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Standard Terminology for Sustainability Relative to the Performance of Buildings¹

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1. Scope*

1.1 This terminology² consists of terms and definitions pertaining to sustainable development; and, in particular to sustainability relative to the performance of buildings.

1.2 The purpose of this terminology is to provide meanings and explanations of terms applicable to sustainable development. In the interest of common understanding and standardization, consistent word usage is encouraged to help eliminate the major barrier to effective technical communication.

1.3 It is recommended that terms used only within an individual standard, and having a meaning unique to that standard, be defined or explained in the terminology section of that individual standard.

1.4 Certain standard definitions herein are adopted from other sources. Each is an exact copy. The source is identified at the right margin following the definition, and is listed in Section 2.

1.5 Terms are listed in alphabetical sequence. Compound terms appear in the natural spoken order.

2. Referenced Documents

2.1 ASTM Standards:³

D 1356 Terminology Relating to Sampling and Analysis of Atmospheres

E 631 Terminology of Building Constructions

E 833 Terminology of Building Economics

E 943 Terminology Relating to Biological Effects and Environmental Fate

2.2 ISO Standard:⁴

ISO 14040 Life Cycle Assessment—Principles and Framework

¹ This terminology is under the jurisdiction of ASTM Committee E60 on Sustainability and is the direct responsibility of Subcommittee E60.01 on Buildings and Construction.

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² Boldfaced terms are defined in this terminology.

³ For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

⁴ Available from American National Standards Institute (ANSI), 25 W. 43rd St., 4th Floor, New York, NY 10036, http://www.ansi.org.

3. Terminology

3.1 Definitions:

alternative agricultural products, *n*—bio-based industrial products (non-food, non-feed) manufactured from agricultural materials and animal by-products.

alternative energy, *n*—see **renewable energy**.

bioaccumulation, *n*—the net accumulation of a substance by an organism as a result of uptake from all environmental sources. **(E 943)**

biobased products, *n*—products fabricated from alternative agricultural materials and forestry materials, or both.

biodegradable, *adj*—capable of decomposing under natural conditions into elements found in nature.

biodiversity, *n*—the variability among living organisms from all sources including: terrestrial, marine, and other aquatic ecosystems and the ecological complexes of which they are a part; this includes diversity within species, between species and of ecosystems.

biological control agents, *n*—living organisms used to eliminate or regulate the population of other living organisms.

biological diversity, *n*—see **biodiversity**.

biomagnification, *n*—the increase in tissue concentration of poorly depurated materials in organisms along a series of predator-prey associations, primarily through the mechanism of dietary accumulation. **(E 943)**

biomass, *n*—(1) All living material in a given area. (2) Any material which is or was a living organism or excreted from a microorganism.

DISCUSSION—It often refers to vegetation.

building, *n*—(1) A shelter comprising a partially or totally enclosed space(s), erected by means of planned forces of forming and combining materials. (2) The act or process of construction. **(E 631)**

building performance, *n*—the behavior in service of construction as a whole, or of the building components. **(E 631)**

building related illness, BRI, *n*—diagnosable illness of which cause and symptoms can be directly attributed to a specific pollutant source within a building (for example, Legionnaire's disease, hypersensitivity, pneumonitis). BRI differs from sick building syndrome (SBS) conditions because the

*A Summary of Changes section appears at the end of this standard.

symptoms of the disease persist after leaving the building,
unlike SBS where the occupant experiences relief shortly

after leaving the building.

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carrying capacity, *n*—(1) The theoretical maximum population of a biological organism that an ecosystem can sustain indefinitely.

DISCUSSION—While the existence of a carrying capacity for a given species in a given ecosystem is commonly recognized, the specific number or range established as the carrying capacity is often debated.

cogeneration, *n*—the simultaneous production of electrical or mechanical energy (power) and useful thermal energy from a single energy stream, such as oil, coal, natural or liquefied gas, biomass, or solar.

compost, *n*—the stable humus material that is produced from a composting process.

composting, *v*—the controlled biological decomposition of organic material in the presence of air to form a humus.

contaminant, *n*—a physical, chemical, biological, or radiological substance or matter that has an adverse effect on air, water, or soil.

criterion, *n*—an established precedent, rule, measure, norm, or code upon which a decision may be based. **(E 631)**

deconstruction, *n*—disassembly of buildings for the purpose of recovering materials.

ecological impact, *n*—the effect that an activity has on living organisms, their non-living (abiotic) environment, and the ecosystem.

ecological indicator, *n*—a characteristic of an ecosystem that is related to, or derived from, a measure of biotic or abiotic variable, that can provide quantitative information on ecological structure and function. An indicator can contribute to a measure of integrity and sustainability.

ecosystem, *n*—a community of biological organisms and their physical environment, functioning together as an interdependent unit within a defined area.

DISCUSSION—For the purposes of this definition, human, animals, plants, and microorganisms are individually all considered biological organisms.

electromagnetic spectrum, *n*—a continuum of electric and magnetic radiation, encompassing all wavelengths from electricity, radio and microwaves, at the low-frequency end to infrared, visible light, and ultraviolet light in the midrange, to X-rays and gamma rays at the high frequency end of the spectrum. (As defined by the Institute of Electrical and Electronic Engineers, Inc. (IEEE),⁵ the spectrum of electromagnetic radiation consists of gamma rays, wavelengths shorter than 0.0006 nm; X-rays, 0.0006–5 nm; ultraviolet rays, 5 nm–0.4 μm; visible light, 0.4–0.7 μm; infrared, 0.7 μm–0.1 mm; radio, greater than 0.1 mm.).

⁵ Available from Institute of Electrical and Electronics Engineers, Inc. (IEEE), 445 Hoes Ln., P.O. Box 1331, Piscataway, NJ 08854-1331, <http://www.ieee.org>.

embodied energy, *n*—the energy used through the life cycle of a material or product to extract, refine, process, fabricate, transport, install, commission, utilize, maintain, remove, and ultimately recycle or dispose of the substances comprising the item.

DISCUSSION—The total energy which a product may be said to “contain,” including all energy used in, inter alia, growing, extracting, transporting, and manufacturing. The embodied energy of a structure or system includes the embodied energy of its components plus the energy used in construction.

endangered species, *n*—a species which is in danger of extinction throughout all or a significant portion of its habitat range as determined by the governmental entity having jurisdiction.

end-of-the-pipe technologies, *n*—technologies (such as scrubbers on smokestacks) that reduce emissions of pollutants after they have formed.

energy recovery, *n*—obtaining usable energy by consuming waste through a variety of processes.

environmental indicator, *n*—a measurement, statistic or value that provides a proximate gage or evidence of the effects of environmental management programs or of the state or condition of the environment in a given area.

exotic species, *n*—an introduced species not native or indigenous to the area where it is found.

exposure, *n*—contact with a physical, chemical, biological, or radiological agent.

flush out, *v*—the process of reducing or removing VOCs and other airborne contaminants from a building.

green building, *n*—a building that provides the specified building performance requirements while minimizing disturbance to and improving the functioning of local, regional, and global ecosystems both during and after its construction and specified service life.

DISCUSSION—A green building optimizes efficiencies in resource management and operational performance; and, minimizes risks to human health and the environment.

habitat, *n*—the place where a population of organisms lives and their surroundings, both living and non-living.

habitat indicator, *n*—a physical attribute of the environment measured to characterize conditions necessary to support an organism, population, or community.

hazard, *n*—the adverse effect(s) that may result from exposure(s). **(E 943)**

*heat island effect, *n**—see **urban heat island**.

indicator, *n*—quantitative value or qualitative information derived from a set of parameters that provides information about the state of a phenomenon.

DISCUSSION—It is used for reference or comparative purposes for decision-making at a specified level.