

Appendix 2

EUGENE CLIMATE AND ENERGY ACTION PLAN GLOSSARY

Adaptation: An adjustment in natural or human systems to a new or changing environment. Adaptation to *climate change* refers to adjustments in response to actual or expected climatic stimuli or their effects, which lessens harm or exploits beneficial opportunities. Various types of adaptation include anticipatory and reactive, private and public, and autonomous and planned.

Albedo: The amount of solar *radiation* reflected by a surface or object. Snow-covered surfaces have a high albedo; the albedo of soils ranges from high to low; and vegetation- covered surfaces and oceans have a low albedo.

Architecture 2030: A non-profit, non-partisan and independent organization established in response to the *global-warming* crisis by architect Edward Mazria in 2002. The mission is to rapidly transform the US and global Building Sector from the major contributor of *greenhouse gas* emissions to a central part of the solution to the global-warming crisis. (Description from website: www.architecture2030.org). Find more detail about Architecture 2030 and proposed targets in Appendix 11

Atmosphere: The gaseous envelope surrounding the Earth. The dry atmosphere consists almost entirely of nitrogen (78.1 percent volume mixing ratio) and oxygen (20.9 percent volume mixing ratio) together with a number of trace gases, such as argon (0.93 percent volume mixing ratio), helium, radiatively active *greenhouse gases* such as carbon dioxide (0.035 percent volume mixing ratio), and ozone.

Barrier: Any obstacle to reaching a potential that can be overcome by a policy, program, or measure.

Biofuel: A fuel produced from dry organic matter or from combustible oils produced by plants. Examples include alcohol from fermented sugar, black liquor from the paper manufacturing process, wood, and soybean oil.

Biomass: When referring to fuel, biomass is a plant-derived fuel from clean and untreated wood such as brush, stumps, lumber ends and trimmings, wood pallets, bark, wood chips or pellets, shavings, sawdust and slash, agricultural crops, biogas, or liquid *biofuels*, but excludes materials derived in whole or part from construction and demolition debris.

Bioswale: A vegetated depression that can temporarily store *stormwater*, reduce flooding, cleaning water, and encourage infiltration.

Bus Rapid Transit (BRT): A system that emulates the efficiencies and operations of light-rail at a fraction of the costs. Attributes of a BRT system:

Exclusive right-of-way—guarantees travel time, Signal priority—gives buses priority through intersections, Level boarding—makes boarding easier and quicker, Off-Board Fare Collection—negates fumbling with change and allows boarding at all doors, Less frequent stops—improves travel time, Improved stations—offers station amenities for passenger comfort, and Park & Ride connections – improves Vehicle Image (Source: Lane Transit District)

Capacity (energy): The maximum power capability of a system.

Carbon dioxide (CO₂): The major heat-trapping gas whose atmospheric *concentration* is being increased by human activities. It also serves as the yardstick for all other *greenhouse gases*. The major source of CO₂ emissions is fuel combustion, but they also result from clearing forests and burning *biomass*. Atmospheric concentrations of CO₂ have been increasing at a rate of about 0.5 percent a year, and are now more than 30 percent above pre-industrial levels.

Carbon neutral (also climate neutral): When *greenhouse gas* emissions are net zero. A building is carbon neutral when it doesn't generate more *greenhouse gas* emissions than it sequesters. This can also be accomplished by "offsetting" *emissions* with "carbon credits."

Carbon sequestration: The uptake and storage of carbon. Trees and other plants, for example, absorb *CO₂*, then release the oxygen while storing the carbon.

Carbon sinks: The processes or ecological systems that take in and store more carbon than they release. This process is called *carbon sequestration*. Forests and oceans are large carbon sinks.

Climate: The average state of the *atmosphere* including typical weather patterns for a particular region and time period (usually 30 years). Climate is the average, long-term weather pattern for a particular region, while weather describes the short-term state of the atmosphere. Climate measures average precipitation, temperature, wind, and seasonal phenomena such as length of the growing season.

Climate change: A significant change from one climatic condition to another, often used in reference to climate changes caused by the increase in heat-trapping gases since the end of the 19th century.

Climate feedback: An interaction mechanism between processes in the *climate system* that happens when an initial process triggers changes in a second process that in turn influences the initial one. A positive feedback intensifies the original process, and a negative feedback reduces it.

Climate neutral: See carbon neutral.

Climate refugees: People displaced from their homes or lands by significant changes in climate such as increased drought, sea level rise, or increased storm intensity.

Climate system: A complex system consisting of five major components: the *atmosphere*, the hydrosphere, the cryosphere, the land surface and the biosphere, and the interactions between them. The climate system evolves in time under the influence of its own internal dynamics and because of external forcings such as volcanic eruptions, solar variations, and human-induced forcings such as the changing composition of the *atmosphere* and *land-use change*.

Climate variability: Climate variability refers to changes in the average state and other aspects of the climate over space and time beyond that of individual weather events. Variability can be due to natural climate processes (internal variability), or natural or human-induced external changes (external variability). See also *climate change*.

Concentration: Amount of a chemical in a particular volume or weight of air, water, soil, or other medium. See also *PPM* (parts per million).

Cost-effective: A criterion that specifies that a technology or measure delivers a good or service at equal or lower cost than current practice, or the least-cost alternative for reaching a given target.

Community scale renewable energy: A renewable energy system, *photovoltaic* for example, installed at a large scale: for example, over the roof of a large commercial building. Often this will include multiple investors paying for a single, large installation that will benefit many homes or businesses.

District energy: In this system, steam, hot water or chilled water is produced in a central plant and distributed to multiple buildings in a defined area through underground pipes.

Earth Advantage: A third party, green building certification program for new homes, multi-family buildings, and neighborhoods. Pilot programs are also available for remodels and small commercial projects. Key areas addressed include *energy efficiency*, indoor air quality, environmental responsibility, and resource efficiency. For more information: www.earthadvantage.com

Ecosystem: Any natural unit of living and non-living parts that interact to produce a stable system through cyclic exchange of materials.

Embodied energy: The total expenditure of energy involved in the creation of a product. This includes the energy to extract raw materials (lumber, iron, etc.), process, package, transport, install, and recycle or dispose of products.

Emissions: The release of a substance (usually a gas when referring to the subject of climate change) into the *atmosphere*.

Energy efficiency: Ratio of energy output of a conversion process or of a system to its energy input.

Energy intensity: Energy consumption per unit of output (e.g., food, materials, goods) or per measure of demand for services: (e.g., number of buildings, total floorspace, floorspace-hours, number of employees).

Energy Performance Score: A home energy rating system similar to the miles-per-gallon (MPG) rating for the auto industry that enables homebuyers to directly compare energy consumption between homes while offering a natural market incentive to upgrade their homes as much as possible.

Energy Trust of Oregon (ETO): A nonprofit organization that helps certain utility customers in the Pacific Northwest improve their *energy efficiency* and tap renewable sources. ETO was set up to administer public purpose funds that are collected from customers for new cost-effective conservation, new market transformation, and the above-market costs of new *renewable energy* resources. For more information: <http://energytrust.org>

EWEB: Eugene Water and Electric Board—Eugene’s largest utility.

EPA: The United States Environmental Protection Agency.

Exposure: The nature and degree to which a system is exposed to significant *climatic variations*.

Food insecurity: When people lack secure access to sufficient amounts of safe and nutritious food for normal growth and development, and for an active and healthy life. It may be caused by the unavailability of food, insufficient purchasing power, inappropriate distribution, or inadequate use of food at the household level and can be chronic, seasonal, or transitory.

Foodshed: The area where food is grown, processed, delivered and consumed. A foodshed may be global or may be local—defined by a specific distance for example.

Fossil fuel: A general term for combustible geologic deposits of carbon in reduced (organic) form. Fossil fuels are of biological origin and include coal, oil, natural gas, oil shales and tar sands. A major concern is that they emit *CO₂* when burned, significantly enhancing the *greenhouse effect*.

Generation: The process of making electricity. The term may also refer to energy supply.

Global warming: An average increase in the temperature of the Earth's *atmosphere*, which can contribute to changes in global climate patterns. Global warming can occur from a variety of causes, both natural and human induced. In common usage, "global warming" often refers to the warming that can occur as a result of increased emissions of *greenhouse gases* from human activities. See *climate change*, *greenhouse effect*.

Greenhouse effect: The thermal effect that results from heat-trapping gases allowing incoming *solar radiation* to pass through the Earth's atmosphere, but preventing most of the outgoing infrared radiation from the surface and lower atmosphere from escaping into outer space.

Greenhouse gas (GHG): Commonly abbreviated GHG, a term used for gases that trap heat in the *atmosphere*. The principal greenhouse gases that enter the atmosphere as a result of human activity are *carbon dioxide*, *methane*, and *nitrous oxide*. Others include, but are not limited to, water vapor, chlorofluorocarbons (CFCs), hydrochlorofluorocarbons (HCFCs), ozone (O₃), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF₆).

Greywater: Under Oregon law, greywater means *wastewater* from showers, baths, bathroom and kitchen sinks, and laundry. If handled properly, greywater can safely be reused for flushing toilets and urinals as well as for irrigation. Reuse of greywater reduces the demand on other sources of water, such as potable water, surface water, and groundwater.

HFC: Hydrofluorocarbon compounds: a human-made greenhouse gas generated by industrial processes.

IPCC: Intergovernmental Panel on Climate Change. Established in 1988, the IPCC assesses information in the scientific and technical literature related to all significant components of the issue of *climate change*. It draws on hundreds of the world's leading scientists to serve as authors, and thousands as reviewers. Key experts on *climate change* and the environmental, social and economic sciences from some 60 nations have helped the IPCC prepare periodic assessments of the scientific underpinnings of global *climate change* and its consequences. The IPCC is also looked to as the official advisory body to the world's governments on the state of the science of the climate change issue.

Implementation: The realization of an idea, or execution of a plan, by groups or individuals, public or private.

Infill compatibility standards: A City of Eugene planning effort with a stated goal to create and adopt land use code standards and processes that (a) Prevent residential infill that would significantly threaten or diminish the stability, quality, positive character, livability or natural resources of residential neighborhoods; and (b) Encourage residential infill that would enhance the stability, quality, positive character, livability or natural resources of residential neighborhoods; and (c) if the goal stated in (a) is met, allow for increased density, a variety of housing types, affordable housing, and mixed-use development; and (d) Improve the appearance of buildings and landscapes.

Integrated design: a collaborative and holistic approach to building through which multiple disciplines and aspects of design—including architecture, lighting and electrical, HVAC, interior design, and landscape design—are considered together in the planning of a new structure or renovation to achieve a cost-effective, resource-efficient, and comfortable result. (Source: BetterBricks and the National Institute of Building Sciences)

Invasive species: An introduced species that invades natural habitats.

KWh: Kilowatt-hour.

LCOG: Lane Council of Governments, a voluntary association of local governments in Lane County, Oregon. The agency is a regional planning, coordination, program-development, and service-delivery organization that helps area cities, Lane County, educational districts, and special-purpose districts reach their common goals.

LTD: Lane Transit District

Land use: Human-determined arrangements, activities, and inputs undertaken in a certain land type, the social and economic purposes for which land is managed (e.g., grazing, timber extraction, and conservation).

Land-use change: A change in the use or management of land by humans, which may lead to a change in land cover. Land cover and land-use change may have an impact on the *albedo*, evapotranspiration, sources, and *sinks* of *greenhouse gases*, or other properties of the *climate system*, and may thus have an impact on climate, locally or globally.

Lifecycle (of goods): The complete life (of goods)—the mining or extraction of raw materials, the manufacturing processes, transportation, packaging, retail, the use of goods, and finally their disposal.

LEED: Leadership in Energy and Environmental Design, a program of the United States Green Building Council and a commonly used green building standard.

Methane (CH₄): A hydrocarbon that is a heat-trapping gas carrying a *global warming* potential recently estimated at 24.5. Methane is produced through anaerobic (without oxygen) decomposition of waste in landfills, animal digestion, decomposition of animal wastes, production and distribution of natural gas and oil, coal production and incomplete combustion of fossil fuels.

Metric ton (Mt): Common measurement for the quantity of *greenhouse gas* emissions. A metric ton is equal to 2205 lbs or 1.1 short tons.

Mitigation: An intervention to reduce the sources or enhance the *sinks* of *greenhouse gases*.

Natural gas: A fossil fuel that occurs as underground deposits of gases consisting of 50 to 90 percent *methane* (CH₄) and small amounts of heavier gaseous hydrocarbon compounds like propane (C₃H₈) and butane (C₄H₁₀).

Nitrous oxide (N₂O): A powerful *greenhouse gas*. Major sources include soil cultivation—especially from use of commercial and organic fertilizers—fossil fuel combustion in vehicles, nitric acid production and the combustion of *biomass*.

Non-point-source pollution: Pollution from sources such as areas of crop production, timber, surface mining, disposal of refuse, and construction, which cannot be defined as discrete source points. See also *point-source pollution*.

NWN: Northwest Natural Gas.

Occupant behavior: The behavior of building occupants such as residents and employees. Relevant occupant behaviors include how occupants operate thermostats, open and close windows, and use water and electricity.

ODOT: Oregon Department of Transportation.

Oregon DEQ: Oregon Department of Environmental Quality.

Opportunity siting: A City of Eugene planning effort with the stated goals of 1) Creating a planning process for finding specific sites that can feasibly accommodate high-density residential development that is compatible with and has the support of nearby residents and 2) Facilitating development on those sites.

Pervious pavement: Pavement (asphalt or concrete) that is designed so that water can move through the pavement and infiltrate into the ground.

PFCs: Perfluorocarbons; a human-made *greenhouse gas* generated by industrial processes.

PPM: Parts per million.

Photovoltaic (PV): A solar power technology that converts sunlight into electricity.

Peak Oil: A term used to describe the transition from many decades in which the available supply of oil grew each year to a period in which the rate of oil production enters its terminal decline.

Point-source pollution: Pollution resulting from any confined, discrete source, such as a pipe, ditch, tunnel, well, container, concentrated animal-feeding operation, or floating craft. See also *non-point-source pollution*.

Product stewardship: Calls on those in the product lifecycle—manufacturers, retailers, users, and disposers—to share responsibility for reducing the environmental impacts (definition from EPA website). Ideally, this would result in changes in design so that products create less waste, can be re-used or disassembled for easier recycling, or are otherwise redesigned.

Rain gardens: *Stormwater* management structures designed to slow runoff, clean water, and increase soil infiltration.

Radiation: Energy transfer in the form of electromagnetic waves or particles that release energy when absorbed by an object.

Renewable energy: Energy sources that are, within a short time frame relative to the Earth's natural cycles and sustainable. They include non-carbon technologies such as solar energy, hydropower, and *carbon-neutral* technologies such as *biomass*.

Resilience: Amount of change a system can undergo without altering state.

Setbacks: Land use code that requires buildings or facilities to be a certain distance back from a roadway or other defined object. A building must be "set back" xx feet from the street, for example.

Sink: A natural or artificial reservoir like soil, a forest, a landfill, a wood structure or other *biomass*-related product that stores carbon from the *atmosphere*.

Snowpack: A seasonal accumulation of slow-melting snow.

Solar radiation: *Radiation* emitted by the sun.

Source (greenhouse gas): Any process or activity that releases into the *atmosphere* a *greenhouse gas*, an aerosol or a precursor to a *greenhouse gas*.

Stakeholder: A person or entity that would be affected by a particular action or policy.

Stormwater: Rain, snow, and other precipitation that falls onto buildings, streets, and the ground. Stormwater is managed within the stormwater system of downspouts, gutters, underground pipes, and streams.

Streamflow: Water within a river channel usually expressed in cubic meters per second.

Urban heat island: The increased temperatures experienced in urban areas due to dark-colored pavement, roofs, buildings, etc.

Vector: An organism, such as an insect, that transmits a pathogen from one host to another. See also *vector-borne diseases*.

Vector-borne disease: Disease transmitted between hosts by a vector organism such as a mosquito or tick.

Vehicle-miles traveled (VMT): A measurement to determine the amount of automobile traffic—can also be used to calculate greenhouse gas emissions.

Vulnerability: The degree to which a system is susceptible to, or unable to cope with, adverse effects of *climate variability* and extremes.

Wastewater: Used water that contains dissolved or suspended waste materials.

Weather: Atmospheric condition at any given time or place measured in terms of wind, temperature, humidity, atmospheric pressure, cloudiness, and precipitation. In most places, weather can change from hour to hour, day to day, and season to season. Climate is usually defined as the “average weather.”

Whole building design: See *Integrated design*.

Zero net energy: A net zero energy building annually produces as much energy through on-site renewable systems as it uses.

