3.6 Public Utilities and Energy

3.6.1 Introduction

Section 3.6, Public Utilities and Energy, of the *Burbank to Los Angeles Project Section Environmental Impact Report/ Environmental Impact Statement* (EIR/EIS) analyzes the potential impacts of the No Project Alternative and the High-Speed Rail (HSR) Build Alternative, and describes impact avoidance and minimization features (IAMF) that would avoid, minimize, or reduce impacts. Where applicable, mitigation measures are proposed to further reduce, compensate for, or offset impacts of the HSR Build Alternative. This section also defines the public utilities and energy impacts within the region and describes the affected environment in the resource study areas (RSA).

Utilities

Early identification of utility conflicts may identify opportunities to avoid utility relocations, decrease the inconveniences the public may experience during utility relocations, and decrease project cost.

The *Final Program EIR/EIS for the Proposed California High-Speed Train System* (2005 Statewide Program EIR/EIS; California High-Speed Rail Authority [Authority] and Federal Railroad Administration [FRA] 2005) concluded that system-wide energy demand would be potentially significant under the California Environmental Quality Act (CEQA). Project design elements mentioned in the 2005 Statewide Program EIR/EIS that would reduce effects and are applicable to the HSR Build Alternative include construction phasing to avoid interruptions to utility services and identification of conflicts with utilities. Project features that reduce energy consumption include designing the HSR system with regenerative braking and implementing energy-saving measures during construction.

Energy

A goal of the California High-Speed Rail System is to reduce energy consumption and use alternative sources of energy. This section evaluates energy usage during construction and operation.

Additional details on public utilities and energy are provided in the following appendices in Volume 2 of this Draft EIR/EIS:

- Appendix 2-B, Impact Avoidance and Minimization Features
- Appendix 2-D, Applicable Design Standards
- Appendix 3.1-B, Regional and Local Policy Inventory
- Appendix 3.6-A, California High-Speed Rail Statewide Criteria Pollutant, Greenhouse Gas, and Energy Analysis
- Appendix 3.6-B, Technical Memorandum: Water Usage Analysis for the High-Speed Rail Burbank to Los Angeles Project Section

Four other resource sections in this EIR/EIS provide additional information related to public utilities and energy:

- **Section 3.2, Transportation**—Evaluates impacts on transportation, circulation, and access, including road closures, emergency access, and roadway, pedestrian, and bicycle access of the HSR Build Alternative.
- **Section 3.8, Hydrology and Water Resources**—Evaluates impacts on stormwater, wastewater, and drainage from the HSR Build Alternative.
- **Section 3.10, Hazardous Materials and Wastes**—Evaluates impacts on public services related to hazardous materials and wastes, such as the use of hazardous materials or disposal of solid waste produced by the HSR Build Alternative.
- **Section 3.11, Safety and Security**—Evaluates the impacts on emergency responders and public safety services, including response times during construction and operation of the HSR Build Alternative.

3.6.1.1 *Definition of Resources*

The following are definitions for the public utilities and energy resources analyzed in this Draft EIR/EIS:

- **Public Utilities** are publicly owned facilities used to provide electric power, natural gas, sewerage, or other services to the community. Public utilities impacts are generally evaluated under CEQA based on whether the existing environment can accommodate the proposed project based on the capacities of the existing utilities. Impacts are determined by the potential of the proposed project to exceed the capacities of facilities (e.g., water treatment, wastewater treatment, stormwater drainage, landfill), during construction or operation, or exceed the available supply of pertinent resources (i.e., water).
- **Energy** refers to the power supply for activities within the project footprint. CEQA establishes a goal of conserving energy through wise and efficient use, and places particular emphasis on avoiding or reducing inefficient, wasteful, and unnecessary consumption of energy (Public Resources Code Section 21100(b)(3)). Environmental impacts related to energy involve energy requirements and use efficiencies for construction, operation, and maintenance of the project; impacts on local and regional energy supplies; impacts on peak- and base-period energy demands; compliance with existing energy standards; impacts on energy resources; and transportation energy use requirements and use of more energy-efficient alternatives.

3.6.2 Laws, Regulations, and Orders

This section describes federal, state, and local laws, regulations, orders, plans, and agency jurisdiction and management guidance that are relevant to public utilities and energy resources.

3.6.2.1 *Federal*

Procedures for Considering Environmental Impacts (64 Federal Register 28545)

These FRA procedures state that an EIS should consider possible impacts on energy production and consumption, especially those alternatives likely to reduce the use of petroleum or natural gas consistent with the policy outlined in Executive Order (USEO) 12185.

Section 403(b) of the Power Plant and Industrial Fuel Use Act (Executive Order 12185, 44 Federal Register Section 75093; Public Law 95-620)

This section of the Power Plant and Industrial Fuel Use Act encourages additional conservation of petroleum and natural gas by recipients of federal financial assistance.

Norman Y. Mineta Research and Special Programs Improvement Act (Public Law 108-426)

This act established the Pipeline and Hazardous Materials Safety Administration (within the U.S. Department of Transportation), which regulates safe movement of hazardous materials to industry and consumers by all modes of transportation, including pipelines. The regulations require pipeline owners and operators to meet specific standards and qualifications, including participating in public safety programs that notify an operator of proposed demolition, excavation, tunneling, or construction near or affecting a pipeline. This includes identifying pipelines that may be affected by such activities and identifying any hazards that may affect a pipeline. In California, pipeline safety is administered by the Office of the Fire Marshal.

Federal Energy Regulatory Commission

The Federal Energy Regulatory Commission (FERC) is an independent agency that regulates the interstate transmission of natural gas, oil, and electricity. FERC also regulates natural gas and hydropower projects. As part of that responsibility, FERC regulates the transmission and sale of natural gas for resale in interstate commerce, the transmission of oil by pipeline in interstate commerce, and the transmission and wholesale sales of electricity in interstate commerce. FERC also licenses and inspects private, municipal, and state hydroelectric projects; approves the siting and abandonment of interstate natural gas facilities, including pipelines, storage, and liquefied natural gas; oversees environmental matters related to natural gas and hydroelectricity projects and major electricity policy initiatives; and administers accounting and financial reporting regulations and conduct of regulated companies.

Corporate Average Fuel Economy

Corporate Average Fuel Economy (CAFE) standards are federal regulations that are set to reduce energy consumed by on-road motor vehicles. The National Highway Traffic Safety Administration regulates the standards, and the U.S. Environmental Protection Agency (USEPA) measures vehicle fuel efficiency. The standards specify minimum fuel consumption efficiency standards for new automobiles sold in the United States. The current standard is 34.9 miles per gallon (mpg) for passenger cars and 26.6 mpg for light-duty trucks. On May 19, 2009, President Obama issued a Presidential Memorandum proposing a new national fuel economy program that adopts uniform federal standards to regulate both fuel economy and greenhouse gas (GHG) emissions. The program covers model year 2012 to model year 2016 and ultimately requires an average fuel economy standard of 35.5 mpg in 2016 (39 mpg for cars and 30 mpg for trucks). In response to the Presidential Memorandum, an October 2010 Regulatory Announcement developed with support from industry, the State of California, and environmental stakeholders was issued by USEPA and the U.S. Department of Transportation.

In January 2012, the California Air Resources Board (CARB) approved a vehicle emission control program for model years 2017 through 2025. This is called the Advanced Clean Cars Program. On August 28, 2012, USEPA and the National Highway Traffic Safety Administration issued a joint final rule to establish 2017 through 2025 GHG emissions and CAFE standards. To further California's support of the national program to regulate emissions, CARB submitted a proposal that would allow automobile manufacturer compliance with USEPA's regulations to show conformity with California's requirements for the same model years. The Final Rulemaking Package was filed on December 6, 2012, and the final rulemaking became effective on December 31, 2012.

On August 24, 2018, USEPA and the National Highway Traffic Safety Administration proposed the Safer Affordable Fuel-Efficient Vehicles Rule for Model Years 2021–2026 Passenger Cars and Light Trucks. The Safer Affordable Fuel-Efficient Vehicles Rule, if finalized, would amend certain existing CAFE and tailpipe carbon dioxide emissions standards for passenger cars and light trucks and establish new standards, all covering model years 2021 through 2026. More specifically, the National Highway Traffic Safety Administration is proposing new CAFE standards for model years 2022 through 2026 and amending its 2021 model year CAFE standards, and USEPA is proposing to amend its carbon dioxide emissions standards for model years 2021 through 2025 in addition to establishing new standards for model year 2026. The agencies proposed to retain the model year 2020 standards for both programs through model year 2026, but also requested comment on a range of other alternatives.

Resource Conservation and Recovery Act (42 U.S. Code § 6901 et seq.)

The federal Resource Conservation and Recovery Act was enacted in 1976 to ensure that solid and hazardous wastes are properly managed, from their generation to ultimate disposal or destruction. Implementation of the act has largely been delegated to federally approved state waste management programs and, under Subtitle D, further promulgated to local governments for management of planning, regulation, and implementation of nonhazardous solid waste disposal. USEPA retains oversight of state actions under Code of Federal Regulations Title 40, Parts 239–259. Where facilities are found to be inadequate, 40 Code of Federal Regulations Part 256.42 requires that necessary facilities and practices be developed by the responsible state and local agencies or by the private sector. In California, that responsibility was created under the California Integrated Waste Management Act of 1989 and Assembly Bill (AB) 939.

3.6.2.2 State

Public Utilities Code Section 1001–1013 (California Public Utilities Commission General Order 131-D)

The California Public Utilities Commission (CPUC) regulates public electric utilities in California. Section 1001–1013 of the Public Utilities Code requires that railroad companies operating railroads primarily powered by electric energy or electric companies operating power lines shall not begin construction of electric railroads or power lines without first obtaining a certificate from the CPUC specifying that such construction is required for the public's convenience and necessity. General Order 131-D establishes CPUC rules for implementing Public Utilities Code Section 1001–1013 relating to the planning and construction of electric generation, transmission/power/distribution line facilities, and substations located in California. A permit to construct must be obtained from CPUC for facilities between 50 kilovolts (kV) and 200 kV. A certificate of public convenience and necessity must be obtained from the CPUC for facilities 200 kV and above. Both the permit to construct and public convenience and necessity are discretionary decisions by CPUC that are subject to CEQA.

California Public Utilities Commission General Order 176

The purpose of these proposed rules is to establish uniform safety requirements governing the design, construction, operation, and maintenance of 25 kV AC (alternating current) railroad electrification overhead contact systems (OCS). When CPUC completes these rulemaking proceedings, there will be a new CPUC General Order that will apply to the HSR Burbank to Los Angeles Project Section.

The rulemaking is for 25-kV Electrification System, which includes new safety rules only for construction and operation of high-speed train OCS. The traction power system, which includes all power substations and required interconnections with utilities, will be constructed per existing safety rules (General Orders) and is not part of these proceedings. This rulemaking process is not related to relocation of utilities that enable construction of HSR infrastructure. All this work will be performed based on bilateral agreements with utilities and in accordance with existing regulations and design criteria.

Designation of Transmission Corridor Zones (California Code of Regulations, Title 20, §§ 2320–2340)

The regulation on Designation of Transmission Corridor Zones specifies the scope and process required for identification, evaluation, and designation of new transmission corridor zones.

Energy Efficiency Standards (California Code of Regulations, Title 24, Part 6)

The regulation on Energy Efficiency Standards promotes efficient energy use in new buildings constructed in California. The standards regulate energy consumed for heating, cooling, ventilation, water heating, and lighting. The standards are enforced through the local building permit process.

Renewable Portfolio Standard Program (Senate Bill 1078)

The Renewable Portfolio Standard Program requires retail sellers of electricity to increase their purchases of electricity generated by renewable sources and establishes a goal of having 20 percent of California's electricity generated by renewable sources by 2017. In 2010, CARB extended this target for renewable energy resource use to 33 percent of total use by 2020 (CARB 2010). Subsequent legislation requires retail sellers and publicly owned utilities to procure 50 percent of their electricity from renewable energy resources by 2030. Increasing California's renewable supplies will diminish the state's heavy dependence on natural gas as a fuel for electric power generation.

100 Percent Clean Energy Act (Senate Bill 100)

Senate Bill (SB) 100, the 100 Percent Clean Energy Act of 2018, makes it a policy of the state that eligible renewable energy resources and zero-carbon resources supply 100 percent of all retail sales of electricity to California end-use customers and 100 percent of electricity procured to serve all state agencies by December 31, 2045.

Integrated Waste Management Act (Assembly Bill 939)

In response to the Resource Conservation and Recovery Act, the California Integrated Waste Management Act of 1989 was enacted by AB 939. It requires cities and counties to prepare an integrated waste management plan, including a countywide siting element, for each jurisdiction. Per Public Resources Code Sections 41700–41721.5, the countywide siting element provides an estimate of the total permitted disposal capacity needed for a 15-year period, or whenever additional capacity is necessary. Countywide siting elements in California must be updated by each operator and permitted by Department of Resources Recycling and Recovery, which is within the Natural Resources Agency, every 5 years. AB 939 mandated that local jurisdictions meet solid waste diversion goals of 50 percent by 2000.

Sustainable Communities and Climate Protection Act of 2008 (Senate Bill 375, Chapter 728, Statutes of 2008)

Adopted in September 2008, SB 375 provided a new planning process to coordinate community development and land use planning with regional transportation plans in an effort to reduce sprawling land use patterns and dependence on private vehicles, thereby reducing vehicle miles traveled (VMT) and GHG emissions associated with VMT. SB 375 is one major tool being used to meet the goals in the Global Warming Solutions Act (AB 32). Under SB 375, CARB sets GHG emission reduction targets for 2020 and 2035 for the Metropolitan Planning Organizations (MPO) in the state. Each MPO must then prepare a “sustainable communities strategy” that meets the GHG emission reduction targets set by CARB. Once adopted, the sustainable communities strategy will be incorporated into the region’s regional transportation plan.

Local Government Construction and Demolition Guide (Senate Bill 1374)

SB 1374 seeks to assist jurisdictions with diverting construction and demolition (C&D) material, with a primary focus on CalRecycle, by developing and adopting a model C&D diversion ordinance for voluntary use by California jurisdictions.

Protection of Underground Infrastructure (California Government Code, § 4216)

This code requires that an excavator must contact a regional notification center (i.e., underground service alert) at least 2 days before excavation of any subsurface installations. The underground service alert will then notify the utilities that may have buried lines within 1,000 feet of the excavation. Representatives of the utilities are required to mark the specific location of their facilities within the work area prior to the start of excavation. The construction contractor is required to probe and expose the underground facilities by hand prior to using power equipment.

Pavley Rule (Assembly Bill 1493)

In California, the Pavley regulations for automobile efficiency (AB 1493), with the granting of the federal waiver on June 30, 2009, were expected to reduce GHG emissions from California passenger vehicles by about 22 percent in 2012 and about 30 percent in 2016, all while improving fuel efficiency and reducing motorists’ costs.

California Public Utilities Commission General Order 95

The CPUC General Order, Rule for Overhead Electric Line Construction, formulates uniform requirements for overhead electrical line construction, including overhead catenary construction, the application of which will ensure adequate service and safety to persons engaged in the construction, maintenance, operation, or use of overhead electrical lines and to the public in general.

Water Conservation Act of 2009 (Senate Bill X7-7)

The Water Conservation Act of 2009 (SB X7-7, Chapter 4, Statutes of 2009 Seventh Extraordinary Session) requires urban and agricultural water suppliers to increase water use efficiency. The urban water use goal within the state is to achieve a 20 percent reduction in per capita water use by December 31, 2020. Agricultural water suppliers will prepare and adopt agricultural water management plans by December 31, 2012, and update those plans by December 31, 2015, and every 5 years thereafter. Effective 2013, agricultural water suppliers who do not meet the water management planning requirements established by this bill are not eligible for state water grants or loans.

3.6.2.3 Regional and Local

The HSR Build Alternative traverses several local government jurisdictions, including Los Angeles County; the cities of Burbank, Glendale, and Los Angeles; and several Los Angeles neighborhoods, including, but not limited to, Atwater Village, Lincoln Heights, Cypress Park, Glassell Park, Elysian Park, and Chinatown.

Local jurisdictions (counties and cities) have implemented policies and ordinances to regulate public utilities and energy. The general plan for Los Angeles County contains goals and policies associated with the development, availability, and adequate service of public facilities. The facility and service standards called for in these goals and policies are typically achieved and maintained through the use of equitable development funding methods. The general plans and municipal codes for the cities of Burbank, Glendale, and Los Angeles provide policies and regulations to ensure the development and funding of adequate water services, sewer services, storm drainage services, and solid waste disposal services.

Los Angeles County has developed and implemented integrated waste management plans in coordination with the cities in the county. These plans include the following components: waste characterization, source reduction, recycling, composting, solid waste facility capacity, education and public information, funding, special waste (e.g., asbestos and sewage sludge), and household hazardous waste.

The Conservation and Open Space Element of the Los Angeles County General Plan defines the critical energy-related issues facing the county and sets forth goals, policies, and implementation measures to protect the county's energy resources, to encourage orderly energy development, and to afford the maximum protection for the public's health and safety, and for the environment.

Table 3.6-1 lists county and city general plan goals, policies, and ordinances regarding public utilities and energy that are relevant to the HSR Build Alternative. Please refer to Appendix 3.1-B, Regional and Local Policy Inventory, for a detailed listing of the relevant local planning documents, including sustainable communities strategies, urban water management plans, waste management plans, and clean cities programs.

Table 3.6-1 Regional and Local Plans and Policies

Policy Title	Summary
Southern California Association of Governments	
2012–2035 Regional Transportation Plan/ Sustainable Communities Strategy (2016)	The plan includes the following goals: ▪ Encourage the project implementation agencies to identify police protection, fire service, emergency medical service, waste collection, and public school needs and to coordinate with local officials to ensure that the existing public services would be able to handle the increase in demand for their services. ▪ Encourage the project implementation agencies to identify the locations of existing utility lines and avoid all known utility lines during construction. ▪ Encourage green building measures to reduce waste generation and reduce the amount of waste sent to landfills.
Los Angeles County	
Los Angeles County General Plan 2035 (2015): Public Service and Facilities Element	▪ Policy PS/F 1.1: Discourage development in areas without adequate public services and facilities. ▪ Policy PS/F 1.2: Ensure that adequate services and facilities are provided in conjunction with development through phasing or other mechanisms. ▪ Policy PS/F 1.3: Ensure coordinated service provision through collaboration between County departments and service providers. ▪ Policy PS/F 1.4: Ensure the adequate maintenance of infrastructure. ▪ Policy PS/F 1.5: Focus infrastructure investment, maintenance, and expansion efforts where the General Plan encourages development. ▪ Policy PS/F 1.6: Support multi-faceted public facility expansion efforts, such as substations, mobile units, and satellite offices. ▪ Policy PS/F 1.7: Consider resource preservation in the planning of public facilities. ▪ Policy PS/F 6.1: Ensure efficient and cost-effective utilities that serve existing and future needs. ▪ Policy PS/F 6.4: Protect and enhance utility facilities to maintain the safety, reliability, integrity, and security of utility services. ▪ Policy PS/F 6.5: Encourage the use of renewable energy sources in utility and telecommunications networks. ▪ Policy PS/F 6.8: Encourage projects that incorporate on-site renewable energy systems.
Los Angeles County General Plan 2035 (2015): Conservation and Natural Resources Element	▪ Policy C/NR 12.1: Encourage the production and use of renewable energy resources.
Los Angeles Regional Water Quality Control Board's Basin Plan (1994)	The Los Angeles Regional Board manages stormwater drainage into unincorporated areas of the county. The Basin Plan is a resource for the Los Angeles Regional Board to provide for the continuity of programs that fulfill the requirements of the State Water Resources Control Board General Permit and Section 402(p) of the Clean Water Act.
2015 Urban Water Management Plan for District 40 (2016)	To provide reliable high-quality supplies from the Metropolitan Water District of Southern California and other sources to meet present and future needs at an equitable and economical cost and promote water use efficiency for all of Los Angeles County.

Policy Title	Summary
City of Burbank	
General Plan (2013): Open Space and Conservation Element	▪ Policy 9.1: Meet the goal of a 20 percent reduction in municipal water use by 2020. ▪ Policy 9.4: Pursue infrastructure improvements that would expand communitywide use of recycled water. ▪ Policy 10.1: Incorporate energy conservation strategies in City projects. ▪ Policy 10.2: Promote energy-efficient design features to reduce fuel consumption for heating and cooling. ▪ Policy 10.5: Promote technologies that reduce use of non-renewable energy resources.
General Plan (2013): Land Use Element	▪ Policy 2.6: Design new buildings to minimize the consumption of energy, water, and other natural resources. ▪ Policy 4.12: Underground utilities for new development projects and projects within designated undergrounding districts.
Municipal Code, Title 8, Public Utilities	This section of the Burbank Municipal Code provides regulations for utilities and sewer services.
Zero Waste Strategic Plan (2008)	The plan outlines strategies to be used to reach the goal of achieving zero waste by 2040. It includes four basic strategies, with a priority placed on “upstream” solutions to eliminate waste before it is created. The plan also includes actions to build on the City’s traditional “downstream” recycling programs to fully utilize the existing waste diversion infrastructure.
Burbank Center Plan (1997)	The Burbank Center Plan is an economic revitalization plan that addresses long-range land use and transportation planning of the downtown area.
Burbank Urban Water Management Plan (2015)	The UWMP was prepared in accordance with the California Urban Water Management Planning Act, Water Code Sections 10610 through 10657, which requires that suppliers who provide over 3,000 acre-feet of water annually or serve 3,000 or more connections must assess the reliability of their water sources every 5 years. The UWMP includes assessment of past and future water supplies and demands, evaluation of the future reliability of Burbank’s water supplies, water conservation and water management activities, discussion of water recycling activities, contingency planning for water shortages, and evaluation of distribution system water losses.
City of Glendale	
General Plan (2001): Open Space and Conservation Element	▪ Goal 6: Preserve and protect valuable water and mineral resources. ▪ Objective 6-2: Protect percolation areas important to groundwater recharge. ▪ Objective 6-4: Recognize the importance of watersheds to groundwater recharge and minimize impermeable surfaces. ▪ Objective 6-5: Design drainage devices in a manner that is compatible with the natural terrain and environment. ▪ Goal 11: Minimize environmental hazards including noise, unhealthful air, water and composite hazards. ▪ Goal 12: Continue to conserve water resources and provide for the protection and improvement of water quality. ▪ Objective 12-2: Continue to promote sewer connections in areas not sewered which feed Glendale's groundwater basis. ▪ Objective 12-4: Adhere to the requirements of the National Pollutant Discharge Elimination System to ensure surface water quality and to minimize the introduction of pollutants into drainage courses. ▪ Objective 12-6: Continue to monitor, inventory land uses and coordinate with the Environmental Protection Agency to avoid groundwater pollution and improve groundwater quality with particular emphasis on industrial areas and landfills.

Policy Title	Summary
Municipal Code, Title 13, Public Services	This section of the Glendale Municipal Code provides regulations for utilities and sewer services.
Downtown Specific Plan (2016)	The Downtown Specific Plan seeks to preserve and enhance the aspects that provide each district its unique character while improving the attractiveness and livability of the downtown area.
Greener Glendale Plan (2012)	The Greener Glendale Plan is the City of Glendale's plan for helping the community of Glendale achieve better sustainability. The plan assesses what actions the City and community have already taken to be more sustainable, and recommends how to build on these efforts. The plan takes advantage of common-sense approaches and innovative policies that the local government is uniquely positioned to implement. The actions identified can reduce consumption and waste along with the associated costs, improve air quality and environmental health, and provide other benefits to Glendale for years to come.
Glendale Urban Water Management Plan (2015)	The UWMP was prepared in accordance with the California Urban Water Management Planning Act, Water Code Sections 10610 through 10657, which requires that suppliers who provide over 3,000 acre-feet of water annually or serve 3,000 or more connections must assess the reliability of their water sources every 5 years. The UWMP was developed to achieve conservation and efficient use of Glendale's water supply.
City of Los Angeles	
General Plan (2001): Infrastructure and Public Services Element	▪ Policy 9.1.3: Monitor wastewater effluent discharged into the Los Angeles River, Santa Monica Bay, and San Pedro Harbor to ensure compliance with water quality requirements. ▪ Policy 9.2.2: Maintain wastewater treatment capacity commensurate with population and industrial needs. ▪ Policy 9.3.1: Reduce the amount of hazardous substances and the total amount of flow entering the wastewater system. ▪ Policy 9.5.1: Develop a stormwater management system that has adequate capacity to protect its citizens and property from flooding which results from a 10-year storm (or a 50-year storm in sump areas). ▪ Objective 9.6: Pursue effective and efficient approaches to reducing stormwater runoff and protecting water quality. ▪ Goal 9C: Adequate water supply, storage facilities, and delivery system to serve the needs of existing and future residents and businesses. ▪ Policy 9.9.1: Pursue all economically efficient water conservation measures at the local and statewide level. ▪ Policy 9.9.3: Protect existing water supplies from contamination, and clean up groundwater supplies so those resources can be more fully utilized. ▪ Policy 9.9.7: Incorporate water conservation practices in the design of new projects so as not to impede the City's ability to supply water to its other users or overdraft its groundwater basins. ▪ Objective 9.10: Ensure that water supply, storage, and delivery systems are adequate to support planned development. ▪ Goal 9G: An environmentally sound solid waste management system that protects public health, safety, and natural resources and minimizes adverse environmental impacts. ▪ Policy 9.29.3: Promote conservation and energy efficiency to the maximum extent that is cost effective and practical, including potential retrofitting when considering significant expansion of existing structures.

Policy Title	Summary
General Plan (2001): Open Space and Conservation Framework Element	▪ Policy 6.1.4: Conserve and manage the undeveloped portions of the City's watersheds, where feasible, as open spaces which protect, conserve, and enhance natural resources. ▪ Policy 6.1.2 a.: Coordinate City operations and development policies for the protection and conservation of open space resources, by encouraging City departments to take the lead in utilizing water reuse technology, including graywater and reclaimed water for public landscape maintenance purposes and such other purposes as may be feasible.
General Plan (2001): Conservation Element	▪ Policy 20.1: Continue to encourage energy conservation and petroleum product reuse.
Municipal Code, Chapter 6, Public Works and Property	This section of the City of Los Angeles Municipal Code provides regulations for water supply and sewer systems, including wells, private sewer disposal and drainage systems, and stormwater.
Sustainable City Plan (2015)	This plan sets goals for the sustainable growth of the city of Los Angeles. The plan addresses water conservation, clean and resilient energy supplies, energy-efficient buildings, and waste and landfill goals.
Los Angeles Urban Water Management Plan (2015)	The UWMP was prepared in accordance with the California Urban Water Management Planning Act, Water Code Sections 10610 through 10657, which requires that suppliers who provide over 3,000 acre-feet of water annually or serve 3,000 or more connections must assess the reliability of their water sources every 5 years. The UWMP forecasts future water demands and water supplies under average and dry year conditions, identifies future water supply projects, provides a summary of water conservation Best Management Practices, and provides a single- and multi- dry year management strategy.

UWMP = Urban Water Management Plan

3.6.3 Consistency with Plans and Laws

As indicated in Section 3.1, Introduction, CEQA and National Environmental Policy Act (NEPA) regulations[1] require a discussion of inconsistencies or conflicts between a proposed undertaking and federal, state, regional, or local plans and laws.

Several federal and state laws listed in Section 3.6.2.1 and Section 3.6.2.2, respectively, pertain to public utilities and energy resources. The Authority, as the federal lead agency and lead state agency proposing to construct and operate the HSR system, is required to comply with all federal and state laws and regulations and to secure all applicable federal and state permits prior to initiating construction of the project. Therefore, there would be no inconsistencies between the HSR Build Alternative and these federal and state laws and regulations.

The Authority is a state agency and therefore is not required to comply with local land use and zoning regulations; however, it has endeavored to design and construct the HSR project so that it is consistent with land use and zoning regulations. A total of 22 plans and 34 policies were reviewed. The HSR Build Alternative would be consistent with all plans and policies.

Refer to Appendix 3.1-B, Regional and Local Policy Inventory, for a complete consistency analysis of local plans and policies.

[1] NEPA regulations refer to the regulations issued by the Council for Environmental Quality at 40 Code of Federal Regulations Part 1500.

3.6.4 Methods for Evaluating Impacts

The following sections summarize the RSA and the methods used to analyze impacts on public utilities and energy. As summarized in Section 3.6.1, Introduction, four other sections provide additional information related to public utilities and energy: Section 3.2, Transportation; Section 3.8, Hydrology and Water Resources; Section 3.10, Hazardous Materials and Wastes; and Section 3.11, Safety and Security.

3.6.4.1 Definition of Resource Study Area

As defined in Section 3.1, Introduction, RSAs are the geographic boundaries in which the Authority conducted environmental investigations specific to each resource topic. The RSA for impacts on public utilities and energy includes direct and indirect effects on utility facilities, resources provided by utilities, and energy sources. Table 3.6-2 provides a general definition and boundary description for each RSA within the Burbank to Los Angeles Project Section.

Table 3.6-2 Resource Study Area Information

General Definition	Resource Study Area Boundary and Definition
Public Utilities	
Direct Impacts	The project footprint on or across public utilities infrastructure (which includes aquifers and surface, subsurface, and overhead utilities) crossing the area that would be disturbed temporarily during construction (construction footprint), or the area permanently utilized during operation.
Indirect Impacts	The area that would extend beyond the project footprint, such as impacts on capacity of the existing providers to serve other users of non-HSR resources and facilities necessary for project construction and operation, as well as electrical interconnections with local utilities.
Energy	
Direct Impacts	The entire project footprint.
Indirect Impacts	Electricity generation and transmission includes the entire State of California, as well as western states that produce energy exported to California.

HSR = high-speed rail

3.6.4.2 Impact Avoidance and Minimization Features

The HSR Build Alternative incorporates standardized HSR features to avoid and minimize impacts. These features are referred to as IAMFs. The Authority would implement IAMFs during project design and construction. As such, the analysis of impacts of the HSR Build Alternative in this section factors in all applicable IAMFs. Appendix 2-B, Impact Avoidance and Minimization Features, provides a detailed description of the IAMFs included as part of the HSR Build Alternative design. IAMFs applicable to public utilities and energy include:

- PUE-IAMF#1: Design Measures—The HSR project design incorporates utilities and design elements that minimize electricity consumption. Additionally, the Authority has adopted a sustainability policy that establishes project design and construction requirements that avoid and minimize impacts.
- PUE-IAMF#3: Public Notifications—The contractor would notify, through a combination of communication media (e.g., phone, email, mail, newspaper notices, or other means), the public within the jurisdiction and the affected service providers of the planned outage.
- PUE-IAMF#4: Utilities and Energy—The contractor shall prepare a technical memorandum documenting how construction activities would be coordinated with service providers to minimize or avoid interruptions.
- HYD-IAMF#1: Stormwater Management—The contractor shall prepare a stormwater management and treatment plan for review and approval by the Authority.

- HYD-IAMF#2: Flood Protection—The contractor shall prepare a flood protection plan for Authority review and approval to identify construction and design standards.
- HYD-IAMF#3: Prepare and Implement a Construction Stormwater Pollution Prevention Plan—The contractor shall comply with the State Water Resources Control Board Construction General Permit requiring preparation and implementation of a Stormwater Pollution Prevention Plan (SWPPP). The construction SWPPP would propose best management practices (BMP) to minimize potential short-term increases in sediment transport caused by construction, including erosion control requirements, stormwater management, and channel dewatering for affected stream crossings
- SS-IAMF#4: Oil and Gas Wells—The contractor shall identify and inspect all active and abandoned oil wells within 200 feet of the HSR tracks.

3.6.4.3 Methods for NEPA and CEQA Impact Analysis

This section describes the sources and methods the Authority used to analyze potential impacts on public utilities and energy from implementation of the HSR Build Alternative. These methods apply to both NEPA and CEQA unless otherwise indicated. Refer to Section 3.6.4, Methods for Evaluating Impacts, for a description of the general framework for evaluating impacts under NEPA and CEQA. Laws, regulations, and orders (Section 3.6.2, Laws, Regulations, and Orders) that regulate hydrology and water resources were also considered in the evaluation of impacts on public utilities and energy resources.

The analysis focuses on the direct impacts of the HSR Build Alternative on public utilities and energy. Public utilities and energy impacts could result from any of the following:

- Increases in the use of utilities and service systems
- Physical conflicts with utility infrastructure within the HSR project footprint
- Service interruptions
- Violations of regulatory standards
- Exceedances of existing facilities capacities (e.g., wastewater treatment plants or landfills)
- Interruptions that would lead to a loss of revenue (e.g., commercial or industrial operations)

These effects can be assessed locally for physical infrastructure conflicts, but the area served by utilities and energy providers needs to be reviewed as part of the RSA to fully understand the existing capacity and reserves of utility resources and energy reserves. These capacities and reserves are compared against the demands of the HSR Build Alternative to determine the effect type and severity.

Because this analysis also considered the potential effects of the HSR Build Alternative on electricity generation and transmission lines throughout the entire State of California (and western states that produce energy that is exported to California), the analysis of energy impacts cannot be based on a particular regional study area or the use of any particular generation facilities.

Public Utilities

Data provided by local utilities service providers within the RSA describe the type, size, and location of existing and proposed utility infrastructure. The *Burbank Airport to Los Angeles 15% Design Utilities Report: High Risk and Major Utilities Conflict Memo* (Authority 2017a) identifies high-risk utilities, major utilities, low-risk utilities, and other significant utility facilities in the HSR Build Alternative RSA. The methods used as a basis for evaluating effects of the HSR Build Alternative are based primarily on the Authority Technical Memorandum 2.7.4: *Designer's Responsibilities and Utility Requirements for 15% Design Level* (Authority 2008b).

High-risk and major utilities are defined as existing facilities conducting or carrying the following materials:

- Petroleum products (e.g., jet fuel, crude oil, gas oil, and gasoline)
- Oxygen

- Chlorine
- Toxic or flammable gases or liquids
- Natural gas pipelines of any size
- Underground electric supply lines, conductors, or cables with a potential to ground or more than 300 volts, either directly buried or in duct or conduit, which do not have concentric grounded or effectively grounded metal shields or sheaths
- Water in pressured pipelines
- Other utilities that could disrupt the operation of the HSR Build Alternative

Low-risk utilities are defined as all other utilities found within the RSA, including:

- Low-voltage distribution lines
- Fiber-optic communication lines
- Telecommunication lines
- Sanitary sewer lines
- Drainage facilities
- Storm drain lines

Energy Measurement

Energy is commonly measured in terms of British thermal units (Btu). A Btu is defined as the amount of heat required to raise the temperature of 1 pound of water by 1 degree Fahrenheit. For transportation projects, energy usage is predominantly influenced by the amount of fuel used. The average Btu content of fuels is the heat value (or energy content) per quantity of fuel as determined from tests of fuel samples. A gallon of gasoline produces 120,524 Btu (U.S. Energy Information Administration 2014); however, the Btu value of gasoline varies from season to season and from batch to batch. The Btu is the unit of measure used to quantify the overall energy effects expected to result from construction and operation of the HSR project.

Estimates for water demand, wastewater, stormwater, and waste removal services for the HSR stations are based on typical rates (e.g., gallons per minute, acre-feet per year, or ridership and employment projections). The analysis compares these estimated quantities with anticipated supply and capacity, as reported by the service providers in the Burbank to Los Angeles Project Section.

Water demand estimates are presented in Appendix 3.6-B. Water demand estimates for construction are based on an estimated 6-year period in which earthmoving and construction activities requiring water use would occur. Annual operational water use estimates are based on full build-out of the project in 2040. Estimates of existing water use were generated by applying region-specific water use rates for the known land uses in the RSA (Section 3.13, Station Planning, Land Use, and Development).

For details regarding stormwater and hydrology, see Section 3.8, Hydrology and Water Resources.

Waste generated by C&D activities is based on estimates by project engineers using the existing character of the RSA and the requirements of various project attributes. Operational waste generation is based on the anticipated ridership and number of employees, taking into account the estimates of waste generation and recycling in California.

Energy

The proposed HSR system would obtain electricity from the statewide grid. Any potential impacts on electrical production that may result from the proposed HSR system would affect statewide electricity reserves and, to a lesser degree, transmission capacity. To identify the projected energy demand of the HSR Build Alternative, the estimated energy impact for Phase 1 of the HSR system was prorated based on the proportion of the length of HSR guideway within the RSA. Phase 1 of the HSR system would be approximately 520 miles long. The length of the Burbank to Los Angeles Project Section is approximately 14 miles, or 2.6 percent of the length of the Phase 1 HSR system; therefore, the project section would consume approximately 2.6 percent of the electrical requirements of the Phase 1 HSR system.

For a project (e.g., the HSR Build Alternative) that would not commence operation for almost 10 years and would not reach full operation for almost 25 years, use of only existing conditions as a baseline for energy impacts would not be useful for comparison. It is more likely that existing background traffic volumes (and, thus, the intensity of energy use) would change due to planned traffic improvement projects between today and 2029/2040 than that the existing traffic conditions would remain unchanged over the next 10 to 25 years. For example, regional transportation plans include funded transportation projects that are programmed to be constructed by 2040. To ignore that these projects would be in place before the HSR Build Alternative reaches maturity (i.e., the point/year at which HSR-related transportation generation reaches its maximum), and to evaluate the HSR Build Alternative's energy impacts while ignoring that these improvements would change the underlying background conditions to which HSR Build Alternative effects would be added, and would present a hypothetical comparison that would not be an accurate prediction of expected conditions.

Therefore, the operational energy analysis uses a dual baseline approach. That is, the HSR project's energy impacts are evaluated against existing conditions and expected 2040 background (No Project) conditions. Analysts calculated operational energy consumption for medium and high ridership scenarios. All applicable scenarios are based on the level of ridership as presented in the Authority's 2016 Business Plan (Authority 2016a). The complete statewide analysis is included in Appendix 3.6-A, with detailed calculations on the reduction in energy consumption from transportation (vehicles and aircrafts). Existing and projected statewide energy demand for the state of California, including the implementation of the HSR Build Alternative is presented in Section 3.6.6, Environmental Consequences.

Direct Energy Consumption

Direct energy consumption involves all energy consumed by vehicle propulsion (i.e., automobiles and airplanes). This energy is a function of traffic characteristics such as volume, speed, distance traveled, vehicle mix, and the thermal value of the fuel being used. This energy also includes the electrical power requirements of the HSR Build Alternative, including recoverable energy during HSR train braking. The electrical demands due to propulsion of the trains, stations, storage depots and maintenance facilities were calculated as part of the project design. Direct energy impacts caused by the HSR Build Alternative would include the additional consumption of electricity required to power the HSR system.

Analysts estimated the energy use based on the ridership estimates and train operating characteristics as presented in the Authority's 2016 Business Plan (Authority 2016a). Energy rates were determined through the use of carbon balance equations as recommended by CARB.

Petroleum consumption rates for vehicle travel were derived from the travel demand forecast prepared by the Authority for the HSR Build Alternative and growth projections performed by the California Energy Commission (CEC) (CEC 2016b). These consumption rates were used to determine the amount of petroleum used for transportation under the No Project Alternative and the HSR Build Alternative. Current electricity consumption rates from the CEC are compared with the projected energy consumption of the HSR system.

Analysts also provided change in energy consumption from on-road vehicle and aircraft travel with operation of the HSR Build Alternative.

On-Road Vehicle Energy Usage

Analysts conducted the on-road vehicle energy analysis using average daily VMT estimates and associated average daily speed estimates for Los Angeles County. Parameters were set in the program to reflect conditions within Los Angeles County, as well as statewide parameters to reflect travel through the county. Energy rates were determined using carbon balance equations, as recommended by CARB.

Aircraft Energy Usage

Analysts calculated aircraft energy use by using the fuel consumption factors from CARB's *2000–2014 Greenhouse Gas Emissions Inventory Technical Support Document* (CARB 2016) and the accompanying technical support document. The energy use includes both landing and take-off and cruise operations. Analysts calculated average aircraft energy based on the profile of intrastate aircraft currently servicing the San Francisco to Los Angeles corridor. Analysts estimated the number of air trips removed attributable to the project section through the travel demand modeling analysis conducted for the project section, based on the ridership estimates presented in the Authority's *2016 Business Plan* (Authority 2016a).

Indirect Energy Consumption

Indirect energy consumption involves the nonrecoverable, one-time energy expenditure required to construct the physical infrastructure associated with the project, typically through combustion of fossil fuels for operation of equipment and the energy required for steel and cement production. Indirect energy impacts are evaluated quantitatively. Indirect energy impacts caused by the HSR Build Alternative would include consumption of resources to construct the proposed HSR facilities. This analysis uses construction energy data from other sources or existing HSR systems. Construction energy information for comparable HSR systems is not readily available. Therefore, construction energy consumption factors identified for the proposed HSR system are derived from data gathered for typical heavy-rail systems and the San Francisco Bay Area Rapid Transit District heavy-rail commuter system. These data were used to estimate the projected construction energy consumption for the HSR Build Alternative, including the stations, and are presented in Table 3.6-3. Construction of the HSR Build Alternative at Los Angeles Union Station (LAUS) would be within the area to be constructed by Metro's Link Union Station Project. Within this area, the HSR Build Alternative improvements would be limited to raising platforms, installing an overhead catenary system, and issues related to increased parking and traffic.

Table 3.6-3 Construction Energy Consumption Assumptions for the High-Speed Rail Build Alternative

HSR Alignment Profile Type	Length of Guideway[1]	Energy Consumption Factor[2]	Energy in Btu (billion)
At-Grade	14.88 miles	19.11 billion Btu/one-way guideway mile	284
Retained Fill	8.52 miles	163.14 billion Btu/one-way guideway mile	1,390
Elevated	1.02 Miles	55.63 billion Btu/one-way guideway mile	57
Below Grade	3.92 miles	328.33 billion Btu/one-way guideway mile	1,287
Station Sites[3]	N/A	78 billion Btu/station	156
Total Energy			**3,174**

Source: California High-Speed Rail Authority, 2017
[1] Measured in directional route-miles (mileage in each direction over which the HSR system travels).
[2] Factors for energy consumption for Bay Area Rapid Transit system construction (as a surrogate for HSR construction through urban areas) and a freight terminal (as a surrogate for a passenger train station), as identified in Table 3.5-2 of the *Final Bay Area to Central Valley High-Speed Train (HST) Program Environmental Impact Report/Environmental Impact Statement (EIR/EIS)*, Authority (2008a, revised 2011).
[3] The estimated energy consumption for stations is based on the construction of two HSR stations.
Authority = California High-Speed Rail Authority
HSR = High-Speed Rail
Btu = British thermal units
N/A = not applicable

The construction energy payback period is the number of years required to pay back the energy used in construction with the operational energy consumption savings of the HSR Build Alternative prorated to statewide energy savings. The payback period is calculated for the HSR Build Alternative by dividing the estimated HSR system construction energy by the amount of energy that would later be saved by the full operation of the HSR system (based on the prorated statewide value). The calculations assume the amount of energy saved in the study year (2040) would remain constant throughout the payback period.

3.6.4.4 Method for Determining Significance under CEQA

CEQA requires that an EIR identify the significant environmental impacts of a project (CEQA Guidelines § 15126). One of the primary differences between NEPA and CEQA is that CEQA requires a significance determination for each impact using a threshold-based analysis (see 3.1.3.3, Methods for Evaluating Impacts, for further information). By contrast, under NEPA, significance is used to determine whether an EIS will be required; NEPA requires that an EIS be prepared when the proposed federal action (project) as a whole has the potential to "significantly affect the quality of the human environment." Accordingly, Section 3.6.9, CEQA Significance Conclusions, summarizes the significance of the environmental impacts on public utilities and energy for the HSR Build Alternative. The Authority is using the following thresholds to determine if a significant impact on public utilities and energy would occur as a result of the HSR Build Alternative.

Utilities and Service Systems

Based on CEQA Guidelines, the project would have a significant impact if it would:

- Require or result in the relocation or construction of new or expanded water, wastewater treatment, or stormwater drainage, electric power, natural gas, or telecommunication facilities, if the construction or relocation of the facility could cause significant environmental effects.
- Need new or expanded entitlements to supply water to the project and reasonably foreseeable future development during normal, dry, and multiple dry years.
- Result in a determination by the wastewater treatment provider who serves or may serve the project that it does not have adequate capacity to serve the project's projected demand in addition to its existing commitments.
- Generate solid waste in excess of state or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals.
- Not comply with federal, state, and local management and reduction statutes and regulations related to solid waste.

Low-impact conflicts would occur if the project would cross or conflict with distribution pipelines or electrical power lines, which are easier to avoid or relocate. Low-impact conflicts are considered less-than-significant impacts on utilities and service systems because they would be temporarily affected during a short-term relocation period in coordination with the utility provider and with prior public notification, but otherwise remain unchanged.

For purposes of analysis for this EIR/EIS, the Authority is using these additional criteria as thresholds of significance:

- Require or result in the construction of new electrical facilities or expansion and upgrade of existing facilities, the construction of which could cause significant environmental effects.
- Conflict with a major non-linear fixed facility, such as an electrical substation or wastewater treatment plant, the relocation of which could cause a lengthy and harmful interruption of service.
- Conflict with a major linear non-fixed facility, such as large stormwater transmission main or gas/electricity transmission facility, the reconstruction or relocation of which could cause a lengthy and harmful interruption of service.

Energy

According to Section VI of Appendix G and Appendix F of the CEQA Guidelines, EIRs must discuss the potential energy impacts of proposed projects, with particular emphasis on avoiding or reducing inefficient, wasteful, and unnecessary consumption of energy. Wise and efficient use of energy may include decreasing overall per capita energy consumption; decreasing reliance on fossil fuels such as coal, natural gas, and oil; and increasing reliance on renewable energy sources. The criteria discussed herein are used to determine whether the HSR Build Alternative would have a potentially significant effect on energy use, including energy conservation.

Significant long-term operational or direct energy impacts would occur if the project would:

- Result in potentially significant environmental impacts due to wasteful, inefficient, or unnecessary consumption of energy resources during project construction or operation.
- Conflict with or obstruct a state or local plan for renewable energy or energy efficiency.

- Place a substantial demand on regional energy supply or require substantial additional capacity or substantially increase peak- and base-period electricity demand.
- By contrast, if the proposed project results in energy savings, alleviates demand on energy resources, or encourages the use of efficient transportation alternatives, it would have a beneficial effect.

3.6.5 Affected Environment

This section describes the affected environment for public utilities and energy in the Burbank to Los Angeles Project Section. The information provides the context for the environmental analysis and evaluation of impacts. The affected environment discussion includes the current conditions for public utilities and infrastructure as well as energy demand.

3.6.5.1 Public Utilities

Major public utilities within the RSA include facilities for electricity, natural gas, and petroleum distribution; telecommunications; potable and irrigable water delivery; and stormwater, wastewater, and solid waste disposal. As summarized in Table 3.6-4 and described further in the following discussion, various service providers own or maintain utilities and associated easements within the RSA. The service provider boundaries for water and power are also shown on Figure 3.6-1.

Electrical Transmission Lines

Southern California Edison has electrical lines, ducts, and conduits along the proposed HSR Build Alternative in Burbank and Glendale. The company serves more than 15 million people in a 50,000-square-mile area of Central, coastal, and Southern California, but does not provide service in the RSA (Southern California Edison 2018).

Burbank Water and Power provides electricity to about 52,000 customers in the city of Burbank (City of Burbank 2015). Glendale Water and Power provides electricity to more than 88,000 customers in the city of Glendale (City of Glendale 2017). The Los Angeles Department of Water and Power (LADWP) serves more than 4 million residents in a 465-square-mile service area (LADWP 2013).

High-Pressure Natural Gas Pipelines

Southern California Gas provides natural gas service and is responsible for maintaining the infrastructure for natural gas distribution in the RSA. High-pressure natural-gas transmission pipelines in Burbank, Glendale, and Los Angeles are located within the RSA.

Petroleum and Fuel Pipelines

California is the third-largest oil-producing state in the U.S. (Walton 2015), with important onshore oilfields located within the city of Los Angeles. All oil produced is processed into fuels and other petroleum products at refineries in the San Francisco Bay Area and Southern California. As a result, crude oil pipelines run throughout the RSA; these pipelines are owned by Pacific Pipeline and Kinder Morgan.

Kinder Morgan is the largest independent transporter of refined petroleum products in the U.S. (Kinder Morgan 2016). Kinder Morgan owns and operates approximately 3,000 miles of fuel pipelines in Arizona, Nevada, New Mexico, Oregon, Washington, Texas, and California, including within the RSA.

Pacific Pipeline System LLC operates as a subsidiary of Plains All American Pipeline, L.P. (USEPA 2010). Plains All American handles 4.6 million barrels of crude oil per day, with an extensive network of pipeline transportation in both the U.S. and Canada (Plains All American Pipeline, L.P. 2015).

Table 3.6-4 Study Area Utility and Energy Providers

Utility Type	Provider	County/City
Electrical	Southern California Edison	City of Los Angeles
	Burbank Water and Power	City of Burbank
	Glendale Water and Power	City of Glendale
	Los Angeles Department of Water and Power	City of Los Angeles
Natural Gas	Southern California Gas	Cities of Burbank, Glendale, and Los Angeles
Petroleum and Fuel Pipelines	Pacific Pipeline	Cities of Burbank, Glendale, and Los Angeles
	Kinder Morgan	
Communications	AT&T, MCI, Verizon, Qwest, MFS, Sprint, Metro	Cities of Burbank, Glendale, and Los Angeles
Water Supply[1]	Burbank Water and Power[2]	City of Burbank
	Glendale Water and Power[2]	City of Glendale
	Los Angeles Department of Water and Power	City of Los Angeles
Sewer/Wastewater	City of Burbank Public Works	City of Burbank
	City of Glendale Public Works	City of Glendale
	City of Los Angeles Public Works	City of Los Angeles
Solid Waste Collection	Burbank Landfill Site No. 3	City of Burbank
	Scholl Canyon Landfill (Sanitation Districts of Los Angeles County)	City of Glendale
	Chiquita Canyon Sanitary Landfill	City of Los Angeles
	Calabasas Landfill	
	Sunshine Canyon Landfill	

Source: California High-Speed Rail Authority, 2016
Metro = Los Angeles County Metropolitan Transportation Authority
[1] Obtain water from Metropolitan Water District of Southern California
[2] Obtain water from the State Water Project

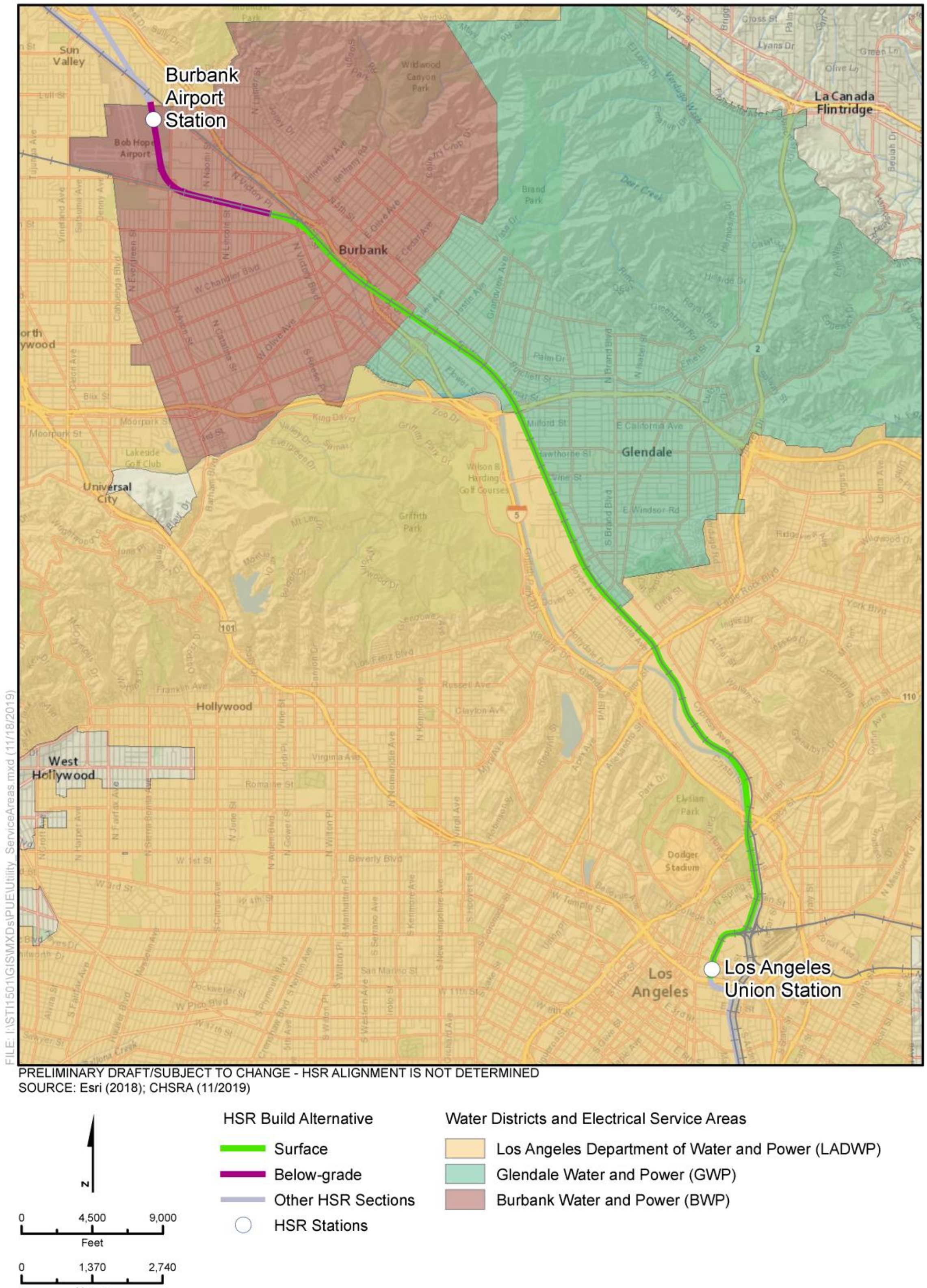


Figure 3.6-1 Water and Electrical Service Provider Areas

Communication Facilities

Communication facilities in the RSA are owned and operated by AT&T, MCI, Verizon, Qwest, MFS, Sprint, and Metro. Other communication service providers may also own or lease cellular service or microwave towers and antennas, or telecommunication cables or overhead distribution lines. The RSA contains both underground and above-ground components of this infrastructure.

Water Supply Infrastructure

Surface water and groundwater are the basic sources of drinking water in the region. Municipal service providers typically use groundwater sources; however, surface water sources may also supplement supplies. Numerous large- and small-scale districts provide municipal water service to the communities in the RSA. There are five water companies and districts in the RSA. Table 3.6-5 lists the water sources and uses, among other key features, of the water supply companies and districts with water supply infrastructure potentially affected by the HSR Build Alternative.

Table 3.6-5 Water Suppliers in the Burbank to Los Angeles Project Section Area

Water District	Water Sources	Predominant Uses	Area Served	Data Sources
Burbank Water and Power	Groundwater credits (20%), stored groundwater (47%), State Water Project (33%)	Residential, commercial, governmental	17 square miles, 286 miles of pipelines, 26,000 service connections	Burbank UWMP (Burbank Water and Power 2016)
Glendale Water and Power	Local groundwater from San Fernando and Verdugo Basins, purchased from MWD, recycled water	Residential, commercial, industrial	32 square miles, 200,000 residents	Glendale UWMP (City of Glendale Water and Power 2016)
Los Angeles Department of Water and Power	Los Angeles Aqueduct (29%), purchased form MWD (57%), local groundwater (12%), recycled water (2%)	Residential, commercial, industrial	473 square miles, over 4 million residents, 681,000 active service connections	LADWP (Los Angeles Department of Water and Power 2016b)
Metropolitan Water District of Southern California	Sacramento and San Joaquin Rivers; Colorado River; recycled, desalination, local groundwater	Residential, industrial, agricultural	5,200 square miles, 819 miles of pipelines, 400 service connections	MWD (Metropolitan Water District of Southern California 2015)
State Water Project	Lake Oroville, Feather River Watershed, Sacramento/San Joaquin Delta	Urban, agricultural	750,000 acres of irrigated farmland, 35 million Californians	California Department of Water Resources (California Department of Water Resources 2010)

Source: California High-Speed Rail Authority, 2016
LADWP = Los Angeles Department of Water and Power UWMP = Urban Water Management Plan
MWD = Metropolitan Water District of Southern California

Wastewater Infrastructure

Wastewater generated in the RSA is removed through the local sanitary sewer collection system, which consists of pipelines, trunklines, sewer connections, and sewer mains. The City of Burbank, the City of Glendale, and the City of Los Angeles maintain municipal wastewater collection lines. Wastewater generated in the RSA is conveyed from the local sanitary sewer system to one of three wastewater treatment plants, where it is treated for reuse or recharge.

Table 3.6-6 summarizes the municipalities and their respective wastewater treatment facilities and capacities within the RSA.

Table 3.6-6 Wastewater Treatment Plant Existing Average Flow and Capacity Summary for the Resource Study Area

Jurisdiction	Agency	Wastewater Treatment Plant Name	Wastewater Treatment Plant Address	Average Flow/ Capacity (mgd)
City of Burbank	Burbank Public Works	Burbank Water Reclamation Plant	740 N Lake St Burbank, CA	8.5/12.5[1]
Cities of Glendale and Los Angeles	City of Los Angeles Public Works and Glendale Public Works	Los Angeles/Glendale Water Reclamation Plant	4600 Colorado Blvd Los Angeles, CA	14/20[2]
City of Los Angeles	City of Los Angeles Public Works	Hyperion Water Reclamation Plant	12000 Vista del Mar Playa del Rey, CA	263/450[3]

Source: California High-Speed Rail Authority, 2016
[1] Burbank Urban Water Management Plan, 2015, Section 5: Water Recycling p. 5-1.
[2] Los Angeles Urban Water Management Plan, 2015, Section 4.2.1.2, Los Angeles- Glendale Water Reclamation Plant p. 4-11.
[3] Sanitation Districts of Los Angeles County 2016
mgd = million gallons per day

Storm Drains

Storm drain systems are prominent in developed urban areas, and the storm drainage systems for the cities in the RSA reflect the limited annual rainfall of the region. Storm drains within the RSA are owned by the Los Angeles County Flood Control District, the City of Burbank, the City of Glendale, and the City of Los Angeles. The Los Angeles County Flood Control District is responsible for planning and managing flood control areas through a network of flood control facilities the agency owns and maintains, including facilities located within the incorporated municipalities within Los Angeles County.

Solid Waste Facilities

Under the Resource Conservation and Recovery Act and AB 939, county or municipal solid waste disposal facilities are required to plan for nonhazardous solid waste facility expansions or additions from all anticipated sources. Table 3.6-7 lists the permitted daily disposal capacities, remaining capacities, and estimated closure dates for the landfills which serve the RSA.

Table 3.6-7 Landfill Facility Summary for Resource Study Area

Facility Name	Activity	Type of Waste Accepted	Operator	Location	Permitted Daily Disposal Capacity (tons per day)	Remaining Capacity (million cubic yards)[1]	Permitted Disposal Area (acres)	Estimated Closure Date
Burbank Landfill Site No. 3	Solid waste landfill	Mixed Municipal, Construction/Demolition, Industrial, Inert	City of Burbank	1600 Lockheed View Drive, Burbank, CA	240	5.17	48	2053
Scholl Canyon Landfill	Solid waste landfill	Inert, Construction/ Demolition, Industrial, Mixed Municipal, Manure, Tires	Sanitation Districts of Los Angeles County	3001 Scholl Canyon Road, Glendale, CA	3,400	9.90	314	2030
Chiquita Canyon Sanitary Landfill	Solid waste landfill	Mixed Municipal, Green Materials, Construction/ Demolition, Industrial, Inert	Chiquita Canyon, Inc.	29201 Henry Mayo Drive, Castaic, CA	6,000	8.62	257	2019[2]
Calabasas Landfill	Solid waste landfill	Construction/Demolition, Industrial, Mixed Municipal, Tires, Green Materials	Sanitation Districts of Los Angeles County	5300 Lost Hills Road, Agoura, CA	3,500	14.50	305	2029
Sunshine Canyon City/County Landfill	Solid waste landfill	Construction/Demolition, Green Materials, Industrial, Inert, Mixed Municipal	Browning-Ferris Industries of California	14747 San Fernando Road, Sylmar, CA	12,100	96.80	363	2037

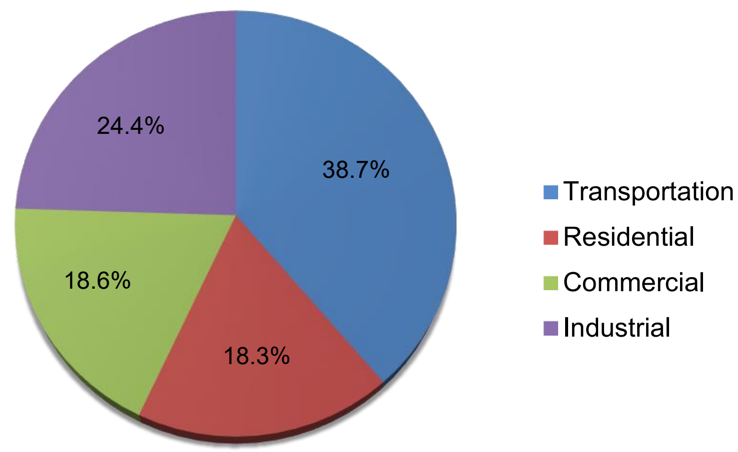
Source: California Department of Resources Recycling and Recovery, 2016b

[1] Daily disposal volumes are obtained from the average of the first quarter (months of January, February, and March).

[2] The landfill is permitted to 2024.

3.6.5.2 Energy

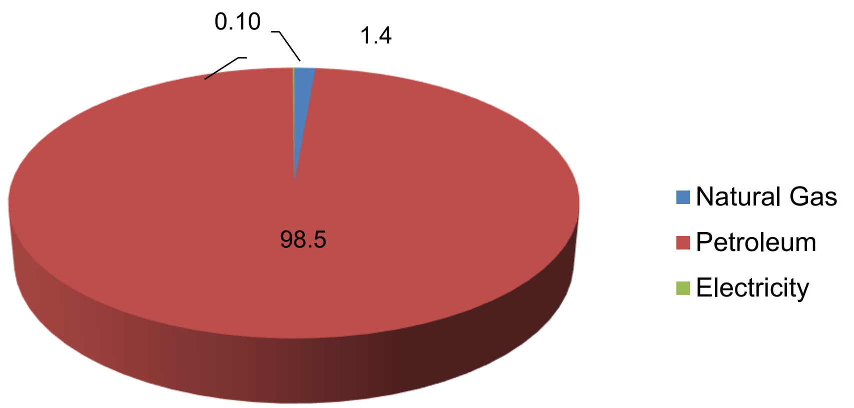
California is the 10th largest energy consumer in the world. The transportation sector consumes 38.7 percent of California's energy, the industrial sector consumes 24.4 percent, the residential sector consumes 18.3 percent, and the commercial sector consumes 18.6 percent (U.S. Energy Information Administration 2016b). Figure 3.6-2 illustrates California's energy consumption by sector in 2014.



Source: U.S. Energy Information Administration, 2016a

Figure 3.6-2 California Energy Consumption by Sector, 2014

In California, electricity and natural gas provide for nearly all of the stationary energy usage, and petroleum comprises nearly all of the transportation energy (98.5 percent) (U.S. Energy Information Administration 2014b). Figure 3.6-3 depicts the sources of energy used for transportation in California in 2014.



Source: U.S. Energy Information Administration, 2014b
Petroleum figure includes fuel ethanol.

Figure 3.6-3 California Transportation Energy Consumption by Source, 2014

Energy Resources

Electricity

Demand

There are two ways to measure electricity demand: consumption and peak demand. Electricity consumption is the amount of electricity used by consumers in the state. According to the CEC, total statewide electricity consumption grew from 227,606 gigawatt-hours (GWh) in 1990 to 281,916 GWh in 2014 (CEC 2016c). Electricity consumption growth rates fell from an estimated rate of 3.2 percent in the 1980s to a rate of 1.36 percent between 1990 and 1998 and 0.52 percent between 2000 and 2014 (CEC 2015b). The most recent electricity consumption data available for Los Angeles County is from 2016, when consumption reached 69,619 GWh (CEC 2016a).

The highest electric power requirement during a specified period, known as peak demand, is measured as the amount of electricity consumed at any given moment, usually integrated over a 1-hour period. Because electricity must be generated the instant it is consumed, this measurement specifies the greatest generating capacity that must be available during periods of peak demand. Peak demand is important in evaluating system reliability, identifying congestion points on the electrical grid, and designing required system upgrades. California's peak demand typically occurs between 3:00 p.m. and 5:00 p.m. in August. The all-time record for peak demand in the city of Los Angeles was reached on September 16, 2014, at 6,396 megawatts (MW). More recently, on June 20, 2016, Los Angeles reached peak energy demand at 6,080 MW, a record high for the month of June (Los Angeles Department of Water and Power 2016a).

Generation

California is ranked second in the nation for retail electricity sales (U.S. Energy Information Administration 2016a). The California Independent System Operator, a nonprofit entity responsible for managing 80 percent of the system's reliability and nondiscriminatory transmission of energy, operates most of California's transmission system. The projected net qualifying capacity within the grid controlled by the California Independent System Operator for summer 2016 was 54,459 MW (California Independent System Operator 2016). In-state electricity generation accounted for 68 percent of the total electricity supply for California in 2014. Table 3.6-8 summarizes fuel sources for electric power in California for 2015.

Table 3.6-8 Fuel Sources for Electric Power in California in 2015

Fuel Source	In-State Generation (gigawatt-hours)	Imports (gigawatt-hours)	Percentage of Fuel Mix
Coal	538	17,197	6.0%
Oil	54	0	0.0%
Nuclear	18,525	8,726	9.2%
Hydroelectric	13,992	4,379	6.3%
Renewable	45,582	16,776	21.0%
Natural Gas	117,490	12,260	44.0%
Unspecified Sources of Power	N/A	39,873	13.5%
Total	**196,181**	**99,211**	**100%**

Source: California Energy Commission, 2016d
N/A = not applicable

Electricity Demand and Generation Capacity Outlook

Statewide, the projected average summer power supply in 2016 was forecast at 54,459 MW. Assuming 1-in-2 summer temperatures,[2] demand was approximately 47,529 MW. The result is an average planning reserve margin of 24 percent (California Independent System Operator 2016). California's population is projected to exceed 44 million by 2030 (Public Policy Institute of California 2018). By 2027, California will require 67,772 MW[3] using high energy demand assumptions, which incorporates relatively high demographic and economic growth and low electricity rates (CEC 2017).

The CEC's *California Energy Demand 2016–2026 Revised Electricity Forecast* (CEC 2016f) provides 10-year forecasts for electricity consumption, retail sales, and peak demand for each of the five major electricity planning areas and the state as a whole. It includes three scenarios (low-, mid-, and high-demand) to capture a reasonable range of demand outcomes over the next 10 years:

- Low-Demand: The low-demand energy scenario includes lower economic/demographic growth and assumes higher rates and higher self-generation impacts.
- Mid-Demand: The mid-demand energy scenario uses input assumptions at levels between the high and low cases.
- High-Demand: The high-demand energy scenario incorporates relatively high economic/ demographic growth and climate change impacts as well as relatively low electricity rates and self-generation impacts.

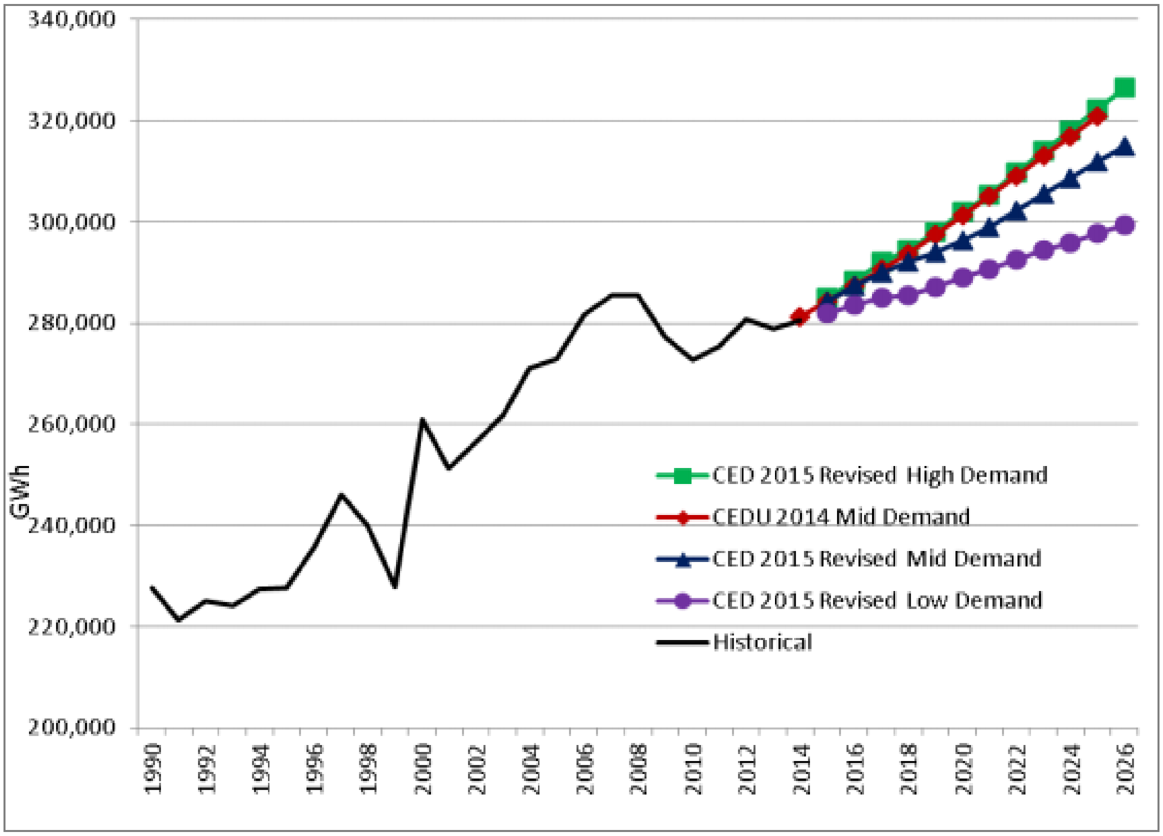
These three scenarios are referred to as "baseline cases," meaning they do not include the additional achievable energy efficiency savings. The Revised 2015 California Energy Demand 2015 (CEC 2015b) and the California Energy Demand 2014 Update (CEC 2015a) provide forecasts for electricity consumption in the five major electricity planning areas and the state as a whole based on population growth projections, electricity and natural gas rates, self-generation, and climate change impact data available at the time of the forecast. Projected electricity consumption for the three California Energy Demand 2015 Revised baseline cases and the California Energy Demand 2014 Update to the mid-demand forecast is shown on Figure 3.6-4. By 2025, consumption for the new mid-demand case is projected to be 2.8 percent lower than that of the California Energy Demand 2014 Update (CEC 2015a) to the mid-demand case, at approximately 9,000 GWh. Annual growth rates from 2014 through 2025 for the Revised 2015 California Energy Demand (CEC 2015b) average 1.27 percent, 0.97 percent, and 0.54 percent for the high-, mid-, and low-demand baseline cases, respectively, compared to 1.21 percent for the California Energy Demand 2014 Update to the mid-demand baseline case.

Projections of in-state generation capacity for the HSR program's horizon year of 2040 are not possible because generation infrastructure decisions typically are not made more than 2 to 3 years in advance of construction. The Western Electricity Coordinating Council 2016 power supply assessment indicates that sufficient generation resources exist or have been proposed within the period forecast in the assessment (i.e., 2026) (Western Electricity Coordinating Council 2016).

California's Renewable Portfolio Standards, established in 2002 and expanded in 2011 under SB 2, require investor-owned utilities, electric service providers, and community choice aggregators to increase procurement from eligible renewable energy resources to 33 percent of total procurement by 2020. The CPUC and the CEC jointly implement the Renewable Portfolio Standards program.

[2] 1-in-2 forecasted temperatures are temperatures with a 50 percent chance of not being exceeded.

[3] Noncoincidental peak load.



Source: California Energy Commission, 2016f

Figure 3.6-4 Statewide Baseline Annual Electricity Consumption

SB 350 has recently reaffirmed California's commitment to the Renewable Portfolio Standards. Specifically, SB 350 requires that California increase the amount of electricity procured from renewable energy sources from 33 percent to 50 percent by 2030, with interim targets of 40 percent by 2024 and 25 percent by 2027.

Transmission

According to the *Final Bay Area to Central Valley High-Speed Train (HST) Program EIR/EIS* (Authority 2008a), California's electricity transmission system comprises more than 31,000 miles of bulk electric transmission lines rated at 69 kV or more and includes towers and substations (Authority 2011). The system links generation to distribution in a complex electrical network that balances supply and demand on a nearly instantaneous basis.

In addition to the in-state transmission connections, a system of transmission interconnections link California's electricity grid with out-of-state electricity utilities. The Western Interconnection links California to electricity generation facilities in 10 other western states, western Canada, and northwestern Mexico. With a total importing capacity of 18,170 MW, these interconnections serve a critical role in satisfying California's electricity consumption (Authority [2008a] 2011). As electricity consumption grows, the addition of transmission capacity may facilitate energy transfers from subregions where there is surplus generating capacity to subregions that require additional energy. However, when the overall energy market is in a deficit, additional transmission capacity alone cannot relieve the subregional deficits and additional energy generation is required.

Natural Gas

California is the second-largest consumer of natural gas in the nation, with consumption at 2.3 trillion cubic feet in 2015 (U.S. Energy Information Administration 2016c). Natural gas is the most-used fuel for electricity generation in California, and approximately 45 percent of the consumption of natural gas is for electricity generation (CEC 2016e). In 2015, California produced 10 percent of the natural gas consumed in the state (U.S. Energy Information Administration 2016d), with 90 percent imported. By 2025, California is expected to import 98 percent of its natural gas demand. According to the CEC, these imports will likely be received from the Southwest (47 percent), the Malin Hub in Oregon (36 percent), and the Rocky Mountains and Kern River (15 percent) (CEC 2015a).

The CEC predicts that overall natural gas demand for power generation in California will decline by about 37 percent over the period from 2013 to 2030, due in part to increasing renewable generation and energy efficiency (CEC 2015a). Due to new technologies, natural gas production within the contiguous U.S. is projected to grow at an annual average rate of 4 percent over the period from 2016 to 2020. Beyond 2020, production is projected to grow at an annual average rate of 1 percent (U.S. Energy Information Administration 2017). Natural gas supplies are not considered to limit California's projected demand.

Petroleum

Automobile travel is the predominant mode of passenger transportation within the RSA. Historically, demand for transportation services (and petroleum consumption) in California has mirrored the growth of the state's population and economic output. The Transportation Energy Demand Forecast, 2016–2026 (CEC 2016b) indicates that VMT has been steadily increasing since 2008 at an average rate of 1.4 percent annually, with a new high in 2014 at 326 billion miles. Nonetheless, the report projects that between 2015 and 2026, on-road gasoline demand will decrease from about 14 billion gallons to 10 billion gallons (a 28.5 percent decrease), due in part to Corporate Average Fuel Economy and zero-emission vehicles regulations. Diesel demand in California is projected to increase modestly from 2015 to 2020, decrease to 2026 under a low-petroleum-demand case, and increase to 2026 under a high-petroleum-demand case.

3.6.6 Environmental Consequences

3.6.6.1 Overview

This section evaluates how the No Project Alternative and the HSR Build Alternative could affect public utilities and energy, including effects related to transportation, hydrology and water resources, hazardous materials and wastes, and safety and security. The impacts of the HSR Build Alternative are described and organized as follows:

- **Construction Impacts**
  - Impact PU&E #1: Temporary Interruption of Utility Service
  - Impact PU&E #2: Accidents and Disruption of Services
  - Impact PU&E #3: Conflicts with Existing Utilities
  - Impact PU&E #4: Effects from Water Demand during Construction
  - Impact PU&E #5: Effects on Stormwater Infrastructure during Construction
  - Impact PU&E #6: Effects from Waste Generation during Construction
  - Impact PU&E #7: Effects from Upgrade or Construction of Power Lines Effects
  - Impact PU&E #8: Potential Conflicts with Oil Wells
  - Impact PU&E #9: Construction Energy Consumption
- **Operations Impacts**
  - Impact PU&E #10: Reduced Access to Existing Utilities in the HSR Right-of-Way
  - Impact PU&E #11: Operational Water Demand
  - Impact PU&E #12: Operational Wastewater Service Demand
  - Impact PU&E #13: Effects on Storm Drain Facilities during Operation
  - Impact PU&E #14: Effects on Waste Generation during Operation
  - Impact PU&E #15: Effects from Hazardous Waste Generation
  - Impact PU&E #16: Operational Energy Demand

3.6.6.2 No Project Alternative

Under the No Project Alternative, recent development trends within the Burbank to Los Angeles Project Section would likely continue, leading to impacts on public utilities and energy. Existing land would be converted for residential, commercial, industrial, and transportation infrastructure development to accommodate future growth, placing potential pressure on public utilities and energy resources. In addition, the demand for energy would increase as a result of the greater population associated with increased housing, leading to additional electricity demand. Planned development and transportation projects that would occur under the No Project Alternative would most likely include various forms of mitigation to address impacts on public utilities and energy.

The population in Los Angeles County is projected to grow, as discussed in Chapter 1, Project Purpose, Need, and Objectives, and Section 3.18, Regional Growth, of this EIR/EIS. An increase in population would increase the demand for utility services. Section 3.19, Cumulative Impacts, of this EIR/EIS discusses foreseeable future projects, which include commercial centers, industrial parks, road network improvements, and residential developments between the cities of Burbank and Los Angeles. These projects are planned or approved to accommodate the growth projections in the area. As discussed above in Section 3.6.5, Affected Environment, local utilities have capital improvement plans to accommodate the anticipated population growth. These improvements include the expansion of the wastewater treatment plants and infrastructure additions and upgrades to provide services to growing populations.

Demand for energy would also increase at a level commensurate with population growth. Peak- and base-period electricity demand would increase and require additional generation and transmission capacity. According to the CEC Demand Analysis Office (CEC 2015a), the average annual growth rate for statewide electricity demand between 2014 and 2026 is forecast to increase between 0.54 percent (low energy demand) and 1.27 percent (high energy demand). The CEC analysis included forecasts that considered impacts (beneficial and adverse) of approved efficiency programs, climate change, electric vehicle use, other electrification projects (including port projects and HSR), and demand response (time-of-use pricing) programs. Energy use in Los Angeles and Orange Counties would be anticipated to trend along the forecast state average during this same time period (2015–2040).

Under the No Project Alternative, the daily VMT in Los Angeles County would increase by the year 2040. In 2040, daily VMT would consume an estimated 924,912 million British thermal units (MMBtu) per day[4] in the Burbank to Los Angeles region (Bureau of Transportation Statistics 2014) and is estimated to increase VMT by 9 percent under baseline conditions without implementation of 2016 Southern California Association of Governments Regional Transportation Plan/Sustainable Communities Strategy. Implementation of this plan would reduce the increase in VMT and is estimated to reduce VMT by 0.7 percent in 2040.

3.6.6.3 High-Speed Rail Build Alternative

Construction and operation of the HSR Build Alternative could result in temporary and permanent impacts on public utilities and energy.

Construction Impacts

Construction of the HSR Build Alternative would involve demolition of existing structures, clearing, and grubbing; reduction of permeable surface area; handling, storing, hauling, excavating, and placing fill; possible pile driving; and construction of aerial structures, bridges, road modifications, utility upgrades and relocations, HSR electrical systems, and railbeds. Chapter 2, Alternatives, further describes construction activities.

[4] The equivalent of 3,877 passenger miles in 2014 (light-duty vehicle, short wheelbase) (Bureau of Transportation Statistics 2014) multiplied by VMT without the HSR system on a daily basis (238,564,030).

Utilities

The construction of the HSR Build Alternative could result in planned temporary interruption of utility service, accidental disruption of services, increased water use, and increased stormwater and waste generation.

Impact PU&E #1: Temporary Interruption of Utility Service

Construction could require the temporary shutdown of utility lines, such as water, sewer, electricity, telecommunications, fuel/petroleum, or gas, to safely move or extend these lines. Shutdown could interrupt utility services to industrial, commercial, agricultural, and residential customers. These temporary shutdowns would potentially occur during construction of the early action projects, which include grade separations at Sonora Avenue, Grandview Avenue, Flower Street, Goodwin Avenue/Chevy Chase Drive, and Main Street (described more in detail in Chapter 2, Alternatives). Where necessary, project design and phasing of construction activities would minimize interruptions, including for upgrades of existing power lines to connect the HSR Build Alternative to existing substations, as well as the proposed paralleling station and switching station.

As discussed in Section 3.6.4.2, IAMFs are incorporated as part of the HSR Build Alternative design to help avoid and minimize impacts. With implementation of PUE-IAMF#3, prior to construction in areas where utility service interruptions are unavoidable, the contractor would provide notice of the planned outage to the affected service providers and would notify the public within that jurisdiction through a combination of communication media (e.g., by phone, email, newspaper notices, or other means). Construction would be coordinated to avoid interruptions of utility service to hospitals and other critical users. Additionally, as described in PUE-IAMF#4, prior to construction, the contractor would prepare a technical memorandum documenting how construction activities would be coordinated with service providers to minimize or avoid interruptions.

CEQA Conclusion

Design characteristics of the HSR Build Alternative would include effective measures to minimize temporary interruption of utility service by adhering to PUE-IAMF#3 and PUE-IAMF#4 during construction of the HSR Build Alternative. PUE-IAMF#3 would require the contractor to notify the public within the jurisdiction and the affected service providers of the planned outage through a combination of communication media (e.g., phone, email, mail, newspaper notices, or other means). PUE-IAMF#4 would require the contractor to prepare a technical memorandum documenting how construction activities would be coordinated with service providers to minimize or avoid interruptions. Planned interruptions to water utilities would be temporary and limited to short durations during construction. Therefore, the planned interruptions would not require the expansion of existing or construction of new water utilities, preventing significant environmental effects. The impact pursuant to CEQA would be less than significant. Therefore, CEQA does not require any mitigation.

Impact PU&E #2: Accidents and Disruption of Services

During construction of the HSR Build Alternative, the potential for accidental disruption of utility systems, including overhead utility lines (e.g., telephone and cable television) and buried utility lines (e.g., water, sewer, and natural gas pipelines), is low due to the established practices of utility identification and notification. California Government Code Section 4216 establishes required procedures for identifying buried utilities prior to initiating excavation. In compliance with state law (California Government Code Section 4216), the construction contractor would use a utility locator service and manually probe for buried utilities within the construction footprint prior to initiating ground-disturbing activities. This would help to avoid accidental disruption of utility services. If accidental disruptions of utility services occur, they would be short in duration yet noticeable to utility users. As described in PUE-IAMF#4, prior to construction, the contractor would prepare a technical memorandum documenting how construction activities would be coordinated with service providers to minimize or avoid interruptions.

CEQA Conclusion

During construction of the HSR Build Alternative, the potential for accidental disruption of utility systems, including overhead utility lines (e.g., telephone and cable television) and buried utility lines (e.g., water, sewer, and natural gas pipelines), is low due to the established practices of utility identification and notification. Additionally, the contractor would prepare a technical memorandum documenting how construction activities would be coordinated with service providers, as required in PUE-IAMF#4. This coordination may result in the identification of additional infrastructure that would further reduce the potential for unforeseen service interruptions. Through adherence to PUE-IAMF#4, the impact of accidents and disruption of services under CEQA would be less than significant. Therefore, CEQA does not require any mitigation.

Impact PU&E #3: Conflicts with Existing Utilities

Table 3.6-9, Table 3.6-10, and Table 3.6-11 show the number of conflicts with high-risk and major utilities, with other significant utility facilities, and with low-risk utilities, respectively, that could be affected by the HSR Build Alternative. Utilities affected by the early action projects are included in these totals. The locations of potential utility conflicts with the HSR Build Alternative are shown on Figure 3.6-5, Figure 3.6-6, Figure 3.6-7, Figure 3.6-8, Figure 3.6-9, and Figure 3.6-10 (each figure has three sheets).

Throughout the RSA, construction of the HSR Build Alternative would require the relocation of existing underground utilities, such as gas, fuel, petroleum, water pipelines, water wells, and communication facilities, that conflict with the HSR Build Alternative or roadway modifications. These affected utilities would be placed in a protective casing or relocated so that future maintenance of the line could be accomplished outside the HSR Build Alternative right-of-way. Construction of pump stations may also be necessary to provide adequate water pressure for emergency situations and would be connected to existing water pipelines.

The Burbank to Los Angeles Project Section would relocate utilities within the existing railroad right-of-way to several roads in the cities of Burbank, Glendale, and Los Angeles. Natural gas lines would be relocated to Sonora Avenue and Air Way in Glendale. Water lines would also be relocated in Glendale along Grandview Avenue. Petroleum lines would be relocated to W Alameda Avenue in Burbank and San Fernando Boulevard from E Alameda Avenue to Interstate 5 in Los Angeles. Other utility relocations would affect the following roads and cities:

- **City of Burbank**
  - N Hollywood Way
  - N Victory Place/Boulevard from north of the Burbank Boulevard junction to W Chandler Boulevard
  - W Burbank Boulevard
  - W Magnolia Boulevard
  - W Olive Avenue
  - W Verdugo Avenue
  - S Flower Street from W Olive Avenue to W Alameda Avenue
  - W Alameda Avenue
- **City of Glendale**
  - Allen Avenue
- **City of Los Angeles**
  - Tyburn Street

Table 3.6-9 High-Speed Rail Build Alternative Impacts on High-Risk and Major Utilities

Facility Type	Electrical Lines (greater than 69 kV)	Natural Gas Distribution Lines	Petroleum and Fuel Pipelines	Oil Wells	Water Pipelines	Sewer Force Mains
HSR Build Alternative Alignment	42	40	8	0	63	0

Source: California High-Speed Rail Authority, 2016
HSR = high-speed rail
kV = kilovolt

Table 3.6-10 High-Speed Rail Build Alternative Impacts on Other Significant Utility Facilities

Facility Type	Wind Turbines	Solar Farms	Water Wells	Pump Station	Reservoirs	Measurement Towers
HSR Build Alternative Alignment	0	0	2	8	0	0

Source: California High-Speed Rail Authority, 2016
HSR = high-speed rail

Table 3.6-11 High-Speed Rail Build Alternative Impacts on Low-Risk Utility Facilities

Facility Type	Electrical Lines (less than 69 kV)	Communication Facilities	Stormwater Pipelines/Drainage Basins	Sewer Pipelines
HSR Build Alternative Alignment	2	35	37	44

Source: California High-Speed Rail Authority, 2016
HSR = high-speed rail
kV = kilovolt

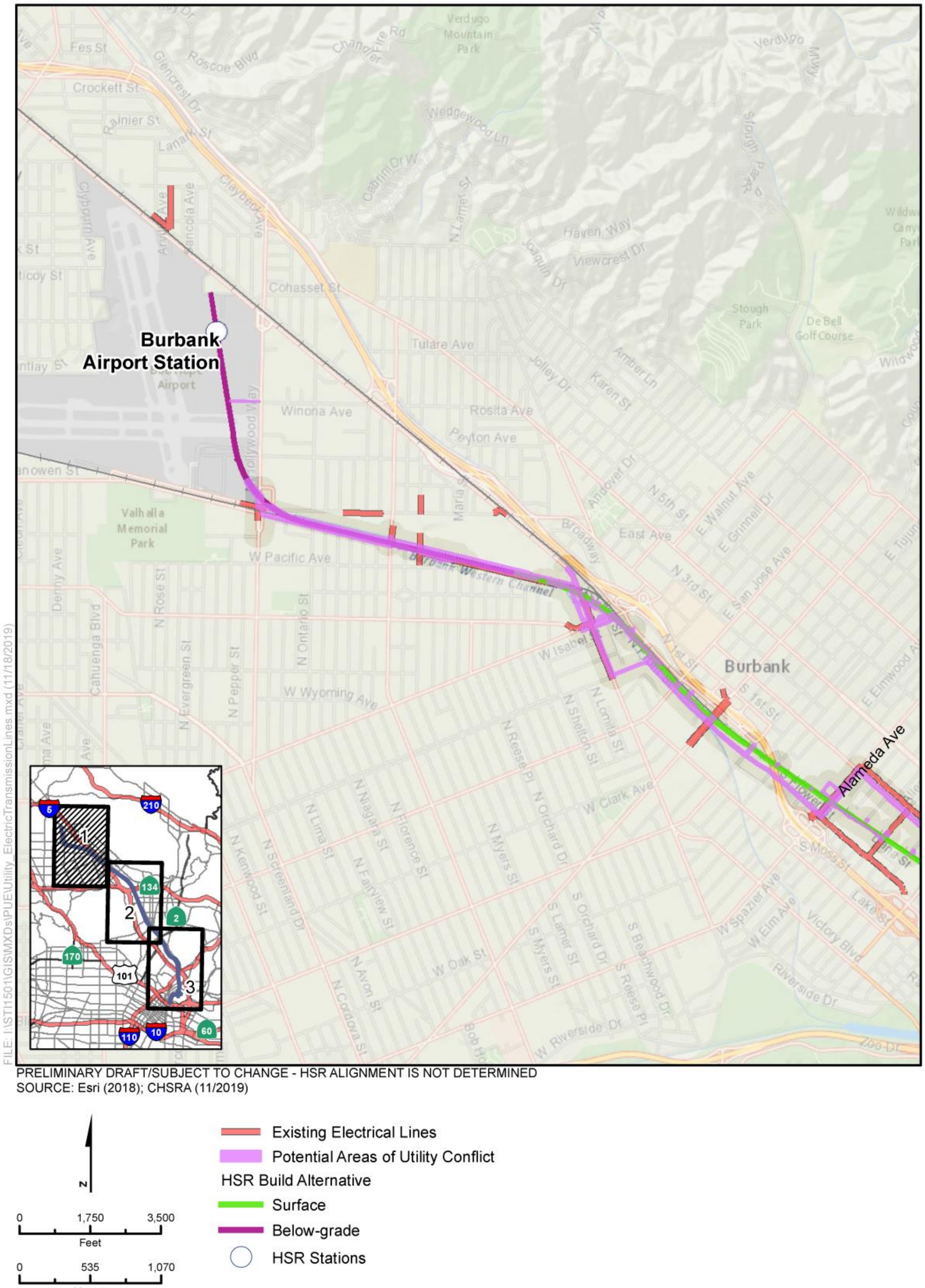
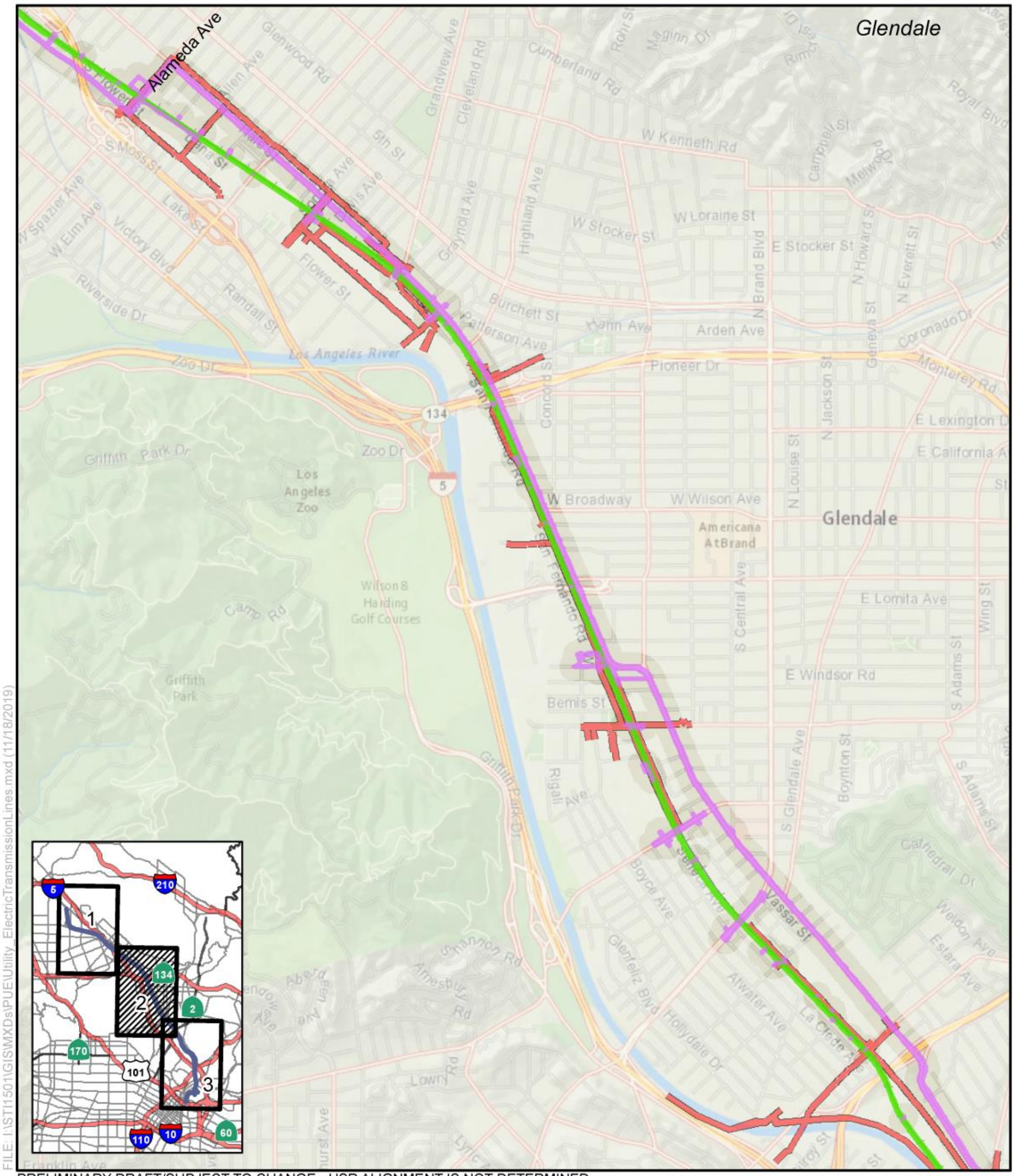


Figure 3.6-5 Electric Transmission Lines

(Sheet 1 of 3)



PRELIMINARY DRAFT/SUBJECT TO CHANGE - HSR ALIGNMENT IS NOT DETERMINED
SOURCE: Esri (2018); CHSRA (11/2019)

N

0 1,750 3,500
Feet

0 535 1,070
Meters

- Existing Electrical Lines
- Potential Areas of Utility Conflict

HSR Build Alternative

- Surface

Figure 3.6-5 Electric Transmission Lines

(Sheet 2 of 3)

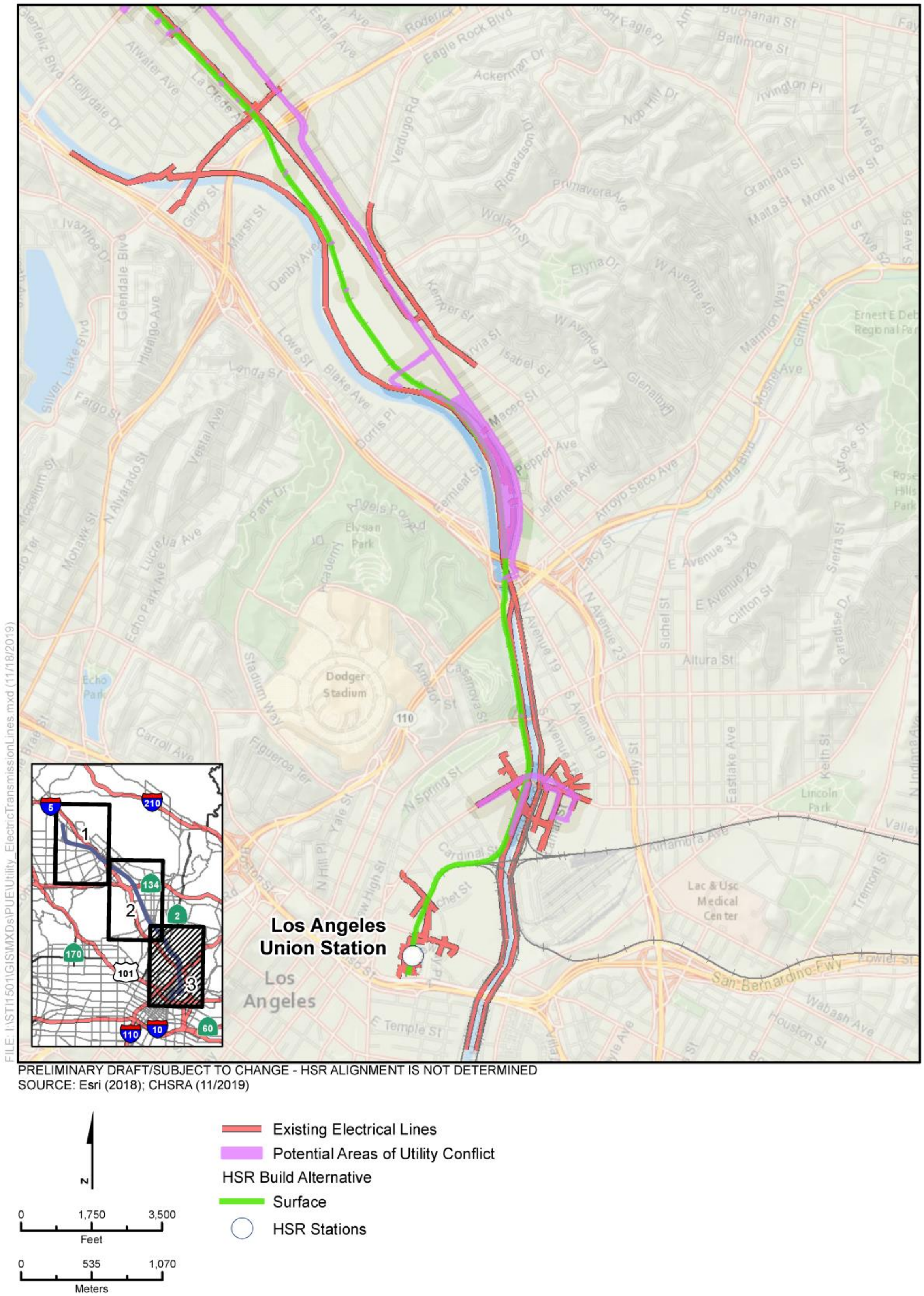


Figure 3.6-5 Electric Transmission Lines

(Sheet 3 of 3)

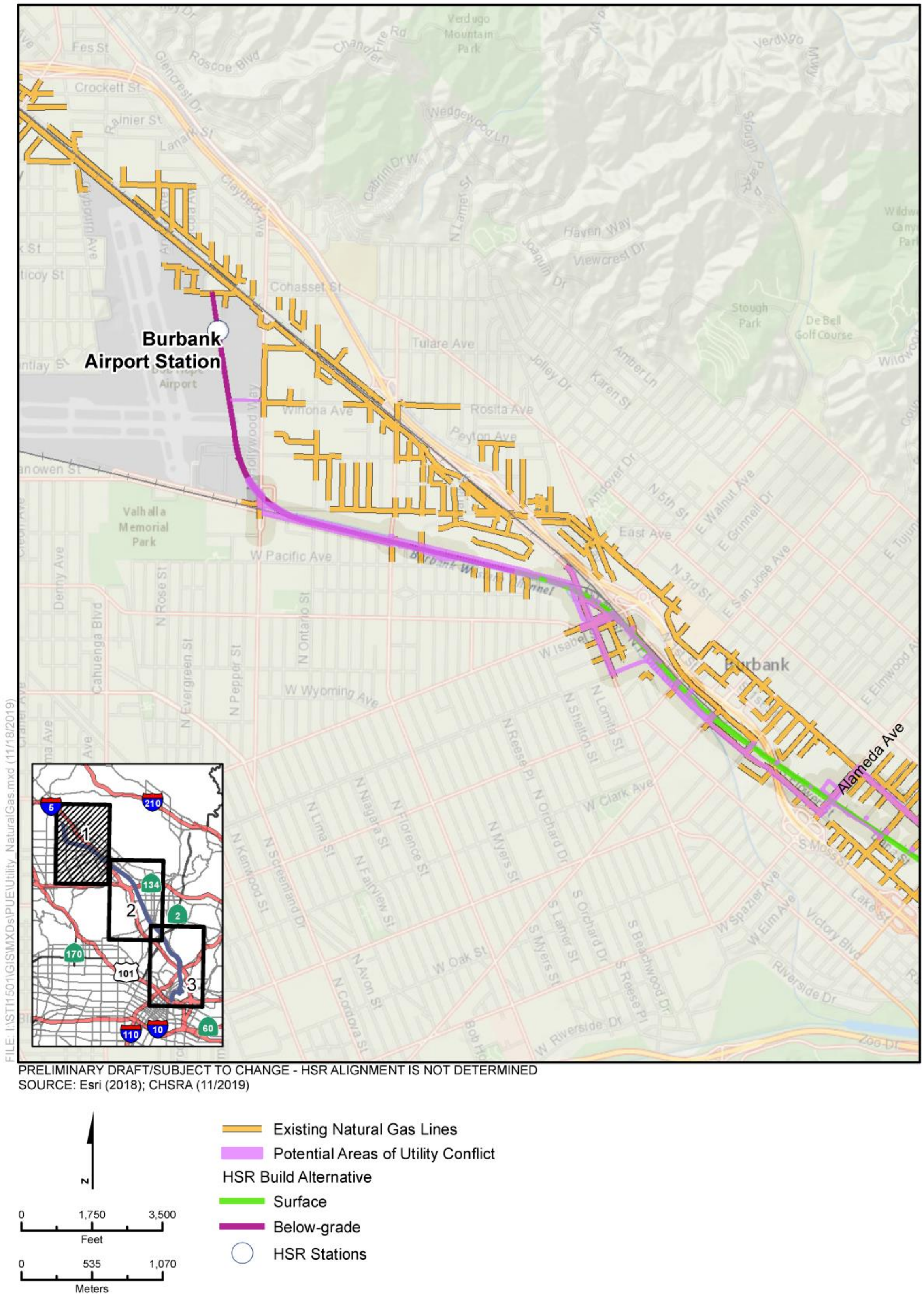


Figure 3.6-6 Natural Gas Pipelines

(Sheet 1 of 3)

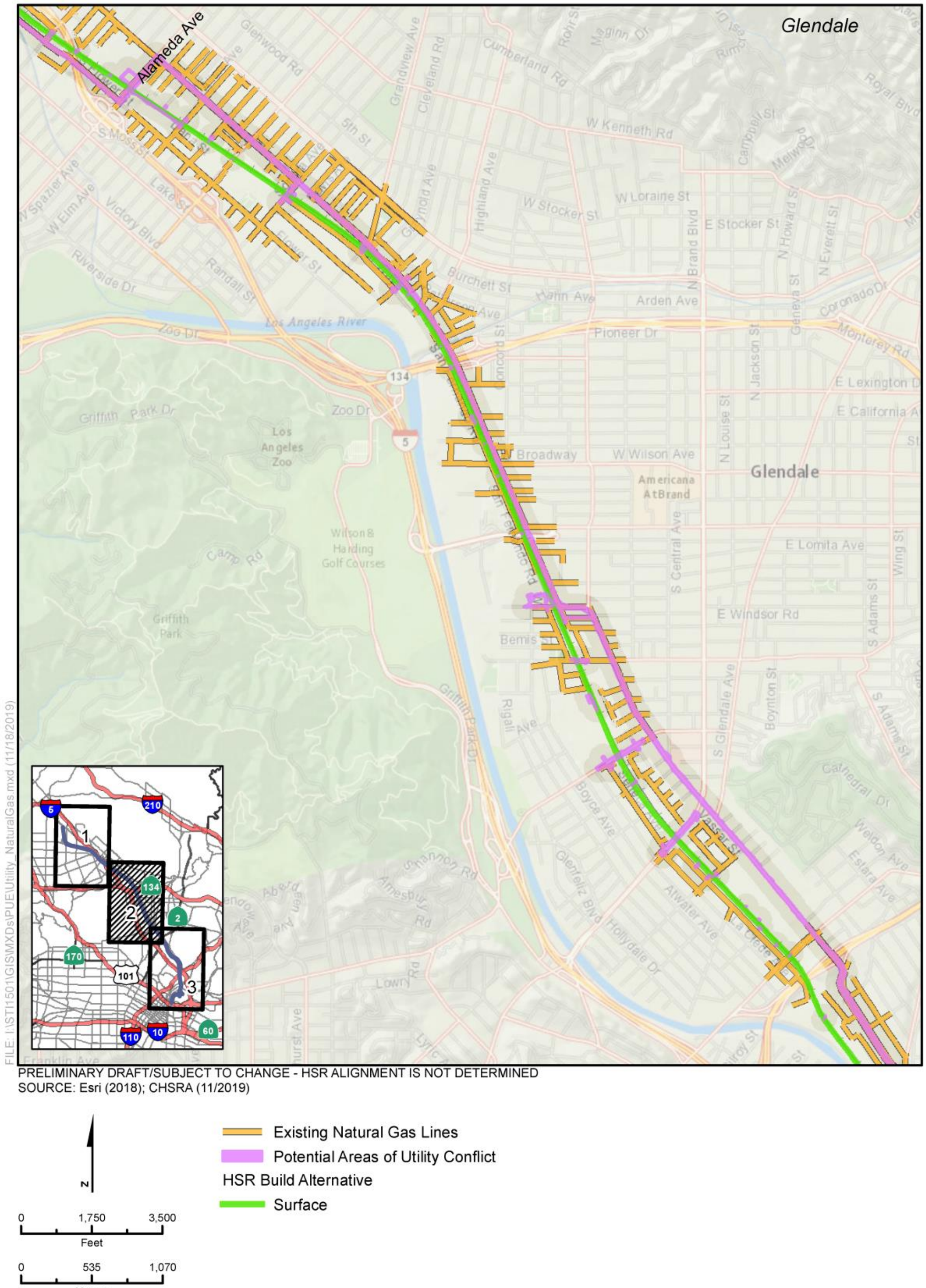


Figure 3.6-6 Natural Gas Pipelines

(Sheet 2 of 3)

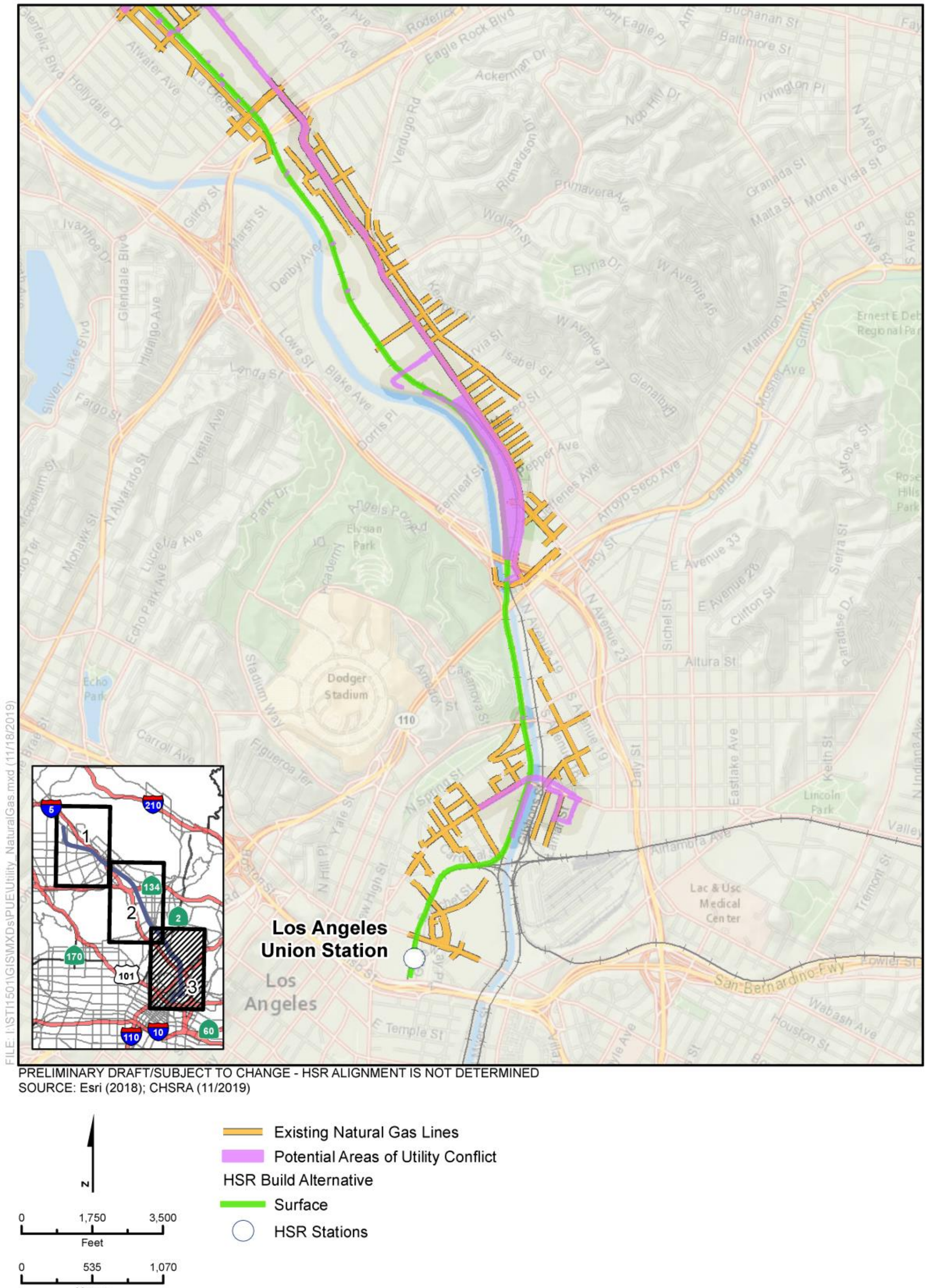


Figure 3.6-6 Natural Gas Pipelines

(Sheet 3 of 3)

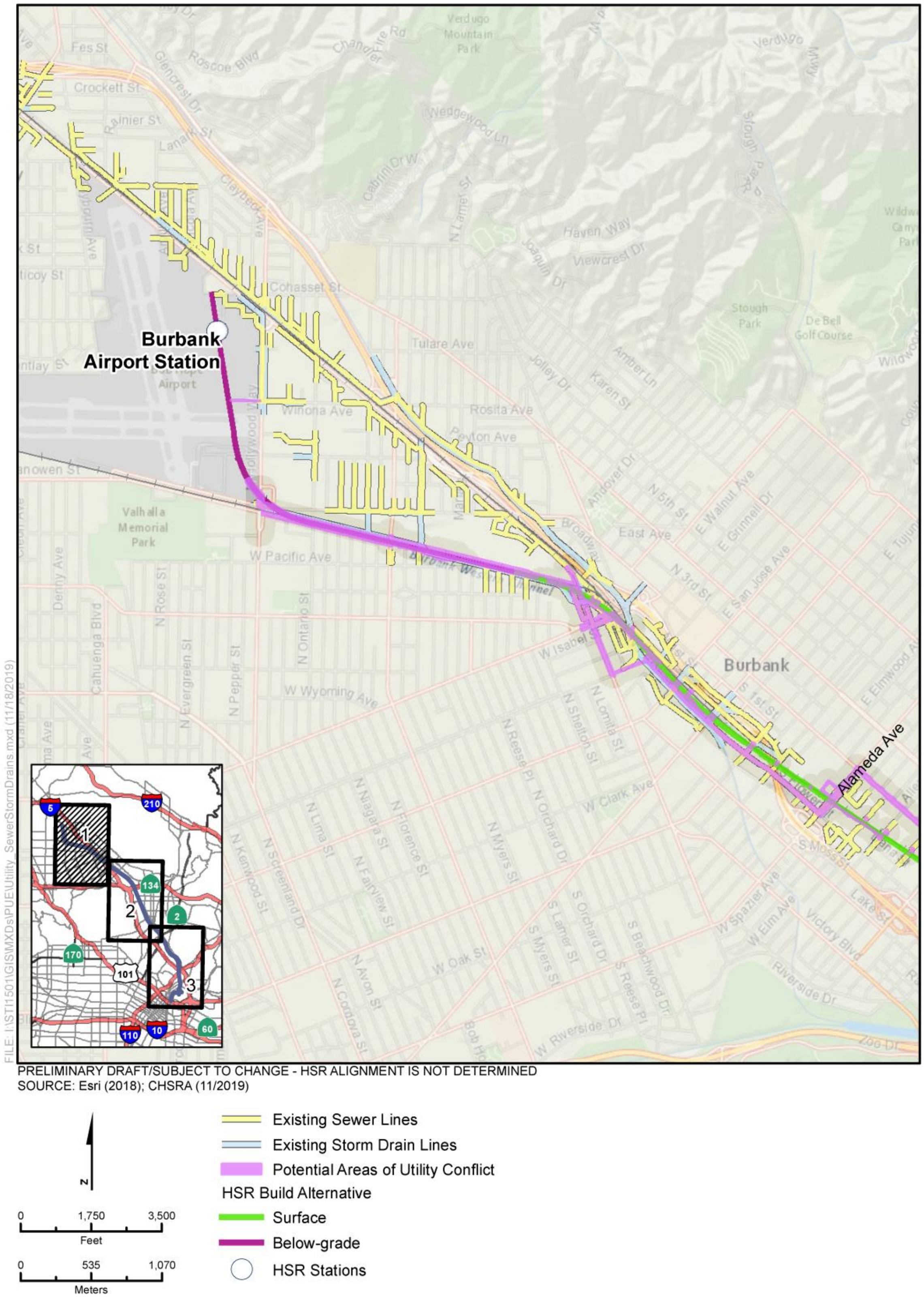
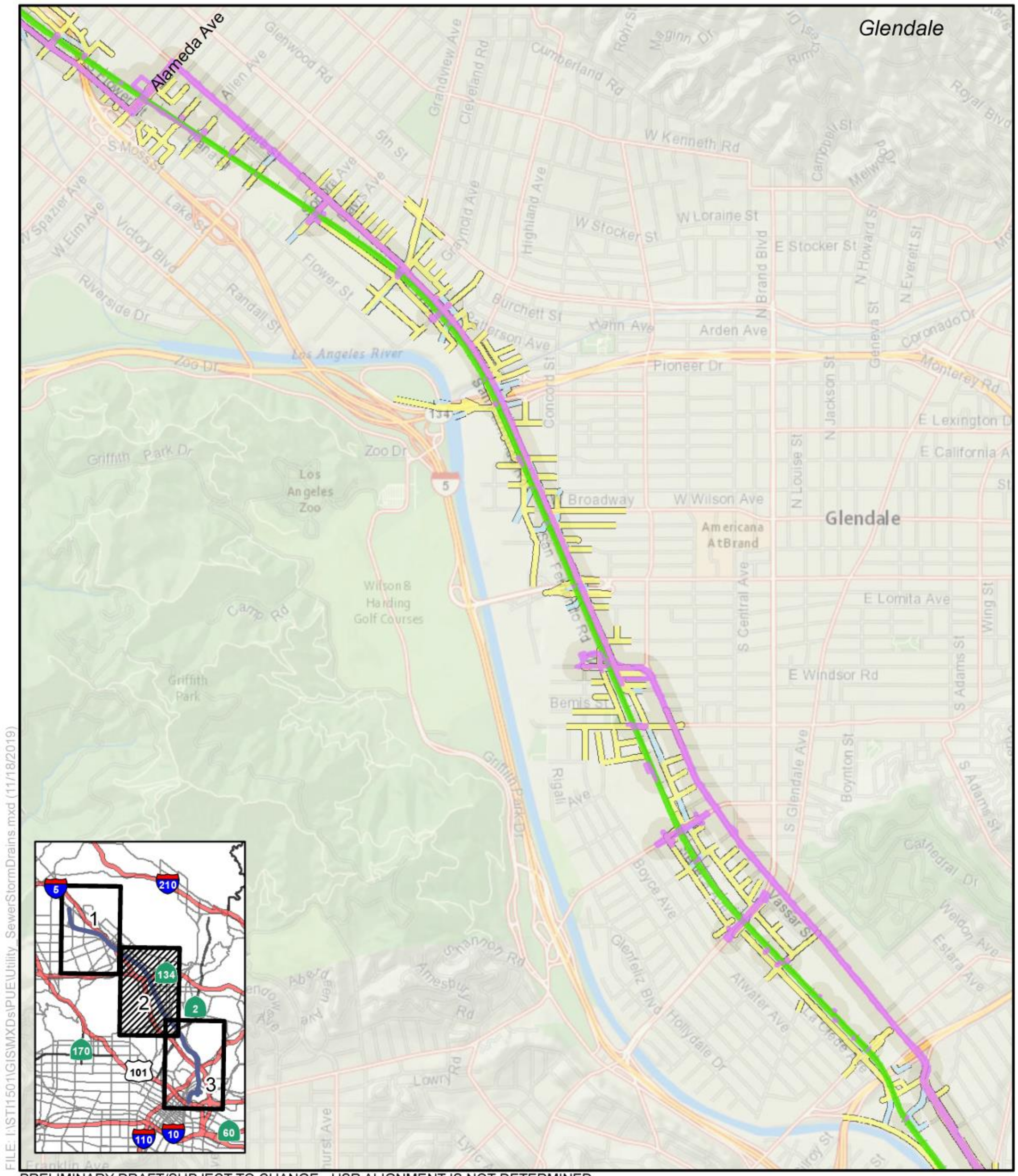


Figure 3.6-7 Sewer Lines and Storm Drains

(Sheet 1 of 3)



PRELIMINARY DRAFT/SUBJECT TO CHANGE - HSR ALIGNMENT IS NOT DETERMINED
SOURCE: Esri (2018); CHSRA (11/2019)

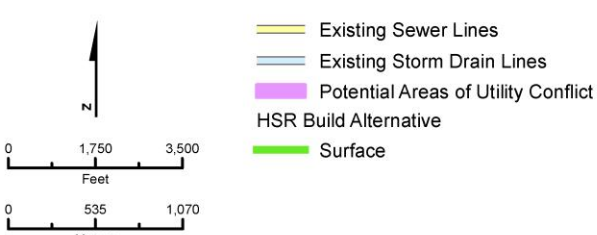


Figure 3.6-7 Sewer Lines and Storm Drains

(Sheet 2 of 3)

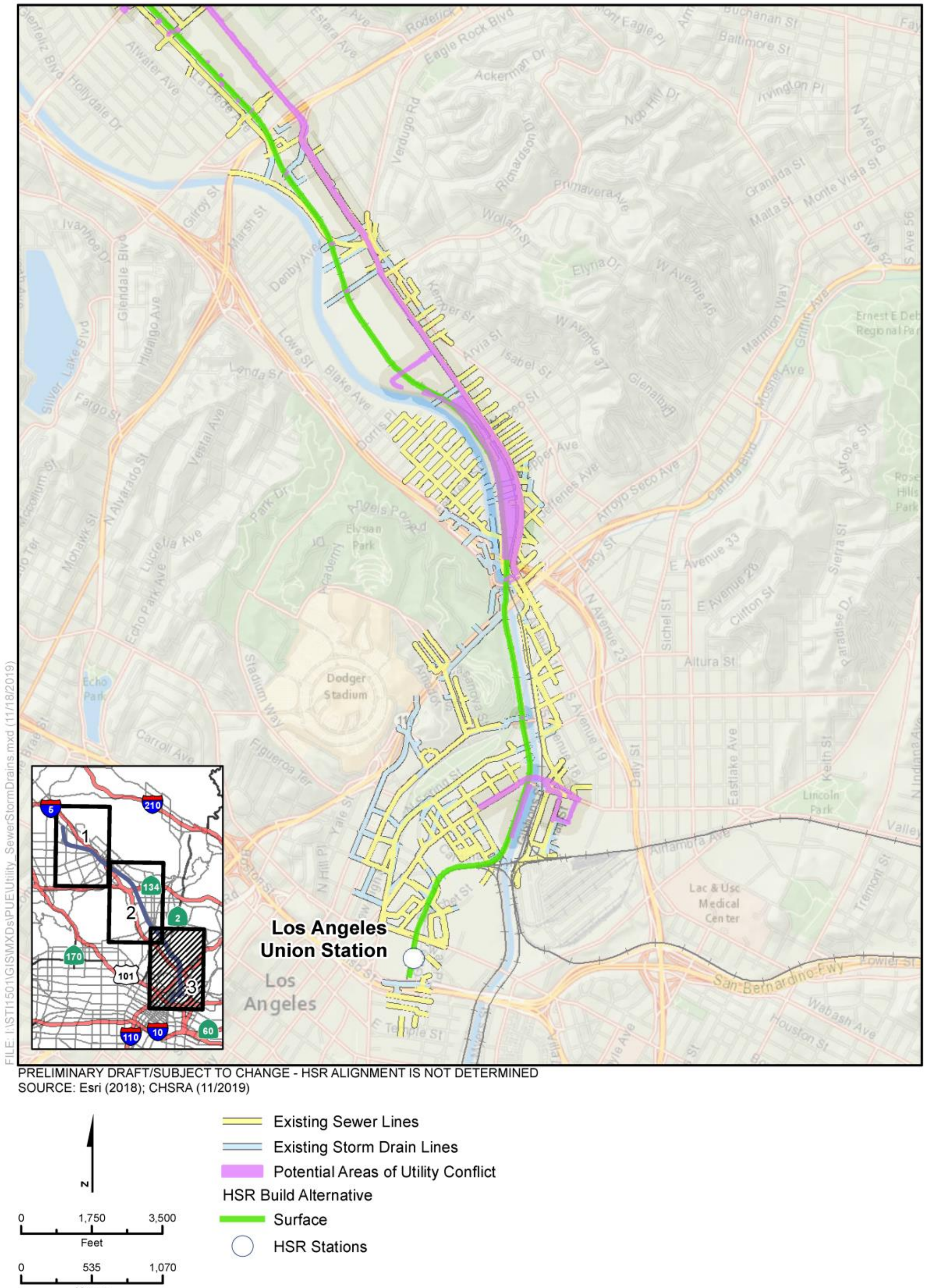
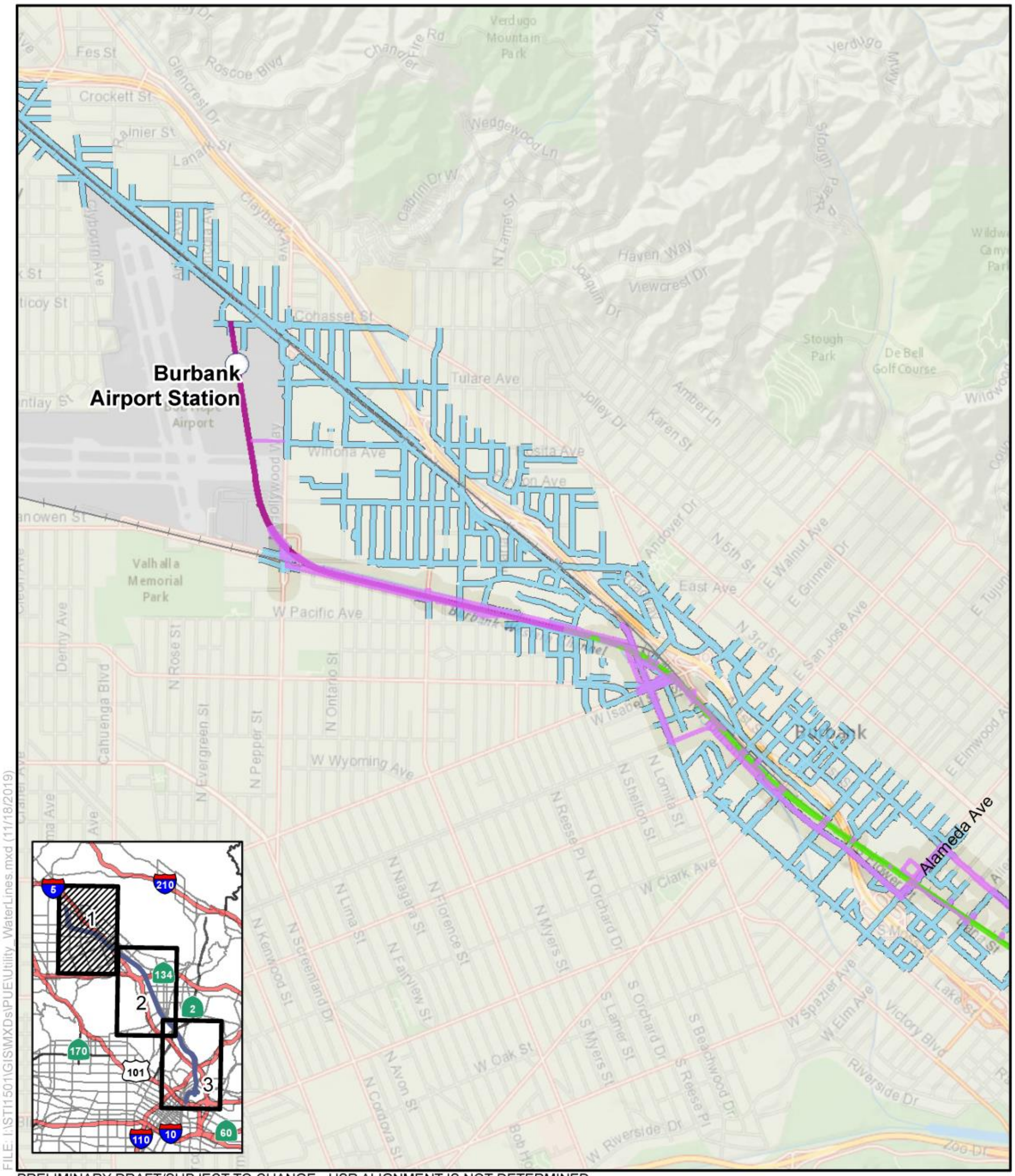


Figure 3.6-7 Sewer Lines and Storm Drains

(Sheet 3 of 3)



PRELIMINARY DRAFT/SUBJECT TO CHANGE - HSR ALIGNMENT IS NOT DETERMINED
SOURCE: Esri (2018); CHSRA (11/2019)

N

0 1,750 3,500
Feet

0 535 1,070
Meters

Existing Water Lines
Potential Areas of Utility Conflict
HSR Build Alternative
Surface
Below-grade
HSR Stations

Figure 3.6-8 Water Lines

(Sheet 1 of 3)

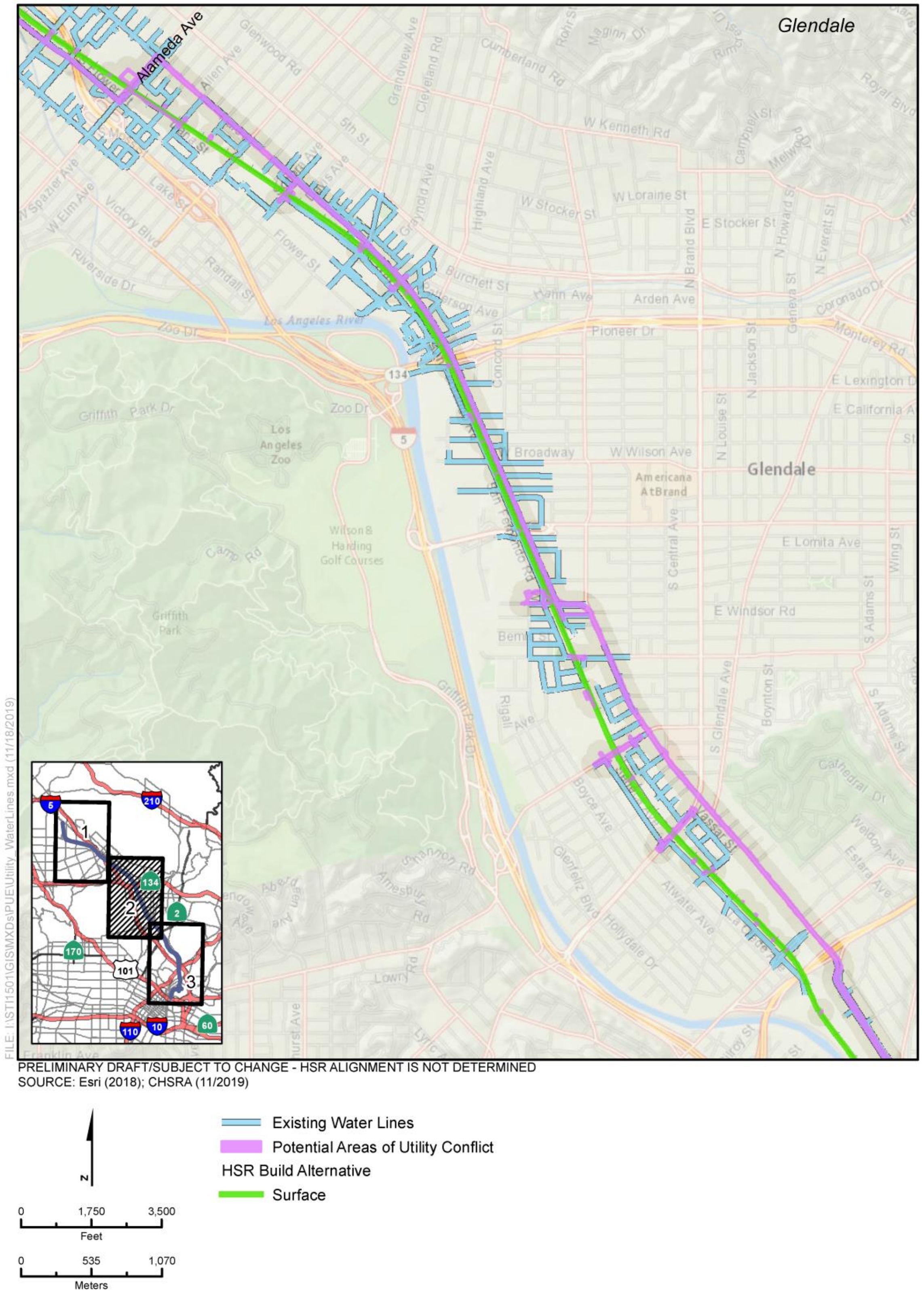


Figure 3.6-8 Water Lines

(Sheet 2 of 3)

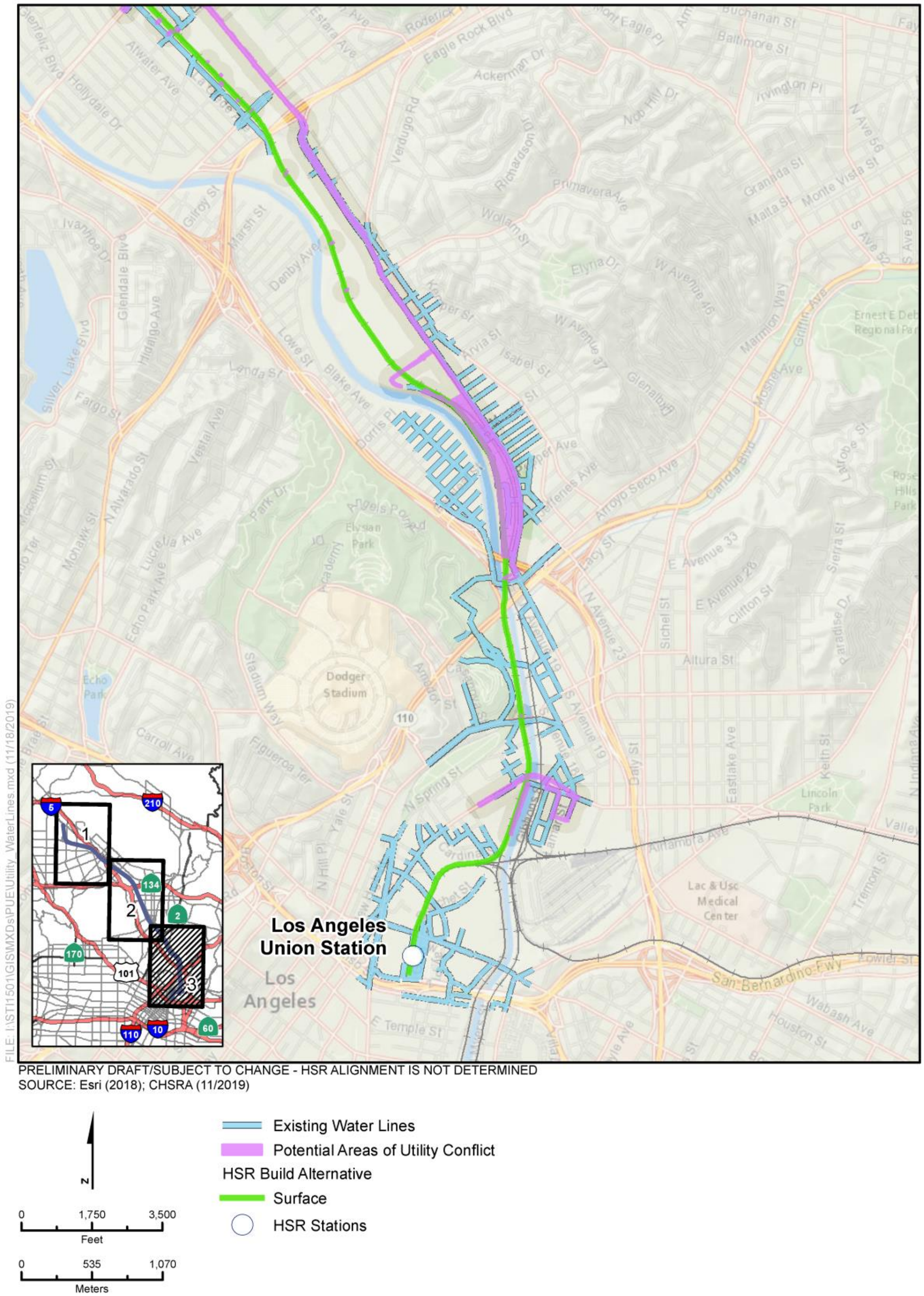


Figure 3.6-8 Water Lines

(Sheet 3 of 3)

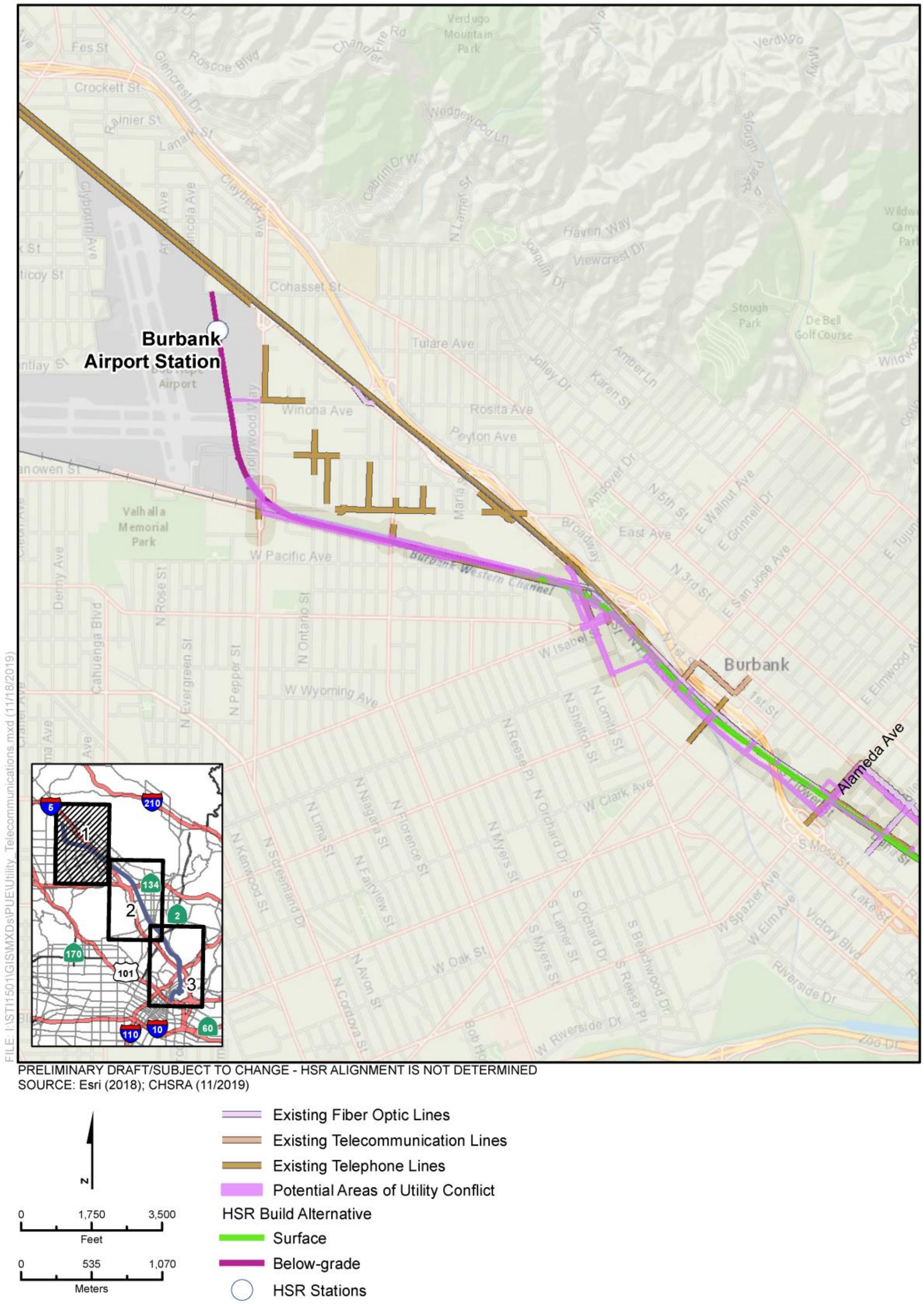


Figure 3.6-9 Communication Facilities and Sites

(Sheet 1 of 3)

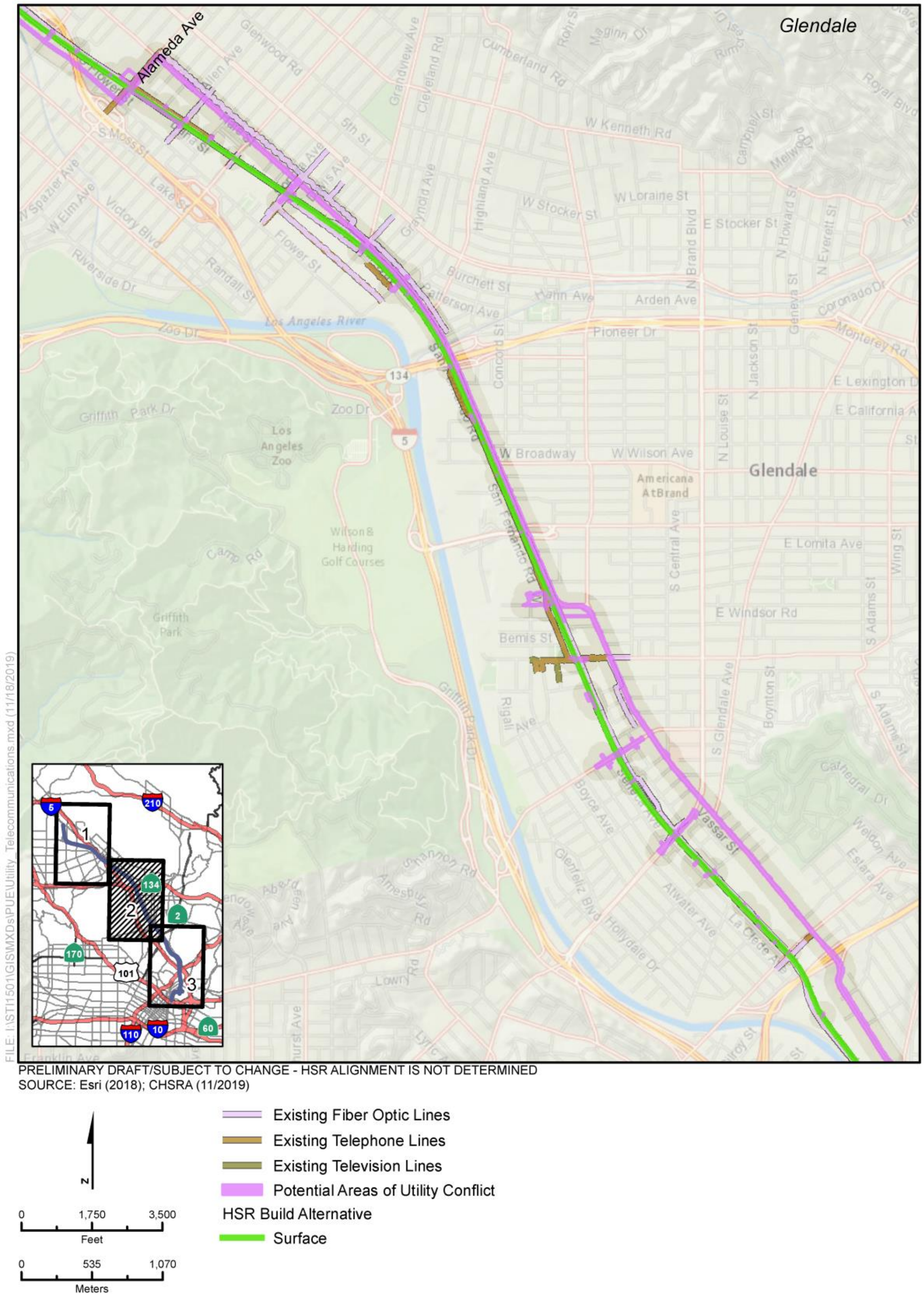
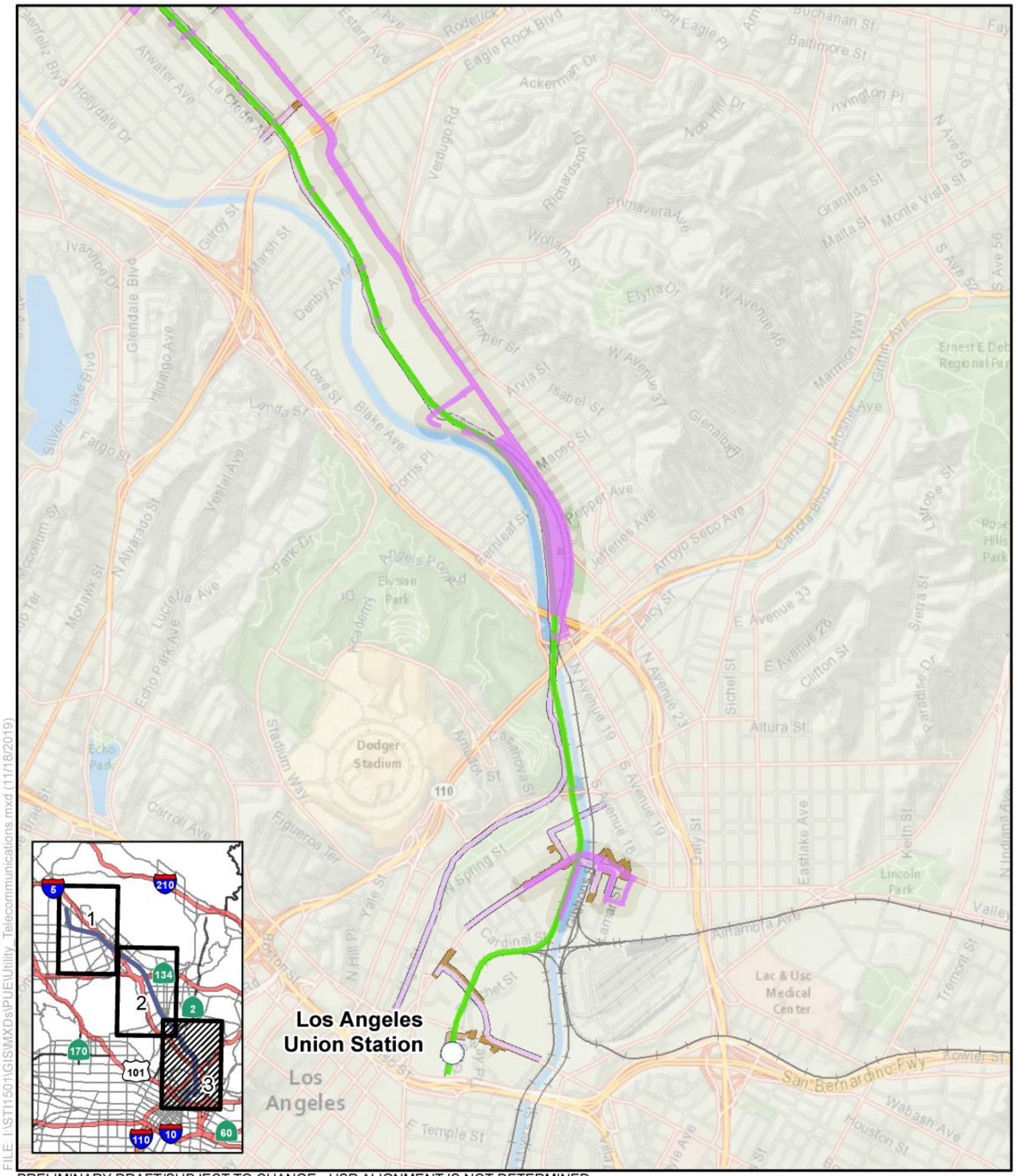


Figure 3.6-9 Communication Facilities and Sites

(Sheet 2 of 3)



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PRELIMINARY DRAFT/SUBJECT TO CHANGE - HSR ALIGNMENT IS NOT DETERMINED
SOURCE: Esri (2018); CHSRA (11/2019)

N

0 1,750 3,500 Feet

0 535 1,070 Meters

- Existing Fiber Optic Lines
- Existing Telecommunication Lines
- Existing Telephone Lines
- Potential Areas of Utility Conflict

HSR Build Alternative
- Surface
- HSR Stations

Figure 3.6-9 Communication Facilities and Sites

(Sheet 3 of 3)

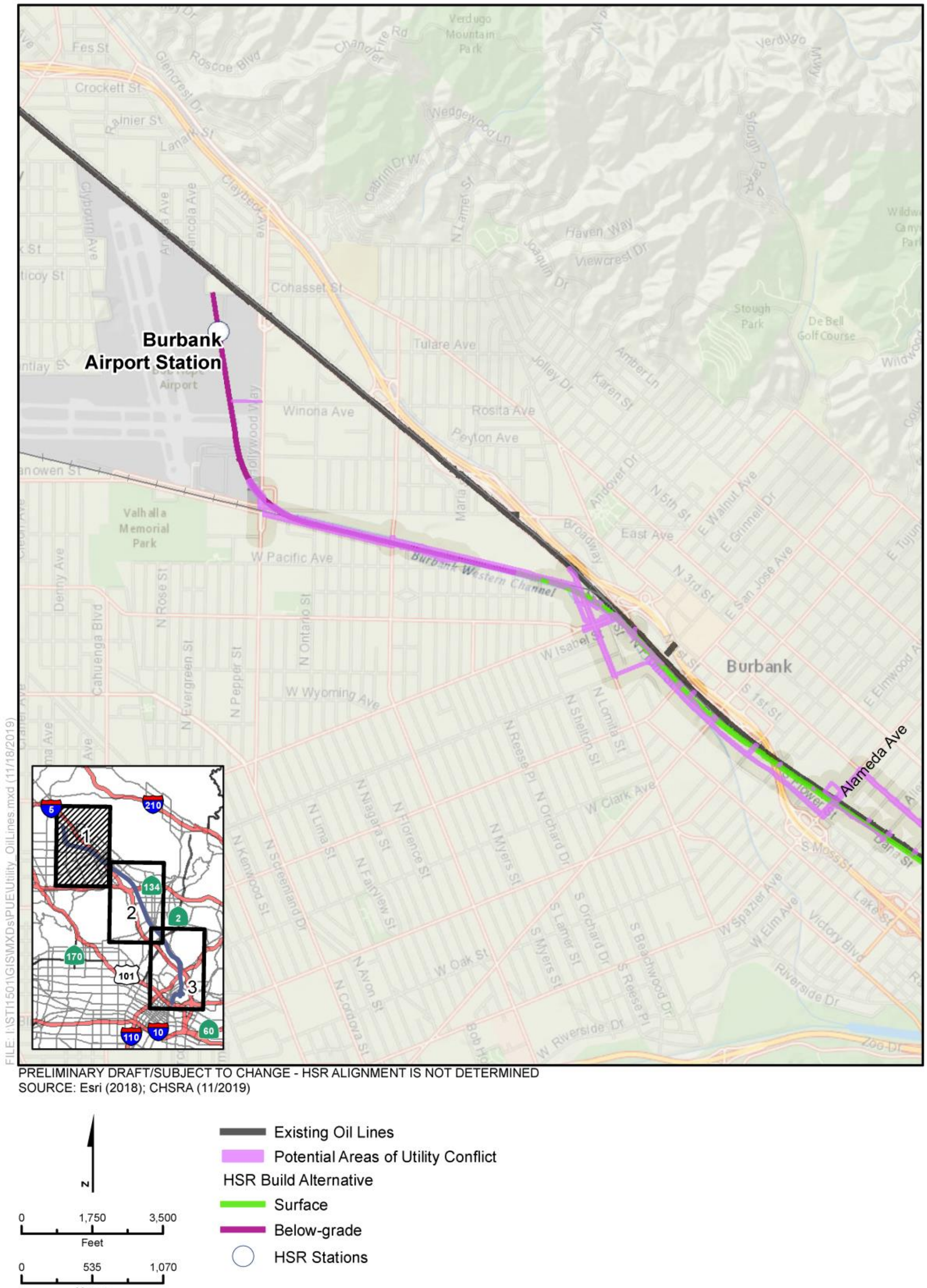
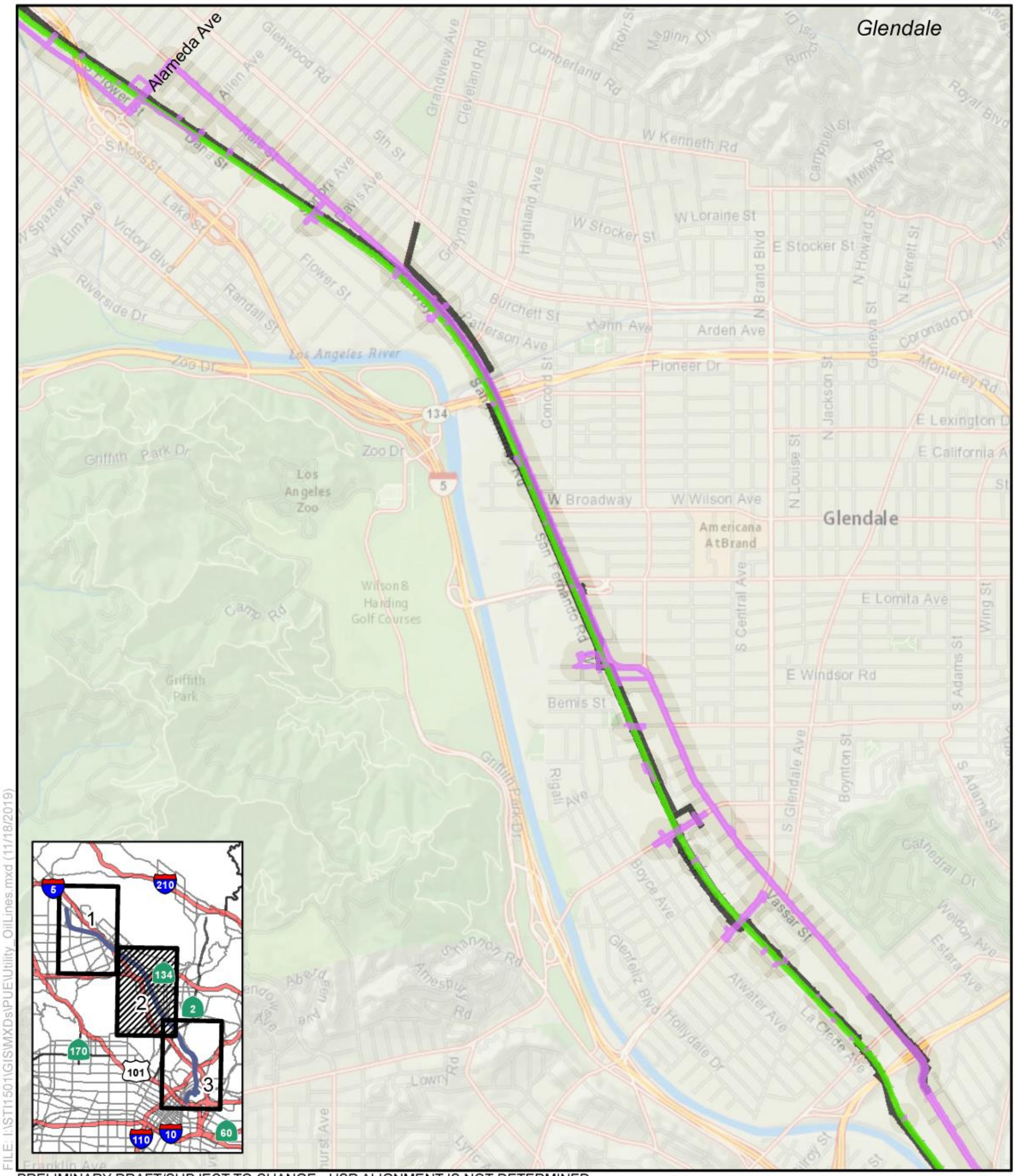


Figure 3.6-10 Oil Pipelines

(Sheet 1 of 3)



PRELIMINARY DRAFT/SUBJECT TO CHANGE - HSR ALIGNMENT IS NOT DETERMINED
SOURCE: Esri (2018); CHSRA (11/2019)

N

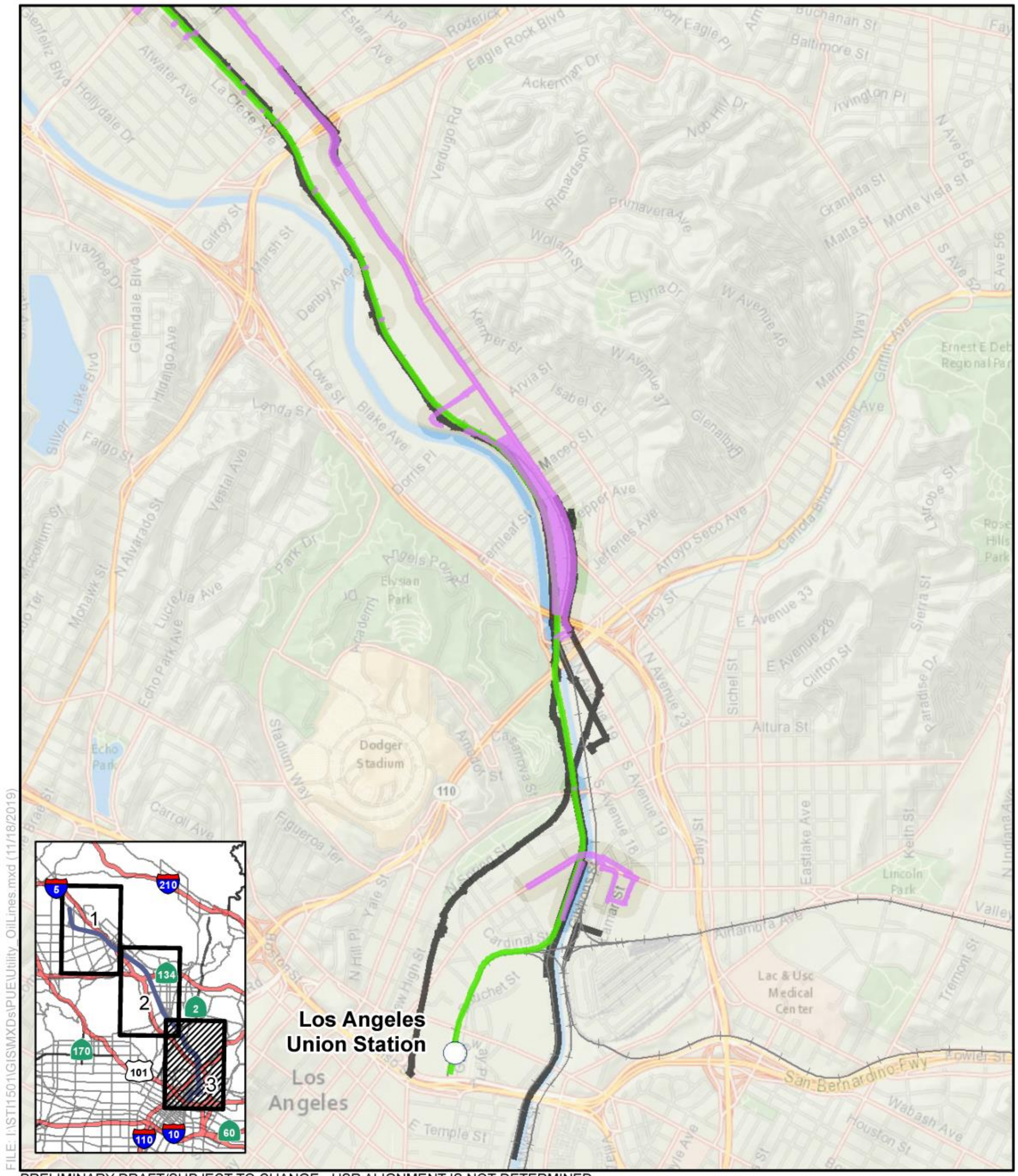
0 1,750 3,500
Feet

0 535 1,070
Meters

- Existing Oil Lines
- Potential Areas of Utility Conflict

HSR Build Alternative
- Surface

Figure 3.6-10 Oil Pipelines
(Sheet 2 of 3)



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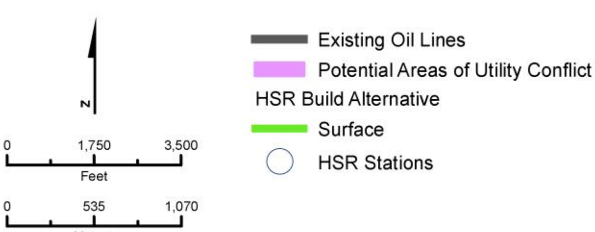

Figure 3.6-10 Oil Pipelines

(Sheet 3 of 3)

Construction related to the above utility relocations would require directional drilling, and the roadways would likely be temporarily reduced to one lane. For more information regarding construction-related road closures and detours, please refer to Sections 3.11, Safety and Security, and 3.2, Transportation, of this EIR/EIS.

Although this EIR/EIS identifies many potential utility conflicts, some areas of potential conflict cannot be fully determined at this time. For example, information about utility conflicts associated with relocating utilities outside of the railroad right-of-way is limited due to the preliminary locations of the drilling pits, and the absence of current engineering plan information for structures adjacent to the railroad right-of-way. In addition, because the location of power and communication supply is pending coordination with utility owners, information about conflicts due to interface with existing utilities for communication, traction power, and train control communication and power distribution systems is not available. There are also limits to the above estimation of utility conflicts due to unanswered requests from utility owners and certain more conceptual project elements, such as the LADWP parking structure built to replace parking that would be lost from the closure of a private LADWP road. It is, therefore, likely that with a more detailed design, there may be additional conflicts with utilities than what are currently identified. However, these would be low-impact conflicts such as minor relocations of underlying utilities.

The HSR Build Alternative would avoid, protect, or relocate potentially affected existing utility infrastructure. Pursuant to utility agreements negotiated between the Authority and the utility owners, the Authority would work with utility owners during final engineering design and construction of the HSR Build Alternative to relocate utilities or protect them in place. It is anticipated that all utilities can be relocated and modified within the construction footprint. If during development of final design it is determined that utilities cannot be relocated or modified within the footprint as described in Chapter 2, then additional environmental analysis would be conducted, if necessary.

Where overhead electrical distribution lines conflict with the HSR Build Alternative, the Authority and the utility owner may determine that it is best to place the lines underground. In this case, the distribution line would be placed in a conduit. Transmission lines between the traction power substations (TPSS) and the existing substations would be constructed above-ground and to industry standards, and would not conflict with existing infrastructure. The contractor would prepare a technical memorandum documenting how construction activities would be coordinated with service providers to minimize or avoid any potential interruptions, as established under PUE-IAMF#4. A TPSS is not required for the Burbank to Los Angeles Project Section since TPSSs in adjacent HSR project sections would service the Burbank to Los Angeles Project Section. The adjacent project sections are Palmdale to Burbank and Los Angeles to Anaheim, near Sun Valley and the City of Vernon, respectively. For purposes of independent utility, however, three potential locations for a TPSS have been preliminarily identified within the Burbank to Los Angeles Project Section. Because the addition of a TPSS would alter the spacing of the other systems facilities, further design and environmental study would be required to approve the TPSS site and the alteration of the other facilities if the Palmdale to Burbank and Los Angeles to Anaheim Project Sections are not built. If a TPSS were needed in the Burbank to Los Angeles section, it would not create a conflict with existing infrastructure.

CEQA Conclusion

The HSR Build Alternative would conflict with high-risk and major utilities, with other significant utility facilities, and with low-risk utilities. For low-impact conflicts, the HSR Build Alternative would result in a less than significant impact because the utility would remain unchanged after temporary relocation or adjustment. Other relocations could create lengthy and harmful interruptions of service for major linear and non-linear fixed facilities, which would result in a high-impact conflict. The HSR Build Alternative would incorporate PUE-IAMF#4, which includes effective measures to avoid utility conflicts by entering into agreements negotiated between the Authority and the utility owners prior to construction of the HSR Build Alternative. The contractor would prepare a technical memorandum documenting how construction activities would be coordinated with service providers to minimize or avoid interruptions to existing utilities. Through adherence to PUE-IAMF#4, the impact of conflicts with existing utilities under CEQA would be less than significant. Therefore, CEQA does not require any mitigation.

Impact PU&E #4: Effects from Water Demand during Construction

Construction activities related to the HSR Build Alternative and early action projects would use water to prepare concrete; to increase the water content of soil to optimize compaction for dust control and to reseed disturbed areas; for earthwork; and for tunnel construction and excavation. Information regarding existing water use and anticipated project water demand is presented in Appendix 3.6-B, California High-Speed Rail Environmental Impact Statement Water Usage Analysis: Technical Memorandum.

Table 3.6-12 shows the existing water usage within the project footprint, and the estimated water usage for construction of the HSR Build Alternative and station facilities. The projected demand for construction water use represents an approximately 14 percent decrease in water use when compared to existing use. This reduction is a result of acquisition of existing land within the project footprint, which would eliminate water use associated with existing land uses during the construction of the project. Therefore, the water use during construction of the HSR Build Alternative would be offset by the reduction in water use from the acquired local land uses.

Table 3.6-12 Construction Water Use Summary

Facility Type	Annual Water Usage (acre-feet)
Existing Water Usage	
HSR Build Alternative Project Footprint	267.15
Construction Water Usage	
HSR Build Alternative Alignment	123.29
Burbank Airport Station	105.00
Los Angeles Union Station	0.00[1]
Maximum Use Total	**228.29**

Source: California High-Speed Rail Authority, 2017

[1] There would be no construction water use at Los Angeles Union Station because dust control and earthwork are not required, all concrete production would occur off-site, and workers would utilize portable facilities.

HSR = high-speed rail

Because the Burbank to Los Angeles Project Section HSR Build Alternative is in an urbanized area, sources from municipalities would be used for construction water use whenever possible. Table 3.6-13 outlines the impact of construction water use on municipalities potentially utilized during construction. The table assumes 100 percent of the construction water use from each municipality. This provides a worst-case scenario and conservative estimate given the uncertainty of exact water connections and supply during construction.

Table 3.6-13 Construction Water Use by City

Jurisdiction	Existing Annual Water Usage (acre-feet)	Construction Annual Water Usage (acre-feet)	Change in Annual Water Usage (acre-feet)	Urban Water Management Plan Surplus (thousands of acre-feet per year)	Construction Water Use Percent of Surplus
City of Burbank	192.45	228.29	35.84	2020: 0	–
				2030: 0	–
				2040: 0	–
City of Glendale	20.40		207.89	2020: 532	0.043%
				2030: 636	0.036%
				2040: 709	0.032%
City of Los Angeles	54.30		173.99	2020: 1,588	0.014%
				2030: 1,699	0.013%
				2040: 1,777	0.0139%
Totals	**267.15**	**228.29**	**417.72**	**–**	**–**

Source: California High-Speed Rail Authority, 2017

The average annual water use over the construction period would not be greater than 228.29 acre-feet per year, which is less than the 267.15 acre-feet per year (Jacobs Engineering 2017) of existing annual water demand due to the elimination of water use for existing purposes (industrial, commercial, residential, and public sources) within the project footprint. Table 3.6-13 includes calculations for construction water usage and compares the annual construction water usage for the Burbank to Los Angeles Project Section to jurisdictional construction water usage for cities that the HSR Build Alternative would pass through. Construction water use within the cities of Glendale and Los Angeles would increase annual water usage from existing conditions. However, annual construction water usage would account for less than 0.04 percent of the surplus water supply in both water districts in the years 2020, 2030, and 2040. In the city of Burbank, construction water use would make up 118 percent of the existing annual water usage (Jacobs Engineering 2017). The Burbank Urban Water Management Plan does not include surplus information. Because construction water use would exceed water use in the city, it is anticipated that there would not be sufficient water supplies available to serve the HSR Build Alternative from existing entitlements and additional water could be required for construction in a worst-case scenario.

Because construction water use would result in increased water usage from existing conditions within all water districts (assuming total water demand is supplied from a single provider), mitigation measure PUE-MM#1, Water Supply Analysis, would need to be implemented. PUE-MM#1 would require the Authority to prepare a water supply analysis for the HSR Build Alternative to identify the detailed water supply needs for the construction of the Burbank to Los Angeles Project Section. Section 3.6.7, Mitigation Measures, describes PUE-MM#1 in more detail. Reallocation of water resources from other city jurisdictions or other local groundwater or water project resources would affect water surplus in these areas; however, overall impact of water usage during construction would be reduced.

CEQA Conclusion

The impact under CEQA would be significant because the worst case construction water use of the HSR Build Alternative would result in increased water usage from existing conditions that may not be served from existing supplies within the independent city jurisdictions. The Authority would implement mitigation measure PUE-MM#1, which would require the Authority to prepare an updated water supply analysis for the HSR Build Alternative that identifies the detailed water supply needs for the construction and operation of the HSR Build Alternative. Section 3.6.7, Mitigation Measures, describes PUE-MM#1 in more detail. With the implementation of PUE-MM#1 during construction of the HSR Build Alternative, the impact under CEQA would be less than significant because the water supply analysis would detail and describe the minimum adequate water supply for the RSA during normal, dry, and multiple dry years based on a more detailed project design. Proper processes for water conservation, reallocation of water resources from other jurisdictions, and compensatory payment would be followed to provide adequate water supply during normal, dry, and multiple dry years for the project from existing sources such as local groundwater, water imported through the State Water Project (and water imported through the Colorado River Aqueduct). Reallocation of water resources from other city jurisdictions or other local groundwater or water project resources would affect water surplus in these areas; however, overall impact of water usage during construction would be reduced.

Impact PU&E #5: Effects on Stormwater Infrastructure during Construction

As discussed in Section 3.8, Hydrology and Water Resources, construction activities such as grading and excavation could redirect stormwater runoff by altering the existing drainage pattern. Soil would be compacted during ground-disturbing activities, resulting in a decrease in infiltration and an increase in the volume and rate of stormwater runoff, which could exceed the capacity of storm drains during storm events.

Implementation of HYD-IAMF#3 would require the contractor to comply with the State Water Resources Control Board Construction General Permit to avoid or minimize temporary hydraulic impacts associated with construction activities at all construction sites and in adjacent areas during construction. This IAMF would reduce impacts from stormwater during construction activities through the preparation and implementation of a construction SWPPP, including BMPs to provide hydromodification controls to maintain pre-project hydrology and to manage the amount of stormwater runoff emanating from the construction sites. Construction BMPs would include both structural and nonstructural BMPs. Structural BMPs include temporary silt fences, fiber rolls, sandbag barriers, diversion berms and drainage swales, and check dams. Nonstructural BMPs would be incorporated into the operation of the construction site and include preserving existing vegetation, hydroseeding, dust control, and street/parking lot sweeping. Construction BMPs, such as check dams and preserving existing vegetation, would reduce the volume and rate of stormwater runoff during construction activities. The construction SWPPP would also describe temporary drainage patterns within the construction sites and indicate stormwater discharge locations from the construction sites.

CEQA Conclusion

HSR Build Alternative construction activities such as grading and excavation could redirect stormwater runoff by altering the existing drainage pattern. Ground-disturbing activities could compact soil, resulting in a decrease in infiltration and an increase in the volume and rate of stormwater runoff, which could exceed the capacity of storm drains during storm events. The HSR Build Alternative includes HYD-IAMF#3, which would include effective measures to avoid or minimize temporary hydraulic impacts associated with construction activities at all construction sites and in adjacent areas during construction by requiring the contractor to comply with the State Water Resources Control Board Construction General Permit. This IAMF would reduce impacts from stormwater during construction activities through the preparation and implementation of a construction SWPPP, including BMPs to provide hydromodification controls to maintain pre-project hydrology and to manage the amount of stormwater runoff emanating from the construction sites. Through adherence to HYD-IAMF#3, the impact under CEQA to stormwater during construction would be less than significant. Therefore, CEQA does not require any mitigation.

Impact PU&E #6: Effects from Waste Generation during Construction

Temporary housing, workers (e.g., meals, restrooms, office supplies, and trailer cleaning), construction debris, clearing and grubbing, excess construction materials, forms, and demolition of bridge construction would generate solid waste. During construction, the HSR Build Alternative, and early action projects would generate an estimated 77,137 cubic yards of solid waste.

The 2010 Green Building Standards Code requires every city and county in California to develop a waste management plan and divert at least 50 percent of the construction materials generated (California Department of Resources, Recycling, and Recovery 2016a). As standard construction practice, the contractor would divert C&D waste from landfills by reusing or recycling to aid with implementing the Local Government C&D Guide (SB 1374) and to meet solid waste diversion goals to the extent practicable. The contractor would either segregate and recycle the waste at a certified recycling facility or contract with an authorized agent to collect mixed (not segregated) waste and dispose of it at a certified recycling facility. In addition, the Authority's 2016 sustainability policy specifies all (100 percent) steel and concrete will be recycled and a minimum of 75 percent of construction waste will be diverted from landfills (Authority 2016b). The landfills to which C&D material from the project would be sent have not been identified. Each landfill has specific requirements regarding the acceptance of hazardous wastes and C&D material that may influence the selection of disposal sites. Although there are five active landfills in the vicinity of the Burbank to Los Angeles Project Section that accept C&D material (Table 3.6-7), other regional facilities may be used for waste disposal. It is estimated that the total volume of C&D material would be approximately 77,137 cubic yards before recycling (approximately 0.06 percent of the total remaining capacity of the five active landfills that accept C&D material). After diversion, C&D material would occupy 0.03 percent of the total remaining capacity of the active landfills. One of the existing landfills (Burbank Landfill Site No. 3) has adequate estimated capacity through 2040. Under the Resource Conservation and Recovery Act and AB 939, affected county or municipal solid waste disposal facilities are required to plan for nonhazardous solid waste facility expansions or additions from all anticipated sources. Following reuse or recycling, anticipated HSR solid waste disposal volumes destined for county and municipal facilities would be considered in the mandated 5-year Countywide Siting Element review process, along with all other prospective sources, and eventually included in the affected Integrated Waste Management Plan documentation. The project would comply with federal, state, and local statutes and regulations related to solid waste, and there is sufficient permitted capacity at the landfills serving the project to accommodate solid waste disposal needs.

As discussed in Section 3.10, Hazardous Materials and Wastes, construction would generate hazardous waste consisting of welding materials, fuel and lubricant containers, paint and solvent containers, and cement products containing strong basic or acidic chemicals. Demolition of older buildings could also generate hazardous waste (e.g., asbestos-containing materials and lead-based paint). The Authority would handle, store, and dispose of all hazardous waste in accordance with applicable requirements, including the Resource Conservation and Recovery Act (Section 3.10, Hazardous Materials and Wastes). A certified hazardous waste collection company would deliver the waste to an authorized hazardous waste management facility for recycling or disposal. The transportation, use, and disposal of construction-related hazardous materials and wastes would be subject to state and federal regulations described in Section 3.10.2, Laws, Regulations, and Orders, of Section 3.10, Hazardous Materials and Wastes. All hazardous materials, soils, drums, trash, and debris generated during construction would be handled and disposed of in accordance with these regulations. In-state landfills, such as the Chemical Waste Management Kettleman Hills Landfill in Kings County, accept hazardous wastes. The Kettleman Hills Landfill is a chemical waste disposal and treatment facility with a capacity of 10 million cubic yards. The 1,600-acre site accepts waste from all over the western U.S., although it primarily serves California. It has approximately 4.9 million cubic yards of permitted capacity, with a projected life remaining of 30 years or more (beyond the year 2045) (Waste Management 2015). Hazardous wastes could be disposed of at permitted landfills that have sufficient capacity through the HSR Build Alternative construction period.

CEQA Conclusion

The impact of construction waste generation under CEQA would be less than significant because the project would comply with regulatory standards and construction recycling practices, and there would be sufficient permitted capacity for the project's solid waste disposal needs. As described in Section 3.10, Hazardous Materials and Wastes, the Resource Conservation and Recovery Act would require a certified hazardous waste collection company to deliver the waste to an authorized hazardous waste management facility for recycling or disposal, and there would be sufficient permitted capacity for the project's hazardous waste disposal needs. Therefore, CEQA does not require mitigation.

Impact PU&E #7: Effects from Upgrade or Construction of Power Lines

The HSR Build Alternative would use an electrified line with traction power for electric vehicles. Electricity would be supplied and distributed by a 2x25 kV autotransformer power supply system and an OCS (Authority 2010).

Switching and paralleling stations would also be needed to balance the electrical load between tracks and to switch power off or on to either track in the event of an emergency. Switching stations would be required at approximately 15-mile intervals, midway between the TPSSs, and paralleling stations would be required at approximately 5-mile intervals between the switching stations and the TPSSs. For the Burbank to Los Angeles Project Section, a switching station is proposed in the city of Los Angeles, south of Verdant Street and west of the railroad right-of-way, and a paralleling station is proposed in the city of Los Angeles, south of Main Street, between the railroad right-of-way and the Los Angeles River.

Further detail regarding electrical improvements that might be required can be found in Chapter 2, Alternatives, Section 2.3.6.4. Typical impacts associated with the construction of new or upgraded transmission lines include impacts on traffic circulation because of detours required for construction, potential impacts associated with ground-disturbing activities for construction of new transmission towers, and short-term electrical service disruptions. Permanent visual impacts could occur as a result of any new transmission towers or other features added to the existing visual setting. The Authority would assist utility providers in complying with CPUC General Order 131-D, including the need for follow-on design and environmental review for transmission line upgrades or construction as part of the CPUC permit application and prior to construction.

CEQA Conclusion

The impact under CEQA from the need to upgrade existing power lines or build new power lines would be less than significant because during construction of the HSR Build Alternative, the Authority would assist utility providers in complying with CPUC General Order 131-D. This includes the need for follow-on design and further environmental review for transmission line upgrades or construction as part of the CPUC permit application and prior to construction. Impacts would be evaluated through CPUC's CEQA process once upgrades are identified. Therefore, CEQA does not require any mitigation.

Impact PU&E #8: Potential Conflicts with Oil Wells

Table 3.6-9 identifies zero potential conflicts with idle oil wells. An existing idle oil well located near the project footprint in the center of the Los Angeles River to the north of the E Cesar E. Chavez Avenue Bridge is outside of the RSA. As such, the HSR Build Alternative would not affect this idle oil well, and the relocation or abandonment of the idle oil well would not be required.

SS-IAMF#4 is included in the project design to avoid or minimize impacts related to conflicts with existing oil wells. This IAMF specifies that identified oil wells, as well as any unidentified wells encountered during construction, would be relocated or abandoned in accordance with California Department of Conservation, Division of Oil, Gas, and Geothermal Resources standards, and in coordination with the well owners.

CEQA Conclusion

The idle oil well in the Los Angeles River is located outside of the RSA. As such, the HSR Build Alternative would not require the relocation or abandonment of the well. Any unidentified oil wells encountered during construction would be relocated or abandoned in accordance with California Department of Conservation, Division of Oil, Gas, and Geothermal Resources standards, and in coordination with the well owners, as outlined in SS-IAMF #4. This IAMF is included in the HSR Build Alternative design to avoid or minimize impacts related to conflicts with existing oil wells. There would be no impact on oil well utilities during construction pursuant to CEQA. Therefore, CEQA does not require mitigation.

Energy

The construction of the HSR Build Alternative could result in a temporary increase in energy use.

Impact PU&E #9: Construction Energy Consumption

During construction of the HSR Build Alternative, energy would be consumed to produce and transport construction materials. Operating and maintaining construction equipment would also consume energy resources. Energy used for the construction of trackwork, guideways, stations, support facilities, and other structures would be a one-time, nonrecoverable energy cost.

Energy consumption during construction of the HSR Build Alternative is calculated using characteristics of the alignment, particularly the length of elevated, underground, and at-grade guideway work. As shown in Table 3.6-3 and Table 3.6-14, the energy consumption estimate for constructing the HSR Build Alternative would be approximately 3,174 billion Btu (3,174,000 MMBtu). Because the HSR Build Alternative would contribute approximately 2.59 percent to the HSR systemwide energy demand and to the annual energy savings, as shown in Table 3.6-14, the payback period for energy consumed during construction (assuming nonrenewable diesel) would be 0.11 to 0.16 year (1 month and 10 days or 1 month and 29 days) of full project operations based on the changes in energy consumption shown in Table 3.6-15 (i.e., the HSR system would remove more energy-inefficient cars and planes from the system).

Table 3.6-14 Construction Energy Consumption Assumptions for the Burbank to Los Angeles Project Section High-Speed Rail Build Alternative

Alternative	Total 5-Year Energy Consumption (MMBtu)	Medium		High	
		2040 Annual Energy Savings (MMbtu/year)	Payback Period for Energy Used during Construction (years)	2040 Annual Energy Savings (MMbtu/year)	Payback Period for Energy Used during Construction (years)
HSR Build Alternative	3,174,000	19,281,490	0.16 (1 month and 29 days)	28,108,650	0.11 (1 month and 10 days)

Source: California High-Speed Rail Authority, 2017b
HSR = high-speed rail
MMBtu = million British thermal units

Table 3.6-15 2040 Estimated Change in Energy Consumption Due to the High-Speed Rail System (Medium Ridership Scenario to High Ridership Scenario)

Projected Outcomes of the HSR System	Change in Energy Usage in the Future Year with the HSR System (MMBtu per day)
Reduced VMT	-20,514 to -46,515
Reduced Airplane Travel	-36,608 to -35,221
Increased Electricity Consumption	4,296 to 4,726
Net Change in Energy Use	**-52,826 to -77,010**

Source: California High-Speed Rail Authority, 2017b
HSR = high-speed rail VMT = vehicle miles traveled
MMBtu = million British thermal units

Although measurable, the energy used for project construction would not require additional capacity or increase peak- or base-period demands for electricity or other forms of energy. Energy efficiency is assumed for the off-site production of construction materials (Authority and FRA 2005). This assumption is based on the cost of nonrenewable resources and the economic incentive for efficiency. Standard BMPs would be implemented on-site so that nonrenewable energy would not be consumed in a wasteful, inefficient, or unnecessary manner. In addition, project design would incorporate utilities and design elements to minimize electricity consumption and not overburden utility services. The Authority has adopted a sustainability policy that establishes project design and construction requirements to avoid and minimize energy consumption (PUE-IAMF#1).

CEQA Conclusion

The Authority has adopted a sustainability policy under PUE-IAMF#1 as part of the HSR Build Alternative that establishes project design and construction requirements to avoid and minimize energy consumption. Construction of the HSR Build alternative is not expected to place a substantial demand on regional energy supply or require additional capacity, or substantially increase peak- or base-period electricity demand. Through adherence with PUE-IAMF#1 and standard BMPs during construction of the HSR Build Alternative, the impact on energy consumption during construction would be less than significant. Therefore, CEQA does not require any mitigation.

Operations Impacts

Operation and maintenance of the HSR Build Alternative would include inspection and maintenance along the railroad track right-of-way, as well as on the structures, fencing, power system, train control, electric interconnection facilities, and communication system. Operations and maintenance are more fully described Chapter 2, Alternatives.

Utilities

The operation and maintenance of the HSR Build Alternative would reduce access to existing utilities in the project footprint, and increase demand for water, wastewater, and waste disposal services. The HSR Build Alternative would not physically encroach on the footprint of water or wastewater treatment facilities, water pump stations, or power plants.

Impact PU&E #10: Reduced Access to Existing Utilities in the High-Speed Rail Right-of-Way

The HSR Build Alternative right-of-way would be fenced and secured after construction. Any underground utilities that conflict with the HSR Build Alternative right-of-way would be relocated or reinforced underneath the HSR Build Alternative right-of-way inside a casing pipe that is strong enough to carry the HSR system facilities and allow for utility maintenance access from outside the HSR Build Alternative right-of-way. Underground wet utilities, such as water, sewer, storm drains, gas, and petroleum pipelines, would be conveyed inside a pipeline material with a service life typically of 50 years or more. Dry utilities such as electrical, fiber-optic, and telephone lines would be encased in a durable pipeline (e.g., a pipeline made of steel would protect the dry utilities from deterioration and would have a service life of 50 years or more). If the utility conveyance pipeline were in need of repair or replacement, the casing pipe would stay in place so that the HSR Build Alternative operations could continue. It is common practice that utility districts coordinate and schedule in advance any field visits to their facilities with the owner of the property within which their facilities lie.

CEQA Conclusion

The impact on access for existing utilities under CEQA would be less than significant because standard engineering and utility access practices would be implemented, in addition to casing utilities and providing maintenance access to utilities located underneath the HSR Build Alternative. Any underground utilities that conflict with the HSR Build Alternative right-of-way would be relocated or reinforced underneath the HSR Build Alternative right-of-way inside a casing pipe that is strong enough to carry the HSR system facilities and allow for utility maintenance access. Underground wet utilities, such as water, sewer, storm drain, gas, and petroleum pipelines, would be conveyed inside pipeline material. Dry utilities such as electrical, fiber-optic, and telephone lines would be encased in a durable pipeline. If the utility conveyance pipeline were in need of repair or replacement, the casing pipe would stay in place so that the HSR Build Alternative operations could continue. Therefore, CEQA does not require any mitigation.

Impact PU&E #11: Operational Water Demand

Table 3.6-16 identifies the anticipated project water demand for each proposed station facility.

Table 3.6-16 Anticipated Project Water Demand at Proposed High-Speed Rail Build Alternative Stations

Facility	Project Water Demand (acre-feet/year)
Burbank Airport Station	164.8
Los Angeles Union Station	167.6
Stations Total	**332.4**

Source: California High-Speed Rail Authority (2016)
[1] See methodology in Appendix 3.6-B, California High-Speed Rail Project Environmental Impact Statement Water Usage Analysis.

As described in Appendix 3.6-B, the only water usage associated with the HSR Build Alternative alignment would occur at tunnels and portals during operations for tunnel cleaning, fire and life safety, domestic needs, and general maintenance operations. The number, size, and end use of the facilities have not been fully established at this time. Water needs would be updated as the operation plans of the tunnel facilities are updated. Where domestic water pipelines are not available at the portal locations, potable water would need to be stored on-site in approved water storage tanks.

As indicated in Appendix 3.6-B, existing water use in the Burbank area of the HSR Build Alternative project footprint is approximately 192 acre-feet/year. The projected water use at the Burbank Airport Station during operation of the HSR Build Alternative would be 165 acre feet/year, which is approximately 15 percent less than existing water demand in the Burbank area of the project footprint. This figure was calculated using gallons of water per passenger per day and gallons of water per square foot of landscaping. The proposed Burbank Airport Station is within the study area of the 2015 Burbank UWMP. This plan projects that total water supply for the city of Burbank from all sources will be 28,130 acre-feet per year by 2025 and 27,250 acre-feet per year by 2040 (Burbank Water and Power 2016). The proposed Burbank Airport Station would require an estimated 165 acre-feet per year, which is 0.6 percent of Burbank’s total water supply, by the year 2040.

As described in Metro’s Link Union Station Project EIR (Metro 2019), the operational water use required by Metro’s Link Union Station Project by the year 2040 would be 453 acre-feet/year. By 2040, operation of the HSR Build Alternative would increase water use at LAUS by 168 acre feet/year due to the additional passengers and employees at the facility. This figure was calculated using gallons of water per passenger per day and gallons of water per employee per day. LAUS is within the study area of the 2015 Los Angeles UWMP. The plan projects that the total water supply for the city of Los Angeles from all sources will be 676,900 acre-feet per year by 2025 and 709,500 acre-feet per year by 2040 during both single and multiple dry year scenarios (LADWP 2016b). For a normal year scenario, the Los Angeles UWMP projects that the total water supply will be 644,700 acre-feet per year by 2025 and 675,700 acre-feet per year by 2040. The HSR Build Alternative operations at LAUS would require approximately 0.02 percent of LADWP’s total supply, by 2040, for all three scenarios.

The operational water use for the HSR Build Alternative would decrease water usage for the proposed Burbank Airport Station area and increase water usage for LAUS when compared to existing conditions in the project footprint within Burbank and Los Angeles. However, the increase at LAUS would account for approximately 0.02 percent of the total water supply by the year 2040 in the city of Los Angeles. According to the UWMP, LADWP would have sufficient supply to adequately serve its existing service area during normal, dry, and multiple dry years. However, it has not yet been determined if the project-generated increase in operational water demand at LAUS is within the existing and future service capacity of LADWP.

As previously discussed, the project-related increase in water demand at LAUS would be approximately 168 acre-feet/year. Although this increase is a small fraction of LADWP’s total supply, the project-generated increase in water demand has the potential to exceed LADWP’s existing and projected future supply during normal, dry, and multiple dry years, and potentially result in impacts to LADWP's existing service commitments. In the absence of the verification of future supply by LADWP, the sufficiency of water supply to serve the HSR Build Alternative at LAUS cannot be confirmed at this time.

CEQA Conclusion

The impact on water supply demand under CEQA is conservatively assumed to be significant and unavoidable because the worst case operational demand associated with the HSR Build Alternative at LAUS would result in increased water usage from existing conditions that may not be served by existing and future supplies from LADWP. In the absence of verification of the sufficiency of future LADWP supplies to meet project-generated operational water demand at LAUS, a water supply analysis in coordination with LADWP is required to verify the sufficiency of existing and future LADWP supplies for project operations at LAUS without resulting in impacts to LADWP's existing service commitments. By the year 2040, operational water demand for the Burbank Airport Station would require 0.6 percent of the provider's annual supply, but it would be less than the existing demand. For LAUS, operational water use would be approximately 0.02 percent of LADWP's annual supply in normal, dry, and multiple dry year scenarios. Although this increase is a small fraction of LADWP's total supply, the project-generated increase in water demand has the potential to exceed LADWP's existing and projected future supply during normal, dry, and multiple dry years and potentially result in impacts to LADWP's existing service commitments. As such, project operation would potentially require new or expanded LADWP entitlements. Therefore, because the sufficiency of the water supply cannot be confirmed at this time, CEQA would require mitigation for potential impacts to LADWP's service capacities.

The Authority would implement mitigation measure PUE-MM#2, which would require the Authority to prepare an updated water supply analysis for the HSR Build Alternative at LAUS that identifies the detailed water supply needs for operation of the HSR Build Alternative at LAUS. The water supply analysis would describe in detail the minimum adequate water supply for the RSA and, specifically, LAUS during normal, dry and multiple dry years based on a more detailed project design, and determine if the small fraction of water required to serve the HSR Build Alternative at LAUS can be served by LADWP's existing supplies. Section 3.6.7, Mitigation Measures, describes PUE-MM#2 in more detail. However, in the absence of verification of LADWP supplies to meet future project demand at LAUS, a sufficiency of supplies may not be available. Though the amount of water required for project operation at LAUS is a small fraction of LADWP's existing supply, the increased water demand would not necessarily be reduced to a less than significant impact after the implementation of PUE-MM#2. Therefore, this impact is significant and unavoidable under CEQA.

The Authority will, to the maximum extent feasible, coordinate with LADWP to verify the sufficiency of water supplies and fund the expansion of water supplies and infrastructure necessary to reduce impacts related to operational water use at LAUS.

Impact PU&E #12: Operational Wastewater Service Demand

Table 3.6-17 identifies the estimated wastewater demand for the proposed station facilities. Wastewater generation at the stations is based on wastewater generation rates from Los Angeles County Sanitation District No. 19 Service Charge Report for Fiscal Year 2015–16. As described in Appendix 3.6-B, the only wastewater associated with the HSR Build Alternative alignment would occur at tunnels and portals during operations for tunnel cleaning, fire and life safety, domestic needs, and general maintenance operations. The number, size, and end use of the facilities have not been fully established at this time. Wastewater demand will be updated as the operation plans of the tunnel facilities are updated.

As previously shown in Table 3.6-6, wastewater treatment facilities for the HSR Build Alternative are located in Burbank and Los Angeles. Table 3.6-17 shows the existing wastewater capacity for all of these treatment facilities. As shown in the table, the volume of wastewater generated at the station facilities represents less than 2 percent of the excess capacity of the wastewater treatment facilities in the vicinity of the HSR Build Alternative. Therefore, wastewater generated by the stations is within the capacity of the regional wastewater treatment facilities.

Table 3.6-17 Estimated Project Wastewater (Sewage) Generated for the High-Speed Rail Build Alternative Stations

Station	Estimated Wastewater Generation (gallons/day)	Existing Capacity (million gallons/day)	Excess Capacity (million gallons/day)	% Excess Capacity Used by HSR Build Alternative
Burbank Airport Station	22,302[1]	12.5 (BWRP)	4	0.6
Los Angeles Union Station	30,775[1]	20 (LAGWRP)	6	0.5
Total	**148,416**	**32.5**	**10**	**1.1**

Source: California High-Speed Rail Authority, 2016
[1] Uses wastewater generation estimates from Los Angeles County Sanitation District No. 19 Service Charge Report for Fiscal Year 2015–16. For the Los Angeles Union Station and Burbank Airport Station generation rate, the “service shop” generation rate was used. For the Los Angeles Union Station rail yard generation rate, “light manufacturing” was used.
BWRP = Burbank Water Reclamation Plant LAGWRP = Los Angeles-Glendale Water Reclamation Plant
HSR = high-speed rail

Local governments and water districts are responsible for complying with federal regulations, both for wastewater plant operation and the collection systems (e.g., sanitary sewers) that convey wastewater to a wastewater treatment facility. Proper operation and maintenance is critical for sewage collection and treatment, as impacts from these processes can degrade water resources and affect human health. For these reasons, publicly owned treatment works (POTW) receive Waste Discharge Requirements (WDR) to ensure that such wastewater facilities operate in compliance with water quality regulations set forth by the state. WDRs, issued by the state, establish effluent limits on the kinds and quantities of pollutants that POTWs may discharge. These permits also contain pollutant monitoring, recordkeeping, and reporting requirements. Each POTW that intends to discharge into the nation’s waters must obtain a WDR prior to initiating its discharge.

The HSR Build Alternative would result in a connection to the existing sewer system that is ultimately routed to one of the wastewater treatment plants previously identified in Table 3.6-6. Since all wastewater generated by the HSR Build Alternative would be treated by POTWs, operational discharge flows would be required to comply with WDRs for the facility. Compliance with condition or permit requirements established by the City, and WDRs at the POTWs, would ensure that discharges into the wastewater treatment facility system from the operation of the HSR Build Alterative would not exceed applicable Los Angeles Regional Water Quality Control Board wastewater treatment requirements.

CEQA Conclusion

The impact on operational wastewater usage would be less than significant because, based on the estimates for water usage presented in Table 3.6-17, the regional wastewater treatment facilities have the capacity to treat wastewater demand for the proposed station facilities. The HSR Build Alternative would not trigger the need for new or expanded facilities. Therefore, CEQA does not require mitigation.

Impact PU&E #13: Effects on Storm Drain Facilities during Operation

As discussed in Section 3.8, Hydrology and Water Resources, the HSR Build Alternative would increase impervious surface area, which has the potential to increase the rate and volume of stormwater runoff reaching receiving waters. However, storm drain hydraulics would be reviewed to identify whether the existing drainage systems are sufficient to support the changes in drainage proposed as part of the HSR Build Alternative. HYD-IAMF#1 is included as part of the project design and would be implemented for the HSR Build Alternative to avoid or minimize impacts on existing storm drain facilities. This IAMF would require the contractor to prepare a stormwater management and treatment plan. Additionally, during the design phase for construction, each receiving stormwater system’s capacity to accommodate additional project runoff would be evaluated and, as necessary, on-site stormwater management measures would be designed to provide adequate capacity and comply with the Authority's design standards. In addition, all surface water crossings would be designed to provide flow conveyance and minimize the placement of structures (i.e., columns and fill) within the flow channel where feasible (HYD-IAMF#2).

The stormwater management and treatment plan would evaluate the capacity of receiving stormwater drainage systems to determine the improvements required to maintain existing drainage capacity. The plan would specify BMPs, including detention or upgrades to the receiving drainage system, to manage increased flow volumes and velocities resulting from new and reconstructed impervious surfaces and avoid erosion and sedimentation in receiving waterbodies. The HSR Build Alternative would not cause significant environmental effects as a result of construction of new stormwater drainage facilities or expansion of existing facilities, because the HSR Build Alternative would retain existing drainage to the greatest extent applicable and incorporate any new drainage into the existing system as part of the HSR Build Alternative.

The HSR Build Alternative would include a proposed drainage system that would collect, convey, and discharge surface water runoff from the HSR Build Alternative right-of-way to the existing storm drain system and would include any necessary improvements to the existing stormwater drainage system to accommodate project runoff.

CEQA Conclusion

The HSR Build Alternative includes implementation of HYD-IAMF#1 and HYD-IAMF#2, which would reduce impacts of additional storm drains and drainage channels during operations of the HSR Build Alternative. HYD-IAMF#1 would protect existing storm drains as part of project design through a stormwater management plan and treatment. HYD-IAMF#2 would design surface water crossings to provide flow conveyance and minimize placement of structures within the flow channel, allowing for drainage from the HSR Build Alternative during operations. Through adherence with HYD-IAMF#1 and HYD-IAMF#2, the impact pursuant to CEQA would be less than significant. Therefore, CEQA does not require any mitigation.

Impact PU&E #14: Effects from Waste Generation during Operation

Project operation activities would generate solid waste, including passenger refuse disposal at stations and materials used for maintenance of the HSR Build Alternative.

Using projected passenger ridership and employee totals, total estimated solid waste generation for the proposed Burbank Airport Station was estimated to be 3,209 cubic yards per year (Authority 2017c). The solid waste generation for HSR operations at LAUS was estimated using passenger ridership and employee totals. Total anticipated solid waste at LAUS would be 26,776 cubic yards per year.[5]

As shown in Table 3.6-7, there is one existing solid waste disposal facility, Burbank Landfill Site No. 3, with adequate capacity beyond the date the project commences operation. Under the California Integrated Waste Management Act of 1989 and AB 939, local jurisdictions are required to prepare annual plans for new or expanded solid waste disposal services before the estimated closure dates of the existing facilities. However, the need for new or expanded landfill capacity beyond the currently projected closure dates would not occur solely due to operation of the HSR Build Alternative.

Waste generation estimates for the stations represent a negligible percentage (less than 1 percent) of the estimated permitted daily disposal capacity for landfills in the area, as shown in Table 3.6-7. Under the Resource Conservation and Recovery Act and AB 939, affected county or municipal solid waste disposal facilities are required to plan for nonhazardous solid waste facility expansions or additions from all anticipated sources. The disposal of HSR Build Alternative

[5] Assumptions: 0.00025 tonnes per passenger per year and 27.33 cubic yards per employee per year. Tonnes to tons conversion: 1 metric tonnes = 1.10231 U.S. ton. Tons to cubic yards conversion from *Volume-to-Weight Conversion Factors,* U.S. Environmental Protection Agency Office of Resource Conservation and Recovery, April 2016. https://www.epa.gov/sites/production/files/2016-04/documents/volume_to_weight_conversion_factors_memorandum_04192016_508fnl.pdf (Municipal Solid Waste, uncompacted).

operations-related nonhazardous solid wastes to landfills is not anticipated to trigger the need for new or expanded facilities prior to the date the facilities cease operations.

CEQA Conclusion

The impacts on waste generation during operation of the HSR Build Alternative would be less than significant because implementation of regulatory requirements during operation of the HSR Build Alternative would accommodate waste generation by requiring annual plans for new or expanded solid waste disposal services. Additionally, the HSR Build Alternative would be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs. Therefore, CEQA does not require any mitigation.

Impact PU&E #15: Effects from Hazardous Waste Generation

As discussed in Section 3.10, Hazardous Materials and Wastes, routine maintenance of the HSR Build Alternative stations would produce small quantities of hazardous waste. Hazardous waste may consist of welding materials, fuel and lubricant containers, batteries, and paint and solvent residues and containers.

All hazardous wastes would be handled, stored, and disposed of in accordance with applicable requirements, including the Resource Conservation and Recovery Act (Section 3.10, Hazardous Materials and Wastes). A certified hazardous waste collection company would deliver the waste to an authorized hazardous waste management facility for recycling or disposal (HWM-IAMF#7). Landfills such as the Clean Harbors Westmorland Landfill in Imperial County, the Chemical Waste Management Kettleman Hills Landfill in Kings County, and permitted out-of-state landfills accept hazardous wastes. The permitted landfills mentioned above all have adequate capacity to dispose of hazardous waste generated by the operation of the HSR Build Alternative.

CEQA Conclusion

The HSR Build Alternative would implement HWM-IAMF#7 and regulatory requirements during operation of the project that would require proper storage and disposal of hazardous wastes produced on-site. The HSR Build Alternative would comply with federal, state, and local statutes and regulations related to solid waste. A certified hazardous waste collection company would deliver the waste to an authorized hazardous waste management facility for recycling or disposal, as stated in HWM-IAMF#7, and sufficient capacity is available for hazardous waste disposal. Through adherence with HWM-IAMF#7 and regulatory requirements during operation of the HSR Build Alternative, impacts on operational hazardous waste generation pursuant to CEQA would be less than significant. Therefore, CEQA does not require any mitigation.

Energy

Impact PU&E #16: Operational Energy Demand

The Burbank to Los Angeles Section would reduce long-distance, city-to-city travel along freeways and highways throughout the state, as well as long-distance, city-to-city aircraft takeoffs and landings. The project would also affect electricity demand throughout the state.

The operational energy analysis uses a dual baseline approach. That is, the HSR system's operational energy impacts are evaluated against existing conditions and expected 2040 background (No Project) conditions, with additional consideration of impacts in the HSR opening year. Analysts calculated operational energy consumption for medium and high ridership scenarios. All applicable scenarios are based on the level of ridership as presented in the Authority's 2016 Business Plan (Authority 2016a). The complete statewide analysis is included in Appendix 3.6-A, with detailed calculations on the reduction in energy consumption from transportation.

Electrical Requirements of the High-Speed Rail Build Alternative

Operation of the HSR Build Alternative would use an electrified line supporting electric vehicles with traction power connected to existing Southern California Edison substations. For determining HSR energy consumption, analysts assumed use of a Siemens ICE-3 Velaro vehicle operating as two 8-car trainsets and traveling 43.1 million annual train miles by 2040. The HSR system would decrease automobile VMT and reduce energy consumption by automobiles, resulting in an overall reduction in energy use for intercity and commuter travel. Table 3.6-18 shows that the HSR Build Alternative would reduce energy usage by 6,637,690.09 MMBtu per year under the 2040 medium-ridership scenario and 7,082,945.06 MMBtu per year under the 2040 high-ridership scenario compared to the No Project Alternative.

Table 3.6-18 Projected Change in Annual Energy Consumption from the High-Speed Rail Build Alternative

Projected Outcomes of the HSR System	Medium Ridership Scenario		High Ridership Scenario	
	Change in Energy Usage in 2040 vs. Current Conditions (2015) (MMBtu/year)	Change in Energy Usage in 2040 vs. 2040 No Project Conditions (MMBtu/year)	Change in Energy Usage in 2040 vs. Current Conditions (2015) (MMBtu/year)	Change in Energy Usage in 2040 vs. 2040 No Project Conditions (MMBtu/year)
Reduced VMT	-3,176,876.3	-2,447,128.8	-4,389,830.2	-3,381,459.9
Reduced Airplane Travel	-4,143,531.9	-5,758,700.6	-3,904,460.8	-5,426,438.4
Increased Electricity Consumption	1,568,139.31	1,568,139.31	1,724,953.24	1,724,953.24
Net Change in Energy Use	**-5,752,268.89**	**-6,637,690.09**	**-6,569,337.76**	**-7,082,945.06**

Source: California High-Speed Rail Authority, 2017b
HSR = high-speed rail
MMBtu = million British thermal units
VMT = vehicle miles traveled

In addition, the number of airplane flights statewide (intrastate) would decrease with operations of the HSR system when analyzed against the future conditions' baseline because some travelers would choose to use the HSR rather than fly to their destinations. The average full flight cycle fuel consumption rate for aircraft is based on the profile of aircraft currently servicing the San Francisco to Los Angeles airline corridor. The number of air trips removed because of the HSR system was estimated by using the travel demand modeling analysis conducted for the HSR System. Table 3.6-18 shows that the contribution of the HSR Build Alternative would result in a reduction of 5,758,700.6 MMBtu of energy use from airplane travel under the 2040 medium-ridership scenario, and a reduction of 5,426,438.4 MMBtu under the 2040 high-ridership scenario. In the opening year of HSR operations, the net change in energy use would be lower than identified in Table 3.6-18, but would build over time (Please refer to Appendix 3.6-A).

The proposed HSR system would obtain electricity from the statewide grid. The HSR Build Alternative would not involve construction of a separate power source, but rather would include the extension of existing power lines to a series of traction power substations positioned along the HSR corridor. Any potential impacts on electrical production that might result from the proposed HSR system could affect statewide electricity reserves and, to a lesser degree, transmission capacity. In September 2008, the Authority adopted a policy goal of utilizing renewable energy for all traction power. Subsequent planning identified the preferred strategy for realizing this goal—that is, procuring or producing on-site, where feasible, enough renewable energy to feed into the California grid to offset the energy required for traction power (Authority 2008c). An industry survey in April 2013 indicated that there is sufficient renewable energy capacity to meet the system demand (Authority 2014c). Under the 2013 Policy Directive POLI-PLAN-03, the Authority has adopted a goal to purchase 100 percent of the HSR system's power from renewable energy sources (Authority 2016b).

The Authority has designated staff who are working to effectively collaborate with utilities as well as renewable energy developers (who may construct facilities that contribute wind, solar, or other renewable sources to the power grid). The utilities coordination staff have a strong understanding of HSR system electricity demands and of how these demands affect negotiations with utilities and renewable energy developers. Further, developing a strategic renewable energy procurement plan requires extensive collaboration that can be supported through stakeholder engagement, internal and external working groups, and creation and selection of efficient and effective instruments for power procurement. The Authority will continue to gather and synthesize information to develop this plan for the HSR system (Authority 2011b).

As described in PUE-IAMF#1, the HSR Build Alternative design incorporates utilities and design elements that minimize electricity consumption. Design elements to be included in the design-build contract to minimize electricity consumption could include: using regenerative braking, energy-saving equipment on rolling stock and at station facilities, implementing energy-saving measures during construction, and automatic train operations to maximize energy efficiency during operations.

Backup and Emergency Power Supply Sources

During normal HSR system operations, the local utility service would provide via the traction power supply system. Should the flow of power be interrupted, the traction power supply system would automatically switch to a back-up power source, either through use of an emergency standby generator, an uninterruptable power supply, and/or a direct current battery system.

For the HSR Build Alternative, permanent emergency standby generators would be located at passenger stations and at terminal layup/storage and maintenance facilities. These standby generators are required to be tested (typically once a month for a short duration) in accordance with National Fire Protection Agency Standard on Stored Electrical Energy Emergency and Standby Power Systems to ensure their readiness for back-up and emergency use. If needed, portable generators could also be transported to other trackside facilities to reduce the impacts on system operations.

CEQA Conclusion

The HSR Build Alternative would implement PUE-IAMF#1 during operation of the project, which would require the design-build contractor to incorporate utilities and design elements that minimize electricity consumption, and prevent wasteful, inefficient, and unnecessary energy consumption. No expansion of energy production would be required. Further, during operation, the HSR Build Alternative as part of the Phase 1 system would contribute to a net savings in energy expended for transportation, a project benefit. Through adherence with PUE-IAMF#1 the impacts on operational energy demand would be less than significant. Therefore, CEQA does not require any mitigation.

3.6.7 Mitigation Measures

The Authority has identified the following mitigation measure for impacts under NEPA and significant impacts under CEQA that cannot be avoided or minimized adequately by IAMFs.

PUE-MM#1: Water Supply Analysis for Construction

The Authority would prepare an updated water supply analysis for the HSR Build alternative that identifies the detailed water supply needs for the construction of the Burbank to Los Angeles Project Section. While the Burbank to Los Angeles Section includes connections to the water supply infrastructure in the area, the project may not rely entirely on the existing and planned local water supply allocations, particularly in the event of a dry year.

Based on the results of the water supply analysis, the Authority will coordinate with the water agencies to determine if allocations for additional water supply are needed for project construction. In the event that additional water supply is needed from the local groundwater or the State Water Project, the Authority shall pay the water agencies its fair share of the State Water

Project fees (per acre-foot of their allocations), which are used for constructing the State Water Project conservation facilities.

Impacts from Implementing Mitigation Measure PUE-MM#1

Implementation of PUE-MM#1 would not be expected to result in secondary effects, as it relates to the allocation of existing water supplies that would be transported to the project via the infrastructure (existing and planned) that was fully evaluated as the physical impact of the Burbank to Los Angeles Project Section. Therefore, the impact of the mitigation measure would not be significant under CEQA. If, during third-party negotiations and final design, it is determined that new utility infrastructure is needed to convey water supplies to serve project construction, additional environmental analysis would be conducted as necessary.

PUE-MM#2: Water Demand Analysis for LADWP Supplies at LAUS for Operation

The Authority would prepare an updated water demand analysis in coordination with LADWP for the HSR Build Alternative that identifies the detailed water supply needs for the operation of the Burbank to Los Angeles Project Section at LAUS. While the Burbank to Los Angeles Section includes connections to the water supply infrastructure in the area, the project may not rely entirely on the existing and planned local water supply allocations, particularly in the event of a dry year.

Based on the results of the water demand analysis, the Authority will coordinate with LADWP to determine if allocations for additional water supply are needed for project operation at LAUS. In the event that additional water supply is needed from the local groundwater or the State Water Project, the Authority shall pay LADWP its fair share of the State Water Project fees (per acre-foot of their allocations), which are used for constructing and operating the State Water Project conservation facilities.

Impacts from Implementing Mitigation Measure PUE-MM#2

Implementation of PUE-MM#2 would not be expected to result in secondary effects, as it relates to the allocation of existing LADWP water supplies that would be transported to the project at LAUS via the infrastructure (existing and planned) that was fully evaluated as the physical impact of the Burbank to Los Angeles Project Section. Therefore, the impact of the mitigation measure would not be significant under CEQA. If, during third-party negotiations and final design, it is determined that new LADWP utility infrastructure is needed to convey water supplies to serve project construction, additional environmental analysis would be conducted as necessary.

Ultimately, it would be the responsibility of the Authority to ensure that the operational water demand required to serve the HSR Build Alternative at LAUS would not cause impacts to LADWP's existing service commitments.

3.6.7.1 Early Action Projects

As described in Chapter 2, Section 2.5.2.9, early action projects would be completed in collaboration with local and regional agencies. They include grade separations and improvements at regional passenger rail stations. These early action projects are analyzed in further detail to allow the agencies to adopt the findings and mitigation measures needed to construct the projects. No public utilities and energy mitigation measures are applicable to the early action projects.

3.6.8 NEPA Impact Summary

This section summarizes the impacts of the HSR Build Alternative and compares them to the anticipated impacts of the No Project Alternative.

Under NEPA, compared to the No Project Alternative, construction of the HSR Build Alternative would have impacts related to temporary interruption of utility service, accidents and disruption of services, conflicts with existing utilities, effects from upgrade or construction of power lines.. This would occur during the construction of the HSR Build Alternative, as these utilities would be encountered and may need to be relocated if they conflict with the HSR Build Alternative. Under

NEPA, construction of the HSR Build Alternative would have no impacts with regard to effects from water demand, stormwater infrastructure, waste generation, potential conflicts with oil wells, and energy consumption. Construction of the HSR Build Alternative would require energy and water and would create additional stormwater runoff; however, this is supported without significant expansion under the existing local resources.

Under NEPA, operation of the HSR Build Alternative would have potential impacts related to water supply in the city of Los Angeles, because it has not yet been determined if the project-generated increase in operational water demand at LAUS is within the existing and future service capacity of LADWP. Under NEPA, operation of the HSR Build Alternative would have no impacts with regard to reduced access to existing utilities in the HSR right-of-way, wastewater service demand, effects on storm drain facilities, effects on waste generation, effects from hazardous waste generation, and energy demand. The operations of the HSR Build Alternative would require utilities, energy, and other public utility facilities to operate; however, this would be supported without significant expansion under the existing local resources.

3.6.9 CEQA Significance Conclusions

Table 3.6-19 provides a summary of the CEQA determination of significance for all impacts of construction and operation discussed in Section 3.6.6.3, High-Speed Rail Build Alternative.

Table 3.6-19 Summary of CEQA Significance Conclusions and Mitigation Measures for Public Utilities and Energy Resources

Impact	Level of Significance before Mitigation	Mitigation Measure	Level of Significance after Mitigation
Construction			
Impact PU&E #1: Temporary Interruption of Utility Service	Less than Significant	No mitigation measures are required	Not Applicable
Impact PU&E #2: Accidents and Disruption of Services	Less than Significant	No mitigation measures are required	Not Applicable
Impact PU&E #3: Conflicts with Existing Utilities	Less than Significant	No mitigation measures are required	Not Applicable
Impact PU&E #4: Effects from Water Demand during Construction	Potentially Significant	PUE-MM#1	Less than Significant
Impact PU&E #5: Effects on Stormwater Infrastructure during Construction	Less than Significant	No mitigation measures are required	Not Applicable
Impact PU&E #6: Effects from Waste Generation during Construction	Less than Significant	No mitigation measures are required	Not Applicable
Impact PU&E #7: Effects from Upgrade or Construction of Power Lines	Less than Significant	No mitigation measures are required	Not Applicable
Operations			
Impact PU&E #8: Potential Conflicts with Oil Wells	No Impact	No mitigation measures are required	Not Applicable
Impact PU&E #9: Construction Energy Consumption	Less than Significant	No mitigation measures are required	Not Applicable
Impact PU&E #10: Reduced Access to Existing Utilities in the High-Speed Rail Right-of-Way	Less than Significant	No mitigation measures are required	Not Applicable

Impact	Level of Significance before Mitigation	Mitigation Measure	Level of Significance after Mitigation
Impact PU&E #11: Operational Water Demand	Potentially Significant	PUE-MM#2	Significant and Unavoidable
Impact PU&E #12: Operational Wastewater Service Demand	Less than Significant	No mitigation measures are required	Not Applicable
Impact PU&E #13: Effects on Storm Drain Facilities during Operation	Less than Significant	No mitigation measures are required	Not Applicable
Impact PU&E #14: Effects on Waste Generation during Operation	Less than Significant	No mitigation measures are required	Not Applicable
Impact PU&E #15: Effects from Hazardous Waste Generation	Less than Significant	No mitigation measures are required	Not Applicable
Impact PU&E #16: Operational Energy Demand	Less than Significant	No mitigation measures are required	Not Applicable

HSR = high-speed rail

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