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 (EIR/EIS) 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 soil. Varying amounts of organic matter give the A horizon a dark color.

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.

Adverse: Negative or detrimental.

Adverse effect: An effect of any Los Angeles to Anaheim project alternative that would negatively affect the environmental resource value or quality as it currently exists prior to the project.

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

Air pollution: The most important effect of air pollution is its effect on human health. Three general classes of air pollutants are of concern: criteria pollutants, toxic air contaminants, and greenhouse gases.

Air quality: Air quality describes the amount of air pollution to which the public is exposed.

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

Alignment alternatives: The general location for HSR tracks, structures, and systems for the HSR system between logical points within study corridors.

Alluvium: A term applied to 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: Federal regulation establishing legal requirements for accessibility for those with disabilities.

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.

Anthropogenic fugitive dust emission: All mechanically suspended dust from human activity, including agriculture, construction, mining, and demolition; vehicular movement on paved and unpaved surfaces; materials handling, processing, and transport; cooling towers; and animal movement on surfaces that have been disturbed or altered by humans beyond a natural range.

Approximate location: As defined in Government Code, Section 4216, as the "approximate location of subsurface installations" being 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: Aquatic resources are wetlands and nonwetland waters that are potentially jurisdictional under Sections 404 and 401 of the federal Clean Water Act, collectively called waters of the U.S.; waters of the state regulated under the Porter-Cologne Water Quality Control Act; and aquatic and other related resources regulated under California Fish and Game Code Section 1600 et seq. The U.S. Army Corps of Engineers (USACE) regulates waters of the U.S., the State Water Resources Control Board regulates waters of the state, and the California Department of Fish and Wildlife (CDFW) regulates the bed, channel, and banks of rivers, streams, and lakes. The project extent crosses areas under the jurisdiction of the USACE Los Angeles District. USACE verified the extent of waters of the U.S. by virtue of its Preliminary Jurisdictional Determination on July 31, 2018. Confirmation of these resources as jurisdictional by the State Water Resources Control Board and CDFW would be obtained through the regulatory permitting process.

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

Areas of difficult excavation: Difficult excavation is defined as excavation methods that require more than standard earth-moving equipment or special controls 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).

Assessor's Parcel Number: A unique number assigned to each parcel of land by a county tax assessor to identify and keep track of land ownership for property tax purposes.

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

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. *Refer to* **maintenance, nonattainment**.

Authority: *Refer to* **California High-Speed Rail Authority**.

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

A-weighted sound level (decibel) (dBA): 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: Railway tracks installed over a specific type of crushed rock that is graded to support heavily loaded rolling stock. *Refer to* **rolling stock**.

Ballast-less track: Railway tracks installed over concrete slabs for support.

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.

Bas-relief: Sculptural element characterized by varied surface planes in low relief.

Before present: Years before the present, typically considered to be 1950.

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

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 on 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 jurisdictional waters), and habitats of concern (including special-status plant communities, critical habitat, core recovery areas, mitigation banks, and wildlife corridors).

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.

Bogie: A structure underneath a train (otherwise named a wheel truck) that suspends the train on the axles connected to the wheels that roll over the rails.

British thermal unit: British thermal unit, 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: 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 in the state of California. This system is based on the North American Datum of 1983.

California Endangered Species Act (CESA): A 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.

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 that has responsibility for planning, designing, building, 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 (mph).

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 building a project.

Carbon dioxide (CO_2): A colorless, odorless gas that occurs naturally in the atmosphere; fossil fuel combustion emits significant quantities of CO_2.

Carbon dioxide equivalent (CO_2e): A quantity that describes, for a given mixture and amount of greenhouse gas, the amount of CO_2 that would have the same global warming potential when measured over a specified timescale.

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

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

Cathodic protection: Method for controlling the corrosion and deterioration of metallic structures in contact with most forms of electrolytically conducting environments (i.e., environments containing enough ions to conduct electricity such as soils, seawater, and basically all natural waters). Cathodic protection reduces the corrosion rate of buried steel and concrete.

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 maintains a derailed wheel in the track alignment. Check rails are installed 36 centimeters from the 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 pedestrians and motorists.

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.

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

Collapsible soils: Collapse can occur in dry, granular soils that have an unstable soil structure because of deposition or irrigation processes, typically with a skeletal structure that is weakly cemented by soluble salts or clay. Increases in moisture content can cause the interparticle cementation to reduce, causing changes in volume (collapse), especially when loaded.

Communities: Refers to groups of people living in the same city, town, or neighborhood who exhibit behavioral 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 cohesion: The degree to which residents have a sense of belonging to their neighborhood, a level of commitment to the community, or an association with neighbors, groups, and institutions, usually as a result of continued association over time.

Community noise equivalent level (CNEL): A 24-hour L_{eq} that has been adjusted to add a "penalty" of 5 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.).

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

Concourse: Area for accommodating 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 within the right-of-way and upright.

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 or points outside the network.

Conservation area: Conservation areas include areas that have been identified as part of habitat conservation plans, Natural Community Conservation Plans, or other approved local, regional, state, or federal conservation plans. Conservation areas also include recovery plan areas for federally listed special-status species, public lands (refuges and ecological reserves), and conservation and mitigation banks.

Conservation bank: Conservation banks are permanently protected lands that contain natural resource values. These lands are conserved and permanently managed for special-status species, jurisdictional waters, or other natural resources. Conservation banks function to offset adverse impacts on natural resources that occurred elsewhere; for this reason, these banks are sometimes referred to as *offsite mitigation*. In exchange for permanently protecting the land and managing it for natural resources, the natural resource regulatory agencies (e.g., U.S. Fish and Wildlife Service, USACE, CDFW) approve a specified number of natural resource (habitat, species, or resource) credits that bank owners may sell.

Conservation easement: A conservation easement is a binding, legal agreement between a landowner and a land trust or government agency that limits uses of the land to protect its conservation values and achieve specific conservation objectives. A conservation easement allows landowners to continue to own and use their land. However, certain actions are prohibited, and the landowner agrees to conserve or restore habitat, open space, scenic, or other ecological resource values on the land covered by the easement. *Refer to* **easement**.

Construction: Any activity that directly alters the environment, excluding surveying or mapping.

Construction laydown, or staging, area: An area, typically adjacent to the HSR right-of-way and within a temporary construction easement that is used to stockpile materials and store equipment for building HSR or related improvements. In some cases, this area is also used to assemble or prefabricate 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 of the area is left to the discretion of

the design-build contractor. After conclusion of construction, this area is typically restored to preconstruction condition.

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.

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

Containment curb: A low concrete wall along the track that is designed to guide the train wheels back onto its rail if they leave the line.

Containment parapet: A physical component of elevated guideways that, in the event of a derailment, keeps the train within the HSR right-of-way.

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.

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

Corrosive soils: Corrosive soils have chemical properties that weaken concrete or uncoated steel and thereby reduce the design life of the structure. Corrosion, if not accounted for in the project's design, can weaken structures built on corrosive soils, potentially causing structural failure.

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 (CO), sulfur oxides, nitrogen oxides (NO_x), ozone (O_3), particulate matter with a diameter of 10 microns or less (PM_{10}), particulate matter with a diameter of 2.5 microns or less ($PM_{2.5}$), and lead (Pb).

Critical habitat: Designated areas that provide 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 cover: Construction technique in which a trench is excavated, infrastructure is installed, and the trench is covered.

Cut and fill: 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. *Refer to* **fill slope**.

D

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

Debitage: Waste byproducts—chips or debris—resulting from the manufacture of stone tools; found in large quantities in a tool-making area.

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

Dedicated track: Segment along the HSR alignment where high-speed trains operate on guideways 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 in 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: 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.

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

Displacement: The movement of people out of their residences, businesses, nonprofit 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.

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: An interest in land owned in fee 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.

Electric fields: Forces that electric charges exert on other electric charges.

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.

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.

Emergency access and property access: Emergency access and property access refers to emergency facilities and properties and their associated road networks in the transportation resource study area (RSA).

Emergency medical services: Emergency medical services refer to 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: Emergency response plans are created by counties and cities within the RSA and 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 services include 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 take private property for public use in exchange for fair compensation.

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

Employment: Employment is the number of jobs in the RSA that may be held by residents or persons who may reside inside or outside of the RSA and commute to jobs in the RSA.

Endangered species: Any species listed under the federal Endangered Species Act as being in danger of or threatened with extinction throughout all or most of its range. *Refer to* **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 on which they depend.

Energy: Energy refers to the power supply for activities within the project footprint.

Enplanement: The act of boarding an airplane.

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. *Refer to* **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. *Refer to* **significant effect** *and* **mitigation**.

Environmental justice: A state and local process for 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.

Erodible soils: Soils that are susceptible to wind and water erosion. Water erosion can occur from runoff or raindrop impact. Wind erosion can occur through sustained winds or strong gusts.

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

Essential fish habitat: The waters and substrates 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, custom, or social attitudes.

Expansive soils: Expansive soils are susceptible to expansion and contraction resulting from changes in moisture and provide an unstable support for foundations or other structures.

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 characterizes and records changes in agricultural land use. *Refer to* **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's board of supervisors and local advisory committee. *Refer to* **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 are less valuable because they have steeper slopes, less ability to retain moisture in the soil, or other characteristics that limit their use. To quality as Farmland of Statewide Importance, a property must have been used for production of irrigated crops at some time during the previous 4 years. *Refer to* **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 substantial displacement as a result of rock mass movement. *Refer to* **active fault**.

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, or surface fault rupture: A rupture in which the fault extends to the ground surface and causes the ground to break, resulting in an abrupt, relative 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.

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.

Fault zone: 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.

Feasible: Capable of being implemented.

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

Federal Railroad Administration (FRA): An agency in 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.

Feeder route: Branch routes that feed into main (arterial) routes.

Fenestration: The arrangement, proportioning, and design of windows and doors in a building; openings in a building wall, such as windows and doors, designed to permit the passage of air, light, and people.

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. *Refer to* **cut slope**.

Fire protection services: 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: Floodplains are 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 an 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 aerially over another.

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

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

Fossil localities: Areas where fossils have been found.

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

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

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.

Freight rail conditions: Freight rail conditions refer to the regional network of freight railways.

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. *Refer to* **eminent domain** *and* **partial acquisition**.

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.

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). *Refer to* **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 articulates 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.

Geologic hazards: Geologic hazards are the result of natural, active geologic processes, such as seismic activity or liquefaction, that can be hazardous to people or infrastructure.

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: At different elevations; on separate levels.

Grading: The act of raising or lowering ground levels, adding or removing a slope, or leveling the ground surface of a site.

Greenhouse gases (GHG): A class of air pollutants believed to contribute to the global warming effect, including NO_X, hydrocarbons, and CO_2.

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.

Ground shaking: The level of ground movement caused by a seismic event.

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 development in an area.

Grubbing: The act of removing or clearing a site of trees, shrubs, stumps, and rubbish.

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. *Refer to* **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. Similarly, *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 usable by other forms of transportation (as defined by the Federal Railroad Administration).

Guideway system: For the purposes of this California High-Speed Rail 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 occur; an ecological setting used by animals for a particular purpose (e.g., roosting habitat, breeding habitat).

Habitat conservation plans (HCP): Planning documents required as part of an application for an Incidental Take Permit under Section 10 of the ESA. As defined in this document, HCPs also include Natural Community Conservation Plans, which identify measures necessary to conserve and manage natural biological diversity within the planning area while allowing compatible and appropriate economic development, growth, and other human uses. Each HCP describes the anticipated effects of the proposed taking, how those impacts will be minimized or mitigated, and how the HCP is to be funded.

Habitats of concern: Habitats of concern consist of riparian areas, critical habitat, essential fish habitat, conservation areas (i.e., recovery plan areas for federally listed species, conservation easements, public lands, conservation banks, and HCPs), wildlife movement corridors, and protected trees.

Haul Route: Routes and roadways used to transport spoils for disposal from the points of spoil origination to the nearest freeway access point or major roadway.

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 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: Any solid waste (i.e., garbage, refuge, sludge, or other material to be disposed of by being discarded, abandoned, or recycled) that exhibits one or more of the following characteristics (toxicity, ignitability, reactivity, or corrosivity), is listed as a known hazardous waste (e.g., F list), or meets other regulatory criteria for hazardous waste (e.g., used oil refined from crude oil). Hazardous waste is regulated by the U.S. Environmental Protection Agency under the Resource Conservation and Recovery Act and the California Department of Toxic Substances Control under the Hazardous Waste Control Law. Federal hazardous wastes are often referred to as Resource Conservation and Recovery Act wastes. California hazardous waste law and regulation is in some cases more stringent than the federal law and, as a result, wastes may be defined as California hazardous wastes, but not be Resource Conservation and Recovery Act wastes; as such, they may, but not necessarily, be identified as non-Resource Conservation and Recovery Act hazardous wastes. Environmental media (i.e., soil, groundwater, or surface water) are not normally considered wastes. However, when environmental media are excavated (and stored or transported) for disposal at another location, the environmental media may be regulated as hazardous waste if it contains hazardous waste, including both listed and characteristic hazardous wastes.

Headway: The time between buses, trains, or other transit vehicles at a given point. For example, a bus route operating on 15-minute headway means that one bus arrives every 15 minutes.

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.

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

Heritage resources: An alternate term for cultural resources used in some planning documents. *Refer to* **cultural resources**.

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

High-risk utility: Utility facilities conducting or carrying specific materials identified in Section 2 of the California Department of Transportation *Project Development Procedures Manual,* Appendix LL—Utilities Policy Certification and Utility Matrix.[1] Other utilities that could disrupt the operation of HSR.

High-speed rail alignment segment: A portion of a project section alignment that is distinguished from other segments 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).

High-speed rail 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.

High-speed rail network alternatives: Different ways to implement the HSR system in the study area with combinations of HSR alternative alignments and station locations.

High-speed rail system: The system that includes the HSR tracks, structures, stations, traction-powered substations, maintenance facilities, and train vehicles able to travel up to or above 220 mph.

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 mph (240 kilometers per hour) on existing rail infrastructure.

High-speed train: A train designed to operate safely and reliably at speeds near 220 mph (350 kilometers per hour).

High visual impacts: Impacts sustained if features of a project alternative 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: Include buildings, structures, objects, landscapes, districts, and linear features.

Historic built resources: Historic built resources include buildings, structures, objects, landscapes, districts, and linear features.

[1] 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 (accessed September 2018).

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.

Historical property: Defined in regulations issued under Section 106 of the National Historic Preservation Act as "any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register of Historic Places" (36 Code of Federal Regulations Part 800.16).

Historical resource: Defined in the State CEQA Guidelines; include but are not limited to resources listed in or determined eligible for listing in the California Register of Historical Resources and resources included in a local register (State CEQA Guidelines, California Code of Regulations Title 14, Section 15064.5).

Holocene: The period following the Pleistocene, from 10,000 years before present to the present. *Refer to* **Miocene**, **Pleistocene**, *and* **Pliocene**.

Hourly equivalent noise level (L_{eq} (h), dBA): Equivalent or average noise level for the noisiest hour, expressed in A-weighted sound level (decibels). *Refer to* **A-weighted sound level (decibels)**.

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 paved parking lots or 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 FMMP. The categories are defined according to U.S. Department of Agriculture land inventory and monitoring criteria, as modified for California. *Refer to* **Farmland of Local Importance**, **Farmland of Statewide Importance**, **Prime Farmland**, *and* **Unique Farmland**.

In lieu of: Instead of or in place of.

In situ: In the original or natural position.

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 performed in compliance with CEQA to evaluate the potential for a proposed project to result in a significant impact on the environment.

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.

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 only flows only during 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 facility: A facility (also referred to as an intermodal rail yard) that accommodates the transfer of goods between freight trains and on-road trucks. Such a facility also enables the loading of containers from trucks onto trains and unloading of containers from trains to trucks.

Intermodal station: A transit station for more than one mode of transportation.

Interoperability: The aptitude of the railway network or infrastructure to allow different high-speed trains to run safely and continuously within specified performance parameters.

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 a 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 region where atmospheric temperature increases rather than decreases with height, suppressing atmospheric mixing and tending to trap pollutants near the ground surface where adverse effects on health and materials are accentuated.

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.

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. *Refer to* **waters of the U.S.**, **waters of the state**, and **riparian**.

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.

Kiss-and-ride: Facility for private vehicles to drop-off or pick-up HSR patrons.

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: Downslope movement of materials such as rock, soil, or fill under the direct influence of gravity. Landslides are caused by several influences and factors related to slope stability, including slope angle, weathering, climate, water content, vegetation, overloading, erosion, earthquakes, and human-induced factors. Landslides are caused by the dynamic factors listed above, but they are usually triggered by the addition of weight to the top of a potential slide area,

removal of mass from the base of a potential slide area, increases in the volume of water within a potential slide area, and vibrations from earthquakes.

Land use categories: Land use categories include existing land uses along the proposed Shared Passenger Track Alternatives including residential; commercial, services, and office; industrial and mixed commercial; transportation; open space and recreation; and facilities uses.[2]

Land use compatibility assessment: An analysis 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 study alternatives, and the impact of these changes on the land use.

Lateral spreading: Lateral spreading and flow slides are phenomena where surficial soil displaces along a shear zone that has formed within an underlying liquefied layer. On reaching mobilization, the surficial blocks are transported downslope or in the direction of a free face by earthquake and gravitational forces. Lateral spreading is thought to occur on slopes as level as 0.5 percent, or on level ground with a “free face,” such as a stream bank. Flow slides occur when conditions are favorable for liquefaction to occur and lead to a state of unlimited flow. A contributing factor to lateral spreading and flow slides is the presence of stratified soil in which pore pressures build up within potentially liquefiable layers that are confined by lower-permeability soil layers. This can result in substantial reductions in shear strength and large, lateral deformations and flow failures.

Law Enforcement: Law enforcement services address the discovery, deterrence, rehabilitation, or punishment of criminal behavior and that the laws of an area 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 (49 Code of Federal Regulations Part 207).

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

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

Lead track: A track connecting a railroad yard or facility with a main line.

L_{eq}: A measure of the average noise level during a specified period of time.

L_{eq}(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. *Refer to* **mitigation**.

Levee: An earthen berm or wall that raises the hydraulic 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.

Light maintenance facility: A maintenance and storage yard facility to support the service defined in the conceptual service plan.

[2] 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; and transportation-railroad and transportation, communications, and utilities uses.

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 phenomenon in which loose to medium dense, saturated, granular materials undergo matrix rearrangement, develop high pore water pressure, and lose shear strength because of cyclic ground vibrations induced by earthquakes. This rearrangement and strength loss are followed by a reduction in bulk volume of the liquefied soils. The effects of liquefaction can include the loss of bearing capacity below foundations, settlement in level ground, and instability in areas of sloping ground (also known as lateral spreading). Liquefaction generally has the potential to cause surface expression when it occurs within 50 feet of the ground surface.

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

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

Logarithmic scale: A measurement in which the ratio of successive intervals is not equal to 1 (which is typical for linear scales) but is some common factor larger than the previous interval (a typical ratio is 10, so that the marks on the scale read: 1, 10, 100, 1000, 10000, etc.). Logarithmic scales are useful for graphing values that have a very large range.

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 that runs through six-county coastal regions in Southern California beginning at San Luis Obispo through Santa Barbara, Ventura, Los Angeles, and Orange County, and ending at San Diego. Passenger rail currently operates within the LOSSAN Corridor and will continue to do so with the introduction of HSR service. The project's alignment would share the existing LOSSAN rail corridor with the existing rail operators.

Low-income: *Low-income* means a person whose median household income is at or below the U.S. 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 and, if circumstances warrant, geographically transient persons (such as migrant workers, students, or Native Americans) who could be affected by a proposed program, policy, or activity.

Low-risk utility: All utilities that are not identified as high-risk facilities (as defined in Section 2 of the California Department of Transportation *Project Development Procedures Manual,* Appendix LL—Utilities Policy Certification and Utility Matrix.[3]

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.

Main line: The tracks allocated to HSR traffic at normal commercial speed and not normally allowed for stops, shunting, or garage.

[3] 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 (accessed September 2018).

Mainline: The portion of a principal highway or railroad that is exclusive of connectors, ramps, spurs, etc.

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. *Refer to* **attainment** *and* **nonattainment**.

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

Maintenance of infrastructure facility: A train industry term that refers to repair and maintenance activity concerning the right-of-way and track, including track and roadway, buildings, signals, and communication and power facilities.

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

Maintenance siding: A dead-end track dedicated to parking maintenance trains and connected to a passing, turnout or station connection track, never to the main line.

Major roadways: Major roadways and corridor traffic volumes refer to the network of roads, roadway intersections, and corridor traffic in the transportation RSA.

- All roadways are classified according to their primary functions:
  - **Freeway:** A major roadway with controlled access, devoted exclusively to traffic movement, mainly of a through or regional nature.
  - **Expressway:** A major roadway with a mix of controlled and uncontrolled access, linking freeways with arterials and providing access to major destinations.
  - **Arterial:** A major roadway mainly taking traffic to and from expressways and freeways and providing access to major destinations as well as adjacent properties.
  - **Collector:** A roadway that collects and distributes traffic to and from arterials and provides access primarily to and from adjacent properties.
  - **Local:** The lowest category of roadway, providing access to and from individual properties and distributing local traffic to and from the higher roadway classifications, particularly collector streets.

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.

Measure M: A measure that provides for a sales tax of 0.5 cent for countywide transportation improvements; approved by Orange County voters in November 1990.

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 observed with the unaided eye.

Mesoscale: Describes regional air quality analysis.

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.

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

Mineral resources: 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: *Minority* includes persons who are American Indian and Alaskan Native, Asian, Black or African American, Hispanic or Latino, and Native Hawaiian and other Pacific Islander. A minority population means any readily identifiable group or groups of minority persons who live in geographic proximity and, if circumstances warrant, geographically dispersed or transient persons (such as migrant workers, students, or Native Americans) who could be affected by a proposed program, policy, or activity.

Miocene: The period between 23 and 5.3 million years before present. *Refer to* **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 Enforcement Program: Document outlining the strategy for implementing, monitoring, and ensuring the effectiveness of the mitigation measures described in the Draft EIR/EIS and committed to as part of project approval.

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

Mobile source: Any nonstationary 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 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.

Nitrogen oxides (NO_X): A class of pollutant compounds that include nitrogen dioxide (NO_2) and nitric oxide, both of which are emitted by motor vehicles. *Refer to* **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). *Refer to* **No Project**.

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

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). *Refer to* **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 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.

Noise: Noise is generally defined as a loud, unpleasant, unexpected, or undesired sound that is typically associated with human activity and that interferes with or disrupts 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.

Nonattainment: An air basin that exceeds federal or state standards for a particular pollutant. *Refer to* **attainment**, **maintenance**.

Nondisturbance exclusion zones: Areas designated off-limits for construction and off-limits to construction 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.

Non-special-status wildlife: An umbrella term for wildlife species or species groups that do not meet the definition of a special-status species but that may still be affected by construction and operations of the project, including native birds protected under the Migratory Bird Treaty Act and California Fish and Game Code Section 3503, as well as species groups of regional or international conservation concern (e.g., waterfowl and shorebirds, roosting bats).

North American Datum of 1983 (NAD 83): The horizontal and geometric control datum for the United States based on the Geodetic Reference System 1983 and with a geocentric origin.

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

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 environmental impact report will be prepared for a proposed project.

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 threaten 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 (EM) pulse or pulses that cause the nuclei to absorb energy from the EM 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.

O

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

Off site: Outside of the HSR project footprint.

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 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.

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

Overhead contact system (OCS): A simple two-wire system, a messenger wire and a contact wire, with overhead wires supported by cantilevers and attached to poles alongside the tracks to provide traction power to HSR trains. *Refer to* **catenary wire** *and* **contact wire**.

Ozone (O_3): 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 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 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, plants, and other nonhuman organisms. They include body fossils (the remains of the organism itself) and trace fossils (which record the presence and movement of past organisms in their environment).

Paleontological sensitivity/paleontological potential: The probability of a geologic unit to yield fossils.

Paleontologist: A scientist who studies fossils.

Paleosol: A layer of ancient or fossil soil buried beneath other sediments or deposits.

Pantographs: Jointed frames that transfer a current to an electric vehicle from overhead wires (*refer to* **overhead contact system**).

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. *Refer to* **switching station**.

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

Park: A publicly owned property 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.

Park-and-ride: Facility where HSR patrons can leave personal vehicles.

Partial acquisition: A permanent acquisition of a portion of a parcel of land as part of land acquisition for a project. *Refer to* **full parcel acquisition** *and* **eminent domain**.

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_{10} and $PM_{2.5}$, respectively). *Refer to* **air pollution.**

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. PM_{10} and $PM_{2.5}$ are of particular concern.

Passing track: A track connected to the main line on both ends that allows a train to stop for commercial reasons (in a station for example) or operating purposes (to deal with a delayed train or a train with technical issues), and that allows other trains to pass.

Pedestrian and bicycle access: Pedestrian and bicycle access refers to pedestrian access routes and bicycle access routes within the RSA.

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.

Pick-up and drop-off: Facility for private and semiprivate vehicles to drop-off or pick-up HSR patrons; could include facilities for taxis, private shuttles, and rental cars.

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.

Plat: A plat refers to a map drawn to scale, depicting the divisions of a piece of land. A plat depicts how the land has been subdivided into lots, illustrating 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. *Refer to* **Holocene**, **Pliocene**, *and* **Miocene**.

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

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.

Population: Population refers to the number of residents living in an area. Population increase is based on births, in-migration, out-migration, and deaths occurring within the area.

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.

Positive train control (PTC) systems: The Rail Safety Improvement Act requires that railroads implement PTC systems to prevent train-to-train collisions on certain rail lines by December 31, 2018.

Pothole/test pit: An excavation to expose an underground facility.

Poverty level: The income at which a family or individual is considered poor. In 2021, the U.S. Census Bureau defined the poverty level for a family of four as an income of $26,500 or less.

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

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

Preferred Alternative: The alternative identified by the Authority 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 alternatives.

Primary seismic hazards: Primary seismic hazards include ground surface fault ruptures and ground shaking. *Refer to* **fault rupture**, **fault zone**, *and* **ground shaking**.

Prime Farmland: An FMMP category describing rural land with the best combination of physical and chemical features to sustain long-term agricultural crop production. These lands have the soil quality, growing season, and moisture supply necessary to produce sustained high yields. Soil must meet the physical and chemical criteria determined by the Natural Resources Conservation Service. Prime Farmland must have been used for production of irrigated crops at some time during the 4 years prior to the FMMP's mapping date. *Refer to* **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 covers the broad spectrum of a large, complex, regionally extensive effort composed of 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 or build 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 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.

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

Protected trees: 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 lands: Public lands are owned and typically maintained by the government, including cities, counties, states, and the federal government.

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) for undertaking a project or action, and the need(s) the project or action is intended to meet or fulfill.

Q

Qualified paleontologist: *Refer to* **paleontological resource specialist**.

Quality level: A level of accuracy scale used (1) to identify the location of underground and above ground 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.

Quaternary Period: The most recent period of time in terms of geological timescale, spanning from 2.6 million years ago to present day. Includes both the Pleistocene and Holocene epochs. *Refer to* **Holocene** *and* **Pleistocene**.

Queuing area: Station area where passengers can wait in a line without disrupting other passenger flow.

R

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

Rail guideway: A track that supports and physically guides high-speed trains.

Rail line: A length of railroad track and railbed.

Rail yard: A series of railroad tracks for storing, sorting, or loading and unloading railroad cars and locomotives.

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

Reactive organic gas (ROG): Reactive hydrocarbon pollutants. *Refer to* **hydrocarbons**.

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

Recovery plan areas: Section 4(f) of the ESA directs the Secretary of the Interior and the Secretary of Commerce to develop and implement recovery plans to promote the conservation of endangered or threatened species. The U.S. Fish and Wildlife Service and the National Oceanic and Atmospheric Administration's National Marine Fisheries Service are responsible for administering the ESA. In some instances, recovery plans identify specific areas and describe what research and management actions are necessary to support recovery but do not themselves commit workforce or funds. Recovery plans are used in setting funding priorities and provide direction to local, regional, and state planning efforts.

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

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

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, 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 financially unconstrained component. The financially constrained component of the RTP 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 facility 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.

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, it represents 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: A form of watercourse bank armoring consisting of placed rock or concrete to strengthen or protect an earthen embankment from erosion. *Refer to* **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

Safety: Vulnerability to accidental injury (usually involving at least one vehicle as the instrument causing the injury). As such, safety resources are components of the built environment that contribute to the safety of a place (e.g., barriers, grade separations, sidewalks, bicycle lanes).

Scale: A graduated line representing a proportionate size.

Scarp: The inner slope of a ditch.

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 EIS (under NEPA) and an EIR (under CEQA). 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.

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: 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.

Section 4(f): Provisions originally enacted as Section 4(f) of the U.S. Department of Transportation Act of 1966 codified in 49 U.S. 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 historic 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. 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 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, and 1993–1996). Consequently, where such conversions of Section 6(f) lands are proposed, replacement land must be provided.

Security: Vulnerability to intentional criminal or antisocial acts suffered by individuals taking trips. Security is provided by something other than the built environment and ensures the safety of a place from intentional criminal acts (e.g., security guards, bag checks, surveillance cameras).

Sediment: 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.

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.

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

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

Seismically induced settlement: Strong ground motion can cause the densification of soils, resulting in ground surface settlement. This phenomenon, known as seismically induced

settlement or seismic compaction, typically occurs in dry, loose, cohesionless soils. During an earthquake, soil grains may become more tightly packed because of the collapse of voids or pore spaces, resulting in a reduction in the soil column thickness.

Senate Bill 45: A law that consolidates various funding programs into the State Transportation Improvement Program (STIP) and increases accountability for programming and delivery of STIP projects to the regions in the state and the various Caltrans districts. *Refer to* **State Transportation Improvement Program**.

Sensitive natural communities: Communities of plants and wildlife interacting in the same ecosystem whose extent has been much reduced in the state and which are locally rare.

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

Sensitive receptor: For air quality, sensitive receptors include 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.

Sensitivity analysis: An analysis that assesses how reactive 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 shadow impact ranking would be high if a new (not existing) elevated structure were within 75 feet (23 meters) of residential or open space, natural areas, or parkland.

Shared right-of-way: An HSR alignment where high-speed trains operate in proximity to and within the existing operating rights-of-way of other transportation systems, including conventional passenger railroads or freight railroads, without sharing tracks. Also includes highways.

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

Shared use track: A segment along the HSR alignment where HSR operates with other passenger railroads (i.e., Caltrain, Metrolink, and Amtrak), on the same track.

Shinkansen: The Japanese high-speed train.

Significant: 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. *Refer to* 40 Code of Federal Regulations Part 1508.27.

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

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

Slump: A slump is a coherent mass of loosely consolidated material or rock that moves a short distance down a slope.

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

Soil densification: Soil compaction that can lead to erosion.

Soil hazards: Soil hazards include expansive soils, erodible soils, and corrosive soils. Expansive soils are susceptible to expansion and contraction resulting from changes in moisture and provide an 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.

South Coast Air Quality Management District: The regional regulatory agency with primary responsibility for improving air quality in the South Coast Air Basin.

Southern California Association of Governments (SCAG): The Metropolitan Planning Organization of 6 of the 10 counties in Southern California (Imperial County, Los Angeles County, Orange County, Riverside County, San Bernardino County, and Ventura County).

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

Special-status natural communities: Determined to be significant or to represent rare vegetation types or to have limited distribution statewide or within a county or region and include riparian areas that are jurisdictional to CDFW under California Fish and Game Code 1600 et seq. These communities are often vulnerable to the environmental effects of projects. A list of Sensitive Natural Communities in California is maintained by CDFW. CDFW has evaluated natural communities according to NatureServe's Heritage Methodology, and natural communities are assigned ranks. Natural communities with ranks of S1 to S3 are considered Sensitive Natural Communities and are to be addressed during the CEQA process and its equivalents.

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: Special-status species are plants and animals that are legally protected under the ESA (16 U.S. Code 1531 et seq.) or CESA (California Fish and Game Code Sections 2050–2085); species considered sufficiently rare by the scientific community to qualify for listing; and species protected under the California Native Plant Protection Act (California Fish and Game Code Sections 1900–1913), the California Fully Protected Species statutes, and other regulations, such as those species that meet the definitions of rare, threatened, or endangered under the State CEQA Guidelines Sections 15380 and 15125. The special-status species designation does not extend to bird species protected under the Migratory Bird Treaty Act (16 U.S. Code 703–712) or the corresponding California bird protection statutes (California Fish and Game Code Sections 3503, 3513).

Spiral: A curve of variable radius used to connect a straight section of track with the radius of the body of the curve. Sometimes called a transition or a transition spiral in European publications.

Staging track facility: a rail facility designed to allow freight trains to be staged or held outside of the corridor so that windows in rail activity may be provided to accommodate construction and operational changes.

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

State streambeds: An area of CDFW jurisdiction, which generally includes a streambed and bank, adjacent floodplain, and riparian vegetation. However, 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 multi-year 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, including construction stormwater best management practices, erosion and sedimentation controls, dewatering (nuisance water removal), runoff controls, and construction equipment maintenance. *Refer to* **best management practice (BMP)**.

Straddle bent: A pier structure that spans the functional/operational right-of-way limit of a roadway, highway, or railway. *Refer to* **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). *Refer to* **fault**, **active fault**, *and* **fault trace**.

Stub end: A track that terminates at one end.

Study corridor: A linear geographic belt or band connecting different parts of the study region that follows the corridor alignment selected for the HSR system at the program level for evaluation at the 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, Southern Mountain Crossing, and Los Angeles Basin.

Subsidence: Vertical displacement of the ground surface, which can be localized or over a broad region. Subsidence may be affected by different processes at work and can be naturally induced or human-induced. Regional-scale, human-induced subsidence generally results from withdrawal of fluids (water, oil, or gas) from underground reservoirs.

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: Sulfur-oxygen compounds that include the important criteria pollutants sulfur dioxide (SO_2) and sulfur trioxide.

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

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

Surface water hydrology: 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 in a watershed, an area drained by a river, river system, or other body of water.

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.

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

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

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.

Tectonic activity: Movement of tectonic plates that result in earthquakes, volcanoes, and mountain building.

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

Tesla: Unit of measure describing the strength of a magnetic field. *Refer to* **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. *Refer to* **program-level** and **project-level**.

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

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

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. *Refer to* **mobile source**.

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

Trackway: The route of a train.

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

Traction power facilities: A general term that encompasses substations, switching stations, and paralleling stations.

Traction power supply substation (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, 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; any place that is a vital and beloved part of the community and that may give the community a special identity or defining character.

Traditional cultural resources: As defined in California Public Resources Code Section 21074, a site, feature, place, cultural landscape, sacred place, or object with cultural value to a California Native American tribe and either of the following: included or determined eligible for inclusion in the California Register of Historical Resources or included in a local register of historical

resources; or a resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant under criteria set forth in subdivision (c) of Section 5024.1. Subdivision (c) of Section 5024.1 criteria describe that a historical resource for inclusion in the California Register of Historical Resources is associated with events that have made a significant contribution to the broad patterns of California history and cultural heritage; is associated with the lives of persons important to our past; embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important artist, or possesses high artistic values; or has yielded or has the potential to yield information important to prehistory or history.

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

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 the means to use a personally owned automobile. *Refer to* **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, translates into higher transit patronage.[4]

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 energy: Generally defined in terms of direct and indirect energy. Direct energy involves energy consumed by vehicle propulsion (e.g., automobiles, airplanes, trains). This energy is a function of traffic characteristics such as volume, speed, distance traveled, vehicle mix, and thermal value of the fuel being used. Direct energy also includes electrical power requirements, including recoverable energy during operations. Indirect energy consumption involves the nonrecoverable, one-time energy expenditure involved in building the physical infrastructure associated with the HSR project, typically through the irreversible burning of hydrocarbons for operating equipment and vehicles in which energy is lost to the environment.

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.

Transverse: A facility passing from one side of the right-of-way to the other side of the right-of-way.

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 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, as well as time spent to reach the final destination.

Tributary watercourse: A stream feeding a larger stream or lake.

Trinomial: An alphanumeric abbreviation for a previously identified historic or prehistoric resource, such as CA-ORA-1352, representing the state (e.g., California [CA]), the county (e.g.,

[4] Transit Cooperative Research Program. 2004. *TCRP Report 102 -Transit-Oriented Development in the United States: Experiences, Challenges, and Prospects*. Washington, DC.

Orange [–ORA]), and a unique number assigned by the State Historic Preservation Office (e.g., -1352).

Tsunami: An ocean wave that develops as a result of the displacement of large amounts of water over a short period of time. Tsunamis are commonly associated with sub-marine faults that displace water in the ocean over long distances. The effect of a tsunami on a shoreline is closely associated with the bathymetric properties of an ocean basin. Tsunamis can also occur as a result of sub-marine as well as land-based landslides, which can displace large volumes of water over a short period of time.

U

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

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.

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. *Refer to* **Farmland of Local Importance**, **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 (USEPA): 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.

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

Vehicle miles traveled: A rating using qualitative measures to characterize operational conditions within a traffic stream that represents the number of vehicles within a study area multiplied by the distance traveled by each vehicle.

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.

Vertebrate: Organisms with a vertebral column.

Vertical curve: A curve inserted between two lengths of a road or railway that 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 built of a series of arches supported by piers. *Refer to* **pier structure**.

Vibration: Vibration is an oscillatory motion that can be described in terms of the displacement, velocity, or acceleration of an object.

Viewer group, or viewer: Neighbors who can see the project and travelers who would use it. The following are types of neighbors and travelers:

- **Neighbors:** Residential, recreational, institutional, civic, retail, commercial, industrial, agricultural, and travelers on roadways with views of the project footprint. Neighbors are those people who are adjacent to and have views of the project footprint.
- **Travelers:** Travelers are those people who have views from the project footprint (i.e., rail users) with transitionary views of the project and passing landscapes.

Neighbors and travelers can be further subdivided into categories that help to establish viewer preferences and their 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.

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.

Viewer sensitivity: An assessment of the concern viewer groups may have to changes in the visual character of visual resources based on two factors: (1) viewer awareness to visual changes (measure of attention, focus, and protection) and (2) viewer exposure to visual changes (proximity, duration, number of people affected, or extent).

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

Visual or landscape character: 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. 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. *Refer to* **viewshed**.

Visual resources: A visual resource is any visible site, object, or feature of the landscape. Visual resources are components of the natural, cultural, or project environments. 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 historic or cultural importance or that include buildings of similar historic 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.

Volatile organic compound (VOC): Any compound of carbon (excluding CO, CO_2, carbonic acid, metallic carbides or carbonates, and ammonium carbonate) that participates in atmospheric photochemical reactions, except those designated by the U.S. Environmental Protection Agency as having negligible photochemical reactivity.

Volt: Standard unit of measure for electrical potential.

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 LOS the roadway can provide. *Refer to* **level of service**.

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 are 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 United States (U.S.): The federal Clean Water Act defines waters of the U.S. at 33 Code of Federal Regulations Part 328.3(a) as:

(1) Waters that are:

  (i) Currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters subject to the ebb and flow of the tide;

  (ii) The territorial seas; or

  (iii) Interstate waters;

(2) Impoundments of waters otherwise defined as waters of the United States under this definition, other than impoundments of waters identified under paragraph (a)(5) of this section;

(3) Tributaries of waters identified in paragraph (1) or (2) of this section that are relatively permanent, standing, or continuously flowing bodies of water;

(4) Wetlands adjacent to the following waters:

  (i) Waters identified in paragraph (1) of this section; or

  (ii) Relatively permanent, standing, or continuously flowing bodies of water identified in paragraph (2) or (3) of this section and with a continuous surface connection to those waters; or

(5) Intrastate lakes and ponds not identified in paragraphs (1) through (4) of this section that are relatively permanent, standing, or continuously flowing bodies of water with a continuous surface connection to the waters identified in paragraph (1) or (3) of this section.

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

Watt: Standard unit of measure for electrical power.

Wayside power: Electrical power provided from the utility grid to the electrified railroad right-of-way at convenient locations from the side of the rail tracks or corridor.

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, i.e., water and wastewater.

Wetland: An area of land with soil that is saturated with moisture, either permanently or seasonally. According to the USACE *Wetland Delineation Manual*,[5] 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: Wildlife movement corridors are areas defined by wildlife use for movement events on varying scales (e.g., daily foraging, seasonal migration, dispersal). Although these areas are referred to as “wildlife” movement corridors, 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 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.

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.

Y

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

[5] U.S. Army Corps of Engineers. 1987. *Corps of Engineers Wetlands Delineation Manual*. January 1987. https://el.erdc.dren.mil/elpubs/pdf/wlman87.pdf.