

13 GLOSSARY OF TERMS

Since publication of the Draft Environmental Impact Report (EIR)/Environmental Impact Statement (EIS), the following substantive change has been made to this chapter:

- A definition for *road diet* was added.

A

Abatement: Reduction; often used to describe noise mitigation.

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

Active fault: A ground rupture or extended break in a body of rock marked by the relative displacement and discontinuity of strata on either side of a particular surface 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. *See also* **Fault**.

Adverse: Negative or detrimental.

Adverse effect: An effect of any San Jose to Merced project alternative that would negatively affect the environmental resource value or quality as it currently exists prior to the project. Adverse effects are qualified as negligible, moderate, or substantial impacts under NEPA and less than significant or significant under CEQA.

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 horizontal route of a transportation corridor or path.

Alluvium: Sediments deposited in a streambed, on a floodplain, in 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.

Alternative: All project components for a given alignment, including the guideway, bridges, elevation profiles, stations, and maintenance facilities.

Americans with Disabilities Act (ADA): A federal regulation establishing legal requirements for accessibility to public places.

Amplitude: The magnitude of a periodic wave; also describes the strength or intensity of a signal that travels in wave form, such as a radio signal.

Aquifer: Subsurface geologic unit (sediment) that contains and conveys groundwater.

Area of potential effect (APE): The area along the project right-of-way in which cultural resources are potentially affected by the construction and operations of the project; considered to be the zone within 250 feet of both sides of the right-of-way for a given alternative, and within 0.5 mile of any potential facilities, including potential stations. *See also* **Cultural resources**.

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

Attainment: When an air basin complies with federal or state standards for a particular pollutant. *See also* **Maintenance and Nonattainment**.

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

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

B

Ballasted track: Railway tracks installed on a specific type of crushed rock that is graded to support heavily loaded rolling stock. *See also* **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.

Baseline: Foundation or basis to use for comparison purposes.

Beneficial effect: An effect of any San Jose to Merced project alternative that would result in improvement of the environmental resource value or quality as it currently exists prior to the project.

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

Biological resources: Plant and wildlife species, terrestrial and aquatic habitats (including jurisdictional waters), and habitats of concern (including special-status plant communities, critical habitat, core recovery areas, mitigation banks, and wildlife corridors). *See also* **Jurisdictional waters, Special-status plant communities, Critical habitat, and Mitigation banks**.

Blended system: Integration of the HSR system with existing or expanded intercity, regional, and commuter electrified rail systems and operating all trains on common infrastructure.

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

C

California Endangered Species Act (CESA): The law mandating that state agencies not approve a project that would jeopardize the continued existence of endangered species if reasonable and prudent alternatives are available that would avoid a jeopardy finding. *See also* **Endangered species and Jeopardy finding**.

California Environmental Quality Act (CEQA): Legislation enacted in 1970 to protect the quality of the environment for the people of 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 responsible for planning, designing, constructing, and operating the California HSR System. The Authority's mandate is to develop the HSR system in coordination with 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: The system that includes the HSR tracks, structures, stations, traction-powered substations, maintenance facilities, and high-speed trains able to travel 220 miles per hour.

Cantilevers: Long projecting beams or girders fixed at only one end, used in bridge construction.

Capital cost: The total cost of acquiring an asset or constructing a project.

Carbon dioxide (CO₂): A colorless, odorless gas that occurs naturally in the atmosphere; fossil fuel combustion emits significant quantities of CO₂.

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

Clean Air Act (CAA): The law defining 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 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 water and groundwater.

Carbon dioxide equivalent (CO₂e): A quantity that describes, for a given mixture and amount of greenhouse gas, the amount of CO₂ that would have the same global warming potential when measured over a specified timescale. *See also* **Greenhouse gas**.

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

Community cohesion: The degree to which residents have a sense of belonging to their neighborhood; a level of commitment to their community; or an association with neighbors, groups, and institutions, usually as a result of continued association over time.

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 or points outside the network.

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

Construction period impacts: Temporary (short- and long-term) impacts associated with project construction. The construction period includes testing of the HSR system prior to passenger service.

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

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

Corrosive soils: Soils that have electrochemical or chemical properties that corrode or weaken concrete or uncoated steel. Factors for corrosivity to concrete are sulfate and sodium content, texture, moisture content, and soil acidity. Factors for corrosivity to uncoated steel are moisture content, particle-size distribution, soil acidity, and electrical conductivity of the soil.

Criteria pollutants: Pollutants for which federal and state air quality standards have been established: carbon monoxide (CO), sulfur oxides (SO_x), nitrogen oxides (NO_x), ozone (O₃), particulate matter with a diameter of 10 microns or less (PM₁₀), particulate matter with a diameter of 2.5 microns or less (PM_{2.5}), and lead (Pb).

Critical habitat: Designated areas of suitable habitat for federally listed threatened or endangered species, which provide the geographical locations and physical features essential to the conservation and recovery of a particular 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 historical and archaeological resources such as sites, structures, buildings, districts, and objects associated with or representative of people, cultures, and human activities and events.

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 fill: Construction technique involving excavation or grading followed by placement and compaction of fill material. See *also* **Cut slope** and **Fill slope**.

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

D

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

Dedicated track: Portion of the HSR alignment where high-speed trains operate on guideways exclusive of other passenger and freight trains.

Design criteria: A set of standards that determine each alternative's ability to meet the HSR project purpose and need and performance requirements, which are used to compare design differences and qualities in alignment and station locations.

Design options: Design features used during the early stages of the alternatives screening process to refer to preliminary alternative alignments.

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 from material, such as fill material.

Displacement: The movement of people out of their residences, businesses, non-profit organizations, or farms as a result of acquisition of private property for a transportation project.

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

E

Easement: An interest in land owned by another individual or organization that entitles its holder to a specific limited use.

Economic impacts: Changes in employment, business productivity (including agricultural 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 revenue from property and sales taxes.

Ecosystem: An interconnected network of living organisms, including people, and their local physical environment; often considered 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.

Electromagnetic field (EMF): The force field that extends outward from a moving electrical current, consisting of both a magnetic field and an electric field.

Electromagnetic interference (EMI): An electrical emission or disturbance that degrades performance or results in malfunctions of electrical or electronic equipment, devices, or systems.

Electromagnetic spectrum: The range of wavelengths or frequencies over which electromagnetic radiation extends.

Emergency services: Emergency response by fire, law enforcement, and emergency services to fire, seismic events, or other emergency situations.

Emergent vegetation: Vegetation rooted in periodically or continuously inundated substrate but with a portion of the plant extending above the water.

Eminent domain: A jurisdiction's 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.

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

Endangered Species Act (ESA): The federal law that provides guidance for conserving federally listed species and the ecosystems upon which they depend.

Environmental impact report (EIR): Documentation of the detailed analysis of a project's potential significant effects, mitigation measures, and reasonable alternatives to avoid significant effects. The EIR is prepared as part of the CEQA environmental review process. Based on both agency expertise and issues raised by the public, the state prepares a Draft EIR with a full description of the affected environment, a reasonable range of alternatives, and an analysis of the impacts of each alternative. Based on comments on the Draft EIR, the state writes a Final EIR with its proposed action. Both the Draft EIR and Final EIR are formal published documents and part of the CEQA environmental review process. *See also Significant effect and Mitigation.*

Environmental Impact Statement (EIS): Documentation of the detailed analysis of a project's potential significant effects, mitigation measures, and reasonable alternatives to avoid significant effects. The EIS is prepared as part of the NEPA environmental review process. Based on both agency expertise and issues raised by the public, the agency prepares a Draft EIS with a full description of the affected environment, a reasonable range of alternatives, and an analysis of the impacts of each alternative. Based on comments on the Draft EIS, the agency writes a Final EIS with its proposed action. Both the Draft EIS and Final EIS are formal published documents and part of the NEPA environmental review process. *See also Significant effect and Mitigation.*

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

Erodible soils: Soils that are susceptible to wind erosion, water erosion, or both.

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

Essential fish habitat (EFH): The waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity.

Ethnicity: A group or category of people with shared cultural traits such as ancestral origin, language, customs, or social attitudes.

Expansive soils: Clay soils that are susceptible to expansion and contraction depending on the water content of the soil. Expansive soils provide an unstable subgrade support for foundations or other structures and exert uplift or lateral pressures on foundations or walls in contact with them.

F

Farmland Mapping and Monitoring Program (FMMP): An automated map and database system administered by the California Department of Conservation that characterizes and records changes in agricultural land use. *See also Farmland of Local Importance, Farmland of Statewide Importance, and Prime Farmland.*

Farmland of Local Importance: An FMMP category describing farmlands important to the local agricultural community, as determined by each county board of supervisors and local advisory committee. *See also Farmland Mapping and Monitoring Program (FMMP), Farmland of Statewide Importance, and Prime Farmland.*

Farmland of Statewide Importance: An FMMP category describing farmlands that are similar to Prime Farmland 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 Mapping and Monitoring Program (FMMP)**, **Farmland of Local Importance**, **Prime Farmland**, *and* **Unique Farmland**.

Fault: A fracture or discontinuity in a volume of rock, across which there has been significant displacement as a result of rock mass movement. *See also* **Active fault**.

Fault trace: The intersection of a geological fault with the ground surface, leaving a visible mark. Also applies to a line plotted on a geological map to represent a fault.

Feasible: Capable of being implemented.

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 United States.

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 consist of material reused from elsewhere on the construction site or imported from off site. *See also* **Cut slope**.

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

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

Footprint: The area covered by a facility or affected by construction activities.

Formation: A geologic unit (e.g., the Modesto Formation, the Riverbank Formation).

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

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

Freeway: A major highway/roadway with controlled access, devoted exclusively to traffic movement, mainly of a through or regional nature.

Frequency: The number of times a field, such as an electromagnetic field, changes direction in space each second. Also, 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 as part of land acquisition for a project. *See also* **Eminent domain** *and* **Partial acquisition**.

G

Gauss: The unit of measure describing the strength of a magnetic field. Near the earth surface, the magnetic field measures approximately 0.5 gauss (0.1 Tesla). *See also* **Tesla**.

General Conformity Rule: A means by which 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 encapsulates policies for land use and development over a specified period of time. A general plan may be supplemented by specific plans that address land use and development policies for specific 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.

Global climate change: Long-term changes in the Earth's climate, usually associated with global warming trends, as well as regional changes in weather and precipitation patterns, attributed to increasing concentrations of greenhouse gases in the atmosphere.

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

Grade, gradient: Slope changes in elevation, defined in percentage, as feet of rise in 100 feet.

Grade separated: A place where a railroad, road or two railroad lines cross at different elevations; on separate levels.

Greenhouse gases (GHG): A class of air pollutants believed to contribute to the global warming effect, including CO₂, hydrocarbons, and NO_x.

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

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

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. *See also* **Wheel flange** and **Switch frog**.

Guideway: A track or riding surface that supports and physically guides transportation vehicles specially designed to travel exclusively on it.

H

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

Hazardous material: 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 to the environment if released.

Hazardous substance: Any substance or mixture of substances that are (1) toxic, (2) corrosive, (3) an irritant, (4) a strong sensitizer, (5) flammable or combustible, or (6) generate pressure through decomposition, heat, or other means. Hazardous substances may cause substantial personal injury or illness, and include petroleum products; certain radioactive substances; asbestos-containing materials; lead-based substances; and certain substances that present an electrical, mechanical, or thermal hazard.

Hazardous waste: A hazardous material that is no longer of use and will be disposed of. 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 California hazardous waste (or non-RCRA hazardous waste).

Heavy maintenance facility (HMF): A maintenance facility that supports delivery, testing, and commissioning on the first completed segment of the HSR system. Trainset assembly, testing and commissioning, train storage, inspection, maintenance, retrofitting, and overhaul are typical HMF activities.

Herbaceous: Plants that have little or no woody tissue. Herbaceous plants typically survive for only one growing season.

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

High-risk utility: Utility facilities that conduct or carry specific materials as identified in Section 2 of the *Caltrans Project Development Procedures Manual*, Appendix LL – Utilities. Other utilities that could disrupt operations of the HSR.

High-speed steel-wheel-on-steel-rail train: An improvement of traditional railroad passenger technology that has been designed to operate at speeds up 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.

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

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.

Impact avoidance and minimization feature (IAMF): Standard practices, actions, and design features that have been incorporated into HSR project design to avoid and minimize impacts.

Impervious surface: Surface covered by impenetrable materials, such as pavement and buildings which 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. The categories are defined according to the U.S. Department of Agriculture land inventory and monitoring criteria, as modified for California.

Important farmland severance: The acquisition of part of a farm property that results in the severance (disconnection) of part of the land from agricultural use. *See also Remnant parcel.*

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

Initial study: An environmental study performed in compliance with CEQA, with the goal of evaluating whether a proposed project could have significant impacts on the environment.

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.

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

Intermodal: Transportation that involves more than one mode (e.g., walking, bike, auto, transit, taxi, train, bus, and air) during a single journey.

Invertebrate: Organism lacking a vertebral column.

J

Jurisdictional waters: Wetlands and other waters regulated by the federal government and the State of California. Jurisdictional waters include Waters of the U.S., wetlands, waters of the state, lakes and streambeds, and riparian areas. *See also Waters of the U.S., Waters of the State, and Riparian areas.*

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 where a project is potentially visible.

Kilo: Prefix meaning 1 thousand.

Kilovolt (kV): A unit of electric potential equal to a thousand volts.

L

Landscape unit: An area of distinct, but not necessarily homogenous, visual character. Landscape units are used to divide long linear projects into logical geographic subareas for which impacts from a proposed project can be assessed.

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

Lead (Pb): A stable element that can have toxic effects and that persists and accumulates in the environment, humans, and animals.

Lead agency: The public agency that has the principal responsibility for performing or approving a project or action and that is responsible for preparing environmental review documents in compliance with CEQA, NEPA, or both.

Leq: A measure of the average noise level during a specified period of time.

Leq(h), dBA: Equivalent or average noise level for the noisiest hour, expressed in A-weighted decibels.

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

Levee: A berm or wall that raises the height of a riverbank.

Level of service (LOS): A rating that uses qualitative measures to characterize operational conditions within a traffic stream and the perception by motorists and passengers.

Linguistic isolation: The term used by the U.S. Census Bureau to assess limited English proficiency populations. A household is linguistically isolated if “no member 14 years old and over speaks only English or speaks a non-English language and speaks English very well.”

Liquefaction: A type of ground failure in which soils or sediments lose their internal cohesion, cease to behave as a solid, and flow like a liquid.

Local geology: Geologic units in the immediate vicinity of the project footprint or action area.

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 exerts on other magnetic materials and on electric charges.

Maintenance: An air basin that was formerly in nonattainment but now meets the established standards for that pollutant. *See also Nonattainment.*

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

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 a parkland.

Mean high water mark: The elevation reached by the water surface at the mean (average) high water level (for example, the average high-tide elevation or average flood elevation), often

indicated by physical characteristics such as erosion, lines of vegetation, or changes in type of vegetation.

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.

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

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

Mitigation: Action or measure 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 the adverse impacts of projects on special-status species, wetlands, or otherwise vegetated biological communities.

Mitigation Monitoring and Reporting Program (MMRP): Document outlining the strategy for implementing the mitigation measures committed to in an EIR/EIS.

Mobile source: Any non-stationary source of air pollution such as cars, trucks, motorcycles, buses, airplanes, and locomotives.

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

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

N

National Ambient Air Quality Standards (NAAQS): Federal air quality standards stipulating the allowable ambient concentrations of specific criteria 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 United States Code § 4331 et seq.

Nitrogen oxides (NO_x): A class of pollutant compounds that includes nitrogen dioxide (NO₂) and nitric oxide (NO), both of which are emitted by motor vehicles.

No effect: Conclusion that a project alternative would not alter the environmental status quo.

Nonattainment: An air basin that exceeds federal or state standards for a particular pollutant.

Non-electrified steel-wheel-on-steel-rail train: Conventional intercity diesel-electric locomotive train equipment (e.g., Amtrak trains, freight trains).

Nonpoint source pollution: Water pollution that collects from a wide area and cannot be traced to a single source. Examples include pesticides or fertilizers that wash into rivers or percolate through soil into groundwater.

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 included in regional transportation plans and have identified funds for implementation by 2040. The No Project Alternative represents the baseline conditions for comparison with the project alternatives.

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

Notice of Preparation (NOP): Formal CEQA notice issued by the state lead agency stating that an EIR will be prepared for a proposed project.

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

O

Open space: Any open piece of land that is undeveloped and accessible to the public for recreation. Open space is generally green space or an area that is partially covered with grass, trees, shrubs, or other vegetation, and generally does not have 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.

Overhead contact system (OCS): A simple two-wire system comprising overhead wires supported by cantilevers and attached to poles alongside the tracks to provide traction power to HSR trains. *See also* **Cantilevers**.

Overdraft: A condition in which groundwater pumping exceeds the natural replenishment (recharge) to an aquifer.

Ozone (O₃): 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 resource monitor (PRM): A person trained in the identification of fossils and who monitors construction activities for paleontological resources.

Paleontological resources: Fossils and the remains of ancient plants, animals, and other organisms.

Paleontological resource specialist (PRS): A person with an advanced degree in paleontology or paleobiology and trained in paleontological resources management.

Paleontological sensitivity/paleontological potential: The probability that a geologic unit contains fossils.

Paleontologist: A scientist who studies fossils.

Paralleling station: A station that would work with the switching stations to balance the electrical load between tracks and to switch power off or on to either track in an emergency. *See also* **Switching station**.

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

Park: Publicly owned property set aside for recreational use by the public and typically maintained in a natural or landscaped state.

Partial acquisition: A permanent acquisition of a portion of a parcel of land as part of land acquisition for a project. *See also* **Full parcel acquisition** and **Eminent domain**.

Particulate matter (PM): Liquid and solid particles of a wide range of sizes and compositions; of special concern for air quality are inhalable particles that are smaller than or equal to 10 microns and 2.5 microns in size (PM₁₀ and PM_{2.5}, respectively). *See also* **Air pollution**.

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

Pier structure: A raised structure that is typically supported by well-spaced piles or pillars. Bridges, buildings, and walkways may all be supported by piers.

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 Pliocene.**

Pliocene: The period between 5.3 and 2.6 million years before present. See *also* **Holocene, Pleistocene, and Miocene.**

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

Positive train control (PTC): Integrated command, control, communications, and information systems for controlling train movements that improve railroad safety by significantly reducing the probability of collisions between trains, casualties to roadway workers, and damage to equipment.

Practicable: Available and capable of being implemented after taking into consideration cost, existing technology, and logistics in light of the overall project purposes.

Preferred Alternative: The alternative identified by the Authority and FRA based on balancing the impacts of the project alternatives on the natural environment and community resources presented in this EIR/EIS in the context of CEQA, NEPA, stakeholder preferences, and capital construction costs. The Preferred Alternative achieves the HSR system's purpose and need, while resulting in fewer impacts on both the natural environment and community resources than the other three alternatives.

Prehistoric archaeological sites: Places where Native Americans lived or performed activities during the prehistoric period (as late as AD 1769).

Prime Farmland: An FMMP category describing 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 Mapping and Monitoring Program (FMMP), Farmland of Local Importance, Farmland of Statewide Importance, and Unique Farmland.**

Profile: The vertical route of a transportation corridor or path.

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

Project footprint: The area encompassing the entirety of HSR facilities and construction-related ground disturbance associated with a given project alternative.

Project impacts: Temporary or permanent impacts related to project construction or project operations and maintenance. Major types of project construction activities include earthwork; bridge, aerial structure, and roadway crossings; railroad systems; and station construction. Project operations include HSR system operations and related project improvements, such as roadway modifications, maintenance of power supply components, and maintenance of the HSR system.

Project-level: A detailed site-specific environmental analysis focusing on a single project that may or may not be part of a larger program.

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

Public utilities: Any subsurface, aboveground, or overhead facility used for transmission, regardless of size, shape, or method of conveyance, including electrical substations; high-voltage electrical lines (60 kilovolts or greater); high-pressure natural gas lines; petroleum and fuel lines; water, wastewater, irrigation, and stormwater canals, conduits, and pipes; and fiber optic and communication infrastructure (i.e., towers and antennas).

Purpose and need: The reason(s) why a project or action is undertaken, and the need(s) it is intended to meet or fulfill.

Q

Quality level: A level-of-accuracy scale used (1) to identify the location of underground and aboveground utility facilities needed to develop capital projects and (2) for acquiring and managing a specific level of quality of information during the project development process.

R

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

Railbed: The substructure of a railroad underlying the tracks.

Reactive organic gas (ROG): Reactive hydrocarbon pollutants.

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

Recreation: A pastime, diversion, exercise, or other activity affording relaxation and enjoyment. Areas used for recreation generally include public parks and open spaces, greenbelts, pedestrian and bicycle trails, playfields, and school district play areas available for public use during non-school hours.

Regional Transportation Improvement Plan (RTIP): A listing of all transportation projects proposed over a 6-year period for a given county or multi-county region. The RTIP includes projects and programs listed in the Regional Transportation Plan and is developed in compliance with state and federal requirements.

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

Relocation: The placement of people into new homes, commercial properties, or farms with assistance and benefits in accordance with federal and California laws.

Relocations: The removal, rearrangement, reinstallation, or adjustment of a utility feature required to implement a transportation improvement project.

Remnant parcel: Land parcels that are not considered viable to continue in agricultural use due to property severance. *See also* **Important farmland severance**.

Resource study area (RSA): The geographic boundaries in which the environmental investigations specific to each resource topic were conducted; the RSA varies for each resource topic.

Retention pond: A human-made pond designed to hold and infiltrate most or all of the runoff that it receives.

Richter scale: A logarithmic scale that measures the severity of earthquakes based on the magnitude of ground motion.

Ridership: The number of people who ride or are projected to use a transportation system.

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

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

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

Riprap: Placed rock or concrete used to strengthen a shoreline embankment or protect it from erosion.

Road diet: A classic road diet typically involves converting an existing four-lane, undivided roadway segment to a three-lane segment consisting of two through lanes and a center, two-way left-turn lane.

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: Locomotives, carriages, wagons, or other vehicles used on a railroad.

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

Scenic corridor: A corridor with landscapes and vistas of high scenic quality. Policies and regulations include design guidelines and designated scenic corridors/routes and identify areas of particular scenic value.

Scoping: The process of gathering information and receiving input from the public and agencies to determine the focus and content of an EIR (under CEQA) and an EIS (under NEPA). Scoping helps identify the range of actions, alternatives, environmental effects, and mitigation measures to be analyzed in depth. It also helps focus detailed study on those issues pertinent to the final decision on the proposed project.

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

Section 6(f): Provisions enacted under Section 6(f) of the Land and Water Conservation Fund Act of 1964, which 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. Section 6(f) directs the Department of the Interior to ensure that replacement lands of equal value (monetary), location, and usefulness are provided as conditions to such conversions. State and local governments often obtain grants to acquire or make improvements to parks and recreation areas (16 United States Code Section 460-4 through 460-11, September 3, 1964, as amended 1965, 1968, 1970, 1972–1974, 1976–1981, 1983, 1986, 1987, 1990, 1991, and 1993–1996). Consequently, where such conversions of Section 6(f) lands are proposed, replacement land must be provided.

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

Sedimentary rock: Rock resulting from the consolidation of sediment.

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

Seiche: Oscillation or “sloshing” of water in a lake, bay, or other enclosed body as a result of landsliding or seismic groundshaking.

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

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

Sensitive receptor: For air quality, sensitive receptors including schools, daycare facilities, elderly care establishments, medical facilities, residences, and other areas that are populated with people considered more vulnerable to the effects of poor air quality. For noise and vibration, sensitive receptors include noise-sensitive locations where increased annoyance can occur, such as residences, schools, hotels/motels, medical facilities. For EMF/EMI, sensitive receptors include land uses and facilities susceptible to EMF and EMI produced by the HSR such as schools, universities, hospitals and other medical facilities, high-tech businesses, research facilities, railroads, rail transit systems, and airports.

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.

Shared right-of-way: An HSR alignment where high-speed trains operate near other transportation systems, such as conventional passenger railroads and freight railroads, sharing portions of the legal right of passage without sharing tracks. Also includes highways.

Shinkansen: The Japanese high-speed train system.

Significant effect: In CEQA usage, an impact that is sufficiently adverse, intense, or prolonged to require mitigation. For NEPA usage, the term requires considerations of both context and intensity. See 40 Code of Federal Regulations Part 1508.27.

Society of Vertebrate Paleontology (SVP): An international society of paleontologists with an emphasis on vertebrate paleontology.

Special-status plant communities: Significant or rare vegetation types 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, the California Endangered Species Act, or other regulations, such as those species that meet the definitions of rare or endangered under CEQA Guidelines Section 15380 and Section 15125.

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

State streambeds: An area of California Department of Fish and Wildlife (CDFW) jurisdiction, which generally includes a streambed and bank, adjacent floodplain, and riparian vegetation. However, the CDFW has not released an official definition of lake or streambed; therefore, the extent of the area regulated under Section 1602 remains undefined.

State Transportation Improvement Program (STIP): A multiyear capital improvement program of transportation projects on and off the state highway system, 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, a station box where passengers wait and access the HSR, and parking facilities.

Stormwater pollution prevention plan (SWPPP): A plan that specifies site management activities to be implemented during site development. These management activities include construction period stormwater BMPs, erosion and sedimentation controls, dewatering (nuisance water removal), runoff controls, and construction equipment maintenance. *See also* **Best management practice (BMP)**.

Straddle bent: A pier structure that spans the functional/operational right-of-way limit of a roadway, highway, or railway. *See also* **Pier structure**.

Strata: Geologic units composed of sedimentary rocks usually thought of as overlying one another in layer-cake fashion.

Stratigraphically long-ranging: Fossils that are present in multiple geologic units.

Strike-slip fault: A fault along which the dominant direction of movement is parallel to the fault trace (the expression of the fault on the ground surface). *See also* **Fault, Active fault, and Fault trace**.

Subsidence: Sinking or lowering of the ground surface.

Sulfur oxides (SO_x): Sulfur-oxygen compounds that include the important criteria pollutants sulfur dioxide (SO₂) and sulfur trioxide (SO₃).

Superelevation: The vertical distance between the height of the inner and outer rails at a curve. Superelevation is used to partially or fully counteract the centrifugal force acting radially outward on a train when it is traveling along the curve.

Surface water hydrology: The occurrence, distribution, and movement of surface water, including water found in rivers, canals, and stormwater drainage systems.

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

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

Switch frog: The point at which the left and right rails cross in a switch or turnout.

Switching station: A station that would work with the paralleling station to balance the electrical load between tracks and to switch power off or on to either track in an emergency.

T

Take: To harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to 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.

Tesla: Unit of measure describing the strength of a magnetic field. *See also* **Gauss**.

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-specific analyses in subsequent (typically project-level) environmental documents that incorporate the initial broad analysis by reference.

Topographic map: A map showing the elevational contours of a given area.

Total organic gases: A pollutant classification that includes all hydrocarbons, both reactive and nonreactive.

Toxic air contaminants: The seven mobile source air toxics identified as having significant contributions from mobile sources: acrolein, benzene, 1,3-butadiene, diesel particulate matter and diesel exhaust organic gases, formaldehyde, naphthalene, and polycyclic organic matter. *See also* **Mobile source**.

Trackwork: Design and construction of train tracks (distinct from other components of a rail system).

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

Traditional cultural properties (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 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; any place that is a vital and beloved part of the community and that may give the community a special identity or defining character.

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

Transportation energy: Generally defined in terms of direct and indirect energy, direct transportation energy involves all energy consumed by vehicle propulsion (e.g., automobiles, airplanes, power requirement of the HSR project), including recoverable energy. Indirect transportation energy involves consumption of the nonrecoverable, one-time energy expenditure involved in building a physical infrastructure through the irreversible burning of hydrocarbons for operating equipment and vehicles in which energy is lost to the environment.

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

Tsunami: Wave that travels in the open ocean, caused by an undersea earthquake, landslide, or volcanic activity.

U

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

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 nonirrigated orchards or vineyards in some of California's climate zones. To qualify as unique farmland, a property must have been cultivated within the previous 4 years. *See also* **Farmland of Statewide Importance** *and* **Prime Farmland**.

Uplift: The action of a portion of the earth's surface as it rises above adjacent areas. An area of higher elevation than surrounding areas; an area that has been uplifted.

U.S. Army Corps of Engineers (USACE): The federal agency responsible for investigating, developing, and maintaining the nation's water and related environmental resources.

U.S. Environmental Protection Agency (EPA): The federal agency that enforces federal laws protecting human health and the environment.

V

Valley fever (coccidioidomycosis or "cocci"): A fungal infection caused by inhalation of fungus in airborne dust after soil disturbance, a regional concern in the San Joaquin Valley.

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 (LOS) the roadway can provide. *See also* **Level of service (LOS)**.

Vertebrate: Organism with a vertebral column.

Vernal pool: An ephemeral wetland that predictably forms in permanent basins underlain by nonpermeable layers during the cooler part of the year and dries during summer. Vernal pools

typically support highly adapted communities such as special-status plants and vernal pool branchiopods.

Vertical curve: A curve inserted between two lengths of a road or railway which are at different slopes. Also, a smooth parabolic curve in the vertical plane used to connect two grades of different slope to avoid an abrupt transition in passing from one to the other.

Viaduct: A bridge that conveys a road or a railroad over a valley; often constructed of a series of arches supported by piers. *See also* **Pier structure.**

Viewer group: Roadway/highway/rail users, residents, commercial viewers, office viewers, park and trail users, and agricultural and industrial workers within a viewshed.

Viewer response: The anticipated reaction from viewers based on their perception of the change. The response of viewer groups to a project's change to the visual setting is based on two factors: (1) viewer sensitivity to visual change, and (2) viewer exposure to those visual changes.

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: An impartial description of the landscape's visual features, which is defined by the relationships between the existing visible natural and built landscape features.

Visual intactness: The aesthetic integrity of the visual environment and its freedom from encroaching elements.

Visual quality: The character or inherent features of a viewshed. *See also* **Viewshed.**

Visual resources: The natural and artificial features of a landscape that characterize its form, line, texture, and color.

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

Visual vividness: The degree of memorability or distinctiveness of landscape components as they combine in distinctive visual patterns.

Volt (V): Standard unit of measure for electrical potential.

W

Waterbody: Any significant accumulation of water, such as oceans, lakes, ponds, puddles, streams, drainage channels, or wetlands.

Waters of the State: Waters of the state broadly defined by the Porter-Cologne Water Quality Control Act (California Water Code, § 13050(e)) to mean any surface water or groundwater, including saline waters, within the boundaries of the state. Under this definition, isolated wetlands that may not be subject to regulation under federal law are considered waters of the state and regulated accordingly.

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 use, degradation, or destruction of which 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 water is intended or likely, such as swimming, water-skiing, and fishing.

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

Watt: Standard unit of measure for electrical power.

Wetlands: An area of land with soil that is saturated with moisture, either permanently or seasonally. According to the *Corps of Engineers Wetlands Delineation Manual*,¹ 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).

Wheel flange: A round flat adapter hub that allows a wheel to be attached to an axle on a vehicle.

Wildlife movement corridor/habitat linkage: A belt of habitat that is essentially free of physical barriers such as fences, walls, and development, connecting two or more larger areas of habitat and allowing wildlife to move between physically separate areas and serving as a corridor for movement or migration of wildlife.

Wye: Refers to the Y-like structure that is created at the point where train alignments intersect, allowing transitions between alignments in multiple directions. The transition requires splitting two tracks into four tracks that cross over one another before the wye legs can diverge in opposite directions to allow two-way travel. Where the San Jose to Merced Project Section connects to the Merced to Fresno Project Section, the Central Valley Wye provides this transition.

¹ U.S. Army Corps of Engineers. 1987. *Corps of Engineers Wetlands Delineation Manual*. January 1987.