

## 13 GLOSSARY OF TERMS

The glossary provided below identifies and defines common terms or phrases used in California High-Speed Rail (HSR) Project Environmental Impact Report/Environmental Impact Statement documents. A full list of all acronyms and abbreviations used below is provided in Chapter 15.

### A

**A horizon:** The A horizon is the soil zone immediately below the surface from which soluble material and fine-grained particles have been moved downward by water seeping into the soil. Varying amounts of organic matter give the A horizon a dark color.

**Abatement:** Reduction; often used to describe noise mitigation.

**Abutment:** A substructure at each end of a main structure, particularly for a bridge, whereon the main structure rests or contacts.

**Accessibility:** The ease with which a site or facility may be reached by passengers and others necessary to the facility's intended function. Also, it refers to the extent to which a facility is usable by persons with disabilities, including wheelchair users.

**Action Alternative:** An alternative that proposes some action by one or both of the co-lead agencies, in contrast to the No Project Alternative.

**Active fault:** A ground rupture that has occurred within approximately the last 11,000 years. A potentially active fault includes ruptures that occurred between 11,000 and 1.6 million years ago.

**Actual use:** The amount or type of use that actually occurs.

**Adverse:** Negative or detrimental.

**Affected environment:** The physical, biological, social, and economic setting potentially affected by one or more of the alternatives under consideration.

**Air pollution:** A general term that refers to one or more chemical substances that degrade the quality of the atmosphere.

**Alignment:** The specific horizontal and vertical route of a transportation corridor or path.

**Alignment alternatives:** The general location for HSR tracks, structures, and systems between the defined starting and ending terminus points within the project section corridor.

**Alluvium:** A term applied to sediments deposited in a streambed, on a floodplain or a delta, or at the base of a mountain during comparatively recent geologic time.

**Alquist-Priolo Earthquake Fault Zoning Act:** A California law passed in 1972 to prevent construction of buildings used for human occupancy on surface traces of active faults.

**Americans with Disabilities Act:** Federal regulation establishing legal requirements for accessibility for those with disabilities.

**Approximate location:** As defined in Government Code Section 4216, the "approximate location of subsurface installations" is a strip of land not greater than 24 inches wide on both sides of the exterior surface of the subsurface installation. Approximate location does not define depth.

**Aquatic resources:** Wetlands and waterbodies, including waters of the U.S., waters of the state, and state streambeds and lakes, that are regulated by the federal government (U.S. Army Corps of Engineers and U.S. Environmental Protection Agency) and the State of California (State Water Resources Control Board and California Department of Fish and Wildlife).

**Aquifer:** Subsurface geologic unit (rock or sediment) that contains and transmits groundwater.

**Arc, arcing:** When an electrical discharge crosses the space between two contacts.

**Area of Potential Effect (APE):** The area including the project right-of-way and adjacent lands potentially affected by the construction and operation of the project. For archaeological properties, it is considered to be the area of ground proposed to be disturbed during construction, including grading, cut-and-fill, easements, staging areas, utility relocation, borrow pits, and biological mitigation areas. For historic architecture, it is considered to be the proposed construction footprint and nearby properties where there would be a substantial change from the historic use, access, or noise and vibration levels that were present 50 years ago, or during the period of significance of a property, if different. For paleontological resources, it is considered to be a zone 250 feet on both sides of the right-of-way and within 0.5 mile of any potential facilities, including potential stations.

**Areas of difficult excavation:** Excavation methods that require more than standard earthmoving equipment or special controls, such as shoring, to enable work to proceed.

**Artifacts:** Objects made by people, including tools such as projectile points, scrapers, and grinding implements; waste products from making flaked stone tools (debitage); and nonutilitarian artifacts (beads, ornaments, ceremonial items, and rock art).

**At-grade:** At ground surface level; used to describe roadways, river crossings, and track alignments.

**Attainment:** An air basin is considered to be in *attainment* for a particular pollutant if it meets the federal or state standards set for that pollutant. *See also maintenance and nonattainment.*

**Authority:** *See also California High-Speed Rail Authority.*

**Aviation:** Aviation refers to the air transportation network in California.

**A-weighted sound level:** A measure of sound intensity that is weighted to approximate the response of the human ear so it describes the way sound will affect people in the vicinity of a noise source.

## B

**Ballasted track:** Railways installed over a specific type of crushed rock that is graded to support heavily loaded rolling stock.

**Ballast-less track:** Railways installed over concrete slabs to support rolling stock.

**Barrier:** A device intended to contain or redirect an errant vehicle by providing a physical limitation through which a vehicle would not typically pass.

**Barrier offset distance:** The lateral distance from the centerline of the track to the face of the barrier, trackside, or other roadside feature.

**Baseline:** Foundation or basis to use for comparison purposes.

**Beneficial visual impact:** Impact resulting if a project alternative eliminates a dominant feature that currently detracts from scenic qualities or blocks landscape vistas.

**Best management practices (BMP):** Methods designed to minimize adverse effects to the environment. Examples of BMPs include practices for erosion and sedimentation controls, watering for dust control, perimeter silt fences, rice straw bales, and sediment basins.

**Biface:** A type of prehistoric stone tool that is flaked on both faces or sides.

**Biological resources:** Plant and wildlife species, terrestrial and aquatic habitats (including aquatic resources), and habitats of concern (including sensitive plant communities, critical habitat, core recovery areas, mitigation banks, and wildlife corridors).

**B.P.:** Years before the present (typically considered to be 1950).

**British thermal unit (Btu):** Equal to the amount of heat required to raise 1 pound of water 1 degree Fahrenheit at 1 atmosphere of pressure.

**Buttressing:** An action or structure that provides support or stability.

## C

**California Coordinate System of 1983 (CCS 83):** The system of plane coordinates established by the National Geodetic Survey for defining or stating the positions or locations of points on the surface of the earth within the State of California. CCS 83 is based on the North American Datum of 1983. *See also North American Datum of 1983.*

**California Endangered Species Act (CESA):** A law that mandates that California agencies do not approve a project that would jeopardize the continued existence of “endangered species,” or species that appear on federal or state endangered species lists, if reasonable and prudent alternatives are available that would avoid impacting these species (or avoid a jeopardy finding under CESA).

**California Environmental Quality Act (CEQA):** Legislation enacted in 1970 to protect the quality of the environment in California by requiring public agencies and decision-makers to document and consider the environmental consequences of their actions. CEQA is the state equivalent of the National Environmental Policy Act (NEPA).

**California High-Speed Rail Authority (Authority):** The state governing board that has responsibility for planning, designing, constructing, and operating the California HSR System. The Authority’s mandate is to develop the HSR system in coordination with the operators of the state’s existing transportation network, which includes intercity rail and bus lines, regional commuter rail lines, urban rail and bus transit lines, highways, and airports.

**California High-Speed Rail (HSR) System:** *See also high-speed rail system.*

**Capital cost:** The total cost of acquiring assets and construction needed to initiate operation of a project.

**Carbon dioxide (CO<sub>2</sub>):** A colorless, odorless gas that occurs naturally in the atmosphere; fossil fuel combustion emits CO<sub>2</sub>.

**Carbon dioxide equivalent (CO<sub>2</sub>e):** The concentration of CO<sub>2</sub> that would have global warming effects similar to other greenhouse gases.

**Carbon monoxide (CO):** A colorless, odorless gas generated in the urban environment primarily by the incomplete combustion of fossil fuels.

**Catenary wire:** A suspended (overhead) wire system that supplies power from a central power source to an electric vehicle such as a train. *See also contact wire and overhead contact system.*

**Central control facility:** A facility where staff and equipment monitor and control HSR operations. Co-located with the heavy maintenance facility, it provides central supervision over train and power dispatch facilities, serves as the hub for safety and security functions, manages real-time tracking of HSR vehicles, collects and records data, and controls access.

**Centroid of flow of streams:** The midpoint of that portion of a stream width that contains 50 percent of the total flow.

**Check rail:** The guiding rail between the two running rails that keeps a derailed wheel in the track alignment. Check rails are installed 36 centimeters (14.2 inches) from the running rail and can be placed inside one or both of the running rails.

**Chert:** A form of quartz used for the manufacture of stone tools.

**Class I trail:** A trail within a separate right-of-way designated for exclusive use by bicycles and pedestrians. Cross traffic by motorists is minimized.

**Class II trail:** A trail within a restricted right-of-way designated for semi-exclusive use by bicycles, with traffic by motor vehicles or pedestrians at crossings.

**Class III trail:** A trail within a right-of-way designated by signs or permanent markings that is shared with motorists and sometimes pedestrians.

**Clean Air Act (CAA):** The law that defines the U.S. Environmental Protection Agency's responsibilities for protecting and improving the nation's air quality and the stratospheric ozone layer. The CAA protects the general public from exposure to airborne contaminants that are known to be hazardous to human health.

**Clean Water Act (CWA):** The primary federal law protecting the quality of the nation's surface waters, including wetlands. The CWA regulates discharges and spills of pollutants, including hazardous materials, to surface waters and groundwater.

**CNEL:** See *also* **community noise equivalent level**.

**Cofferdam:** Watertight enclosure from which water is pumped to expose the bottom of a body of water and allow construction activities to occur.

**Community safety and security:** Safety and security concerns of construction site workers, HSR passengers and employees, and members of the general public (including motorists, pedestrians, and bicyclists) who could be exposed to risks of loss, injury, or death during construction, as well as HSR system passengers and employees or structures that could be exposed to risk of loss, injury, or death during operations.

- Community safety addresses emergency and fire response; automobile, pedestrian, and bicycle safety; landfill safety; fire hazards; rail and airport safety; school safety; and high-risk facilities and fall hazards.
- Community security addresses high-risk facility security, criminal acts (including vandalism, theft, and violence), and acts of terrorism.

**Communities:** Groups of people living in the same city, town, or neighborhood who exhibit behavior patterns expressed through daily social interactions, the use of local facilities, participation in local organizations, and involvement in activities that satisfy the population's economic and social needs.

**Community noise equivalent level (CNEL):** A 24-hour equivalent sound level ( $L_{eq}$ ) that has been adjusted to add a "penalty" increase of 5 A-weighted decibels (dBA) for evening noise (between 7:00 p.m. and 10:00 p.m.) and 10 dBA for nighttime noise (between 10:00 p.m. and 7:00 a.m.).

**Concourse:** Area for accommodating all patrons at an HSR station.

**Concrete derailment walls:** Tall curbs located close to the train wheels that, in the event of a derailment, keep the train upright and within the right-of-way.

**Congestion management plan:** A planning document that addresses strategies for reducing traffic congestion.

**Connectivity:** The degree of "connectedness" of a transportation system, such as a transit network, and the ease with which passengers can move from one point to another within the network, between transportation systems, or points outside the network.

**Conservation easement:** An easement that transfers property development rights to another entity, such as the local jurisdiction or an agricultural protection organization; the land remains in private ownership and may be farmed, but may not be developed with urban uses. See *also* **Easement**.

**Construction:** Any activity that directly alters the environment, such as building infrastructure, but excludes surveying or mapping.

**Construction laydown area:** An area, typically adjacent to the HSR right-of-way and within a defined temporary construction area for which an easement has been obtained that is used to stockpile materials and store equipment for building the HSR system or related improvements. In some cases, this area is also used to assemble or pre-fabricate components of guideway or wayside facilities before transport to installation locations. Construction laydown areas are part of the project footprint that is evaluated for potential environmental impacts, yet actual use and location of the area within the project footprint is left to the discretion of the design-build contractor. After construction, this area is typically restored to pre-construction conditions.

**Contact wire:** A suspended (overhead) wire system that supplies traction power from a central power source to an electric vehicle such as a train. *See also* **overhead contact system**.

**Contra-flow:** Movement against the general direction of flow.

**Cooperating Agency:** Any agency invited by the lead federal agency that has agreed to participate in the NEPA process and has legal jurisdiction over, or technical expertise regarding, environmental impacts associated with a proposed action. *See also* **Federal Railroad Administration**.

**Corridor:** A geographic belt or band that follows the general route of a transportation facility (e.g., highway or railroad). *See also* **alignment**.

**Cowardin Classification System:** A comprehensive classification system of wetlands and deepwater habitats developed for the U.S. Fish and Wildlife Service in 1979. Under this system, wetlands are of two basic types: coastal (also known as tidal or estuarine wetlands) and inland (also known as nontidal, freshwater, or palustrine wetlands).

**Criteria pollutants:** Pollutants for which federal and state air quality standards have been established: carbon monoxide, sulfur oxides (SO<sub>x</sub>), nitrogen oxides (NO<sub>x</sub>), ozone, particulate matter with a diameter of 10 microns or less (PM<sub>10</sub>), particulate matter with a diameter of 2.5 microns or less (PM<sub>2.5</sub>), and lead.

**Critical habitat:** Designated areas that provide suitable habitat for federally listed threatened or endangered species, and in which are the geographical locations and physical features essential to the conservation of a particular species. *See also* **endangered species and threatened species**.

**Cultural resources:** Resources related to the tangible and intangible aspects of cultural systems, living and dead, that are valued by a given culture or contain information about the culture. Cultural resources include, but are not limited to, sites, structures, buildings, districts, and objects associated with or representative of people, cultures, and human activities and events. Cultural resources include prehistoric- and historic-era archaeological resources; architectural/built-environment resources; and traditional cultural properties that are listed in or found eligible for the National Register of Historic Places or qualify as CEQA historical resources.

**Cumulative impact:** (1) CEQA—the result of two or more individual impacts that, when considered together, are considerable or that compound or increase other environmental impacts; (2) NEPA—an impact on the environment that results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions.

**Cut and cover:** A construction technique in which a trench is excavated, infrastructure is constructed or installed, and the trench is covered with a structure that results in creating a tunnel.

**Cut and fill:** A construction technique involving excavation or grading followed by placement and compaction of fill material.

**Cut slope:** A slope that is shaped by excavation or grading. *See also* **fill slope**.

**D**

**Datum:** A reference from which measurements are made for establishing horizontal and vertical control.

**Decibel (dB):** A logarithmic measurement of noise intensity.

**Dedicated corridor:** Segment along the HSR alignment where high-speed trains operate in a right-of-way that is exclusive of other passenger or freight railroads.

**Dedicated track:** Segment along the HSR alignment where high-speed trains operate on tracks exclusive of other passenger and freight railroads.

**Degree of curve:** The central angle turned by a curve in 100 feet. It is closely approximated by degree of curve = 5,730 feet/radius. Railroad curves are defined by the chord definition, in which the length is described by a 100-foot-long tangent between two points on the arc of the curve.

**Densification:** The process of making an element more compact by reducing air space. Also refers to land development that increases the number of people who live or work within a particular area of land.

**Depositional environment:** The conditions in which a sedimentary unit is deposited.

**Derailment containment systems:** Systems that ensure the train wheels do not leave the tracks even in the event of major seismic movements.

**Design criteria:** To determine each alternative's ability to meet the HSR project purpose, need, and objectives, alternatives are evaluated using HSR system performance criteria that distinguish design differences and qualities in the alignment and station locations.

**Detention pond:** A pond designed to temporarily store and slowly release the runoff that it receives.

**Dewatering:** The process of removing water from an area or substance, such as fill material.

**Digital terrain model:** A three-dimensional model of digital surfaces of topographic features.

**Displacement and relocation:** *Displacement* refers to the movement of people out of their residences, businesses, or nonprofit organizations as a result of acquisition of private property for a proposed project. *Relocation* refers to the placement of people into new homes or commercial properties with assistance and benefits in accordance with federal and California laws.

**Disturbance:** A discrete natural or human-induced event that causes a change in the condition of an ecological system.

**Dry utility:** A wire, cable, pipeline, and support facility used to convey electricity, natural gas, gaseous chemicals, telecommunications, cable television, or other nonliquid products.

**E**

**Easement:** A legal interest in land owned in fee by another individual or organization that entitles the easement holder to a specific limited use.

**Economic impacts:** Changes in employment, business productivity, and public funding. Public funding can be affected by displacements and relocations of residences and businesses, which in turn can alter school district funding and property and sales tax revenues.

**Ecosystem:** An interconnected network of living organisms, including people, and their local physical environment; often viewed as an ecological unit.

**Effect:** A change in the condition or function of an environmental resource or environmental value as a result of human activity.

**Electric fields:** Electric fields are forces that electric charges exert on other electric charges.

**Electric multiple units (EMU):** A multiple-unit train consisting of self-propelled carriages that use electricity as the motive power. An EMU requires no separate locomotive, as electric traction motors are incorporated within one or a number of the carriages. Most EMUs are used for passenger trains, but some have been built or converted for specialized nonpassenger roles, such as carrying mail or luggage, or in departmental use (for example, de-icing trains). An EMU usually consists of two or more semi-permanently coupled carriages, but electrically powered single-unit railcars are also generally classed as EMUs.

**Electromagnetic field (EMF):** The force field that extends outward from any moving electrical current, consisting of both a magnetic field and an electric field. EMFs consist of electric and magnetic fields. EMFs occur throughout the electromagnetic spectrum, are found in nature, and are generated both naturally and by human activity. Naturally occurring EMFs include the earth's magnetic field, static electricity, and lightning. EMFs are also created by the generation, transmission, and distribution of electricity; the use of everyday household electric appliances and communication systems; industrial processes; and scientific research.

**Electromagnetic interference (EMI):** An electrical emission or disturbance that causes degradation in performance or results in malfunctions of electrical or electronic equipment, devices, or systems. EMI is the interference that occurs when the EMF produced by a source adversely affects the operation of an electrical, magnetic, or electromagnetic device. EMI may be caused by a source that intentionally radiates EMF (such as a television broadcast station) or one that does so incidentally (such as an electric motor).

**Elevated guideways:** Railroad track and emergency walkways on both sides of a track that may range from approximately 20 to 60 feet high (or higher) in certain urban areas.

**Emergent:** (1) Arising naturally; (2) vegetation rooted in periodically or continuously inundated substrate, but with a portion of the plant extending above the water.

**Emergency access and property access:** Emergency facilities and properties and their associated road networks in the transportation resource study area.

**Emergency medical services:** The treatment and transport of people in crisis health situations that may be life-threatening. These services are typically provided by local fire departments, emergency medical service agencies, and independent ambulance services.

**Emergency response plans:** Plans created by counties and cities that outline procedures for operations during emergencies such as earthquakes, floods, fires, and other natural disasters; hazardous materials spills; transportation emergencies; civil disturbance; and terrorism.

**Emergency services:** Emergency responses provided by fire, law enforcement, and other services provided for people in response to fires, seismic events, or other emergency situations.

**EMF:** See *also* **electromagnetic field**.

**EMI:** See *also* **electromagnetic interference**.

**Eminent domain:** A jurisdiction or agency's legal right to acquire private property for public use in exchange for fair compensation.

**Emission and Dispersion Modeling System (EDMS):** Modeling system used by the Federal Aviation Administration to estimate airplane emissions generated from a specified number of landing and take-off cycles.

**Employment:** The number of jobs that may be held by persons who may reside inside or outside a specific area and commute to jobs in the area. Increases in employment depend upon increased demand for products and services from residents and businesses that may or may not be located in the area. As such, potential regional growth relating to the HSR Build Alternative would be caused by the increased demand for direct, indirect, and induced construction and operations jobs and those jobs created due to improved transportation access provided by the HSR system. Employment growth refers to temporary and permanent jobs that would be created.

**EMU:** See *also* **electric multiple units**.

**Endangered species:** Any plant or animal species listed under the federal Endangered Species Act as being in danger of or threatened with extinction throughout all or most of its range.

**Energy:** Energy refers to the power supply for activities associated with the HSR system. CEQA establishes a goal of conserving energy through wise and efficient use, and places particular emphasis on avoiding or reducing inefficient, wasteful, and unnecessary consumption of energy (Public Resources Code Section 21100(b)(3)). Environmental impacts related to energy involve energy requirements and use efficiencies for construction, operation, and maintenance of the project; effects on local and regional energy supplies; effects on peak- and base-period energy demands; compliance with existing energy standards; effects on energy resources; and transportation energy use requirements and use of efficient alternatives.

**Environmental impact report (EIR):** Documentation of the detailed analysis of a project's potential significant effects upon natural, cultural, and community resources; measures to mitigate significant adverse impacts to a less than significant level; and reasonable alternatives to avoid significant effects. The EIR is prepared as part of the CEQA environmental review process that is intended to disclose the potential consequences of a proposed project to the public and provide decision-makers with analytical information and documented public comments in advance of a final decision on a proposed project.

**Environmental impact statement (EIS):** Documentation required by NEPA for certain actions "significantly affecting the quality of the human environment." An EIS is a decision-making tool that presents detailed analysis of a proposed action and alternatives to the proposed action. The EIS presents the project's potential effects—both beneficial and adverse—and any mitigation measures to reduce adverse effects.

**Environmental justice:** Identifying and addressing the potential for disproportionately high and adverse effects of programs, policies, and activities on minority and low-income populations.

**Equivalent noise level ( $L_{eq}$ ):** A measure of the average noise level during a specified period of time.

**Erosion:** Process by which earth materials are worn down by the action of flowing water, ice, or wind.

**Essential Fish Habitat:** Marine or anadromous fish habitat, which includes those waters and substrates necessary to fish for spawning, breeding, feeding, or growth to maturity. Anadromous fishes are those that migrate up rivers from the sea to spawn. Waters include aquatic areas and associated physical, chemical, and biological properties. Substrates include the sediments underlying the waters. All habitat types needed by a species throughout its lifecycle to complete spawning, breeding, feeding, or growth to maturity are considered essential fish habitat for marine or anadromous fish species.

**Ethnicity:** A grouping of people based on shared cultural traits such as ancestral origin, language, custom, or social attitude.

## F

**Fare gate:** Physical barrier that requires a valid HSR ticket to pass.

**Farmland Mapping and Monitoring Program (FMMP):** An automated map and database system administered by the California Department of Conservation that records changes in agricultural land use.

**Farmland of local importance:** Farmlands important to the local agricultural community, as determined by each county's board of supervisors and local advisory committee. *See also farmland of statewide importance, prime farmland, and unique farmland.*

**Farmland of statewide importance:** Farmlands that are similar to prime farmlands but less valuable because they have steeper slopes, less ability to retain moisture in the soil, or other characteristics that limit their use. To qualify as farmland of statewide importance, a property must have been used for production of irrigated crops at some time during the previous 4 years. *See also farmland of local importance, prime farmland, and unique farmland.*

**Farmland severance:** The acquisition of part of an agricultural property that results in the severance (disconnection) of parts of the parcel of agricultural land.

**Fault:** A fracture in the earth's lithosphere (brittle rocky shell) where movement has occurred or is occurring.

**Fault creep:** (1) The slow, continuous movement of crustal blocks along a fault; (2) measurable surface displacement along a fault in the absence of notable earthquakes.

**Fault rupture:** A rupture in which the fault extends to the ground surface and causes the ground to break, resulting in abrupt ground displacement. Surface fault ruptures are the result of stresses relieved during an earthquake, and they often damage structures astride the typically narrow rupture zone.

**Feasible:** Capable of being implemented.

**Fecundity:** Fertility; the potential to be fruitful in offspring or vegetation.

**Federal Endangered Species Act (FESA):** FESA and subsequent amendments (Sections 7, 9, and 10) provide guidance for conserving federally listed plant and animal species and the ecosystems upon which they depend.

**Federal Railroad Administration (FRA):** An agency within the U.S. Department of Transportation that administers financial assistance programs and regulates the operation and safety of freight and passenger rail throughout the U.S.

**Fiber-optic cable system:** A data transmission technology that relies on light rather than electricity, conveying data through a cable consisting of a central glass core surrounded by layers of plastic.

**Fill slope:** A slope shaped by the placement and compaction of loose fill material, which may be from elsewhere on the construction site or imported.

**Fire protection services:** Services that provide predominantly emergency firefighting and rescue services. These services typically include local fire departments, including paid and volunteer fire departments, county fire services, and equipment used to respond to incidents.

**Fiscally or financially constrained plans:** Plans that are limited by the foreseen availability of project funding in a region.

**Floodplains:** Areas of land susceptible to inundation by floodwaters from any source. Typically, they are low-lying areas adjacent to waterways and subject to flooding during storm events. A 100-year floodplain differs in that it is a defined area adjoining a river, stream, or other waterway that is covered by water in the event of a 100-year flood (a flood having a 1 percent chance of being equaled or exceeded in magnitude in any given year).

**Flyover:** A bridge that carries one road or rail alignment aurally over another.

**Footprint:** The area covered by a facility or affected by construction activities. *See also project footprint.*

**Formation:** A geologic unit (e.g., the Modesto Formation or the Gem Hill Formation).

**Fossils:** The remains or traces of ancient plants, animals, and other organisms.

**Fossil localities:** Areas where fossils have been found.

**Freeboard:** Stream bank or levee height above the high-water mark of a defined high-flow event such as the 100-year flood.

**Free area:** Area within the station that is open to the general public.

**Freight rail conditions:** The regional network of freight railways.

**Frequency:** The number of times a field, such as an electromagnetic field, changes direction in space each second. Frequency also refers to the number of trains, flights, or other transportation service that occur in a given period.

**Full-parcel acquisition:** A permanent acquisition of an entire parcel of land necessary to implement a project.

## G

**G force:** A force with a magnitude equal to the gravitational force acting on a body at sea level; expressed as 1.0 g.

**General Conformity Rule:** In reference to the specific requirements of the Clean Air Act, federal, state, tribal, and local governments work in air quality nonattainment or maintenance areas to ensure that federal actions conform to the initiatives established in the applicable state implementation plan or tribal implementation plan.

**General plan:** A planning document, usually at the city or county level, that articulates policies for land use and development over a specified period of time. A general plan may be augmented by specific plans that implement land use and development policies for particular portions of a planning jurisdiction, such as historic districts or areas slated for redevelopment.

**Geographic information system (GIS):** An information management system designed to store and analyze data referenced by spatial or geographic coordinates.

**Giga:** Prefix meaning 1 billion.

**GIS:** See *also* **geographic information system**.

**Grade crossing:** The intersection of a railroad and a highway/roadways at the same elevation (grade); an intersection of two or more highways/roadways; an intersection of two railroads.

**Grade, gradient:** Slope changes in elevation, defined in percentage, as number of feet of rise in 100 feet of run along a single horizontal line.

**Grade-separated:** At different elevations; on separate levels.

**Greenhouse gases:** A class of air pollutants believed to contribute to the global warming effect, including NO<sub>x</sub>, hydrocarbons, and CO<sub>2</sub>.

**Grid:** A system of interconnected electric power generators and transmission lines managed to meet the requirements of energy users connected to the grid.

**Groundwater:** Water contained and transmitted through open spaces within rock and sediment below the ground surface.

**Growth inducement:** Contribution to the rate or extent of urban development in an area.

**Guard rail:** A short guidance rail in the guideway. When a wheel passes over a switch frog in a nonguided section, the opposite wheel is guided by the guard rail, which acts on the back of the wheel flange.

**Guideway:** A track or riding surface that supports and physically guides transit vehicles specially designed to travel exclusively on it. Similarly, a *fixed guideway* is a public transportation facility using and occupying a separate right-of-way or rail for the exclusive use of public transportation and other high-occupancy vehicles or a fixed catenary system useable by other forms of transportation (as defined by the Federal Railroad Administration).

**Guideway system:** For the purposes of the California HSR Project, the integrated linear system of infrastructure components (e.g., track structures; tunnel, trench, embankment, or bridge structures; overhead contact system; traction power substations; switching and paralleling stations; signaling and train control elements; perimeter access controls, guideway operations and maintenance access; linear right-of-way) that enables the high-speed train to travel along the HSR alignment.

## H

**Habitat:** An environment where plants or animals naturally occur; an ecological setting used by animals for a particular purpose (e.g., roosting habitat or breeding habitat).

**Hazardous materials:** Any material that, because of quantity, concentration, or physical or chemical characteristics, poses a significant present or potential hazard to human health and safety, or the environment, if released.

**Hazardous waste:** A hazardous material that is no longer of use and will be disposed. Hazardous waste is regulated by the U.S. Environmental Protection Agency under the Resource Conservation and Recovery Act (RCRA). California hazardous waste law is in some cases more stringent than federal law, and waste can often be defined as a California hazardous waste but a non-RCRA hazardous waste.

**Heavy maintenance facility (HMF):** A maintenance facility that typically supports delivery, testing, and commissioning; train storage; inspection; maintenance; retrofitting; and overhaul on a completed segment of the HSR system.

**Heritage resources:** An alternate term for cultural resources used in some planning documents. *See also cultural resources.*

**Hertz (Hz):** A unit of measure that describes *frequency*; equal to cycles (number of reversals) per second. *See also frequency.*

**High-risk utility:** Utility facilities conducting or carrying specific materials identified in Section 2 of the *Caltrans Project Development Procedures Manual*, Appendix LL—Utilities. Also refers to other utilities that could disrupt the operation of the HSR system.

**High-speed rail system:** The system that includes the HSR tracks, structures, stations, traction-powered substations, maintenance facilities, and train vehicles. The system supports travel up to 220 miles per hour.

**High-speed steel-wheel-on-steel-rail train:** An improvement of traditional railroad passenger technology that has been designed to operate at speeds of 100 to 150 miles per hour on existing rail infrastructure.

**High-speed train:** A train designed to operate safely and reliably at speeds near 220 miles per hour.

**High visual impacts:** Impacts sustained if features are very obvious, such that they begin to dominate the landscape and detract from the existing landscape characteristics or scenic qualities.

**Historic architectural/built-environment resources:** Includes buildings, structures, objects, landscapes, districts, and linear features.

**Historic-era archaeological resources:** Post-European contact sites that may include remains of early settlements—features such as wells, privies, and foundations—that have the potential to address relevant research questions for the region.

**Holocene:** The period following the Pleistocene, from 10,000 years before present to the present. *See also Miocene, Pleistocene, and Quaternary.*

**Hourly equivalent noise level ( $L_{eq}(h)$ , dBA):** The equivalent or average noise level for the noisiest hour, expressed in A-weighted sound level (decibels). *See also A-weighted sound level and decibel.*

**HSR Alternative Alignment:** The specific location of an HSR guideway within the study corridor; HSR alternative alignments may be along or adjacent to, but may also diverge from, existing transportation corridors.

**HSR Alignment Subsection:** A portion of a project section alignment that is distinguished from other subsections within the alignment by fundamentally different geographic, community, or project characteristics (e.g., valley versus mountain, rural versus suburban versus urban, main line predominantly at grade versus main line predominantly above ground or below ground).

**HSR network alternatives:** Different ways to implement the HSR system in the study area with various combinations of HSR alternative alignments and station locations.

**Hydrocarbons:** Various organic compounds, including methane, emitted principally from the storage, handling, and combustion of fossil fuels.

## I

**Impact:** A change in the condition or function of an environmental resource or environmental value as a result of human activity. An impact may be a negative or positive change.

**Impervious surface:** Surface covered by impenetrable materials, such as paved parking lots or buildings, which prevents infiltration, increases the potential for water runoff, and reduces the potential for groundwater recharge.

**Important farmland:** Categorized as prime farmland, farmland of statewide importance, unique farmland, or farmland of local importance under the Farmland Mapping and Monitoring Program, which is administered by the California Department of Conservation. The categories are defined according to U.S. Department of Agriculture land inventory and monitoring criteria, as modified for California. *See also farmland of local importance, farmland of statewide importance, prime farmland, and unique farmland.*

**Indigenous species:** A native species; any plant or animal species that occurs naturally in a wilderness area.

**Infrastructure:** The facilities required for a societal function or service (e.g., transportation and utility infrastructure).

**Initial Study:** An environmental study carried out in compliance with CEQA to evaluate the potential for a proposed project to result in a significant adverse impact on the environment.

**In lieu of:** Instead of or in place of.

**Insertion loss:** The actual noise level reduction at a specific receiver due to construction of a noise barrier or some other intervention between the noise source (e.g., traffic) and the receiver.

**In-situ:** In the original or natural position.

**Intactness:** A measure of the visual integrity of the natural and human-built landscape and its freedom from encroaching elements.

**Intermediate station:** A train station between two other stations.

**Intermittent stream:** A stream that flows during only part of the year.

**Intermodal:** Transportation that involves more than one mode (e.g., walk, bike, automobile, transit, taxi, train, bus, or air) during a single journey.

**Intermodal station:** A transportation system station for more than one mode of transportation (e.g., a station for both light rail and commuter rail).

**Intrusion:** An errant vehicle's exit out of its right-of-way and entry into the operating space of another transportation system's right-of-way.

**Intrusion detection technology:** Technology used in the fencing around HSR operations to protect an HSR train from the derailment of an adjacent train. When an intrusion detection system is activated, HSR operations are stopped by the signaling system.

**Inversion:** A condition where atmospheric temperature deviates from the normal change of atmospheric properties with altitude. Commonly used to describe atmospheric temperature that increases rather than decreases with altitude, suppressing atmospheric mixing and tending to trap pollutants near the ground surface and resulting in adverse effects on health and materials.

**Invertebrate:** Organisms lacking a vertebral column.

**Investment-grade ridership forecast:** Ridership forecast that is sufficiently detailed and reliable to permit responsible decision-making about capital expenditures.

## K

**Key viewpoints (KVP):** Viewpoints that represent the range of visual character and visual quality in the project viewshed, which is the portion of the surrounding landscape within which a project is potentially visible. *See also viewshed.*

**Kilo:** Prefix meaning 1 thousand.

**Kilovolt:** A unit of electric potential equal to a thousand volts.

## L

**Land use compatibility assessment:** An assessment of the compatibility of a proposed project or land use with existing and projected land uses in nearby areas based on the sensitivity of various land uses to change related to the alternatives, and the impact of these changes on the land use.

**Landscape unit:** An area of distinct, but not necessarily homogenous, visual character.

**Landslide:** Movement of earth or rock materials down a slope under the influence of gravity.

**Land use categories:** Types of development, including residential; commercial, services, and office; industrial and mixed commercial; transportation; open space and recreation; and facilities uses.<sup>1</sup>

**Law enforcement:** Public services address the discovery, deterrence, rehabilitation, or punishment of criminal behavior and ensure that laws are obeyed. These services are provided by federal, state, and local law enforcement agencies. Railroad operators, including the Authority, may also employ railroad police officers to enforce state laws for the protection of railroad property, personnel, passengers, and cargo (Code of Federal Regulations Title 49, Part 207).

**Lead:** A stable heavy metal element that can have toxic effects and that persists such that it accumulates in the environment, humans, or animals.

**Lead agency:** The public agency that has the principal responsibility to carry out or approve a project or action and is responsible for preparing environmental review documents in compliance with CEQA and NEPA.

**L<sub>eq</sub>:** A measure of the average noise level during a specified period of time.

**L<sub>eq</sub> (h), dBA:** Equivalent or average noise level for the noisiest hour, expressed in A-weighted decibels. *See also A-weighted sound level and decibel.*

**Less than significant:** In CEQA or NEPA usage, describes an impact that is not sufficiently adverse, intense, or prolonged to require mitigation. *See also mitigation and significant.*

**Levee:** An earthen berm or other constructed wall used to raise the hydraulic height of a riverbank or prevent a river from overflowing its banks.

**Level of service (LOS):** A traffic rating system using qualitative measures to characterize operational conditions and perceptions of operational conditions by motorists and passengers.

<sup>1</sup> Land uses described in this Draft EIR/EIS can be further broken down from these categories to include single-family residential, multifamily residential, and mixed residential uses, as well as transportation-railroad and transportation, communications, and utilities uses.

**Light maintenance facility (LMF):** A facility used in support of the HSR system associated with fleet storage, cleaning, repair, overnight layover accommodations, and servicing of high-speed train equipment.

**Linguistic isolation:** Defined by the U.S. Census Bureau as living in a household in which all members aged 14 years and older speak a non-English language and also speak English less than “very well” (i.e., have difficulty with English).

**Liquefaction:** A type of ground failure in which soils or sediments lose their internal cohesion, cease to behave as a solid, no longer support weight, and may flow like a liquid.

**Lithic:** Pertaining to or describing a stone tool or artifact.

**Local geology:** Geologic units in the immediate vicinity.

**Logarithmic scale:** A nonlinear scale used when there is a very large range of units. The ratio of successive intervals is not equal to 1 (typical for linear scales) but is some common factor larger than the previous interval. For example, a typical ratio is 10, so that the marks on the scale read: 1, 10, 100, 1000, 10000, etc.

**Longitudinal:** A facility located parallel to and within a highway or railway right-of-way.

**Los Angeles–San Diego–San Luis Obispo Rail Corridor (LOSSAN Corridor):** The 351-mile LOSSAN Corridor is the second busiest intercity passenger rail corridor in the nation. Passenger rail currently operates within the LOSSAN Corridor right-of-way and will continue to do so with the introduction of HSR service. The HSR project’s alignment would share the existing LOSSAN rail corridor with the existing rail operators with shared-rail track operation.

**Low-income:** Low-income means a person or household whose median income is at or below the Department of Health and Human Services poverty guidelines. A low-income population means any readily identifiable group of low-income persons who live in geographic proximity.

**Low-risk utility:** All utilities that are not identified as high-risk facilities (as defined in Section 2 of the *Caltrans Project Development Procedures Manual*, Appendix LL— Policy Certification and Utility Matrix).<sup>2</sup> See also **high-risk utility**.

**Low visual impacts:** Impacts sustained if features of a project alternative are consistent with the existing line, form, texture, and color of other elements in the landscape and do not stand out.

## M

**Magnetic fields:** Forces that a magnetic object or moving electric charge exert on other magnetic materials and on electric charges.

**Magnetic levitation (maglev):** An HSR technology that relies on attractive or repulsive magnetic forces to lift and propel a train along a guideway.

**Major highways/roadways:** Major highways/roadways and corridor traffic volumes refer to the network of roads, roadway intersections, and traffic in an area. All highways/roadways are classified according to their primary functions:

- **Freeway**—A major highway/roadway with controlled access, devoted exclusively to traffic movement, mainly of a through or regional nature.
- **Expressway**—A major highway/roadway with a mix of controlled and uncontrolled access, linking freeways with arterials and providing access to major destinations.

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<sup>2</sup> California Department of Transportation. 2016. *Project Development Procedures Manual*, Appendix LL—Utilities Policy Certification and Utility Matrix. July 2016. [www.dot.ca.gov/design/manuals/pdpm/appendix/apdxll.pdf](http://www.dot.ca.gov/design/manuals/pdpm/appendix/apdxll.pdf) (accessed September 2018).

- **Arterial**—A major highway/roadway mainly taking traffic to and from expressways and freeways and providing access to major destinations as well as adjacent properties.
- **Collector**—A nonmajor highway/roadway that collects and distributes traffic to and from arterials and provides access primarily to and from adjacent properties.
- **Local**—The lowest category of highway/roadway, providing nonmajor roadway access to and from individual properties and distributing local traffic to and from the higher highway/roadway classifications, particularly collector streets.

**Mainline:** (1) The portion of a principal highway or railroad that is exclusive of connectors, ramps, spurs, etc.; (2) the tracks allocated to HSR traffic at normal commercial speeds and not normally allowed for stops, shunting, or garage.

**Maintenance:** Activities associated with the inspection, provisioning, cleanup, repair, or replacement of HSR infrastructure, facilities, trains, or other equipment. Also, an air basin that was formerly in nonattainment but now meets the established standards for that pollutant. *See also light maintenance facility, heavy maintenance facility, attainment, and nonattainment.*

**Maintenance of way:** A maintenance activity for a railway right-of-way and track, including tracks, roadways, buildings, signals, and communication and power facilities.

**Maintenance-of-way facility:** A facility with offices for inspection and maintenance staff, and storage areas for essential equipment and materials, such as rail ballast, ties, sections of rail, overhead contact system (OCS) poles, and diesel-powered maintenance trains. *See also overhead contact system.*

**Maintenance-of-way program:** A program of preventative and corrective maintenance, schedules for inspection and maintenance activities, and safety regulations for HSR employees.

**Maintenance siding:** A dead-end track dedicated to parked trains and connected to a passing, turnout, or station connection track, never to the mainline.

**Major investment study (MIS):** A study that evaluates project alternatives for their ability to solve an area's transportation problems.

**Master plan:** A comprehensive planning document intended to guide the long-range growth and development of a community or region, or the long-term management and use of parkland.

**Mean high-water mark:** The elevation reached by the water surface at the mean (average) high water level (e.g., average high-tide elevation or average flood elevation). It often is indicated by physical characteristics such as erosion, lines of vegetation, or changes in type of vegetation.

**Measure M:** A measure that was approved by Los Angeles County voters in November 2016 and that provides for a sales tax of 0.5 cent beginning in 2017, increasing to a 1 cent sales tax in 2039. This measure funds several transportation-related projects throughout Los Angeles County and expedites projects previously approved under Measure R.

**Medium visual impact:** Impacts sustained if features of a project alternative are readily discernable, but do not dominate the landscape or detract from existing dominant features.

**Megafauna:** Mammoth, bison, horse, camel, dire wolf, and other large animals.

**Megafossils:** Fossils large enough to be seen with the unaided eye.

**Mesoscale:** Describes regional air quality analysis. *See also microscale.*

**Microrelief:** Relief forms that are details of larger surface forms (e.g., knolls, channel banks and spits, small sinkholes, and sand ripples).

**Microscale:** Describes local air quality analysis. *See also mesoscale.*

**Midden:** Refuse accumulation associated with prehistoric human use of a site or area.

**Miocene:** The period between 23 and 5.3 million years before present. *See also* **Holocene**, **Pleistocene**, and **Quaternary**.

**Mineral resources:** Include resources used for building (i.e., aggregate); industrial minerals such as lime, pumice, and gypsum; and fossil fuels and geothermal resources.

**Minorities:** Persons who are American Indian and Alaskan Native, Asian, Black or African American, Hispanic or Latino, Native Hawaiian, other Pacific Islander, and persons of other races or mixed races. A minority population means any readily identifiable group or groups of minority persons who live in geographic proximity.

**Mitigation:** Action or measure undertaken to minimize, reduce, eliminate, or rectify the adverse impacts of a project, practice, action, or activity.

**Mitigation bank:** A large block of land that is preserved, restored, and enhanced for the purpose of mitigating for projects that take (disturb, injure, or kill) special-status species, or that convert wetlands or otherwise vegetated biological communities.

**Mitigation Monitoring and Enforcement Plan (MMEP):** Document outlining the strategy for implementing, monitoring, and ensuring the effectiveness of mitigation measures committed to as part of project approval.

**Mixed-use development:** Development that incorporates residential and nonresidential uses.

**Modal:** A transportation system defined on the basis of specific rights-of-way, technologies, and operational features.

**Modal alternative:** A hypothetical, reasonable build alternative to the proposed HSR system consisting of expansion of highways and airports serving the same geographic areas.

**Monitoring:** The collection of information to determine the effects of resource management and to identify changing resource conditions or needs.

## N

**NAD 83:** *See also* **North American Datum of 1983**.

**National Ambient Air Quality Standards (NAAQS):** Federal standards stipulating the allowable ambient concentrations of specific criteria air pollutants.

**National Environmental Policy Act (NEPA):** Federal legislation that establishes national policies and goals for the protection of the environment and requires federal agencies to consider the environmental impacts of major federal projects or decisions, to share information with the public, to identify and assess reasonable alternatives, to identify appropriate measures to mitigate potential impacts, and to coordinate efforts with other planning and environmental reviews taking place. Codified at: 42 U.S. Code § 4331 et seq.

**National Priorities List/Superfund List:** A federal list of sites that have been identified as posing an immediate public health hazard and where an immediate response is necessary.

**NAVD 88:** *See also* **North American Vertical Datum of 1988**.

**Nitrogen oxides (NO<sub>x</sub>):** A class of air pollutant compounds that include nitrogen dioxide (NO<sub>2</sub>) and nitric oxide (NO), both of which are emitted by motor vehicles. *See also* **criteria pollutants**.

**No Action:** Under NEPA, refers to an alternative under which no action would be taken (no infrastructure would be built and no new management or operational practices would be instituted). *See also* **No Project**.

**No Project:** Under CEQA, refers to an alternative under which no action would be taken (no infrastructure would be built and no new management or operational practices would be instituted). *See also* **No Action**.

**No Project Alternative:** Represents the regional and state transportation system (e.g., highway, air, and conventional rail) as it is today and with implementation of programs or projects that are in regional transportation plans and have identified funds for implementation by 2040, as well as other types of planned development considered in Section 3.19, Cumulative Impacts, of this EIR/EIS. The No Project Alternative represents the baseline conditions for comparison with the HSR alternatives.

**Noise:** Generally defined as a loud, unpleasant, unexpected, or undesired sound that is typically associated with human activity and that may interfere with or disrupt normal activities. Airborne sound is a rapid fluctuation of air pressure above and below atmospheric pressure. Noise can interrupt ongoing activities and can result in community annoyance, especially in residential areas at night.

**Nonattainment:** An air basin that exceeds federal or state standards for a particular pollutant. *See also attainment and maintenance.*

**Nondisturbance exclusion zones:** Areas designated off-limits for construction activities, personnel, and equipment.

**Nonelectrified steel-wheel-on-steel-rail train:** Conventional intercity diesel-electric locomotive train equipment (e.g., Amtrak California Corridor trains).

**Nonpoint-source pollution:** Pollution that collects from a wide area and cannot be traced to a single source. Examples include pesticides or fertilizers from farms or developed lands that wash into rivers or percolate through the soil into groundwater.

**Nonwater-contact recreation:** Describes recreational activities where contact with the water is not likely, such as photography, wildlife viewing, etc.

**North American Datum of 1983 (NAD 83):** The horizontal control datum for the U.S. based on the Geodetic Reference System 1980 and with a geocentric origin.

**North American Vertical Datum of 1988 (NAVD 88):** The vertical control datum established for surveying elevations in the U.S. based on the General Adjustment of the North American Datum of 1988.

**Notice of Intent (NOI):** Formal notice published in the *Federal Register* by the federal lead agency stating that an environmental impact statement will be prepared for a proposed project. *See also National Environmental Policy Act.*

**Notice of Preparation (NOP):** Formal notice issued by the state lead agency stating that an environmental impact report will be prepared for a proposed project. *See also California Environmental Quality Act.*

**Noxious weed:** A plant that has been defined as a pest by law or regulation. The state of California and the federal government maintain lists of plants that are considered threats to the well-being of the state or the country.

**Nuclear magnetic resonance (NMR):** Property that magnetic nuclei have in a magnetic field and applied electromagnetic pulse or pulses that cause the nuclei to absorb energy from the electromagnetic pulse and radiate this energy back out. The energy radiated back out is at a specific resonance frequency that depends on the strength of the magnetic field and other factors.



**Obsidian:** A jet-black to gray, naturally occurring volcanic glass that is formed by the rapid cooling of viscous lava.

**Off-site:** Outside the HSR project footprint. *See also project footprint.*

**Open space:** Any land that is undeveloped and accessible to the public. Open space is generally an area that is partially covered with grass, trees, shrubs, or other vegetation and does not contain buildings or other built structures.

**Ordinary high-water mark:** The line on the shore of a body of water established by the fluctuation of water levels. *See also* **mean high-water mark**.

**Overhead contact system (OCS):** A simple two-wire system consisting of a messenger wire and a contact wire that are supported by cantilever structures and attached to poles installed alongside the rail tracks. *See also* **contact wire**.

**Overdraft:** A condition where groundwater pumping exceeds the natural replenishment (recharge) to an aquifer. *See also* **aquifer**.

**Ozone (O<sub>3</sub>):** A photochemical oxidant that is a major cause of lung and eye irritation in urban environments.

## P

**Paleontological:** Related to the study of life in past geologic time.

**Paleontological potential:** The probability that a geologic unit contains fossils.

**Paleontological productivity:** The relative abundance of fossils that have been encountered in a specific geologic unit.

**Paleontological resource monitor:** A person trained in the identification of fossils in the field and who monitors construction activities for paleontological resources.

**Paleontological resource specialist (PRS):** A person with advanced degree(s) in paleontology or paleobiology and trained in paleontological resources management. A PRS is usually responsible for compliance with the laws, ordinances, regulations, and standards addressing that resource.

**Paleontological resources:** The preserved remains or traces of animals and plants. Paleontological resources include body fossils (the remains of the organism itself) and trace fossils (which record the presence and movement of past organisms in their environment). Fossils are typically found in sedimentary and certain types of volcanic rock units, and they provide information about the evolution of life on earth over the past approximately 4 billion years. Paleontological resources are important to science and education because they document the presence and evolutionary history of particular groups of organisms, reconstruct the environments in which these organisms lived, provide information on the age of the rocks in which they are found, and shed light on environmental change over time.

**Paleontological sensitivity:** The probability of a geologic unit to yield fossils based on historic paleontological productivity. Often used synonymously with paleontological potential. *See also* **paleontological potential**.

**Paleontologist:** A scientist who studies fossils.

**Pantograph power pickup:** A device mounted on the top of train vehicles for collecting current from an overhead wire. It consists of a hinged vertical arm operated by springs or compressed air and a wide, horizontal contact surface that slides along the overhead wire.

**Paralleling station:** An HSR traction power facility that operates with switching stations to balance the electrical load between HSR tracks and switches track power off or on in an emergency.

**Parcel:** A legally defined distinct, continuous portion or tract of land.

**Park-and-ride:** Facility where people can leave personal vehicles and take other modes of transportation, such as the HSR train.

**Parks:** Refers to publicly owned properties set aside for recreational use by the public and maintained in a natural or landscaped state. A park is sometimes a large area of land with grass and trees, sports fields or courts, or play equipment, with accessory amenities like parking, water fountains, and restrooms, which are maintained for public use and enjoyment.

**Partial-parcel acquisition:** A permanent acquisition of a portion of a parcel of land as necessary to implement a project. Also describes a temporary acquisition of a parcel of land that may require the occupants to move during the construction period. *See also parcel.*

**Particulate matter (PM):** Liquid and solid particles of a wide range of sizes and compositions; of particular concern for air quality are particles smaller than or equal to 10 microns and 2.5 microns in size (PM<sub>10</sub> and PM<sub>2.5</sub>, respectively).

**Particulate pollution:** Air pollution such as dust, soot, and smoke that is irritating but usually not poisonous. Particulate pollution also can include bits of highly toxic solid or liquid substances. Of particular concern are particles smaller than, or equal to, 10 microns (PM<sub>10</sub>) or 2.5 microns (PM<sub>2.5</sub>) in size.

**Pedestrian and bicycle access:** Refers to pedestrian access routes and bicycle access routes within the transportation resource study area.

**Perennial stream:** A stream that flows continually throughout the year.

**Pesticide:** Any substance intended to prevent the presence of, destroy, repel, or mitigate any pest. The term pesticide applies to insecticides and various other substances used to control pests, including herbicides.

**Photogrammetry:** The art, science, and technology of obtaining reliable information about physical objects and the environment through the process of recording, measuring, and interpreting images and patterns of electromagnetic radiant energy and other phenomena.

**Plat:** A legal map drawn to scale and showing the divisions of land. A plat shows how the land has been subdivided into lots, defining the locations and boundaries of individual parcels with the streets, alleys, easements, and rights of use over the land.

**Platform:** Station area adjacent to tracks where trains stop to allow passengers to board and alight.

**Pleistocene:** The period between 2.6 and 0.01 million years before present. *See also Holocene, Miocene, and Quaternary.*

**Point source pollution:** Pollution that can be traced to a single source (e.g., a smokestack at a factory).

**Polychlorinated biphenyls (PCB):** Chemicals used in electrical transformers, hydraulic equipment, capacitors, and similar equipment. It is an organic chlorine compound that is persistent and toxic.

**Population:** The number of residents living in a defined area. Population increase is based on births, in-migration, out-migration, and deaths. Analysis in this Draft EIR/EIS assesses whether or not the HSR Build Alternative would affect population growth compared to the No Project Alternative.

**Positive train control (PTC) infrastructure:** Integrated command, control, communications, and information systems for controlling train movements. These systems improve railroad safety by significantly reducing the probability of collisions between trains, casualties to roadway workers, and damage to equipment. The Rail Safety Improvement Act requires that railroads implement PTC systems to prevent train-to-train collisions on certain rail lines by December 31, 2020.

**Poverty level:** The federal annual income threshold below which a household or individual is considered poor. The poverty level changes each year and is based on the number of members in a household. In 2015, the Department of Health and Human Services defined the poverty level for a family of four as an annual income of \$24,250 or less.

**Practicable:** Available and capable of being implemented after considering cost, existing technology, and logistics in light of overall project purposes.

**Pre-contact archaeological sites:** Places where Native Americans lived or carried out activities during the prehistoric period (as late as A.D. 1769). Such sites may contain artifacts, cultural features, subsistence remains, and human burials.

**Preferred Alternative:** The HSR build alternative identified as preferred by the lead agencies (FRA and the Authority).

**Prehistoric archaeological sites:** Places where Native Americans lived or carried out activities during the prehistoric period (as late as AD 1769). Such sites may contain artifacts, cultural features, subsistence remains, and human burials.

**Primary seismic hazards:** Primary seismic hazards include ground surface fault ruptures and ground shaking. Surface fault ruptures are the result of stresses relieved during an earthquake event and often cause damage to structures astride the fault zone. A fault zone is a group of earthquake-induced fractures in soil or rock where there has been documented seismic displacement on two sides of the fault relative to one another. Ground shaking is the level of ground movement caused by a seismic event.

**Prime farmland:** Rural land that has the best combination of physical and soil chemistry characteristics for producing food, feed, forage, fiber, and oilseed crops, and that is available for these uses. *See also farmland of local importance, farmland of statewide importance, and unique farmland.*

**Program-level/programmatic:** Refers to a CEQA or NEPA environmental review that covers the broad spectrum of a large, complex, regionally extensive effort comprising a number of smaller, regionally focused projects or phases.

**Project:** The combination of decisions and actions taken by a lead agency to implement a plan of action, construct a facility, or operate a service. In the context of HSR, projects include the construction of guideway and associated infrastructure; maintenance, station, and other facilities; passenger rail operation and maintenance activities; and implementation of measures to mitigate the significant adverse impacts of HSR construction, operation, and maintenance.

**Project footprint:** The area needed to construct, operate, and maintain all permanent HSR system features. It includes construction of all project elements such as freight, passenger, or transit railroad grade separations; roadway grade separations and adjoining street or intersection changes; contiguous access to severed parcels; new utility features; existing utility relocations; access to new or relocated utility features; drainage facilities; and any other physical changes needed to construct and operate the HSR system. Access to and control of the project footprint includes obtaining all required HSR property rights or licenses to accommodate HSR construction, operation, and maintenance.

**Project-level:** Refers to more detailed, site-specific environmental analysis focusing on the implementation of a single project that is part of a program of projects.

**Project viewshed:** The area within which the project alternatives could be visible.

**Protected trees:** Protected trees are trees or tree communities that have special significance and are provided protection by, and specifically identified in, county and city ordinances, codes, or general plans. The types of trees and specific physical characteristics required to meet the local definitions vary by city and county.

**Public utilities:** Public utilities are publicly owned facilities used to provide electric power, natural gas, sewerage, communications, or other services to the community. Public utilities impacts are generally defined under CEQA as whether the existing utilities can accommodate the proposed project based on the capacities of the existing infrastructure. Impacts are determined by the extent to which the proposed project would exceed the capacities of facilities (e.g., water treatment, wastewater treatment, stormwater drainage, landfills) or exceed the available supply of pertinent resources (i.e., water).

**Public transportation:** Includes bus, trolley bus, streetcar or trolley car, subway or elevated, railroad, ferryboat, and taxicab service.

**Purpose and need:** The reason(s) for undertaking a proposed project or action, and the need(s) the project or action is intended to meet or fulfill.

**Q**

**Qualified paleontologist:** See *also* **paleontological resources specialist**.

**Quality level:** A level of accuracy scale used to: (1) identify the location of underground and above-ground utility facility information needed to develop capital projects, and (2) acquire and manage that level of information during the project development process.

**Quaternary:** The geologic period that encompasses the Pleistocene and Holocene periods. See *also* **Holocene**, **Miocene**, and **Pleistocene**.

**R**

**Radio frequency:** The frequency range of the electromagnetic spectrum used for radio communication.

**Rail guideway:** A rail track that supports and physically guides trains, including high-speed trains.

**Rail line:** A length of railroad track and railbed.

**Railbed:** The substructure of a railroad, underlying the rail tracks.

**Reactive organic gas (ROG):** Reactive hydrocarbon pollutants. See *also* **hydrocarbon**.

**Reconductoring:** The upgrade of an existing electrical power transmission or distribution line to increase current carrying capacity.

**Recreation:** Recreation is a pastime, diversion, exercise, or other activity affording relaxation and enjoyment. Areas used for recreation generally include the following: public parks and open spaces, including greenbelts; pedestrian and bicycle trails (but not bike lanes or routes); playgrounds; and school district play areas available for public use during nonschool hours.

**Regional Transportation Improvement Plan (RTIP):** A listing of all planned transportation projects proposed over a 6-year period for a given region. An RTIP is prepared to implement projects and programs listed in the regional transportation plan and is developed in compliance with state and federal requirements. See *also* **Regional Transportation Plan**.

**Regional Transportation Plan (RTP):** A long-range (20+ year) transportation plan. The RTP identifies major challenges as well as potential opportunities associated with growth, transportation finances, the future of airports in the region, and impending transportation system deficiencies that could result from anticipate regional growth. There are typically two components of the RTP: a financially constrained version and a financially unconstrained version. The financially constrained version of the RTP includes projects and programs that fit within existing and planned funding sources. See *also* **fiscally or financially constrained plans** and **Regional Transportation Improvement Plan**.

**Relocations:** The removal, rearrangement, reinstallation, or adjustment of a utility facility required by a proposed improvement project such as the HSR system. Also describes assistance to property owners and occupants who would be displaced from parcels acquired to implement the HSR system's construction, operation, or maintenance.

**Retention pond:** A pond designed to hold and filter most or all of the runoff that it receives.

**Remnant:** The portion of a parcel of land that would be affected by severance (and creating two parcels) that is not acquired in order to implement the HSR project.

**Ridership:** The number of people who use a transportation system.

**Right-of-way:** A legal right of passage over a defined area of real property. In transit usage, it represents the corridor along a roadway or railway that is controlled by a transit or transportation agency/authority.

**Riparian:** Relating to, living, or located on the bank of a natural watercourse, lake, or tidewater.

**Riparian corridor:** The area along a natural watercourse, lake, or tidewater where wildlife moves or migrates.

**Riprap:** A form of watercourse bank protection consisting of placed rock or concrete objects to strengthen or maintain an earthen embankment from erosion. *See also erosion.*

**Rock or geologic unit:** A body of rock or unconsolidated sediment that has a distinct origin and distinctive attributes allowing its distribution to be mapped.

**Rolling stock:** Wheeled railway vehicles.

**Route mile:** The distance traveled over tracks between two points. Route miles may have one or multiple sets of parallel tracks.

**Ruderal:** Weedy vegetation, commonly including or dominated by introduced species, characteristic of areas where native vegetation has been disturbed or removed.

**Runoff:** The flow of water over land from rain, snowmelt, or other sources.

## S

**Scale:** A graduated line representing a proportionate size (e.g., a line 1 inch long on a map indicating that length represents 2,000 feet on the map). *See also logarithmic scale*

**Scarp:** The inner slope of a ditch.

**Scenic corridor:** A corridor with landscapes and vistas of high scenic quality. Topography, vegetation, viewing distance, or jurisdictional lines determine the corridor boundaries. A city or county can nominate a scenic corridor under the California Scenic Highway Program for official designation by identifying and defining the scenic corridor and adopting a Corridor Protection Program. The city or county must also adopt ordinances, zoning, or planning policies to preserve the scenic quality of the corridor or document that such regulations already exist in various portions of local codes. These ordinances or policies make up the Corridor Protection Program.

**Scoping:** A process used under CEQA and NEPA to determine the set of issues to be discussed and for identifying issues of particular concern related to the proposed action or project to be analyzed in an EIR (under CEQA) or an EIS (under NEPA).

**Scour:** Erosion caused by fast-flowing water.

**Screenline:** An imaginary line across parallel roadways that defines a zone of analysis.

**Seasonal riverine:** A classification of wetland found along rivers and streams.

**Secondary seismic hazards:** Include liquefaction, seismically induced settlements, lateral spreads or slumps, and flooding resulting from seismically induced dam failure. Liquefaction is a type of ground failure in which soils lose their strength as a result of buildup in pore water pressure during and immediately following ground shaking. *See also liquefaction.*

**Section 4(f):** Provisions originally enacted as Section 4(f) of the U.S. Department of Transportation Act of 1966 and codified in 49 U.S. Code, Subtitle I, Section 303(c). Section 4(f) addresses potential conflicts between transportation needs and the protection of land for recreational use and resource conservation. Section 4(f) provides protection for publicly owned parkland, recreation areas, and historic sites from use (displacement or adverse impact). Specifically, the provisions prohibit the Secretary of Transportation from approving any transportation program or project that would require use of any publicly owned land (e.g., public park, recreation area, wildlife or waterfowl refuge, or land of an historic site of national significance as determined by the officials having jurisdiction over these lands). Section 4(f) allows use of such lands if there are no feasible and prudent alternatives. In addition, a proposed program or project must include all possible planning to minimize harm resulting from the proposed use.

**Section 6(f):** Section 6(f) of the Land and Water Conservation Fund Act of 1964 prohibits the conversion of property acquired or developed with funds granted through the act to a nonrecreational purpose without the approval of the National Park Service. If approved, Section 6(f) directs the Department of the Interior to ensure that replacement lands are provided that are of equal value (monetary), location, and usefulness. State and local governments often obtain these grants to acquire or make improvements to parks and recreation areas (16 U.S. Code § 460-4 through 460-11, September 3, 1964, as amended 1965, 1968, 1970, 1972–1974, 1976–1981, 1983, 1986, 1987, 1990, 1991, 1993–1996).

**Sedimentary rock:** Rock resulting from the consolidation of sediment.

**Sedimentary rock units:** Rock units composed of sediment, as distinct from those composed of igneous rocks (volcanic or granite). Sedimentary rock units yield fossils.

**Sediments:** Fragments of material originating from the physical or chemical weathering of rocks and minerals, from the decomposition of organic matter, or from atmospheric fallout. Clay, mud, and sand are all types of sediment.

**Seiche:** Oscillation or “sloshing” of water in a lake, bay, or other enclosed or semi-enclosed body of water. Often occurs as a result of landslides or seismic ground shaking.

**Seismic monitoring devices:** Devices that detect ground movements and automatically shut down electric power to high-speed trains and apply the on-board emergency brakes.

**Senate Bill 45:** A California law that consolidates various transportation funding programs in the State Transportation Improvement Program (STIP). The law increases accountability for programming and delivery of STIP projects to the Caltrans regional districts. *See also State Transportation Improvement Program.*

**Sensitive natural communities:** Communities of plants and wildlife interacting in the same ecosystem. The extent of these communities in the state has been much reduced and is locally rare.

**Sensitive receiver:** Noise-sensitive or vibration-sensitive locations where increased annoyance can occur, such as residences, schools, hotels/motels, or medical facilities.

**Sensitive receptors:** Locations considered more sensitive to adverse effects from air pollution (e.g., residences; preschools and kindergarten through grade 12 schools; daycare centers; healthcare facilities such as hospitals, retirement homes, and nursing homes; and parks and/or playgrounds).

**Sensitivity analysis:** An analysis that assesses how sensitive the outcomes predicted by modeling are to changes in different model inputs (assumptions or variables).

**Service:** The portion of the electrical, gas, water, or sewer system that connects a customer, usually at the meter location, to the utility distribution or supply system. Also refers to passenger transportation provided by transit and other carrier operations.

**Shadow impact:** A visual impact ranking due to newly created shadows. For example, a shadow impact ranking would be high if a new (not existing) elevated structure is constructed within 75 feet of residential, open space, natural areas, or parkland.

**Shared right-of-way:** An HSR alignment where HSR trains operate in proximity to and within the existing operating rights-of-way of other transportation systems, including conventional passenger railroads or freight railroads. Under such conditions, the HSR trains would not operate on the same tracks. Also includes highways where the HSR trains would operate within the highway rights-of-way, but would not use any existing roadway pavement or adjacent areas required for vehicles to safely pull off of the highway.

**Shared-use corridor:** A segment along the HSR alignment where HSR trains operate on exclusive tracks and rights-of-way located adjacent to existing rights-of-way where conventional passenger and freight railroads currently operate.

**Shared-use track:** A segment along the HSR alignment where HSR trains operate on the same track with other passenger railroads (e.g., Caltrain, Metrolink, and Amtrak).

**Shinkansen:** The Japanese high-speed train.

**Significant:** In CEQA usage, describes an impact that is sufficiently adverse, intense, or prolonged to require mitigation. For NEPA usage, see Code of Federal Regulations Title 40, Part 1508.27. *See also less than significant.*

**Slab track:** Railroad track installed on concrete slabs for support.

**Sleeve:** A pipe in which a pipeline or conduit is inserted.

**Society of Vertebrate Paleontology:** An international society of paleontologists, with an emphasis on vertebrate paleontology.

**Soil hazards:** Soil hazards present in the resource study area include expansive soils, erodible soils, and corrosive soils. Expansive soils are susceptible to expansion and contraction resulting from changes in moisture and provide unstable support for foundations or other structures. Erodible soils are susceptible to wind and water erosion. Corrosive soils have chemical properties that weaken concrete or uncoated steel and thereby reduce the design life of the structure.

**Special provision:** Specific clauses setting forth the conditions or requirements peculiar to the construction work; they supplement the project's standard specifications.

**Special-status natural communities:** Significant or rare vegetation types (as defined by the California Department of Fish and Wildlife) or plant communities that are of limited distribution statewide or within a county or region.

**Special-status species:** Plants and animals that are legally protected under the Federal Endangered Species Act of 1973, the California Endangered Species Act, or other regulations. For example, includes those species that meet the definitions of rare or endangered under *State CEQA Guidelines* Sections 15380 and 15125.

**State Implementation Plan (SIP):** Statewide plan for complying with the federal Clean Air Act. The SIP consists of narrative, rules, and agreements that California uses to clean up polluted areas.

**State Transportation Improvement Program (STIP):** A multiyear capital improvement program of transportation projects on and off the state highway system that are funded with revenues from the State Highway Account and other funding sources. STIP programming generally occurs every 2 years.

**Station:** Area that would provide intermodal connectivity, drop-off facilities, an entry plaza, a station house area for ticketing and support services, an area where passengers wait and access the HSR, and parking facilities.

**Stormwater Pollution Prevention Plan (SWPPP):** A construction plan that specifies site management activities to be implemented during site development, including construction stormwater best management practices, erosion and sedimentation controls, dewatering (nuisance water removal), runoff controls, and construction equipment maintenance.

**Straddle bent:** A structure that spans the functional/operational rights-of-way of a roadway, highway, or railway. The structure has piers to support elevated roadways and rail tracks.

**Study corridor:** A linear geographic belt or band connecting different parts of the study region. It follows the program-level corridor alignment selected for the HSR system and is used to evaluate alternatives at the project level. *See also program-level/programmatic and project-level.*

**Study region:** A geographic region that encompasses one or more selected corridors of the HSR system, such as the Bay Area to Central Valley, the Central Valley, and the Los Angeles Basin.

**Subsidence:** Sinking or lowering of the ground surface.

**Subsistence remains:** Remains that include the inedible portions of foods, such as animal bone and shell, and edible parts that were lost and not consumed, such as charred seeds.

**Sulfur oxides (SO<sub>x</sub>):** Sulfur-oxygen compounds that include the criteria pollutants sulfur dioxide (SO<sub>2</sub>) and sulfur trioxide (SO<sub>3</sub>). *See also* **criteria pollutants**.

**Superelevation:** The difference in elevation between the outside rail of a curving rail track and the inside rail measured between the highest point on each rail head. Normally called cant in European publications.

**Surface Transportation Board (STB):** A bipartisan, independent regulatory body. The STB has jurisdiction over the construction and operation of new rail lines, including the HSR system.

**Surface water hydrology:** Surface water hydrology refers to the occurrence, distribution, and movement of surface water, including water found in rivers, creeks, and stormwater drainage systems. Stormwater runoff and drainage patterns are directed by the topography and the gradient of the land.

**Surface water quality:** Water quality is a measure of the suitability of water flowing across land relative to the requirements for a particular use of the water based on selected physical, chemical, and biological characteristics. It is most frequently used based on a set of standards against which compliance can be assessed.

**Surficial geology:** Unconsolidated Quaternary-era geologic materials lying on top of bedrock. Common surficial materials include sand, gravel, glacial tills, clay, and silts. *See also* **Holocene, Miocene, Pleistocene, and Quaternary**.

**Swale or sheetflow runoff:** Runoff from a low tract of land, especially one that is moist or marshy.

**Switch:** A mechanical device enabling trains to be guided from one track to another at a railway junction.

**Switching station:** An HSR traction power facility that operates with paralleling stations to balance the electrical load between HSR tracks and switches track power off or on in an emergency. *See also* **paralleling station**.

## T

**Take:** To harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect, or attempt to engage in any such conduct (as defined in Section 3 of the Federal Endangered Species Act).

**Taxon:** A general term for a named group of related organisms.

**Tectonic activity:** Movement of masses comprising the earth's crust. These masses (called tectonic plates) can move away from or toward each other and result in earthquakes, volcanoes, and mountain building.

**Terminal station:** The first or last station of a passenger railway route.

**Tesla (T):** Unit of measure describing the strength of a magnetic field.

**TGV:** *See also* *Train à Grande Vitesse*.

**Thermocline:** A thin but distinct layer in a large body of water, such as an ocean or lake, in which temperature changes more rapidly with depth than it does in the layers above or below.

**Threatened Species:** Any plant or animal species listed under the federal Endangered Species Act that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.

**Tiering:** Refers to the practice of addressing general issues in broader environmental impact reports or statements, such as program-level documents, and providing more detailed site- or route-specific analyses in subsequent project-level environmental documents. The project-level documents incorporate the initial broad program-level analysis by reference. See *also* **program-level/programmatic and project-level**.

**Topographic map:** A map of the surface features of the earth. Elevation is shown by contour lines that connect surface features at the same elevation.

**Total organic gases (TOG):** A pollutant classification that includes all hydrocarbons, both reactive and nonreactive. See *also* **hydrocarbons**.

**Toxic air contaminants (TAC):** The TACs of concern are seven air toxics identified by the U.S. Environmental Protection Agency as having significant contributions from mobile sources. These include: acrolein, benzene, 1,3-butadiene, diesel particulate matter and diesel exhaust organic gases, formaldehyde, naphthalene, and polycyclic organic matter.

**Track mile:** The number of miles of single track.

**Trackway:** The route of a train.

**Trackwork:** The design of train tracks.

**Traction power substation (TPSS):** An electrical substation that supplies power to the HSR system.

**Traditional cultural properties and resources (TCP):** Places associated with the cultural practices or beliefs of a living community that are rooted in that community's history. Examples of TCPs include, but are not limited to: any place where people practice a ritual activity or festival; any place where something happened that is of significance to a group or community and is referred to in stories; and any place that is a vital and beloved part of the community and that may give the community a special identity or defining character.

**Train à Grande Vitesse:** The French high-speed rail system. See *also* **TGV**.

**Trainset:** A complete unit of rolling stock that makes up a single train. See *also* **rolling stock**.

**Transit conditions:** Transit conditions refer to the regional network of passenger rail and bus transportation.

**Transit-dependent population:** The population over the age of 16 (workers) who use public transportation to travel to and from work, typically without access to use an automobile. See *also* **public transportation**.

**Transit node:** A connection, station, or terminal on a transit network.

**Transit-oriented development (TOD):** Transit-oriented development is a pattern of dense, diverse, pedestrian-friendly land uses near transit nodes that, under the right conditions, can result in higher transit patronage.<sup>3</sup>

**Transportation demand management:** The operation and coordination of various transportation system policies and programs to manage travel demand to make the most efficient and effective use of existing transportation services and facilities.

**Transportation system management:** Actions that improve the operation and coordination of transportation services and facilities to realize the most efficient use of the existing transportation system.

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<sup>3</sup> Transit Cooperative Research Program. 2004. *TCRP Report 102 - Transit-Oriented Development in the United States: Experiences, Challenges, and Prospects*. Washington, D.C.

**Travel time:** The time spent traveling from a place of origin to a place of destination. Total travel time includes the time required to reach a station or an airport, time spent waiting for the scheduled train or flight, time spent getting to the boarding area, time spent checking and retrieving luggage, and time spent using other modes of transportation to reach the final destination.

**Tributary watercourse:** A stream feeding a larger stream, river, or lake.

## U

**Unavoidable:** In CEQA and NEPA usage, describes an impact that cannot be entirely avoided, reduced, or compensated.

**Unbalance, unbalanced superelevation:** The difference between the superelevation and equilibrium superelevation. In European publications, unbalance is called cant deficiency if the actual superelevation is less than the equilibrium superelevation, and is called excess cant if the actual superelevation is greater than the equilibrium superelevation. *See also* **superelevation**.

**Unique farmland:** Farmland with soils of lower quality than either prime farmland or farmland of statewide importance, but still used for the production of crops. Unique farmlands are usually irrigated but may include non-irrigated orchards or vineyards in some of California's climate zones. To qualify as unique farmland, a property must have been planted in crops at some time during the previous 4 years. *See also* **farmland of local importance, farmland of statewide importance, and prime farmland**.

**Uplift:** (1) The action of a portion of the earth's surface as it rises above adjacent areas, or (2) an area of higher elevation than surrounding areas (i.e., an area that has been uplifted).

## V

**Value capture:** A station area development principle that is a criterion for selecting an HSR station site.

**Variance:** Approved deviation, or exception, from a minimum design criterion or standard.

**Vehicle miles traveled (VMT):** A measurement of miles traveled by vehicles within a specified region for a specified time period. VMT is either calculated using two odometer readings or, for vehicles with fewer than two odometer readings, imputed using a regression estimate.

**Vertebrate:** Organisms with a vertebral column.

**Vernal pool:** An ephemeral wetland that predictably forms in permanent basins during the cooler, wetter months of the year, but may be completely dry during the summer.

**Vertical curve:** The transition between grades is normally parabolic in the U.S. and Asian practices and circular arc radii in European practices.

**Viaduct:** A bridge that conveys a road or a railroad over a valley. It is often constructed of a series of arches supported by piers.

**Vibration:** An oscillatory motion that can be described in terms of the displacement, velocity, or acceleration of an object. Ground-borne vibration generated by operational rail systems can be a serious concern for occupants of nearby buildings; and can cause noticeable movement of building floors, rattling of windows, or shaking of items on shelves or hanging on walls. Ground-borne vibration can also cause rumbling sounds inside buildings, referred to as ground-borne noise. Although vibration can cause damage to buildings in extreme cases, building damage is not a typical factor for the construction or operation of transportation projects, with the occasional exception of blasting and pile driving during construction.

**Viewer groups and viewer sensitivity:** Roadway/highway/rail users, residents, commercial viewers, office viewers, park and trail users, and agricultural and industrial workers within a viewshed. There are two distinct groups of viewers: neighbors and travelers. Neighbors are those people who are adjacent to the highway or rail corridor and have “views of” the infrastructure. Travelers are those people who are using the highway or train and have “views from” the infrastructure. Neighbors and travelers can be further subdivided into categories that help to establish viewer preferences and sensitivity to changes in visual resources. Viewer preferences are determined as part of the inventory phase, and viewer sensitivity is determined in the analysis phase.

**Viewshed:** The total area visible from a single observer position, or the total area visible from multiple observer positions. Viewsheds include scenes from highways, trails, campgrounds, towns, cities, or other viewer locations. Viewshed types include corridor, feature, or basin viewsheds.

**Visual or landscape character:** Refers to an impartial description of what the landscape consists of, defined by the relationships between existing, visible natural, and built landscape features. These relationships are considered in terms of form, line, color, texture, dominance, scale, diversity, and continuity. Visual character-defining resources and features include landforms, vegetation, land uses, buildings, transportation facilities, overhead utility structures and lighting, open space, viewpoints, and views to visual resources, waterbodies, historic structures, and downtown skylines.

**Visual quality:** Visual quality is a result of the interactive experience between viewers and their environment. Under the Federal Highway Administration’s visual quality analysis system, visual quality is determined by evaluating the viewed landscape’s characteristics in terms of natural harmony, cultural order, and project coherence. The analysis of natural harmony, cultural order, and project coherence informs the overall visual quality ratings. Visual quality is rated as low, moderate-low, moderate, moderate-high, or high. To determine overall visual quality, the natural harmony, cultural order, and project coherence are also rated, and the ratings of these three factors determine the overall visual quality.

**Visual resources:** Components of the visible natural, cultural, or project environments. A visual resource is any visible site, object, or feature of the landscape. *Natural visual resources* include land, water, sky, vegetation, and animals that compose the natural environment. *Cultural visual resources* include buildings, structures, and artifacts that compose the cultural environment. *Project visual resources* include geometrics, structures, and fixtures that compose and give character to the project environment. Visual resources also include state-designated scenic routes and views toward and within natural areas, parks, and urban areas that have been identified as having historical or cultural importance or that include buildings of similar historical or cultural importance or notable landmark status.

**Visual unity:** The visual coherence and compositional harmony of a landscape considered as a whole.

**Visual vividness:** The visual power or memorability of landscape components as they combine in patterns experienced by the viewer.

**Volt:** Standard unit of measure for electrical potential. *See also kilovolt.*

**Volume-to-capacity (V/C) ratio:** Describes the relationship between the amount of traffic a roadway was designed to carry and the amount of traffic it actually carries. Related to the level-of-service the roadway can provide. *See also level-of-service.*

## W

**Waterbody:** Any significant accumulation of water. The term *body of water* most often refers to large accumulations of water, such as oceans, seas, and lakes, but it may also include smaller pools of water such as ponds, puddles, or wetlands.

**Waters of the state:** Isolated wetlands that may not be subject to regulations under federal law (as defined by the Porter-Cologne Water Quality Control Act (§ 1305(e))). An area is a wetland if,

under normal circumstances, it (1) is saturated by groundwater or inundated by shallow surface water for a duration sufficient to cause anaerobic conditions within the upper substrate; (2) exhibits hydric substrate conditions indicative of such hydrology; and (3) either lacks vegetation or the vegetation is dominated by hydrophytes (plants that grow only in water).<sup>4</sup>

**Waters of the U.S.:** The federal Clean Water Act defines waters of the U.S. as (1) all waters that are currently used, or were used in the past, or that may be susceptible to use in interstate or foreign commerce, including all waters subject to the ebb and flow of the tide; (2) all interstate waters, including interstate wetlands; and (3) all other waters, such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds. The regulation of waters of the U.S. is based on the supposition that their use, degradation, or destruction could affect interstate or foreign commerce (Code of Federal Regulations Title 33, Part 328.3[a]).

**Water-contact recreation:** Recreational activities in which contact with the water is intended or likely, such as swimming, waterskiing, and fishing.

**Watershed:** The area that contributes water to a drainage system or stream.

**Weir:** A small dam that restricts flow in a stream to raise the water level or diverts flow into a desired course.

**Wet utility:** A pipeline that conveys liquid through gravity or pressured systems for public purposes (e.g., water and wastewater).

**Wetland:** An area of land with soil that is saturated with moisture, either permanently or seasonally. According to the *U.S. Army Corps of Engineers Wetland Delineation Manual*,<sup>5</sup> three criteria must be satisfied to classify an area as a jurisdictional wetland: (1) a predominance of plant life that is adapted to life in wet conditions (hydrophytic vegetation), (2) soils that saturate, flood, or pond long enough during the growing season to develop anaerobic conditions in the upper part (hydric soils), and (3) permanent or periodic inundation or soils saturation, at least seasonally (wetland hydrology). See also **aquatic resources**, **Clean Water Act**, and **Cowardin Classification System**.

**Wildlife movement corridor:** A belt of habitat that is essentially free of physical barriers such as fences, walls, and development, and connects two or more larger areas of habitat, allowing wildlife to move between physically separate areas. Wildlife movement corridors are areas defined by wildlife use for movement events on varying scales (e.g., daily foraging, seasonal migration, or dispersal). While these areas are referred to as “wildlife” movement corridors, it should be noted that they also function as linkages for plant species. The wildlife movement corridors referenced in this document refer to areas that have been modeled for specific species based on different physical and biological parameters published in statewide reports. For the purposes of this document, the term *habitat linkage* is used synonymously with wildlife movement corridor. Habitat linkages are areas of land used for a variety of purposes that potentially serve as a corridor for movement or migration of wildlife. Habitat linkages aid in the dispersal and distribution of wildlife and are crucial for maintaining healthy populations of multiple species.

**Wingwall:** A wall at the abutment of a bridge that extends beyond the bridge to retain the earth behind the abutment. See also **abutment**.

<sup>4</sup> San Francisco Estuary Institute and Aquatic Science Center. 2012. *Technical Memorandum No. 2: Wetland Definition*. California Wetland and Riparian Area Protection Policy Technical Advisory Team. June 25, 2009; revised September 1, 2012. [www.waterboards.ca.gov/water\\_issues/programs/cwa401/docs/wrapp/memo2.pdf](http://www.waterboards.ca.gov/water_issues/programs/cwa401/docs/wrapp/memo2.pdf) (accessed September 2018).

<sup>5</sup> U.S. Army Corps of Engineers. 1987. *Corps of Engineers Wetlands Delineation Manual*. January 1987. <https://el.erdc.dren.mil/elpubs/pdf/wlman87.pdf> (accessed September 2018).

**Wye connection:** A railway that connects different sections of track. The transition to a wye requires splitting two guideways into four guideways crossing over one another before the wye legs diverge in opposite directions to allow bidirectional travel.

**Y**

**Yard track:** Dead-end track dedicated to operation needs and connected to a passing track, never to the main line railway.