

Acronyms

BAU	Business as usual
BIPOC	Black, Indigenous, and people of color
BMP	Best Management Practice
CO₂ or CO₂	Carbon dioxide
CO₂-e	Carbon dioxide equivalent (common unit for greenhouse gas emissions)
DC	Direct current
EV	Electric vehicle
FEMA	Federal Emergency Management Agency
GHG	Greenhouse gas
IPCC	Intergovernmental Panel on Climate Change
LCFS	Low Carbon Fuel Standard
LDV	Light duty vehicle
LEED	Leadership in Energy and Environmental Design (green building rating system)
LiDAR	Light Detection and Ranging
HDV	Heavy duty vehicle
MAWQCP	Minnesota Agricultural Water Quality Certification Program
MCAP	Minnesota Climate Adaptation Partnership
MN	Minnesota
MnDOT	Minnesota Department of Transportation
mpg	Miles per gallon
N	Nitrogen
NREL	National Renewable Energy Laboratory
PV	Photovoltaic
USDA	U.S. Department of Agriculture
REV	Regional Electric Vehicle
VMT	Vehicle miles traveled

Definitions of terms

Accessibility

The intentional design of technology, policies, products, and services that increase one's ability to use, access, and obtain the respective item.

Acidification (of manure)

The addition of an acid to a manure slurry to reduce the release of ammonia and methane.

Active transportation

See **Non-motorized transportation**.

Adaptation

Taking action to prepare for and adjust to both the current and projected impacts from **climate change**. For both natural and built systems, humans may intervene to help adjustment.

Adaptation plan

A document that describes how a community will prioritize, prepare, and respond to **climate change** impacts through **adaptation** actions.

Adaptive capacity

The ability of humans or natural systems to adjust to **climate change** (including climate variability and extremes) by moderating potential damages, taking advantage of opportunities, or coping with the consequences.

Adaptive reuse

The process of changing the use of an existing building and making it more efficient through repair, alterations, and additions.

Advanced transportation

Technologies aimed at **energy efficiency** in transportation systems, switching from **fossil fuels** to renewable and clean technologies, improvements in public transport and non-motorized transport systems and infrastructure, and travel demand management in order to reduce the negative effects caused by conventional technologies. Examples include light rail, bus rapid transit vehicles and systems, transit centers, and traffic signal prioritization and coordination systems.

Anaerobic digestion

A process through which bacteria break down organic matter, such as animal manure, in the absence of oxygen. Anaerobic digestion for biogas (a gaseous **biofuel**) production takes place in a sealed vessel called a reactor.

Aquifer

A body of permeable rock which can contain or transmit groundwater.

Asset management

A systemic approach for evaluating trade-offs between service, cost, and risk for built and natural assets. An asset is a thing is valuable and long-lasting, such as real estate property, buildings, transportation **infrastructure**, equipment, recreation facilities, and more.

Biochar

Stable, **carbon**-rich material produced by heating **biomass** in a low oxygen environment. Biochar may be added to soils to improve soil functions and to reduce **greenhouse gas** emissions from biomass and soils, and for **carbon sequestration**.

Biodiversity

The enormous variety of life on Earth, including plants, bacteria, animals, and humans. It can more specifically refer to all the species in one region or ecosystem.

Biofuel

A fuel produced from **biomass**. These include first-generation biofuels such as ethanol from corn sugars and biodiesel from soybean oil, second-generation biofuels from an array of source materials including lignocellulosic feedstocks and municipal solid waste, and any biofuels that may be developed in the future.

Biomass

1. The mass of all living things. 2. **Renewable material** that comes from plants or animals. This organic material can be used as fuel to produce electricity or heat. Examples are wood, energy crops, and waste from forests, yards, or farms.

Broadband

High-speed internet access that is always on and faster than the traditional dial-up access. Broadband includes several high-speed transmission technologies such as: Digital Subscriber Line (DSL), cable modem, fiber, wireless, satellite, and broadband over power lines (BPL).

Buffer

Vegetated land adjacent to a stream, river, lake or wetland. Buffers help filter out phosphorus, nitrogen, and sediment, and are an important conservation practice for helping keep water clean.

Building sector

The building construction and maintenance industry.

Carbon

1. A chemical element. Carbon is found in all living things. 2. Used when referring to the gas **carbon dioxide** in terms of the effect it has on the earth's **climate** in causing **climate change**.

Carbon dioxide (CO₂)

A naturally occurring gas, CO₂ is also a by-product of burning **fossil fuels** (such as oil, gas and coal), of burning **biomass**, of land use changes, and of industrial processes (e.g., cement production). It is the principal **greenhouse gas** produced by human activities that affects the Earth's radiative balance.

Carbon footprint

The amount of **greenhouse gases** and specifically **carbon dioxide** emitted by something (such as a person's activities or a product's manufacture and transport) during a given period.

Carbon-free electricity

Electricity generation that either does not use **fossil fuels** or does not emit carbon. Examples include wind, solar, and nuclear.

Carbon-neutral

Achieving **net-zero carbon dioxide** emissions at a global scale through the balance of residual carbon dioxide emissions with the same amount of carbon dioxide removal.

Carbon sequestration (biological)

The process by which atmospheric **carbon dioxide** is taken up by trees, grasses, and other plants through photosynthesis and stored as carbon in **biomass** (trunks, branches, foliage, and roots) and soils.

Carbon storage

See **Carbon sequestration (biological)**. *Also:* In the forestry sector, a snapshot of the amount of **carbon** in a tree, woodland, or harvested wood product at any given time.

Clean economy

An economy that is **low-carbon** and that produces goods and services with an environmental benefit.

Clean energy

Energy generated from **renewable** or **carbon-free** sources, as well as energy saved through **energy efficiency** measures.

Clean Fuels Standard

A policy to incentivize reducing **greenhouse gas** emissions from transportation fuels as compared to conventional petroleum fuels, such as gasoline and diesel.

Clean transportation

The shift to **clean energy** vehicles and the development, operation and upgrade of public transportation facilities, including improvement to rail transport, bicycle and pedestrian **infrastructure**, and other **non-motorized transportation**. Clean energy vehicles include electric and hydrogen vehicles and supporting infrastructure.

Climate

The typical weather conditions of a specific region over a given period of time, with a minimum period of 20-30 years.

Climate-adaptive

The ability of a species, ecosystem, or human system to cope with or adjust to changing climatic conditions.

Climate change

A change in the state or variability of the **climate**. Climate change is identified by variability in climate properties that persists for a prolonged period and can be identified (e.g., by using statistical tests). The United Nations Framework Convention on Climate Change (UNFCCC) distinguishes climate change from climate variability. Climate change is attributed directly or indirectly to human activity that alters the composition of the global atmosphere, which is in addition to natural climate variability observed over comparable time periods.

Climate pollution

See **Greenhouse gas**.

Climate-smart

Aiming to increase **climate resiliency** and reduce **greenhouse gas** emissions.

Combustion engine

An internal combustion engine generates mechanical power by burning fuel within the engine. Examples include gasoline engines and diesel engines.

Conservation improvement activities

Rebates or other kinds of help that utilities provide to their customers to lower their energy bills.

Conservation tillage

Farming practices that leave at least 30 percent of the soil surface covered by crop residue after planting to reduce erosion. Examples of conservation tillage include no-till and strip-till.

Cover crop

Crops planted to temporarily protect the ground from wind and water erosion and supply living roots to the soil during times when cropland is often not adequately protected.

Critical facility

Facilities and **infrastructure** that are critical to the health and welfare of the population and that are especially important following **hazard** events. These include police and fire stations, hospitals, waste-water treatment plants and other public utilities.

Decarbonize

Lower the **carbon** emissions.

Deconstruction

Taking apart or removing some building components for reuse and recycling.

Disadvantaged

In unfavorable circumstances, especially with regard to financial or social opportunities.

Discrimination

The practice of unfairly treating a person or group differently from other people or groups of people.

Disparity

A noticeable and usually significant difference.

Disproportionate effects/impacts

Situations of concern where people of color, **Indigenous** people, or **lower income communities** experience significantly worse health, environmental, or social impacts.

Drainage (agricultural)

Use of surface ditches, subsurface permeable pipes or both to remove standing or excess water from poorly drained lands.

Electric power sector

Utilities providing electric power to Minnesota.

Embodied carbon (of construction materials)

All the **carbon dioxide** emitted in producing a product, including the energy needed for the extraction of natural resources, manufacturing, transportation, and installation.

Energy burden

The percentage of gross household income spent on energy costs.

Energy efficiency

Using less energy to get the job done.

Energy sector

All the industries involved in the production and supply of energy related to heating, industrial processes, and electricity generation.

Environmental justice

The fair treatment and meaningful involvement of all people regardless of race, color, culture, national origin, income, and educational levels with respect to the development, implementation, and enforcement of protective environmental laws, regulations, and policies.

Environmental justice area of concern

A census tract where the number of **people of color** and/or **Indigenous** people is greater than 50% and/or more than 40% of the households have a household income of less than 185% of the federal poverty level.

Equity

The proactive reinforcement of policies, practices, attitudes and actions that produce fairness in power, access, opportunities, treatment, impacts and outcomes for all.

Fossil fuel

Fuel made from decomposing plants and animals. These fuels are found in the Earth's crust and contain **carbon** and hydrogen, which can be burned for energy. Coal, oil, and natural gas are examples of fossil fuels.

Gray infrastructure

Human-built structures such as dams, barriers, seawalls, bridges, roads, pipes or water treatment plants.

Green bank

A public or quasi-public financial institution that uses innovative financing techniques and market development tools to fund **low carbon, climate resilient infrastructure**.

Green infrastructure

Ecological systems, both natural and engineered, that are managed primarily for **stormwater management**, reduction of heat stress, increased **biodiversity**, better air quality, cleaner water, and healthier soils.

Green

Contributing to preserving or restoring the environment.

Green space

Usually publicly accessible areas with natural vegetation, parks, street trees, woodlands, forests and grasslands which often provide co-benefits with mitigating stormwater and reducing the **urban heat island** effect.

Greenhouse gas (GHG)

Gases in the Earth's atmosphere that trap heat. **Carbon dioxide** is the primary greenhouse gas emitted through human activities, such as burning **fossil fuels**.

GreenStep (program)

A voluntary program to help Minnesota cities, Tribal Nations, and schools achieve their sustainability and quality-of-life goals through technical assistance and recognition.

Grid (electrical)

An interconnected network for electricity delivery from producers to consumers. See **Transmission and distribution**.

Habitat complex

A collection of adjacent or nearby parcels in public and private working lands ownership that provide habitat for a wide range of wildlife species. An example could include a state wildlife management area next to a federal waterfowl production area adjacent to private pasture.

Habitat corridor

A series of habitat patches connecting larger **habitat complexes** on the landscape that makes it easier for wildlife to move from one area to another. These corridors often stretch through areas dominated by human activity.

Hazard

The potential occurrence of a natural or human event that may cause damages to health, property, **infrastructure**, and ecosystems.

Hazard mitigation

Any sustained action taken to reduce or eliminate the long-term risk to life and property from **hazard** events. Includes activities to reduce the loss of life and property from natural and/or human-caused disasters by avoiding or lessening the impact of a disaster and providing value to the public by creating safer communities.

Health disparities

Differences in health among population groups.

Health inequities

Health disparities that are deemed unfair or stemming from some form of injustice.

Hedgerow

A narrow line of closely spaced native trees, shrubs, grasses or groundcovers designed to buffer adjacent land uses and benefit native wildlife.

Heritage Tree Preservation

A program to identify and give official recognition to trees that are very large, very old, or are an important part of an area's history or culture. Heritage trees may live on either public or private property.

Indian

A person recognized as Indian through their affiliation with a **Tribal Nation**.

Indian Country

A statutory legal term referring to lands held in trust for **Indians** and Indian tribes, and all land within the exterior boundaries of Indian reservations.

Indigenous

A broad term for people who have historical ties to societies that existed prior to colonial settlement. Indigenous people often have a special relation to and use of their ancestral land. Indigenous people exist across the world and often maintain distinct language, culture, beliefs, and social and political systems.

Indigenous knowledge

Indigenous knowledge refers to the understandings, skills and philosophies developed by societies with long histories of interaction with their natural surroundings.

Inequality

Difference in size, degree, circumstances, etc.

Inequity

Unfair, avoidable differences arising from poor governance, corruption or cultural exclusion.

Infiltration

The movement of water into the ground from the surface.

Infrastructure

The basic systems and services, such as transportation and power supplies, that a society or organization uses in order to work effectively.

Invasive species

Species that are not native to Minnesota and cause economic or environmental harm or harm to human health.

Justice40 Initiative

An initiative of the federal government that aims to deliver “at least 40 percent of the overall benefits from Federal investments in climate and clean energy to disadvantaged communities.” The initiative was launched by an Executive Order in 2021 and is still under development.

Land use pattern

The layout or arrangement of the human uses of land. It represents the economic and cultural activities (e.g., agricultural, residential, industrial, mining, and recreational uses) that are practiced in a given place.

Land use planning

The process of regulating the use of land by a central authority. Usually, this is done to promote better social and environmental outcomes and a more efficient use of resources.

LiDAR

A remote sensing method that uses light in the form of a pulsed laser to measure variable distances to Earth. LiDAR is an abbreviation for Light Detection and Ranging.

Low-carbon

Causing or resulting in only a relatively small net release of **carbon dioxide** or other **greenhouse gas** into the atmosphere. For example, the most common low-carbon fuels are alternative fuels (such as electricity or hydrogen) and **biofuels** or cleaner **fossil fuels** (such as natural gas). Low-carbon building materials have a lower **embodied carbon** than commonly available products.

Lower income communities

Communities that are made up of a large number of households that meet one of several low-income definitions, including, but not limited to, <80% Area Median Income and <200% Federal Poverty Level.

Methane

A powerful greenhouse gas produced by both natural processes and human activities. It is a primary component of natural gas. Human-influenced emission sources include landfills, oil and natural gas systems, agricultural activities, coal mining, combustion, wastewater treatment, and certain industrial processes.

Minnesota Climate Adaptation Partnership (MCAP)

A public-private partnership based at the University of Minnesota that advances **climate adaptation** science, supports climate resilience actions, and collaborates across all sectors and levels of government in Minnesota.

Mitigation (of climate change)

A human intervention to reduce emissions or enhance the removal of a **greenhouse gas** from the atmosphere (e.g., through **carbon sequestration** in plants)

Multi-hazard events

Events where more than one **hazard** occurs at the same time and place. For example, a chemical spill from a plant occurring at the same time the area is experiencing a flood.

Multi-modal transportation and planning

Transportation and land use planning that considers diverse transportation options, typically including walking, cycling, public transit, and automobile, and accounts for land use factors (such as land use density and mix) that affect access to destinations.

Natural and working lands

Farms, forests, wetlands, grasslands, and urban open space.

Natural fibers (construction materials)

Fibers that are produced from plants or other natural processes, such as cellulose, jute, or hemp.

Natural hazard

A **hazard** related to weather patterns and/or physical characteristics of an area, and that may occur repeatedly in the same geographical locations.

Net-zero

A building or process that generates as much energy through **renewable sources** as it consumes in its operation.

Nitrification inhibitors

A compound added to a nitrogen-based fertilizer to reduce losses of nitrogen in soil that would otherwise be used by crops. By extending the time the active nitrogen component of the fertilizer remains in the soil as either urea-N or ammonium-N, an inhibitor can improve nitrogen use efficiency and reduce environmental emissions.

Non-motorized transportation

Human-powered transportation modes including walking and bicycling, and variants such as small-wheeled transport (skates, skateboards, push scooters, etc.) and wheelchair travel. These modes can provide recreation (they provide enjoyment), transportation (they provide access to goods and activities), or both. Also known as active transportation.

Overburdened community

A community where multiple factors, including environmental and socio-economic stressors, act together to negatively affect **people of color**, **Indigenous** people, or **lower income communities**. Overburdened communities face overlapping harms and risks that reduce **resilience**, create negative health impacts, and reduce economic and political opportunities.

Passive cooling

Buildings constructed with design features that reduce heat gain and increase heat loss.

Peatlands

Terrestrial wetland ecosystems in which waterlogged conditions prevent plant material from fully decomposing. Consequently, the production of organic matter exceeds its decomposition, which results in a net accumulation of peat. Peatlands are **carbon**-rich ecosystems that store and sequester more carbon than any other type of terrestrial ecosystem.

People of color

A broad reference to multiple **races** other than white.

Perennial crops

Plants that last for more than two growing seasons, either dying back after each season or growing continuously.

Pollinator

Bees, butterflies, flies, birds, hummingbirds, moths, and other species who transfer pollen grains to other plants by feeding off its pollen or nectar.

Precision agriculture

A farming management concept that uses data from multiple sources to improve crop yields and increase the cost-effectiveness of crop management strategies including fertilizer inputs, irrigation management, and pesticide application. These tools and strategies are generally applied to address variability between and within fields.

Public health infrastructure

Physical and organizational structures and facilities used to prevent disease, promote health, and respond to health threats.

Race

A social construct that artificially divides people into distinct groups based on characteristics such as physical appearance (particularly skin color), ancestral heritage, cultural affiliation, cultural history, ethnic classification, and the social, economic and political needs of a society at a given period of time.

Racism

Prejudiced thoughts and discriminatory actions based on a difference in **race** or ethnicity. Racism can exist in all aspects of a society including its history, culture, politics, economics, and social norms. It can be conscious and unconscious. Racism creates racial inequity across a society.

Redlining

Redlining is the illegal practice of refusing to provide financial services to consumers based on the area where they live.

Rehabilitation/Rehabbing (of buildings)

See **Retrofitting**.

Remediation

The action of reversing or stopping environmental damage.

Renewable electricity

Wind, solar and hydro-generated electricity.

Renewable energy

Energy collected from resources that are naturally replenished on a human timescale. Sources include such as sunlight, wind, rain, tides, waves, and geothermal heat.

Renewable materials

Products that can be replenished or regenerated after use, such as **biomass**.

Resilience (to climate change)

The capacity of a community, business, or natural environment to prevent, withstand, respond to, and recover from a disruption. The ability of a system to maintain function in the face of stresses imposed by **climate change** and to adapt the system to be better prepared for future **climate** impacts.

Resilient design standards

Specific criteria for the design or renovating of buildings and landscapes within communities and regions to better withstand the impacts of **climate change**.

Reskilling

Learning a new skill to do a different job, or training people to do a different job.

Retrofitting (of buildings)

The process of making an existing building more efficient and/or changing its use through repair, alterations, and additions while keeping large portions of the building structure, material and architectural character.

Rideshare

The act or practice of sharing automobile trips.

Risk assessment

The process to identify potential **hazards** and analyze what could happen if a hazard occurs.

Shelterbelts

Linear plantings of multiple rows of trees or shrubs established for environmental purposes such as protecting farmsteads and livestock, saving energy, and enhancing wildlife habitat.

Sink

A reservoir (natural or human, in soil, ocean, and plants) where a greenhouse gas, an aerosol or a precursor of a greenhouse gas is stored. *See also* **Carbon sequestration**.

Soil organic carbon

A measurable component of soil organic matter that is a source of solid **carbon** and energy for most soil microorganisms and fauna. It is a building block of soil productivity that contributes to higher water-holding capacity, better drainage, higher cation exchange capacity, and better storage of nutrients.

Source water protection area

Area surrounding the source of drinking water. Water sources can be rivers, streams, lakes, reservoirs, springs, and groundwater. The purpose of defining these areas is to provide additional protection to safeguard drinking water. Contamination on the land surface or in water can affect the drinking water.

Sovereign

The authority of a political entity (such as a tribe, state, or nation) to govern itself.

Split nitrogen fertilizer applications

To make two or more nitrogen fertilizer applications during the growing season rather than providing all of the crop's nitrogen requirements with a single treatment before or while planting.

Stormwater management

Stormwater runoff includes rain and snowmelt that flows over land or impervious surfaces, such as paved streets, parking lots, and building rooftops, and does not soak into the ground. Management of stormwater runoff means intercepting and treating the runoff water.

Sustainability

A dynamic process that guarantees the persistence of natural and human systems in an **equitable** manner.

Telecommute

Work from home rather than a central office, using telecommunications (telephone, fax, email, websites, video connections, etc.) to substitute for physical travel.

Transmission and distribution (of electricity)

Different stages of carrying electricity over poles and wires from generators to a home or business. Electricity generated at power plants moves through a complex network of electricity substations, power lines, and distribution transformers before it reaches customers. Together, transmission and distribution lines make up the electrical **grid**.

Transportation options

The quantity and quality of options available to an individual or group to reach desired goods, services, activities and destinations, taking into account their specific needs and abilities.

Tree canopy

The layer of leaves, branches, and stems of trees that cover the ground when viewed from above.

Tribal consultation

Within the contexts of tribal-state relations in Minnesota, the term consultation tends to be used to refer to formal government to government interactions undertaken by duly authorized officials from tribes and the state.

Tribal Nation (or Indian Tribe)

A statutory legal term referring to lands held in trust for **Indians** and Indian tribes, and all land within the exterior boundaries of Indian reservations.

Underserved communities

Communities that face barriers in accessing and using resources due to geographic location, racial background, sexual orientation, language, or other social factors. These communities have often been systematically denied a full opportunity to participate in aspects of economic, social, and civic life.

Upskilling

Improving an employees' existing skills.

Urban heat island

Urbanized area that experiences higher temperatures than outlying areas because structures such as buildings and roads absorb and re-emit the sun's heat more than natural landscapes such as forests and water bodies.

Utility disconnection

A deliberate interruption or limitation of a customer's utility service (e.g., electricity, heating) by the utility company.

Vehicle efficiency

The **energy efficiency** of a particular vehicle, given as a ratio of distance traveled per unit of fuel consumed, such as miles per gallon (MPG). Also known as fuel economy.

Vehicle Miles Traveled (VMT)

The amount of travel for all vehicles in a geographic region over a given period of time, typically a one-year period. It is calculated as the sum of the number of miles traveled by each vehicle.

Vehicle tailpipe emissions standards

The legal requirements governing air pollutants released into the atmosphere from internal **combustion engine** exhaust. Emission standards set limits on the permissible amount of specific air pollutants that may be released from specific sources over specific timeframes.

Volkswagen settlement funds

Money paid by Volkswagen (VW) as part of an agreement with the federal government for cheating on emissions standards and violating the federal Clean Air Act by selling cars that emit air pollution over the legal limit. VW paid \$2.9 billion into a fund called the Environmental Mitigation Trust, created to help states and tribes clean up the excess air pollution emitted by the violating VW vehicles. Grants will be administered by states and other entities. Minnesota will receive \$47 million from the settlement over the course of ten years, beginning in 2018.

Vulnerability

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

Vulnerability assessment

A tool used as an initial step in the **adaptation planning** process that identifies a community's assets and evaluates their **vulnerability** and risk from **climate change** impacts.

Weatherization Assistance Program

A program that supports home **energy efficiency** upgrades, such as weather-stripping of windows and increasing insulation in attics. The program lowers the energy burden of households with income at or below 200% of the federal poverty level.

Zero waste

The conservation of all resources by means of responsible production, consumption, reuse, and recovery of products, packaging, and materials without burning and with no discharges to land, water, or air that threaten the environment or human health.