals, and birds.

2.115 Sequestration

The process by which carbon dioxide is removed from the atmosphere by plants.

2.116 Solar Heat

Active solar space-heating systems consist of collectors that collect and absorb solar radiation combined with electric fans or pumps to transfer and distribute that solar heat. Active systems also generally have an energy-storage system to provide heat when the sun is not shining. The two basic types of active solar space-heating systems use either liquid or air as the heat-transfer medium in their solar energy collectors.

2.117 Storm Water Management

Storm water management is the mechanism for controlling storm water runoff for the purposes of reducing downstream erosion, water quality degradation, and flooding and mitigating the adverse effects of changes in land use on the aquatic environment. Storm water management facilities are those facilities, including but not limited to, storm water retention and detention ponds and BMPs, which retain water for a period of time to control runoff and/or improve the quality (i.e., by reducing the concentration of nutrients, sediments, hazardous substances and other pollutants) of storm water runoff.

2.118 Sustainable

Sustainability, in a general sense, is the capacity to maintain a certain process or state indefinitely. In an ecological sense it is a means of shaping civilization and human activity so that society,

its members and its economies are able to meet their needs and express their greatest potential now, while preserving and maintaining biodiversity and natural ecosystem productivity for the very long term.

2.119 Sustainable Flooring

Bamboo, cork or flooring that is made from reclaimed or rapidly renewable sources.

2.120 Thermal Comfort

Human thermal comfort is defined by ASHRAE as the state of mind that expresses satisfaction with the surrounding environment (ASHRAE Standard 55). Maintaining thermal comfort for occupants of buildings or other enclosures is one of the important goals of HVAC design engineers. Thermal comfort is affected by heat conduction, convection, radiation and evaporative heat loss. Thermal comfort is maintained when the heat generated by human metabolism is allowed to dissipate thus maintaining thermal equilibrium with the surroundings. Any heat gain or loss beyond this generates a sensation of discomfort. It has been long recognized that the sensation of feeling hot or cold is not just dependent on air temperature alone.

2.121 Tight Buildings

Buildings that are designed to let in minimal infiltration air in order to reduce heating and cooling energy costs. In actuality, buildings typically exhibit leakage that is on the same order as required ventilation; however, this leakage is not well distributed and cannot serve as a substitute for proper ventilation.

2.122 Topsoil

It is the uppermost layer of soil, usually the top 2 inches (5.1 cm) to 8 inches (20 cm). It has the highest concentration of organic matter and microorganisms and is where most of the Earth's biological soil activity occurs. Plants generally concentrate their roots in and obtain most of their nutrients from this layer. A major environmental concern known as topsoil erosion occurs when the topsoil layer is blown or washed away. Without topsoil, little plant life is possible. It takes approximately 100 years for 1 inch (2.5 cm) of topsoil to be deposited, if there is the correct ratio of organic material, inorganic material, and moisture.

2.123 U-factor	Measure of the heat conducted through a given product or material—the number of British thermal units (Btus) of heat that move through a square foot of the material in one hour for every 1 degree Fahrenheit difference in temperature across the material (Btu/ft ² °F hr). U-factor is the inverse of R-value.
2.124 VOC:	Volatile organic compounds are carcinogens found in paint, finishes, synthetic foams, fabrics and stains. Most labels should indicate if something has low or zero
2.125 Waste Management Plan	Plan that addresses the collection and disposal of waste generated during construction or renovation, usually including the collection and storage of recyclable materials.
2.126 Wetlands	Land that provide a multitude of ecological, economic and social benefits. They provide habitat for fish, wildlife and a variety of plants. Wetlands are nurseries for many fish of commercial and recreational importance. Wetlands are also important landscape features because they hold and slowly release flood water and snow melt, recharge groundwater, act as filters to cleanse water of impurities, recycle nutrients, and provide recreation and wildlife viewing opportunities.
2.127 Window-to-Floor Ratio	The ratio of total, unobstructed window glass area to total floor area served by the windows, expressed as a percentage. This value can also be further subdivided by solar orientation (such as south-facing window-to-floor ratio).
2.128 Work Plane	The plane at which work is usually done and on which the illuminance is specified and measured. Unless otherwise indicated, this is assumed to be a horizontal plane, 30 inches (0.76 meter) above the floor.
2.129 Xeriscape	Xeriscaping is derived from the Greek word "xeros", meaning "dry" and combined with "landscape", xeriscape means gardening with less than average water. A trademarked term referring to water-efficient choices in planting and irrigation design. It refers to

seven basic principles for conserving water and protecting the environment. These include: (1) planning and design; (2) use of well-adapted plants; (3) soil analysis; (4) practical turf areas; (5) use of mulches; (6) appropriate maintenance; and (7) efficient irrigation. A landscaping method used in arid areas that incorporates native plants that can tolerate infrequent watering.

2.130 Zenith

The point on the skydome directly overhead, the 90-degree solar altitude angle.

2.131 Zero Water Urinal

This wall-mounted urinal uses virtually no running water, with the exception of an occasion servicing to clean the unit. The units rely on simple physics: Urine has a specific gravity that is greater than a special sealing liquid. Several inches of the liquid are used to create a trap seal allowing the urine to flow into the system. The super slick surfaces do not allow material to remain behind and thus reduces odor and maintenance. The obvious advantage is a significant reduction in water usage over long periods of time. A disadvantage to steel plumbing is a build-up of salts on the pipe interiors, increasing corrosion. Careful maintenance schedules must be followed to keep systems working properly.

Abbreviations

ACH	Air changes (usually per hour is quoted at some pressure, e.g. 6.4ACH@50Pa)
AD	Approved Document [Building Regulations]
AGW	Anthropogenic Global Warming
A	Ampere
AFV	Alternative-Fueled Vehicle: e.g., hybrid-electric, electric, natural-gas, bio-diesel and fuel-cell
AHU	Air Handling Unit
ANSI	American National Standards Institute
ASHRAE	American Society of Heating, Refrigeration, and Air-conditioning Engineers, Inc.
ASTM	American Society for Testing Materials
ASHP	Air Source Heat Pump
BIPV	Building Integrated Photovoltaics: e.g., integrated roof, spandrels, glazing, or shading devices
BMP	Best Management Practice
BOD	Basis of Design
BRE	Building Research Establishment
BREEAM	Building Research Establishment Environmental Assessment Model
BS	British Standard
BSRIA	Building Services Research and Information Association
CBECs	Commercial Building Energy Consumption Survey
CFCs	Chlorofluorocarbons: ozone-depleting constituent of the most widely used
CFM	Cubic Feet per Minute
CFL	Compact Fluorescent Light
CH	Central heating
CHP	Combined Heat and Power
CIBSE	Chartered Institute of Building Services Engineers

CO2	Carbon Dioxide
CoP	Coefficient of performance (term used to explain the performance of heat pumps)
CSH	Code for Sustainable Homes
CEC	California Energy Commission
CFR	Code Federal Regulation
CRI	Carpet and Rug Institute
CRS	Center for Resource Solutions
ECMs	Energy Conservation Measures, as in those tracked in support of measurement and verification
EER	Energy Efficiency Ratio (used to rate air conditioners)
EPA	U.S. Environmental Protection Agency
EPS	Expanded Polystyrene [Insulation]
ETS	Environmental Tobacco Smoke, includes that transported between spaces by ventilation systems
FSC	Forest Stewardship Council
FTE	Full Time Equivalent
GBCI	Green Building Certification Institute
GPM	Gallons per Minute
GS	Green Seal
GWP	Global Warming Potential: rating of a gaseous substance's contribution to greenhouse effects
HCFC	Hydrochlorofluorocarbon (ozone destroying gas which is still used in some Insulation)
HFC	Hydrofluorocarbon - replacement refrigerant with zero ODP
HVAC	Heating, Ventilation, and Air-Conditioning
HVAC&R	Heating, Ventilation, Air Conditioning, and Refrigerants
IAQ	Indoor Air Quality with respect to human occupancy of a building

IEQ	Indoor Environmental Quality: encompasses
IESNA	Illuminating Engineering Society of North America
IPLV	Integrated Part Load Value: chiller efficiency including part-load operation for a given duty cycle
ISO	International Organization for Standardization
kg	kilogram
kW	Kilowatts
kWh	Kilowatthours
LAV	Lavatory
LCA	Life-Cycle Assessment: a full accounting of a material's "cradle-to-grave" environmental impacts
LCBP	Low Carbon Building Programme
LCC	Life-Cycle Cost
LCGWP	Life-Cycle Global Warming Potential
LCODP	Life-Cycle Ozone Depletion Potential
LED	Light Emitting Diode
LEED	Leadership in Energy Efficient Design - US efficient building program for mainly commercial buildings
LPD	Lighting Power Density
Lr	Refrigerant Leakage Rate
LNR	Local Nature Reserve
LZC	Low or Zero Carbon
m	metre (metric measurement)
MEP	Mechanical, Electrical, and Plumbing
MERV	Minimum Efficiency Reporting Value: a measure of the effectiveness of air filtration media
MSDS	Material Safety Data Sheet: provides essential information on composition, hazards, & precautions

M&E	Mechanical & Electrical
MDF	Medium Density Fibreboard
MHRV	Mechanical Heat and Recovery Ventilation
NBI	New Building Institute
NC	New Construction
NFRC	National Fenestration Rating Council
NOx	Nitrogen Oxides or Oxides of Nitrogen (E.g. NO, NO2)
NPDES	National Pollutant Discharge Elimination System
ODP	Ozone Depleting Potential
O&M	Operations and Management
OPR	Owner Project Requirements
OSA	Outside Air
PM	Particulate Matter
PMV	Predicted Mean Vote
PPM	Parts Per Million
PV	Photovoltaic Solar Panels
PVC	Polyvinylchloride
RA	Return Air
Rc	Refrigerant Charge
REC	Renewable Energy Certificate
RH	Relative Humidity
SA	Supply Air
SBIC	Sustainable Building Industry Council
SCAQMD	South Coast Air Quality Management District

SEER	Seasonal Energy Efficiency Ratio (the above corrected for an idealized cooling season)
SHGC	Solar Heat Gain Coefficient: the fraction of solar radiation admitted through a particular glazing
SI	System International
SMACNA	Sheet Metal and Air Conditioning National Contractors Association
SO ₂	Sulphur Dioxide
SRI	Solar Reflectance Index
TSS	Total Suspended Solids: particles too small or light to be removed from a liquid by gravity settling
TP	Total Phosphorous: phosphates, polyphosphates, and orthophosphates in storm water
TVOC	Total Volatile Organic Compounds, see VOCs
USDA	United States Department of Agriculture
USGBC	United States Green Building Council
VAV	Variable Air Volume: ventilation system configuration differentiated from Constant Air Volume
VOCs	Volatile Organic Compounds: potentially hazardous substances omitted as a gas from certain solids and liquids.
WC	Water Closet
ZEV	Zero Emissions Vehicle (minimum energy star rating of 40)