3.6 Public Utilities and Energy

3.6.1 Introduction

This section describes the regulatory setting, affected environment, impacts, and mitigation measures for public utilities and energy within the area potentially affected by the Build Alternatives of the California High-Speed Rail (HSR) System. Based on the analysis conducted for this Draft Environmental Impact Report/Environmental Impact Statement (EIS/EIS), impacts on the following utility services were identified: water, wastewater, stormwater, electricity, natural gas, petroleum, communications, and solid waste disposal.

Public Utilities and Energy

It is important to understand where utility conflicts may occur early in project development. This early identification of conflicts may identify opportunities to avoid utility relocations, decrease the public's inconveniences experienced during utility relocations, and decrease project cost.

Palmdale to Burbank Project Section design elements that may be used to avoid or minimize effects to public utilities include elevated alignments that would prevent or reduce conflicts with surface utility lines, construction phasing to minimize or avoid interruptions to utility service, and identification and coordination of direct conflicts with utility lines. Additional features that reduce energy consumption include designing the California HSR System with regenerative braking and implementing energy-saving measures during construction.

The following Draft EIR/EIS resource sections provide additional information related to public utilities and energy:

- Section 3.2, Transportation, evaluates construction work outside the Palmdale to Burbank Project Section's permanent footprint that would require utility relocation, which would temporarily affect traffic.
- Section 3.5, Electromagnetic Interference and Electromagnetic Fields, evaluates pipelines and linear metallic objects that are not sufficiently grounded through direct contact with the earth and would be separately grounded in coordination with the affected owner or utility to avoid possible shock hazards.
- Section 3.8, Hydrology and Water Resources, evaluates infrastructure that would be located outside of floodplains wherever feasible. In many instances, floodplain crossings by proposed utilities, such as electrical lines, would be collocated within existing utility corridors and on existing utility poles, resulting in no new floodplain disturbance in those areas. The Palmdale to Burbank Project Section would also affect stormwater generation and treatment facilities.
- Section 3.11, Safety and Security, evaluates hazards associated with oil and gas fields, oil and gas wells, pipelines, and refineries which may involve the release of hazardous gases, such as methane, carbon dioxide, and hydrogen sulfide. There are no hazardous facilities near the Palmdale to Burbank Project Section that would pose explosion threats.

In addition, the following appendices provide more detailed information:

- Appendix 2-E, Impact Avoidance and Minimization Features (IAMF), lists IAMFs incorporated into the project.
- Appendix 2-H, Regional and Local Policy Consistency Analysis, provides a Regional and Local Policy Consistency Table, which lists the utilities and public energy goals and policies applicable to the Palmdale to Burbank Project Section and notes the Build Alternatives' consistency or inconsistency with each.
- Appendix 3.1-B, United States Forest Service (USFS) Policy Consistency Analysis, assesses the consistency of the Palmdale to Burbank Project Section with applicable laws, regulations, plans, and policies governing proposed uses and activities within the Angeles National Forest (ANF) and the San Gabriel Mountains National Monument (SGMNM).

- Appendix 3.6-A, High Risk and Major Utility Impact Report, evaluates high risk and major utilities that would intersect with the Palmdale to Burbank Project Section alignment.
- Appendix 3.6-B, Statewide Air Quality and Energy Emissions *Transmittal Memo and Statewide Summary*, discusses statewide energy consumption for on-road vehicles, aircraft, and electrical energy that would change with California HSR System operation.

3.6.2 Laws, Regulations, and Orders

3.6.2.1 Federal

Procedures for Considering Environmental Impacts (64 Federal Register 28545)

These Federal Railroad Administration (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 12185.

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

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

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

This act, established for the United States Department of Transportation's Pipeline and Hazardous Materials Safety Administration, 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 participation 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 hazards that may affect a pipeline. In California, the Office of the State Fire Marshal administers pipeline safety.

Federal Energy Regulatory Commission

The Federal Energy Regulatory Commission is an independent agency that regulates the interstate transmission of natural gas, oil, and electricity. The commission also regulates natural gas and hydropower projects. As part of that responsibility, the commission 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. The Federal Energy Regulatory Commission 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 standards are federal regulations aimed at reducing energy consumed by on-road motor vehicles. The National Highway Traffic Safety Administration regulates the standards, and the United States 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 for passenger cars and 26.6 miles per gallon for light-duty trucks.

On May 19, 2009, President Obama issued a Presidential Memorandum proposing a new national fuel economy program that adopted uniform federal standards to regulate both fuel economy and greenhouse gas (GHG) emissions for model years 2012 through 2016. In January

2012, the California Air Resources Board (CARB) approved a vehicle emissions control program for model years 2017 through 2025; this is called the Advanced Clean Cars Program. On August 28, 2012, the USEPA and the National Highway Traffic Safety Administration issued a joint final rule to establish 2017 through 2025 GHG emissions and Corporate Average Fuel Economy standards. To further California's support of the national program to regulate emissions, CARB submitted a proposal that would allow automobile manufacturer compliance with the 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 March 31, 2020, the USEPA and the National Highway Traffic Safety Administration issued the final Safer Affordable Fuel-Efficient Vehicles Rule for Model Years 2021–2026 Passenger Cars and Light Trucks. The Safer Affordable Fuel-Efficient Vehicles Rule amended certain existing Corporate Average Fuel Economy standards and tailpipe carbon dioxide emissions standards for passenger cars and light trucks and established new standards, all covering model years 2021 through 2026. More specifically, the National Highway Traffic Safety Administration proposed new Corporate Average Fuel Economy standards for model years 2022 through 2026 and is amending its 2021 model year Corporate Average Fuel Economy standards. The USEPA proposed amending 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. The final Safer Affordable Fuel-Efficient Vehicles Rule, issued March 31, 2020, by National Highway Traffic Safety Administration and USEPA, sets fuel economy and carbon dioxide standards that increase 1.5 percent in stringency each year from model years 2021 through 2026. These standards apply to both passenger cars and light trucks.

Resource Conservation and Recovery Act (42 U.S.C. 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 Resource Conservation and Recovery 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 non-hazardous solid waste disposal. The USEPA retains oversight of State actions under Title 40 of the Code of Federal Regulations (C.F.R.) Parts 239–259. Where facilities are found to be inadequate, 40 C.F.R. 256.42 requires the development of necessary facilities and practices 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.

United States Forest Service Authorities

The installation and use of public utilities and energy facilities within the ANF, including the SGMNM, is guided by several federal laws and their implementing regulations, as well as policies, plans, and orders. The primary laws governing installation and use of public utilities and energy facilities are the Federal Land Policy and Management Act, the National Forest Management Act, and the Antiquities Act of 1906. Appendix 3.1-B, USFS Policy Consistency Analysis, provides an analysis of the consistency of the six Build Alternatives with these laws, regulations, policies, plans, and orders.

3.6.2.2 State

Waste Management for State Agencies (Assembly Bill 75)

This California state law, adopted in 1999, requires each state agency and each large state facility, as defined, to divert at least 50 percent of the waste it generates. Agencies must also designate at least one solid waste reduction and recycling coordinator to oversee the implementation of waste management plans and recycling/reuse programs and submit an annual report, for the prior calendar year, including disposal amounts and explanation of diversion activities. Reports are due by May 1 of each year. The business services manager at the California High-Speed Rail Authority (Authority) is the designated coordinator.

Public Utilities Code Section 1001–1013 and 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 those 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 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 the 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 that are 200 kV and above. Both the permit to construct and the certificate of public convenience and necessity are discretionary decisions by the CPUC, subject to the California Environmental Quality Act (CEQA).

California Public Utilities Commission General Order 95

CPUC General Order 95, 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.

California Public Utilities Commission General Order 176

The Rules for Overhead 25 kV Railroad Electrification Systems for a high-speed rail system became effective on March 26, 2015. The rules establish uniform safety requirements governing the design, construction, operation, and maintenance of 25-kV alternating current railroad electrification overhead contact systems. The CPUC General Order would apply to the HSR system.

General Order 176 applies to 25-kV alternating current electrification systems constructed in California and serving an HSR passenger system capable of operating at speeds of 150 miles per hour or higher, located in dedicated rights-of-way with no public highway-rail at grade crossings and in which freight operations do not occur. General Order 176 promotes the safety and security of the general public and of persons engaged in the construction, maintenance, and operation of a 25-kV electrified HSR system.

The base standards for design, construction, installation, operation, and maintenance established by General Order 176 require coordination and cooperation of the Authority (the entity that owns the HSR system) and other facility owners (e.g., Pacific Gas and Electric Company) so that the facilities of both parties are not prevented from performing as required or intended. General Order 176 does not prevent the Authority from entering into agreements with other facility owners that establish stricter standards than or additional requirements to those specified in these rules.

Designation of Transmission Corridor Zones (California Code of Regulations, Title 20, Sections 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 [SB] 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 its 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 (SB 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 [AB] 939)

In response to the Resource Conservation and Recovery Act, the California Integrated Waste Management Act of 1989 was enacted via Assembly Bill (AB) 939. The act requires cities and counties to prepare an integrated waste management plan, including a countywide siting element, for each jurisdiction. Per Public Resources Code Section 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 the Department of Resources Recycling (part of 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 (SB 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 to reduce sprawling land use patterns and dependence on private vehicles, thereby reducing vehicle miles traveled (VMT) and GHG associated with VMT. SB 375 is one of the major tools used to meet the goals in the Global Warming Solutions Act (AB 32). Under SB 375, CARB sets GHG emissions reduction targets for 2020 and 2035 for the metropolitan planning organizations in the State. Each metropolitan planning organization must then prepare a sustainable communities strategy to meet the GHG emission reduction targets established by CARB. Once adopted, each sustainable communities strategy will be incorporated into that region's regional transportation plan.

Local Government Construction and Demolition Guide (SB 1374)

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

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

This code requires that an excavator must contact a regional notification center (e.g., Underground Service Alert) at least 2 days before excavation of subsurface installations. The notification center 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 before using power equipment.

Pavley Rule (AB 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, while also improving fuel efficiency and reducing costs to motorists. In January 2012, CARB approved a vehicle emissions control program for model years 2017 through 2025. CARB's new approach combines the control of smog-causing pollutants and GHG emissions into a single coordinated package of standards and includes efforts to increase the numbers of plug-in hybrids and zero-emissions vehicles in California.

Water Conservation Act of 2009 (SB 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.

Clean Energy and Pollution Reduction Act (SB 350)

In October 2015, the Clean Energy and Pollution Reduction Act (SB 350) was signed into law, establishing new clean energy, clean air, and GHG emissions reduction goals for 2030 and beyond. SB 350 is considered the most significant climate and clean energy legislation since the passage of the California Global Warming Solutions Act (AB 32) that set the statewide goal of reducing GHG emissions to 1990 levels by 2020. Building off of AB 32, SB 350 established California's 2030 GHG emissions reduction target of 40 percent below 1990 levels. To achieve this goal, SB 350 sets ambitious 2030 targets for energy efficiency and renewable electricity, among other actions aimed at reducing GHG emissions. SB 350 will greatly enhance the State's ability to meet its long-term climate goal of reducing GHG emissions to 80 percent below 1990 levels by 2050.

Sustainable Groundwater Management Act

In September 2014, Governor Edmund G. Brown enacted the Sustainable Groundwater Management Act, which empowers local agencies to adopt groundwater management plans that are tailored to the resources and needs of its communities. The intent of good groundwater management is to provide a buffer against drought and climate change, and to contribute to reliable water supplies regardless of weather patterns. California depends on groundwater for a major portion of its annual water supply, and sustainable groundwater management is essential to a reliable and resilient water system.

California Regional Water Quality Management Plans

Division Seven (Water Quality) of the State Water Code establishes the responsibilities and authorities of the nine Regional Water Quality Control Boards (RWQCB) and the State Water Resources Control Board (SWRCB). The Porter-Cologne Act names these boards "… the principal State agencies with primary responsibility for the coordination and control of water quality" (Section 13001). Each regional board is directed to "… formulate and adopt water quality control plans for all areas within the region." The regional boards implement the basin plans by issuing and enforcing waste discharge requirements (WDR) to individuals, communities, or businesses whose waste discharges can affect water quality. These requirements can be either State WDRs for discharges to land, or federally delegated National Pollutant Discharge Elimination System (NPDES) permits for discharges to surface water. Methods of treatment are not specified. When such discharges occur, they are managed so that (1) they meet these requirements; (2) water quality objectives are met; and (3) beneficial uses are protected, and water quality is controlled.

Urban Water Management Planning Act (California Water Code, Sections 10610–10656)

In 1983, the California Legislature enacted the Urban Water Management Planning Act. This law requires every urban water supplier that provides water to 3,000 or more customers, or that provides more than 3,000 acre-feet of water annually, to ensure the appropriate level of reliability to meet the needs of its customers during normal and dry years and multiple dry years. The act describes the contents of the required Urban Water Management Plans (UWMP), and how urban water suppliers should adopt and implement the plans. Plan updates are required every five years, and those updates maintain the local water authority's eligibility for state grants. The Urban Water Management Planning Act requires the California Department of Water Resources to submit a report to the legislature summarizing the status of submitted urban water management plans.

Executive Order B-30-15

In April 2015, Governor Brown issued an executive order to establish a California GHG reduction target of 40 percent below 1990 levels by 2030. The new emission reduction target is thought to make it possible to reach the ultimate goal of reducing emissions 80 percent under 1990 levels by 2050. The order also specifically addresses climate adaptation by directing the state government to factor climate change into the state agencies' planning and investment decisions and implement measures under existing agency and departmental authority to reduce GHG emissions.

Executive Order B-32-15

In July 2015, Governor Brown issued Executive Order B-32-15 to reduce California's GHG emissions to 40 percent below 1990 levels by 2030. To that end, it mandates state agencies to develop an integrated action plan that establishes clear targets to improve freight efficiency, transition to zero-emission technologies, and increase competitiveness of California's freight system. The order also required that the action plan identifies state policies, programs, and investments to achieve these targets, and that the plan be informed by existing state agency strategies and a broad stakeholder input.

100 Percent Clean Energy Act (SB 100)

The 100 Percent Clean Energy Act of 2018 established a state policy 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.

3.6.2.3 Regional and Local

The Build Alternatives would pass through several local government jurisdictions in Los Angeles County, including the cities of Palmdale, Santa Clarita, Los Angeles, and Burbank. It would also pass through extensive unincorporated areas, including the communities of Acton and Agua Dulce, and the ANF including SGMNM. Table 3.6-1 lists the regional and local plans identified and considered in preparation of this analysis.

Los Angeles Clean Cities Coalition

The Los Angeles Clean Cities Coalition was established in the city of Los Angeles in 1996 as part of the United States Department of Energy Clean Cities Program. The Clean Cities Program was established to advance the nation's economic, environmental, and energy security by supporting local actions to reduce petroleum use in transportation. The Los Angeles Clean Cities Coalition works with vehicle fleets, fuel providers, community leaders, and other stakeholders to save energy and promote the use of domestic fuels and advanced vehicle technologies in transportation.

County and Municipal General Plans and Community Plans

Regional and local jurisdictions in the Palmdale to Burbank Project Section have adopted plans, goals, policies, and ordinances related to public utilities and energy. Most of these goals and policies are outlined within the County's and cities' general and community plans. The general plans for Palmdale (City of Palmdale 1993), Los Angeles County (Los Angeles County Department of Regional Planning 2015), and Burbank (City of Burbank 1997) contain goals and policies associated with the development and operation of public utilities infrastructure. Additionally, these local jurisdictions have local waste management plans and UWMPs intended to fulfill state regulations. Table 3.6-1 lists and describes the local plans and policies relevant to utilities and energy.

Table 3.6-1 Regional and Local Plans

Plan	Applicable Subsections	Summary
Regional Sustainable Communities Strategy		
Southern California Association of Governments 2016–2040 Regional Transportation Plan/Sustainable Communities Strategy	Central Subsection, Burbank Subsection (all six Build Alternatives)	This plan applies to large portions of Southern California, and focuses on the movement of people, goods, and information. The purpose of the plan is to enhance economic growth and productivity, while also improving the quality of life for citizens within every economic sector. The RTP/SCS goals that apply to public utilities include actively encouraging incentives for improved energy efficiency, ensuring coordination between Palmdale to Burbank Project Section implementation agencies and utility providers to guarantee that demand for services can be met with new development, and encouraging green building measures to reduce materials waste and improve building operation efficiency.
County/Municipal General and Community Plans		
City of Palmdale		
City of Palmdale General Plan – Public Facilities and Open Space Elements – Policies PS1.5, PS1.6, PS2.1, PS2.2, PS3, and PS6	Central Subsection (all six Build Alternatives)	The Public Services Element of the *Palmdale General Plan* is intended to ensure the availability of public services and infrastructure to permit orderly growth and promote public health, safety, and welfare. This element provides an area-wide assessment of public services and facilities to promote a broader understanding of service issues and implements a range of policies. Specifically, policies PS1.5, PS1.6, PS2.1, PS2.2, PS3, and PS6 aim to manage existing and planned utilities within Palmdale. These policies provide for regional infrastructure improvements, minimize the impacts of development within Palmdale on adjacent jurisdictions, provide unified support for mutually beneficial improvements requiring outside approvals and/or funding, and ensure that adequate utilities are provided to serve development in Palmdale in an efficient and aesthetic manner.
City of Palmdale Energy Action Plan	Central Subsection (all six Build Alternatives)	The *Energy Action Plan* demonstrates the City of Palmdale's commitment to achieving energy efficiency and independence by reducing greenhouse gas emissions, consistent with state legislation, through the goals, measures, and actions identified in this plan. Goals 4 and 5 of the plan involve the reduction of transportation emissions through alternative vehicles, trip reduction and consolidation, efficient flow, and the creation of integrated land use patterns that promote the use of alternative transportation.

Plan	Applicable Subsections	Summary
City of Santa Clarita[1]		
City of Santa Clarita General Plan – Conservation and Open Space Element – Policies CO1.1, CO1.2, CO1.3, CO4, CO8 through CO8.4.8.[1]	Central Subsection Refined SR14 and SR14A Build Alternatives (not applicable to the E1, E1A, E2, and E2A Build Alternatives)	The *Santa Clarita General Plan* planning area includes communities both within the city limits and in the surrounding unincorporated areas, including the sub-communities of Sand Canyon and Placerita Canyon. The Conservation and Open Space Element describes the City's approach to implementing and managing sustainable utilities, as well as enforcing energy efficiency during buildout and development of the General Plan. Policy CO1.2.1 requires the consideration of impacts on renewable resources when planning for new regional infrastructure projects. Policies 4.3.1 through 4.3.7 limit disruption of natural hydrology by reducing impervious cover, increasing on-site infiltration, and managing stormwater runoff at the source.
City of Burbank		
City of Burbank General Plan 2035 – Policies LU-8, S-1, S-2, S-3, S-7, OS-9.1 through 9.5	Burbank Subsection (all six Build Alternatives)	The *Burbank 2035 General Plan* outlines the available supply sources and infrastructural needs of the City and outlines the basic strategies through which each utility is provided and maintained. Program LU-8 offsets increasing development demands on city facilities and services with development impact fees. Program S-2 requires the City to review critical facilities (power and water utilities) proposed for development or expansion to ensure that hazardous conditions are mitigated, or hazard reduction features are incorporated to the satisfaction of the responsible agencies. Policies OS-9 through OS-9.4 establish a 20 percent reduction goal in municipal water use by 2020 by promoting recycled water infrastructure and establishing incentives for new development to include design features that conserve water.
City of Burbank Sustainability Action Plan – Renewable Energy Actions 1.1 through 1.5, Energy Efficiency Actions 2.1 through 2.8, Waste Reduction Actions 4.1 through 6.3, Water and Wastewater Efficiency Actions 19.1 through 21.3	Burbank Subsection (all six Build Alternatives)	The *Sustainability Action Plan* is intended to organize and structure the City of Burbank's efforts to address urban sustainability. The plan focuses on the following seven urban themes to encourage healthy economies and to promote social equity: energy, waste reduction, urban design, urban nature, transportation, environmental health, and water. Renewable Energy Actions 1.1 through 1.5 and Energy Efficiency Actions 2.1 through 2.8 promote the City's renewable energy policy by implementing measures supporting the promotion of renewable energies and the implementation of energy efficiency programs and devices. Waste Reduction Actions 4.1 through 6.3 promote waste reduction through implementation of a zero-waste policy, through regulation of disposable and non-renewable products, and by targeting consumer waste. Water and Wastewater Efficiency Actions 19.1 through 21.3 develop water conservation programs, support recycled water efforts, and continue offering rebates encouraging water-conserving fixtures.

Plan	Applicable Subsections	Summary
Los Angeles County		
Los Angeles County General Plan 2035 – Public Services and Facilities Element	Central Subsection (all six Build Alternatives)	The *Los Angeles County General Plan 2035* Public Services and Facilities Element is intended to promote the orderly and efficient planning of public facilities and infrastructure in conjunction with land use development and growth. The Public Services and Facilities Element focuses on services and facilities that are usually affected the most by growth and development (e.g., drinking water, sanitary sewers, solid waste, utilities, early care and education, and libraries). Policies PS/F 1 through 6 outline the specific infrastructural and operational guidelines for utilities within Los Angeles County. Policies PS/F 1.1 through 1.7, 2.1, 4.4, 6.1, 6.4 through 6.8, and 6.10 outline the specific infrastructural and operational guidelines for utilities within Los Angeles County that are relevant for the California HSR System. Policies 1.1 through 1.7 ensure that sufficient infrastructure is available and maintained, consistent with the development vision of the General Plan, through coordination with the County and service providers. Policy 2.1 requires support of water conservation measures, and Policy 4.4 requires evaluation of stormwater runoff treatment through wastewater management systems. Policies 6.1, 6.4 through 6.8, and 6.10 pertain to utility infrastructure and require the provision of utilities in an efficient, low-impact manner to meet current and future needs, including the use of renewable energy. This element works in conjunction with the Los Angeles County Department of Public Works Strategic Plan. The strategic plan outlines service delivery goals for sanitary sewer, water supply, flood protection, water quality, and garbage disposal.
City of Los Angeles		
City of Los Angeles General Plan – Conservation Element and Safety Element	Burbank Subsection (all six Build Alternatives)	The City of Los Angeles General Plan Conservation Element Policy 1, and corresponding programs one through three, outline the management of fossil fuels, including programs promoting energy conservation and petroleum products recycling. The Safety Element describes flood control and storm drainage systems that feature debris basins; flood control basins; concrete flood control channels; streets; gutters and catch basins; spreading rounds; and associated bridges, reservoirs, and water storage facilities.

Sources: City of Palmdale, 1993; City of Palmdale, 2011; City of Santa Clarita, 2011; City of Santa Clarita, 2016; City of Burbank, 2013; City of Burbank, 2008; City of Los Angeles, 2001; Los Angeles County, 2015; SCAG, 2016
[1] Included herein because the HSR Central Subsection's Refined SR14 and SR14A Build Alternatives would run through the planning area covered by the *Santa Clarita General Plan*.
RTP/SCS = Regional Transportation Plan/Sustainable Communities Strategy

Urban Water and Sewer Management Plans

Under California Water Code Section 10610 (et seq.), agencies with public water systems supplying water to more than 3,000 customers or supplying more than 3,000 acre-feet of water annually must prepare UWMPs, and renew them every 5 years. Table 3.6-2 lists and summarizes the UWMPs for the local jurisdictions within the Palmdale to Burbank Project Section.

In addition to the UWMPs listed below, the HSR Build Alternatives would be constructed through smaller jurisdictions and unincorporated areas that are not subject to the UWMP requirement. These areas are serviced by public and independent utility providers, which are described in Section 3.6.5.1.

Table 3.6-2 Urban Water and Sewer Management Plans and Regional Water Management Documents

Jurisdiction/ Plan	Applicable Subsections	Description
Urban Water Management Plans		
Antelope Valley-East Kern Water Agency UWMP	Central Subsection (all six Build Alternatives)	The Antelope Valley-East Kern Water Agency UWMP provides a breakdown of the supply and demand within the agency's jurisdiction and delineates how the agency manages and compensates for its jurisdictional water needs.
City of Palmdale UWMP	Central Subsection (all six Build Alternatives)	The City of Palmdale's UWMP establishes goals and policies that aim to reduce the wasteful consumption of water and utilize available water resources conservatively and efficiently. The plan also evaluates existing and future water supply and demand to accurately assess the city's available and potential water resources.
Santa Clarita UWMP	Central Subsection Refined SR14 and SR14A Build Alternatives (not applicable to the E1, E1A, E2, and E2A Build Alternatives)	The Santa Clarita UWMP outlines the Santa Clarita Valley's existing water availability and demands and outlines the long-term (2050) water needs of the valley, and the strategies to meet the valley's future water demand.
City of Los Angeles UWMP	Burbank Subsection (all six Build Alternatives)	The City of Los Angeles' UWMP serves as the city's guide for reliable water supply and water resource management through 2040. The UWMP incorporates recommendations from prior planning initiatives, including the Groundwater System Improvements Study and the Stormwater Capture Master Plan, to ensure the most efficient sourcing and use of water resources for the City of Los Angeles.
City of Burbank UWMP	Burbank Subsection (all six Build Alternatives)	The Burbank UWMP describes how the agency intends to manage the existing and projected water supply and demand. The plan also includes goals and policies to manage the sustainable use of Burbank's water supply, and to guarantee the most efficient use and reuse of available water resources.
Additional Regional Water Management Documents		
Santa Clarita Valley Water Use Efficiency Plan	Central Subsection Refined SR14 and SR14A Build Alternatives (not applicable to the E1, E1A, E2, and E2A Build Alternatives)	The Santa Clarita Valley Water Use Efficiency Plan describes objectives pertaining to the feasible use of the Santa Clarita Valley's existing and planned water resources. The objectives include updating and further examining the water savings committed by the Castaic Lake Water Agency, developing a long-term plan to meet the gallons per capita-per-day target by 2020, and maximizing opportunities to meet future water demands.
Sewer Management Plans		
City of Palmdale – Sewer Management Plan	Central Subsection (all six Build Alternatives)	The City of Palmdale *Sewer System Management Plan* describes a plan and schedules to properly manage, operate, and maintain all parts of the sanitary sewer system. This plan also sets a goal to help reduce and prevent sanitary sewer overflows and mitigate overflow events that do occur.

Jurisdiction/ Plan	Applicable Subsections	Description
Los Angeles County Sewer Maintenance Districts – Sewer System Management Plan	Central Subsection (all six Build Alternatives)	The Sewer Maintenance Districts of Los Angeles County's *Sewer System Management Plan* describes actions and goals to minimize the occurrence of sanitary system overflows throughout the districts. Goals and actions include ensuring that sanitary facilities are properly operated, maintained, and managed to reduce frequency and severity of sanitary sewer overflows and associated impacts on public health, safety, and the environment.
City of Burbank – Sewer System Management Plan	Burbank Subsection (all six Build Alternatives)	The City of Burbank *Sewer System Management Plan* describes goals pertaining to the City's management, operation, and maintenance of its wastewater collection system. The goals include providing adequate capacity to convey peak sewer flows, minimizing the frequency of sanitary sewer overflows, and minimizing the impacts of sanitary sewer overflows on human health and the environment.
City of Los Angeles – Sewer Management Plan	Burbank Subsection (all six Build Alternatives)	The City of Los Angeles *Sewer System Management Plan* describes goals and plans to properly manage, operate, and maintain all parts of the sanitary sewer system. The goals include repairing, rehabilitating, replacing, and upgrading system components as needed; eliminating dry- and wet-weather overflows; and maintaining an effective sanitary sewer overflow response plan to mitigate, in a timely manner, sanitary sewer overflows that do occur.
Recycled Water Plans		
Palmdale Recycled Water Authority – Recycled Water Facilities Master Plan	Central Subsection (all six Build Alternatives)	The PRWA *Recycled Water Facilities Plan* includes plans for the construction and operation of recycled water distribution pipelines and one new pump station at the Palmdale water reclamation plant. The closest existing and proposed recycled water pipelines under the PRWA's jurisdiction are located near Avenue R and 20th Street E.
Los Angeles County – Final Facilities Planning Report, Antelope Valley Recycled Water Project	Central Subsection (all six Build Alternatives)	In 2008, the Los Angeles County Waterworks District 40 prepared the *Antelope Valley Facilities Planning Report* to apply for financial assistance from the State Water Resources Control Board's Proposition 50 Recycled Water Construction Grants program. The report includes four phases for the development and construction of a recycled water system in the Lancaster and Palmdale areas. Phases 2 and 4 of the recycled water infrastructure are along Avenue R and Sierra Highway, and would follow the same alignment of the Palmdale to Burbank Project Section to Avenue R. At the time of this environmental document, confirmation on which phases of the program were completed could not be obtained from the district.

Jurisdiction/ Plan	Applicable Subsections	Description
Metropolitan Water District of Southern California – Potential Regional Recycled Water Program Feasibility Study	All subsections (all six Build Alternatives)	The Metropolitan Water District of Southern California has evaluated the feasibility of a potential Regional Recycled Water Program to produce up to 150 million gallons per day of purified water in partnership with the Los Angeles County Sanitation Districts. The feasibility study found that the program is technically feasible–from the advanced water treatment process to the conveyance system to the necessary recharge facilities. The feasibility study recommends next steps, such as the construction of the demonstration plant, continued facility planning, public outreach, and development of agreements with the Los Angeles County Sanitation Districts and other entities. Completion of these next steps would enable the Metropolitan Water District's board to make an appropriate investment decision at a future date with more comprehensive information at that time.

Sources: AVEK, 2016; City of Burbank, 2015; City of Los Angeles, 2015b; City of Palmdale, 2010; City of Santa Clarita, 2015; City of Palmdale, 2009; City of Burbank, 2009; City of Los Angeles, 2015c; LADPW, 2013; Palmdale Recycled Water Authority, 2015; Los Angeles County Waterworks District 40, 2006; Metropolitan Water District of Southern California, 2016
PRWA = Palmdale Recycled Water Authority
UWMP = Urban Water Management Plan

Integrated Waste Management Plans

Los Angeles County is the only jurisdiction within the Palmdale to Burbank Project Section to have developed and implemented an integrated waste management plan. Table 3.6-3 lists and summarizes this plan. The plan only applies to unincorporated areas within Los Angeles County.

Table 3.6-3 Integrated Waste Management Plans

Plan	Applicable Subsections	Summary
Los Angeles County Integrated Waste Management Plan Update	Central Subsection (all six Build Alternatives)	Approved in 1999, the *Integrated Waste Management Plan* delineates the approach for solid waste management through recycling, reduction, composting, and safe disposal of waste. The plan is updated annually to reassess the landfill needs and capacity of the county and its subsidiaries. The most recent update (2017) summarizes the County's regional solid waste issues and efforts to manage and reduce solid waste through legislation, recycling, alternative technology, public education, and diversion facilities. Efforts include on-site re-use strategies, such as salvaging construction and demolition waste for road construction, erosion control, and other uses.

Source: Los Angeles County Department of Public Works, 2019

3.6.3 Consistency with Plans and Laws

As indicated in Section 3.1.4.3, Consistency with Plans and Laws, CEQA and Council on Environmental Quality regulations require a discussion of inconsistencies or conflicts between a proposed undertaking and federal, state, regional, or local plans and laws. As such, this Draft EIR/EIS evaluates inconsistencies between the six Build Alternatives and federal, state, regional, and local plans and laws to provide planning context.

The Authority, as the lead state and federal agency proposing to construct and operate the California 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 on the selected Build Alternative. Therefore, there would be no inconsistencies between the six Build Alternatives 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. For example, the proposed Build Alternatives would incorporate IAMFs that require the contractor to prepare a plan to demonstrate how construction utility impacts will be maintained to avoid significant interruptions in conveyance.

The goals and policies listed in Table 3.6-1, Table 3.6-2, and Table 3.6-3, and analyzed for consistency in Appendix 2-H, relate to reducing demands for natural resources, ensuring that public infrastructure is developed so that sufficient utilities are provided for the regional growth anticipated, and conserving energy. Appendix 2-H provides a Regional and Local Policy Consistency Table that lists the goals and policies applicable to the public utilities and energy resources within the Palmdale to Burbank Project Section Resource Study Area (RSA) and notes the Build Alternatives' consistency or inconsistency with each. The Authority reviewed seven plans. Each of the six Build Alternatives are consistent with the majority of policies reviewed, are potentially inconsistent with two policies, and are inconsistent with one policy. That policy is Policy 9.1 (meet the goal of a 20 percent reduction in municipal water use by 2020) included in the Burbank 2035 General Plan (2013).

Despite the inconsistency listed above, the project is consistent with the majority of regional and local policies and plans. Although it may not be possible to meet all utility goals and policies as outlined in Table 3.6-1, Table 3.6-2, and Table 3.6-3, IAMFs and mitigation measures will generally minimize utilities impacts and would ultimately meet the overall objectives of the local policies.

3.6.4 Methods for Evaluating Impacts

The evaluation of impacts on public utilities and energy is a requirement of NEPA and CEQA. The following sections summarize the RSAs, and the methods used to analyze public utilities and energy. Improvements in the Palmdale Subsection and Maintenance Facility area are included in this section for context; however, the effects of these facilities are evaluated in the Bakersfield to Palmdale Project Section EIR/EIS.

3.6.4.1 Definition of the Resource Study Areas

As defined in Section 3.1, Introduction, RSAs are the geographic boundaries in which the environmental investigations specific to each resource topic were conducted. This analysis considers two RSAs in the analysis of public utility and energy resources:

- Direct conflicts RSA: The Build Alternatives' footprint on or across public utilities and energy infrastructure. This also includes surface, subsurface, and overhead utilities, and aquifers underlying the project footprint.
- Expanded utility RSA: The area beyond the project footprint, where indirect impacts on public utilities associated with the Build Alternatives would occur (e.g., utility relocations or use of non-HSR resources and facilities necessary for construction and operation, and electrical interconnections with local utilities).

Section 3.6.5 provides detailed maps of the direct conflicts RSA, by utility type (Figure 3.6-1 through Figure 3.6-4 for natural gas lines; Figure 3.6-5 for petroleum and fuel pipelines; Figure 3.6-6 through Figure 3.6-9 for communications infrastructure; Figure 3.6-10 through Figure 3.6-13 for water pipelines; Figure 3.6-14 through Figure 3.6-17 for wastewater infrastructure; Figure 3.6-18 through Figure 3.6-21 for stormwater infrastructure; and Figure 3.6-22 through Figure 3.6-25 for electrical facilities). The expanded utility RSA is used to understand the existing capacity and reserves of utility resources and energy reserves that would support the Build

Alternatives and includes the larger utility providers' service areas. Section 3.6.5 also details the utility providers that serve the expanded utility RSA.

For the analysis of direct and indirect impacts on public utilities, the direct conflicts RSA includes areas within the cities of Lancaster, Palmdale, Santa Clarita, Los Angeles, and Burbank, and unincorporated areas of Los Angeles County. The expanded utility RSA is studied to determine the impacts on electricity generation and transmission; it includes the entire State, because the California HSR System would draw power from the statewide grid.

For public utilities, direct and indirect impacts are defined as listed below:

- Direct impacts consist of the entire project footprint on or across public utilities and energy infrastructure:
  - Includes surface, subsurface, and overhead utilities, and aquifers underlying the construction footprint
  - If necessary, a broader footprint or a range of footprint options may be considered to ensure all impacts are accounted for
- Indirect (secondary) impacts include areas that would extend beyond the project footprint, such as impacts of utility relocations or use of non-HSR resources and facilities necessary for project construction and operations, and electrical interconnections with local utilities.

3.6.4.2 Impact Avoidance and Minimization Features

IAMFs are project features the Authority has incorporated into the project and are included as applicable in each of the six Build Alternatives for purposes of the environmental impact analysis. The full text of the IAMFs that are applicable to the project is provided in Volume 2, Appendix 2-E, Project Impact Avoidance and Minimization Features.

The following IAMFs were incorporated into the public utilities and energy analysis:

- **PUE-IAMF#1**: Design Measures—This IAMF describes the Authority's commitment to energy-efficient and green design. All contractors will be required to incorporate the following energy- and GHG-saving measures: reduce energy use on construction sites, increase energy and fuel efficiency through energy-efficient on- and off-road equipment, and consider cost-effective renewable energy.
- **PUE-IAMF#2**: Irrigation Facility Relocation—This IAMF describes the Authority's commitment to ensuring consistent irrigation facility operations throughout construction. Where relocating an irrigation facility is necessary, the contractor will verify the new facility is operational prior to disconnecting the original facility, where feasible.
- **PUE-IAMF#3**: Public Notifications—This IAMF describes the Authority's commitment to keep the public informed of potential utility service interruptions during construction. Prior to construction in areas where utility service interruptions are unavoidable, the contractor will notify the public through a combination of communication media (e.g., by phone, email, mail, newspaper notices, or other means) within that jurisdiction and the affected service providers of the planned outage.
- **PUE-IAMF#4**: Utilities and Energy—This IAMF describes the Authority's commitment to minimize or avoid utility service interruptions during construction. Prior to construction, the contractor shall prepare a technical memorandum documenting how construction activities would be coordinated with service providers to minimize or avoid interruptions. It will include upgrades of existing power lines to connect the HSR system to existing utility substations. The technical memorandum shall be provided to the Authority for review and approval.

Other resource IAMFs applicable to impacts on public utilities and energy include:

- **HYD-IAMF#1**: Stormwater Management

- **HYD-IAMF#3**: Prepare and Implement a Construction Stormwater Pollution Prevention Plan (SWPPP)
- **HMW-IAMF#7**: Transport of Materials

This environmental impact analysis considers these IAMFs as part of the project design. Within Section 3.6.6, Environmental Consequences, each impact narrative describes how these project features are applicable and effective at avoiding or minimizing potential impacts.

3.6.4.3 Methods for NEPA and CEQA Impact Analysis

Overview of Impact Analysis

This section describes the sources and methods the Authority used to analyze potential project impacts of each of the six Build Alternatives on public utilities and energy. These methods apply to both NEPA and CEQA analyses unless otherwise indicated. Refer to Section 3.1.4.4, Methods for Evaluating Impacts, for a description of the general framework for evaluating impacts under NEPA and CEQA.

Construction information and calculations are included for each year of Build Alternative construction, which was assumed to occur from 2020 to 2029 when the analysis was conducted. While the year 2020 has passed, the construction years listed remain the same for purposes of this environmental analysis because the scope and scale of impacts on public utilities and energy are based on the number of construction years and construction activities, which would remain the same in an updated construction timeline.

Definition of Public Utilities

Public utilities include utility infrastructure that are operated and maintained for public service. These utilities can be either publicly or privately owned and involve natural monopolies in sectors specially regulated by the CPUC.

Minor utilities are defined as subsurface, aboveground, or overhead facilities used as distribution lines or service laterals to individual parcels or properties.

Major utilities are defined as "any subsurface, aboveground, or overhead facility used for *transmission* regardless of size, shape or method of conveyance" (Authority 2008a). These would include:

- Overhead and subsurface power transmission lines, 50 kV or greater
- Fiber optic/telecommunications transmission lines
- Sanitary sewer trunk lines, 12-inch diameter or greater

The Authority's definitions of high- and low-risk utilities were used in this impact analysis based on the Authority Technical Memorandum 2.7.4: *Designer's Responsibilities and Utility Requirements for 15% Design Level* (Authority 2008a). Section 3.6.5 provides a detailed discussion of existing utilities within the RSAs.

Facilities conducting or carrying the following materials, whether encased or not, are considered high-risk utilities:

- Petroleum products
- Oxygen
- Chlorine
- Toxic or flammable gases or liquid
- Natural gas pipelines of any size
- Underground electric supply lines, conductors or cables that have a potential to ground of more than 300 volts, either directly buried or in duct or conduit, which do not have concentric grounded or other effectively grounded metal shields or sheaths

- Water in pressured pipeline
- Sanitary sewer force mains
- Other utilities that could disrupt the operation of the California HSR System

All facilities that are not noted above are considered low-risk utilities. Low-risk utilities include:

- Low-voltage distribution lines (less than 69 kV)
- Fiber-optic communication lines
- Telecommunication lines
- Sanitary sewer lines
- Drainage facilities
- Storm drain lines
- Irrigation canals and facilities

Definition of Energy

Direct energy use is the energy consumed by vehicle propulsion (e.g., automobiles and airplanes) of a vehicle using the facility. It can be measured in terms of the thermal value of the fuel (measured in British thermal units), the cost of the fuel, or the quantity of electricity used in the engine or motor.

Indirect energy is defined as the remaining energy consumed to run a transportation system, including construction energy, maintenance energy, substantial energy consumption related to project-induced land use changes and mode shifts, and substantial changes in energy associated with vehicle operation, manufacturing, or maintenance due to changes in automobile use.

Demand for electricity varies over time, with daily, weekly, and seasonal cycles, and can fluctuate constantly even within a given hour. Demand is generally lower at night and on weekends and holidays, with the maximum demand generally occurring during the afternoon (between 4:00 pm and 9:00 pm) on a hot summer weekday (Southern California Edison 2019). This demand forecast is known as the “peak” and is an important factor in electricity and transmission planning, as generation and transmission must be built out to capacity that can meet peak demand when needed.

Analysis of Public Utilities

Direct Conflicts

The analysis of direct conflicts with high-risk and major utilities focuses on the Palmdale to Burbank Project Section’s potential to disrupt utility service or access. This analysis identifies the high-risk and major utilities that might require relocation along with the environmental impacts associated with the relocations.

The Authority contacted public and private utility owners for facilities within the RSAs (see Table 3.6-7 later in this section for a list of these utility service providers). The first solicitation effort was intended to acquire as-built and utility service maps. Letters were sent to all utility owners within the Build Alternatives footprint, with exhibits depicting the Build Alternatives. If the utility owner was not responsive, subsequent solicitation efforts included follow-up via email and phone call (Authority 2017b).[1] In addition, utility record drawings and as-built information were collected from various sources, including public agencies, third-party drawings, and respective stakeholders.

Site visualization and Google Earth maps were used to identify and/or confirm various aboveground and aerial facilities. Information pertaining to natural gas pipelines in the area of the Build Alternatives was obtained from the Southern California Gas Company’s (SoCal Gas) interactive maps (SoCalGas 2016). SoCalGas’s website uses an overlay of the gas transmission

[1] A utility owner contact log has been established as a living document to record the due diligence taken during the information gathering stage of this study.

and distribution line within Google Maps. The website shows approximate locations of SoCalGas's utility alignment but does not disclose information regarding the size of pipelines.

Existing utility record maps and as-built drawings can vary in accuracy, depending on the time and method of preparation. The information from the utility providers was provided in a variety of formats with varying levels of detail. The Authority would work with utility owners during the final engineering design state to locate existing utilities at a higher level of detail. The information presented in this section reflect the best available data to date.

Calculating Existing Water Demand

Estimates of existing water use were generated by applying water use factors from relevant purveyors for existing land use types (i.e., residential, commercial, etc.) in the Build Alternatives' footprint. The affected land uses were identified (per acre) by overlaying each parcel with the respective land use category and the Build Alternatives' footprint. Water use factors from the Rosamond Community Services District 2015 UWMP (Rosamond Community Service District 2015) were applied to estimate water usage demand for the existing land uses that would be displaced by the Maintenance Facility. Water usage factors from the Palmdale Water District 2016 Water System Master Plan (PWD 2016b) were applied to estimate water usage for the existing land uses within the Palmdale and Burbank Subsection footprints.

Burbank Water and Power does not utilize water usage factors by land use types. Instead, its water usage projections (systemwide) are based on population and gallons per capita rates. As such, Palmdale Water District water usage factors for land use types were applied to the current land uses in the Burbank Subsection footprint to estimate existing water use in that area. Because water use per capita in the region surrounding the city of Palmdale is higher than the region surrounding Burbank (DWR 2013), applying the Palmdale water use factors to the land uses that would be displaced by the HSR improvements in the Burbank Subsection is a conservative approach to establishing a baseline for existing water demands and future supply.

Utility Demands for Project Construction

The analysis of the effects related to utility demands focuses on whether new or expanded utility services or facilities would be needed to meet the demands associated with constructing the Build Alternatives. The Authority obtained information about the current capacities of the service providers within the expanded utility RSA directly from the utilities and their public planning documents (Authority 2017c). For water supply, estimates of project-related demands are compared to the water supply forecasts from the UWMPs. Table 3.6-2 lists the UWMPs consulted. Table 3.6-3 presents the relevant Integrated Waste Management Plan for the unincorporated areas of Los Angeles County.

Utility demands that would be generated by the construction of the Build Alternatives were estimated by Palmdale to Burbank Project Section engineers, taking into account both site characteristics and project requirements (Authority 2017b).

Water and Wastewater

Construction of the Build Alternatives would use water in the following ways: dust control, tunneling (increasing the water content of soil optimizes tunnel boring), preparing concrete, and reseeding/replanting temporary use areas. Water demand estimates for HSR construction are presented in gallons per year of construction. However, daily water consumption would vary depending on the active construction activities and would be highest during tunnel excavation as activities involving tunnel boring machines (TBMs) would have significantly higher water demand rates than other construction activities. Water demand rates for the anticipated construction activities for the Palmdale to Burbank Project Section are presented in Table 3.6-4. Wastewater generation during construction is estimated to be 50 percent of the total water demand.

Table 3.6-4 Water Demand Rates for Construction Activities

Activity	Demand Rate
Constructing a steel structure (truss/arch)	10,000 gallons/structure
Constructing a concrete structure	10,000 gallons/structure
Constructing station buildings	20,000 gallons/building
Cut-and-cover	40,000 gallons/day/double track tunnel
Tunnel boring machine	55,000–105,000 gallons/day per tunnel boring machine[1]

Source: Authority, 2017b

[1] Tunnel boring machine rates vary depending on tunnel diameter (28, 32, or 36 feet). This rate would include the following possible contingencies (per tunnel): two tunnel boring machines launched at each portal to dig twin tunnels; maintenance and cleaning of the already excavated tunnel; and dust control and vehicles/engines wash down.

Solid Waste

Solid waste estimates consider construction material wastes, including cleared vegetation, removed asphalt and gravel, and demolished existing structures. Solid waste generation rate assumptions include average clearing depths and widths, average building heights and surface areas that would be demolished, and total track lengths by Build Alternative. Table 3.6-5 lists the assumptions used to calculate solid waste generation due to construction of the Build Alternatives.

Table 3.6-5 Solid Waste Generation Assumptions for Construction Activities

Activity	Assumptions used for Construction Estimates
Clearing/removal depth	3 feet
Clearing/removal width	225 feet
Height of buildings to be demolished	30 feet
Surface area of buildings to be demolished	36,000 square feet
Solid waste of buildings to be demolished	21,600 cubic feet per building
Total track lengths	Refined SR14: 40.80 linear miles SR14A: 41.88 linear miles E1: 38.77 linear miles E1A: 38.92 linear miles E2: 34.93 linear miles E2A: 35.08 linear miles

Note: Clearing and removal assumptions include an increase factor of 1.10 and 1.01 for urban and rural areas, respectively.

Utility Demands for Project Operation

The impact analysis in this section estimates the total change in water use associated with replacement of existing land uses with Palmdale to Burbank Project Section features (i.e., stations, Maintenance Facility, rail alignment, other ancillary facilities). Estimates for operation water demand, wastewater generation, and waste removal services for HSR stations and maintenance facilities are based on typical rates, such as gallons per minute, acre-feet per year, or ridership and employment projections (Authority 2014a). These estimated quantities are compared with anticipated supply and capacity as reported by utility service providers who serve the expanded utility RSA. Once operational, the only components requiring water, wastewater, and solid waste services would be the Palmdale and Burbank stations and the Maintenance Facility.[2]

Stations

Water and Wastewater

Annual operation water use estimates for the Palmdale and Burbank stations are based on full buildout of the Palmdale to Burbank Project Section in 2040. These estimates consider domestic water use per passenger/employee (i.e., restrooms), station cleaning, and landscaping (Table 3.6-6). Wastewater generation for the station operations is estimated at 3.0 gallons of wastewater produced per passenger/employee per day.[3]

Table 3.6-6 Water Demand Rates for Station Operations

Activity	Demand Rate[1]
Cleaning	2.5 gallons/passenger/day 0.25 gallon/square foot/day (exterior walkways, patios) 0.50 gallon/square foot/day (interior)
Domestic water use (i.e., restrooms)	2.5 gallons/passenger/day
Landscaping (drip irrigation)	0.0313 gallon/square foot/day

Source: Authority, 2017b
[1] Rates based on "passengers/day" include employees and ridership projections.

Solid Waste

California HSR System passengers and employees would generate solid waste, such as paper, cardboard, plastics, and other materials similar to household waste. Operation solid waste generation is based on the anticipated ridership and number of employees documented in the Authority' 2016 Business Plan (Authority 2016a), considering the estimates of waste generation and recycling in the State of California. The estimated solid waste generation rate for the Palmdale and Burbank stations is 0.00025 tons per passenger/employee per year (Authority 2017d).

Maintenance Facility

Water and Wastewater

The water demand for the operation of the Maintenance Facility considers water used for industrial operations, landscaping, and train washing. The water usage factor selected for the Maintenance Facility assumes that the facility would be built to perform maintenance on the same types of trains, and utilize similar conservation technologies as a heavy maintenance facility. Depending on its final use, the Maintenance Facility could operate at a much lower volume than a heavy maintenance facility. In addition, wash water is assumed to be reused at a rate of approximately 60 percent with the implementation of an on-site recycling system. Daily water use for the Maintenance Facility includes an estimated 30 gallons per employee per day. Wastewater generation is assumed to be 85 percent of the domestic water demand generated by the Maintenance Facility.

---

[2] Improvements in the Palmdale Subsection and Maintenance Facility area are included in this section for context; however, the effects of operations of these facilities are evaluated in the Bakersfield to Palmdale Project Section EIR/EIS.
[3] Rates based on "passengers/day" include employees and ridership projections.

Solid Waste

Activities at the Maintenance Facility that would generate solid waste include administrative (office) work and packaging of materials and equipment used for maintenance of the Palmdale to Burbank Project Section. In addition, employees would generate solid waste, such as paper, cardboard, plastics, and other materials similar to household waste. Solid waste estimates for the Maintenance Facility are based on rates established for non-air-travel-related transportation businesses, which dispose of approximately 1.3 tons per employee of waste per year (CalRecycle 2011).

Energy

This energy analysis focuses on the following four areas:

- The Palmdale to Burbank Project Section's demand on regional energy supply and the potential need for additional electrical generation capacity to support operations
- Peak-period electricity demand for operations
- Overall statewide energy consumption for transportation
- Construction-related energy consumption, primarily derived from extending electric utilities to HSR tunnel portal areas during construction

If built, the statewide California HSR System 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. If built, the system would also affect electricity demand throughout the state. These elements would affect energy in both the statewide and regional study areas.

Construction Energy Usage

Construction energy information for comparable HSR systems is not readily available. Therefore, construction energy consumption factors identified for the proposed California 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 (Authority 2003). Energy usage information was also supplemented by Palmdale to Burbank Project Section engineers in terms of truck and machinery fuel consumption during construction (Authority 2017e). Actual energy consumption may differ from these estimates, depending on the final design. The estimates presented in this section should be used for comparison purposes.

The construction energy payback period is comprised of the number of years required to offset the energy used in construction with operational energy savings of the Build Alternatives prorated to statewide energy savings. The payback period is calculated for the Palmdale to Burbank Project Section by dividing the estimated California HSR System construction energy by the amount of energy that would later be saved by the full operation of the California 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.

Operation Energy Usage

The operation energy analysis uses a dual baseline approach. That is, the Palmdale to Burbank Project Sections energy impacts evaluated against existing conditions (2015) and expected 2040 No Project conditions. Impacts in the opening year of HSR operations were also considered. The Authority calculated operation energy consumption for medium and high ridership scenarios for the Phase 1 HSR system. The medium and high scenarios are based on the 2040 level of ridership as presented in the Authority's 2016 Business Plan (Authority 2016a).[4] The complete statewide analysis is included in Appendix 3.6-B, with detailed calculations on the reduction in energy consumption from transportation (vehicles and aircrafts). Section 3.6.5.10 presents

[4] Refer to Chapter 3.1, Introduction, for more information regarding ridership forecasts.

existing and projected statewide energy demand for the State of California, including the implementation of the Build Alternatives (Authority 2017e).

The electrical demands due to propulsion of the trains, stations, and Maintenance Facility were calculated for the Build Alternatives (Authority 2017b). Peak-period electricity demand was calculated in terms of kilowatt-hours and compared to current estimates of peak demand and supply capacity within the grid controlled by the California Independent System Operator.

On-Road Vehicle Energy Offsets

On-road vehicle energy analysis was conducted using the same inputs and RSAs as described for air quality emission calculations in Section 3.3, Air Quality and Global Climate Change. Energy rates were determined using carbon balance equations as recommended by CARB. Ridership estimates from the Authority's 2016 Business Plan (Authority 2016a) were used to estimate the number of vehicle trips that would be replaced by rail trips attributable to the Palmdale to Burbank Project Section through travel demand modeling analysis.

Aircraft Energy Usage Offsets

Aircraft energy use estimates were derived from fuel consumption factors from the CARB's 2000–2014 Greenhouse Gas Emissions Inventory Technical Support Document and the accompanying technical support document. Estimated energy use includes both landing and take-off and cruise operations.[5] Average aircraft energy was estimated based on the profile of intrastate aircraft currently servicing the San Francisco to Los Angeles corridor. Ridership estimates from the Authority's 2016 Business Plan (Authority 2016a) were used to estimate the number of air trips that would be replaced by rail trips attributable to the Palmdale to Burbank Project Section through travel demand modeling analysis.

3.6.4.4 Method for Evaluating Impacts under NEPA

Council on Environmental Quality NEPA regulations (40 C.F.R. Parts 1500–1508) provide the basis for evaluating project effects (Section 3.1.4.4). As described in Section 1508.27 of these regulations, the criteria of context and intensity are considered together when determining the severity of the change introduced by the project. "Context" is defined as the affected environment in which a proposed project occurs. "Intensity" refers to the severity of the effect, which is examined in terms of the type, quality, and sensitivity of the resource involved; location and extent of the effect; duration of the effect (short- or long-term); and other considerations of context. Beneficial effects are also considered. When no measurable effect exists, no impact is found to occur. For the purposes of NEPA compliance, the same methods used to identify and evaluate impacts under CEQA are applied here.

3.6.4.5 Method for Determining Significance under CEQA

Utilities and Service Systems

The Authority is using the following thresholds to determine if a significant impact on utilities and service systems would occur as a result of the project. A significant impact is one that would:

- Require or result in the relocation or construction of new or expanded water, wastewater treatment, stormwater drainage, electric power, natural gas, electric power, or telecommunications facilities, the construction or relocation of which would cause significant environmental effects
- Not have sufficient water supplies available to serve the Palmdale to Burbank Project Section and reasonably foreseeable future development during normal, dry, and multiple dry years
- Result in a determination by the wastewater treatment provider that serves or may serve the Palmdale to Burbank Project Section that it does not have adequate capacity to serve the

[5] Formulas: aircraft energy per flight = fuel consumption × British thermal units/gallon of fuel; aircraft energy = flights removed × aircraft energy per flight.

selected Build Alternative's projected demand in addition to the provider's 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-risk utility conflicts would occur if the project would cross or conflict with distribution pipelines or electrical power lines, which are easier to avoid, relocate, or protect in place. Low-risk utility conflicts are considered less than significant impacts on utilities and service systems because these types of utilities and service systems would be temporarily affected, typically only during a brief relocation period. Construction work that could result in temporary interruption of utility services would be conducted in coordination with the utility provider and with prior public notification, and utility service levels would remain unchanged after construction work is completed. Environmental consequences related to utility relocations are described in detail in Section 3.6.6.

For purposes of analysis for this Draft EIR/EIS, the Authority is using these additional criteria as thresholds of significance. The Palmdale to Burbank Project Section would have a significant impact if it would:

- Require or result in the construction of new electrical facilities or expansion and upgrade of existing facilities, the construction of which would cause significant environmental effects
- Conflict with a major nonlinear fixed facility, such as an electrical substation or wastewater treatment plant, the relocation of which would 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 would cause a lengthy and harmful interruption of service

Energy

According to 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 thresholds of significance criteria listed below are used to determine whether the Palmdale to Burbank Project Section would have a potentially significant effect on energy use, including energy conservation.

Significant long-term operation or direct energy impacts would occur if the Palmdale to Burbank Project Section would:

- Result in potentially significant environmental impacts due to wasteful, inefficient, or unnecessary consumption of energy resources, during 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 Palmdale to Burbank Project Section 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

3.6.5.1 Public Utilities

Public utilities within the RSAs include electrical facilities, natural gas and petroleum distribution; telecommunications; potable, recycled, and irrigable water delivery; stormwater; wastewater; and solid waste disposal. For context, the Palmdale Subsection and Maintenance Facility are included in this section; however, the effects of these facilities are evaluated in the Bakersfield to Palmdale Project Section EIR/EIS. As summarized in Table 3.6-7, various service providers own or maintain utilities and associated easements within the expanded utility RSA. Table 3.6-7 is organized by utility type, utility provider, applicable subsection, and jurisdiction served.

As discussed in Section 3.6.3, the goals and policies listed in Table 3.6-1, Table 3.6-2, and Table 3.6-3 relate to reducing demands for natural resources, ensuring that public infrastructure is developed so that sufficient utilities are provided for the regional growth anticipated, and conserving energy. These goals and policies are reflective of the concerns and interests of the stakeholders, and their intent to ensure that the provision of utility services to their service areas is uninterrupted. Section 3.6.4.3 describes the solicitation efforts the Authority has taken to obtain information from the utility owners in the expanded utility RSA.

Table 3.6-7 Utility Service Providers

Utility Service Provider	Applicable Subsection/Area[1]	County/City
Electricity		
Southern California Edison	Palmdale, Central, and Burbank Subsections; Maintenance Facility	City of Lancaster City of Palmdale
		Los Angeles County (unincorporated)
		City of Los Angeles
		City of Burbank
Los Angeles Department of Public Works	Central and Burbank Subsections, Maintenance Facility	Los Angeles County (unincorporated), City of Los Angeles
Burbank Water and Power	Burbank Subsection	City of Burbank
Communications		
AT&T, Verizon, Sprint, and Time Warner Cable	All subsections	City of Lancaster City of Palmdale
		Los Angeles County (unincorporated)
		City of Los Angeles
		City of Burbank
Qwest (Century Link)	Central Subsection	Los Angeles County
		City of Burbank

Utility Service Provider	Applicable Subsection/Area[1]	County/City
Petroleum/Oil		
Pacific Pipeline System, LLC	Central and Burbank Subsections	Los Angeles County (unincorporated)
		City of Los Angeles
		City of Burbank
Natural Gas		
Southern California Gas Company	All subsections	City of Lancaster City of Palmdale
		Los Angeles County (unincorporated)
		City of Los Angeles
		City of Burbank
Wastewater		
Palmdale Department of Public Works	Palmdale Subsection	City of Palmdale
Los Angeles County Sanitation Districts	Palmdale and Central subsections; Maintenance Facility	City of Lancaster City of Palmdale
		Los Angeles County (unincorporated)
Burbank Department of Public Works	Burbank Subsection	City of Burbank
Consolidated Sewer Maintenance of Los Angeles County	Maintenance Facility	City of Lancaster
City of Lancaster Utility Services	Maintenance Facility	City of Lancaster
Stormwater		
Palmdale Department of Public Works	Palmdale Subsection	City of Palmdale
Los Angeles County Department of Public Works	Central Subsection	Los Angeles County (unincorporated)
		City of Los Angeles
		City of Burbank
Burbank Department of Water and Power	Burbank Subsection	City of Burbank
Lancaster Department of Public Works	Maintenance Facility	City of Lancaster

Utility Service Provider	Applicable Subsection/Area[1]	County/City
Water		
Los Angeles Department of Water and Power	Palmdale and Central subsections; Maintenance Facility	City of Lancaster City of Palmdale
		Los Angeles County (unincorporated)
		City of Los Angeles
Antelope Valley-East Kern Water Agency	Palmdale and Central subsections; Maintenance Facility	City of Lancaster City of Palmdale
		Los Angeles County (unincorporated)
Los Angeles County Waterworks District 40	Palmdale and Central subsections; Maintenance Facility	Los Angeles County (unincorporated)
California Department of Water Resources East Branch of the California Aqueduct	Central Subsection	Los Angeles County (unincorporated)
Metropolitan Water District	Burbank Subsection	City of Los Angeles
		City of Burbank
Palmdale Water District	Palmdale Subsection	City of Palmdale
Burbank Water and Power	Burbank Subsection	City of Burbank
California Water Service	Maintenance Facility	City of Lancaster
Sunnyside Farms MWC	Maintenance Facility	City of Lancaster
Recycled Water		
Palmdale Recycled Water Authority	Palmdale Subsection	City of Palmdale
Los Angeles County Waterworks District 40	Palmdale and Central Subsections; Maintenance Facility	Los Angeles County (unincorporated)
Los Angeles County Sanitation Districts	Palmdale and Central Subsections; Maintenance Facility	Los Angeles County
Burbank Water and Power	Burbank Subsection	City of Burbank

Sources: AVEK, 2015; AT&T, 2017; City of Burbank Department of Water and Power, 2015; City of Burbank Public Works, 2017; City of Palmdale Department of Public Works, 2017; City of Lancaster Department of Public Works, 2017; City of Lancaster Utility Services, 2017; City of Los Angeles Sanitation, 2017; Consolidated Sewer Maintenance of Los Angeles County, 2017; Authority 2019; Los Angeles County Department of Public Works, 2017; Los Angeles County Sanitation Districts, 2016; Los Angeles Department of Water and Power, 2015; Los Angeles County Waterworks District 40, 2016; Metropolitan Water District, 2015; Palmdale Water District, 2016; Qwest (CenturyLink), 2017; Verizon, 2017; Southern California Edison, 2007; Southern California Gas Company, 2017; Sprint, 2016; Sunnyside Farms MWC, 2017; Time Warner Cable, 2017

[1] Within the identified utility service provider's district, all six Build Alternatives would be served.

3.6.5.2 Natural Gas Lines (High-Pressure)

All six Build Alternatives would encounter several natural gas high-pressure transmission and distribution pipelines. Most potential encounters with SoCalGas facilities would occur within urban centers, such as Palmdale and Burbank (Figure 3.6-1 through Figure 3.6-4). Table 3.6-8 summarizes the potential natural gas pipeline encounters by the Build Alternative.

Table 3.6-8 Natural Gas Line Conflicts

Build Alternative	Potential Natural Gas Pipeline Encounters
Refined SR14	76
SR14A	79
E1	69
E1A	59
E2	42
E2A	40

Source: Authority, 2021a

Southern California Gas Control Structure

All six Build Alternatives would partially overlap the existing SoCal Gas control structure located 550 feet east of the East Avenue S and East 10 Street intersection, in Palmdale. The northerly edge of the sidewalk under the proposed East Avenue S realignment would encroach up to 25 feet from the existing SoCalGas property line, with potential conflicts to components of the control structure.

3.6.5.3 Petroleum and Fuel Pipelines

Two oil pipelines traverse the Central and Burbank subsections (Figure 3.6-5). The first pipeline is owned by Plains All American Pipeline and lies within San Fernando Road and the Metrolink right-of-way. The second pipeline is owned by Exxon-Mobil and lies within the San Fernando Road right-of-way, in the city of Los Angeles. All six Build Alternatives would encounter these pipelines in the Central Subsection. Table 3.6-9 summarizes all potential petroleum pipeline encounters by the Build Alternative. There are no oil refineries in the Build Alternatives' direct conflict RSA (California Energy Commission [CEC] 2019a).

Table 3.6-9 Petroleum and Fuel Pipeline Conflicts

Build Alternative	Potential Petroleum Pipeline Encounters
Refined SR14	13
SR14A	13
E1	16
E1A	9
E2	3
E2A	3

Source: Authority, 2021a

3.6.5.4 Communication Facilities

AT&T, Verizon Telecom, Time Warner Cable, Sprint, and Qwest (CenturyLink) own and operate the communication facilities within the expanded utility RSA (Figure 3.6-6 through Figure 3.6-9). Other service providers may also own or lease communication facilities. Both underground and aboveground components of the communication lines (i.e., telecommunication/fiber optic) are located throughout the expanded utility RSA, particularly within urbanized areas and along existing roadway infrastructure. Near Burbank, communication lines are generally located within subsurface conduits that run parallel to the existing Metrolink right-of-way and along San Fernando Road.

3.6.5.5 Water Supply Infrastructure and Facilities

Southern California sources of water supply include the State Water Project, the Colorado River Aqueduct, the Central Valley Project, the Los Angeles Aqueduct, local groundwater basins, local surface water sources, and recycled water. The State Water Project is responsible for bringing drinking water to 25 million people and provides irrigation for 750,000 acres of farmland. As the nation's largest State-built water and power development and conveyance system, the State Water Project diverts water from the Feather River to the Central Valley, the San Francisco Bay Area, and Southern California. Today, about 30 percent of State Water Project water is used for irrigation, mostly in the San Joaquin Valley. About 70 percent of State Water Project water is used for residential, municipal, and industrial customers, mainly in Southern California, but also in the San Francisco Bay Area. The State Water Project was built and is operated by the California Department of Water Resources.

Water supplies conveyed to Southern California via aqueduct are distributed by several wholesale water and retail domestic potable water agencies. Several agencies within the expanded utility RSA distribute water services to the local communities. These agencies include the Los Angeles Department of Water and Power (LADWP), Palmdale Water District, Los Angeles County Waterworks District 40, Metropolitan Water District, Burbank Water and Power, and Antelope Valley-East Kern Water Agency (AVEK). Wholesale water and retail domestic potable water agencies also provide a range of services, including water treatment, recycled water, and groundwater management. A list of water distributors and suppliers within the expanded utility RSA is included in Table 3.6-10. These agencies are reasonably assumed to provide water required for the construction and/or operation of the Build Alternatives (Table 3.6-11).

Many waterlines, including transmission and distribution lines, traverse the direct conflicts RSA. Pipeline diameters vary from 8 to 48 inches (see Figure 3.6-10 through Figure 3.6-13). All pressurized water lines are defined as high-risk utilities. Table 3.6-12 summarizes potential water line encounters by the Build Alternative.

Table 3.6-10 Water Distributors and Suppliers within the Expanded Utility Resource Study Area

Water Agency	Agency Activity					Sources of Water Supply	Service Area (square mile)	Average Daily Demand (mgd)	Maximum Day Demand (mgd)	Average Annual Demand (ac-ft/yr)	Applicable Subsections
	Retail Domestic Potable Water	Wholesale Water	Water Treatment	Recycled Water	Groundwater Management						
Palmdale Water District	X	X	X	N/A	X	▪ State Water Project ▪ Little Rock Creek Reservoir ▪ Antelope Valley Basin	187	20.9	34.1	24,000	Palmdale Subsection (all six Build Alternatives)
Antelope Valley-East Kern Water Agency	N/A	X	X	N/A	N/A	▪ State Water Project	2,300	47.6	83.3	56,400	Central Subsection (all six Build Alternatives)
Castaic Lake Water Agency	N/A	X	X	X	N/A	▪ State Water Project	195	38.0	67.0	45,000	Central Subsection (Refined SR14 and SR14A Build Alternatives)
Santa Clarita Water Division	X	N/A	N/A	N/A	X	▪ Castaic Lake Water Agency ▪ Saugus Formation and Alluvial Aquifer ▪ Buena Vista Water Storage	50.0	12.6	24.9	24,558	Central Subsection (Refined SR14 and SR14A Build Alternatives)

Water Agency	Agency Activity: Retail Domestic Potable Water	Agency Activity: Wholesale Water	Agency Activity: Water Treatment	Agency Activity: Recycled Water	Agency Activity: Groundwater Management	Sources of Water Supply	Service Area (square mile)	Average Daily Demand (mgd)	Maximum Day Demand (mgd)	Average Annual Demand (ac-ft/yr)	Applicable Subsections
Los Angeles County Waterworks District 37, Acton	X	N/A	X	X	X	▪ Metropolitan Water District ▪ Los Angeles Aqueduct ▪ Central Basin	473	N/A	N/A	659,000	Central Subsection (all six Build Alternatives)
Burbank Water and Power	X	N/A	X	X	X	▪ Metropolitan Water District ▪ San Fernando Basin	17.2	20.2	33.4	25,400	Burbank Subsection (all six Build Alternatives)
Metropolitan Water District	X	X	X	X	X	▪ State Water Project ▪ Colorado River Aqueduct	5,200	1,500	N/A	3,200,000	Burbank Subsection (all six Build Alternatives)
Los Angeles County Waterworks District 40, Lancaster	X	N/A	N/A	X	X	▪ Antelope Valley-East Kern Water Agency ▪ Antelope Valley Basin ▪ Colorado River Aqueduct	660	N/A	N/A	2,402	Maintenance Facility (all six Build Alternatives)

Sources: AVEK, 2015; Burbank Water and Power, 2015; Castaic Lake Water Agency, Santa Clarita Water Division, Newhall County Water District, and Valencia Water Company, 2015; Los Angeles County Water District 40, 2015; Los Angeles Department of Public Works, 2017; Metropolitan Water District, 2015; Palmdale Water District, 2016

Note: Palmdale Water District, Burbank Water and Power, and Los Angeles County Waterworks District 40, Lancaster would be used for both construction-period and operation demand. Antelope Valley-East Kern Water Agency would be used for construction only.

ac-ft/yr = acre-feet per year

mgd = million gallons per day

N/A = not applicable

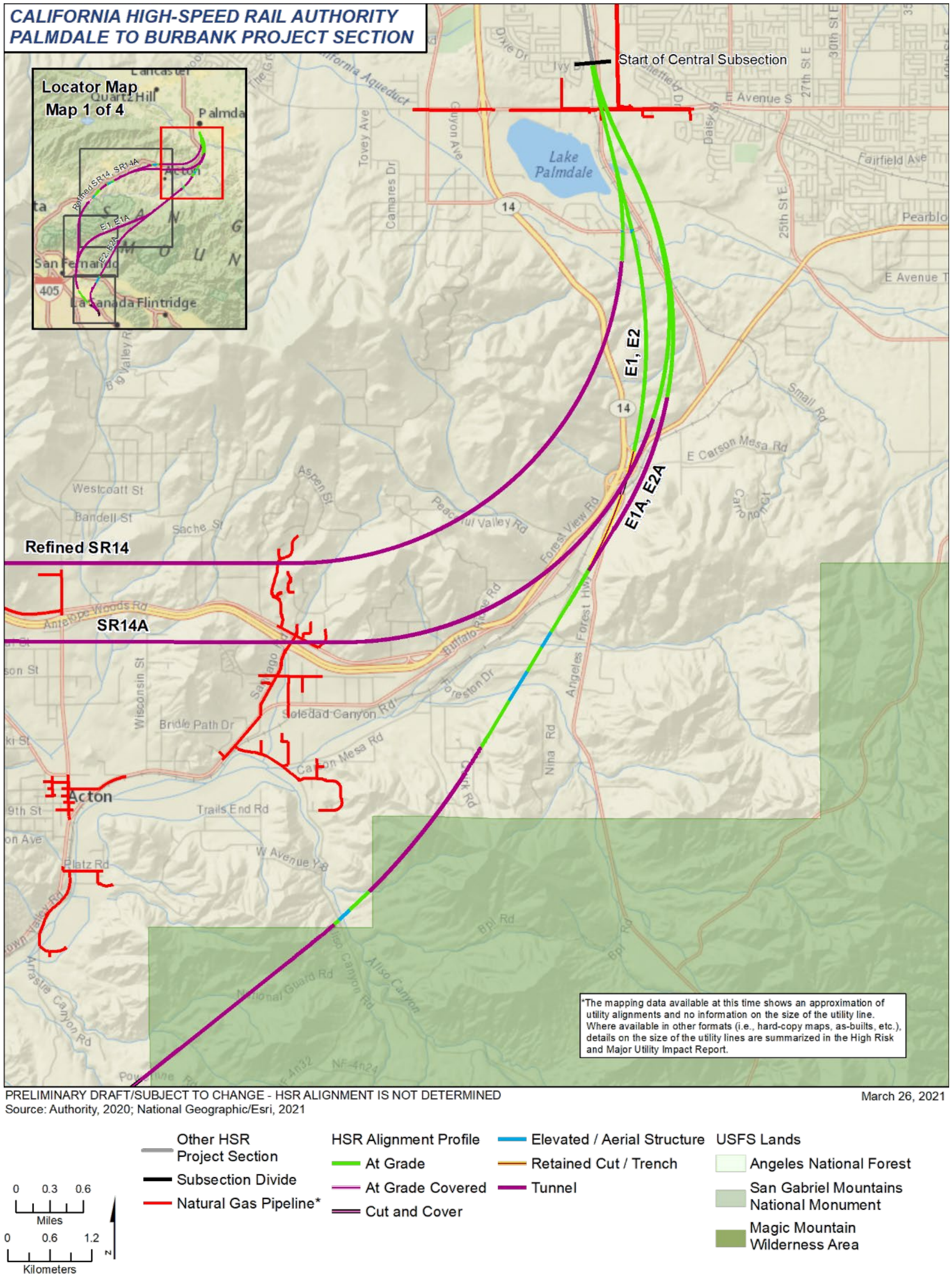


Figure 3.6-1 Natural Gas Lines Map (Map 1 of 4)

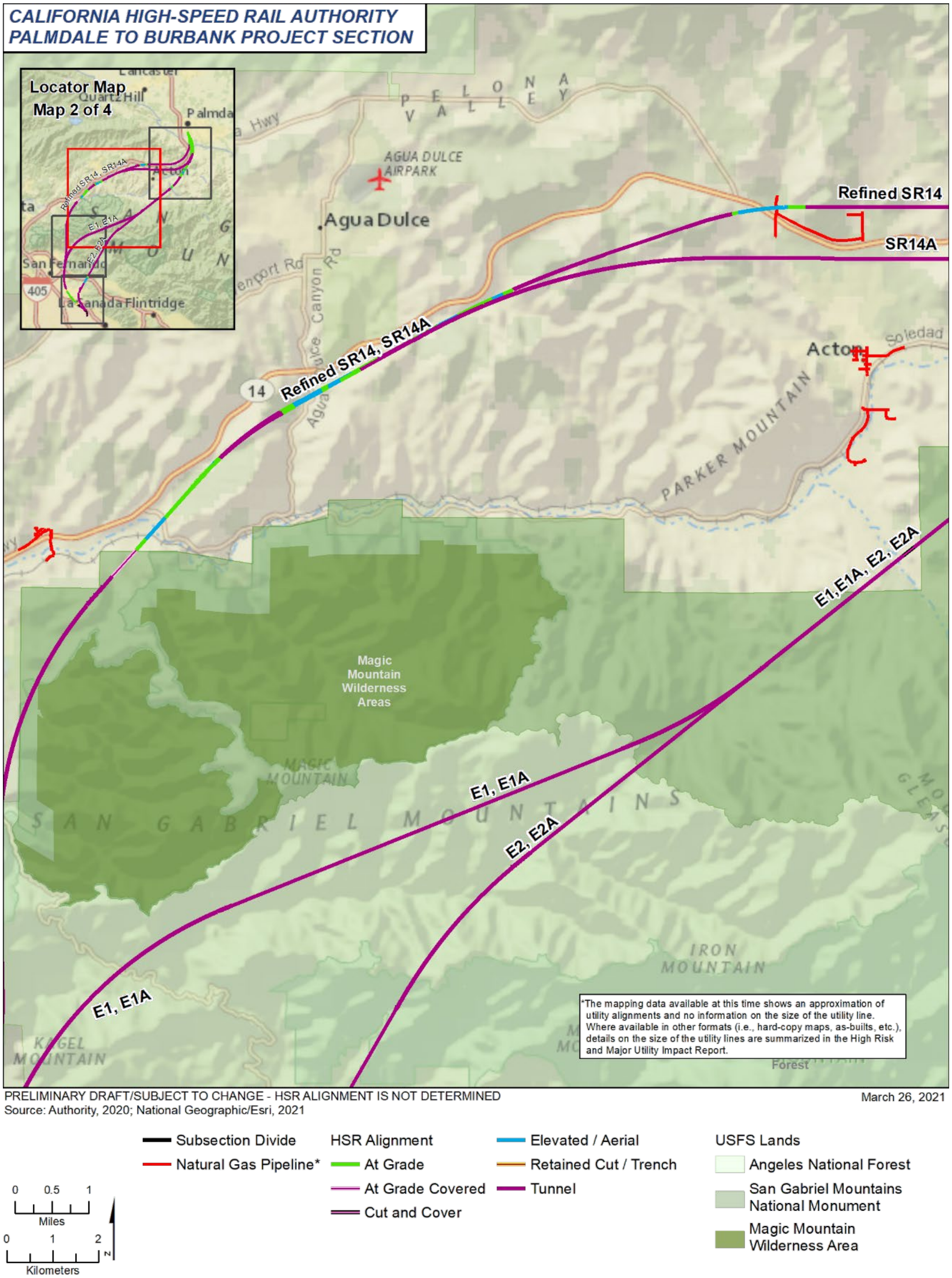


Figure 3.6-2 Natural Gas Lines Map (Map 2 of 4)

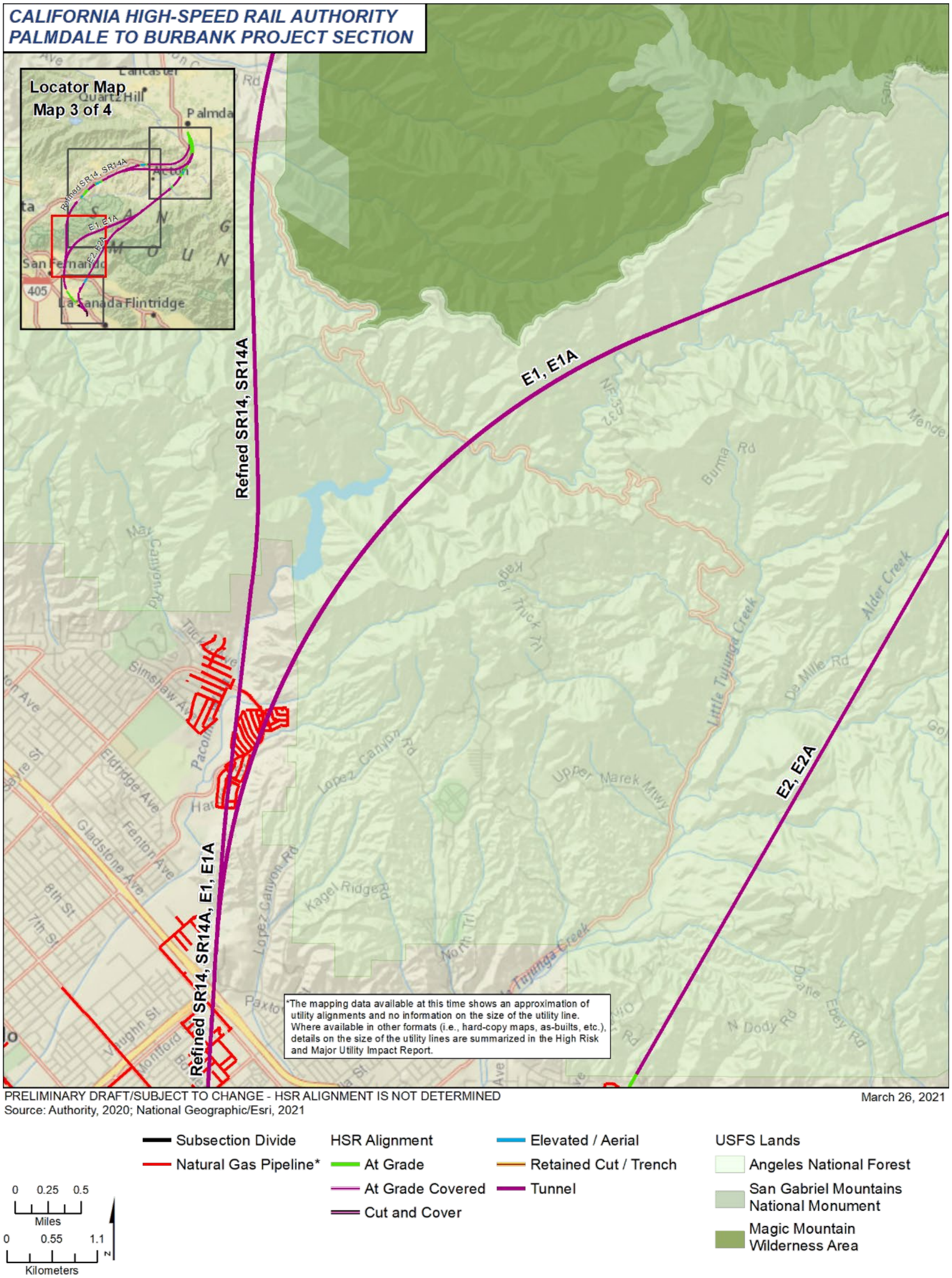


Figure 3.6-3 Natural Gas Lines Map (Map 3 of 4)

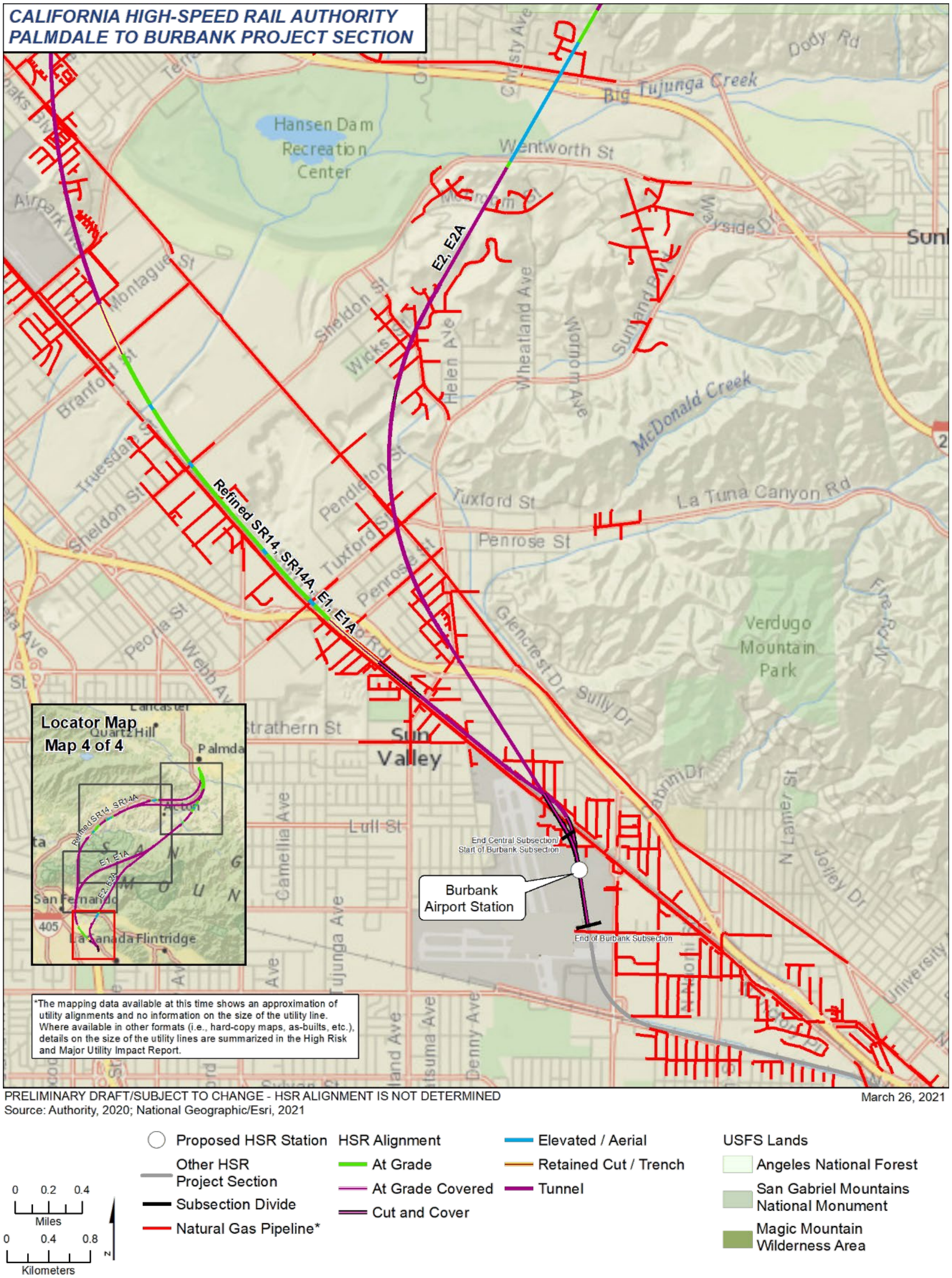


Figure 3.6-4 Natural Gas Lines Map (Map 4 of 4)

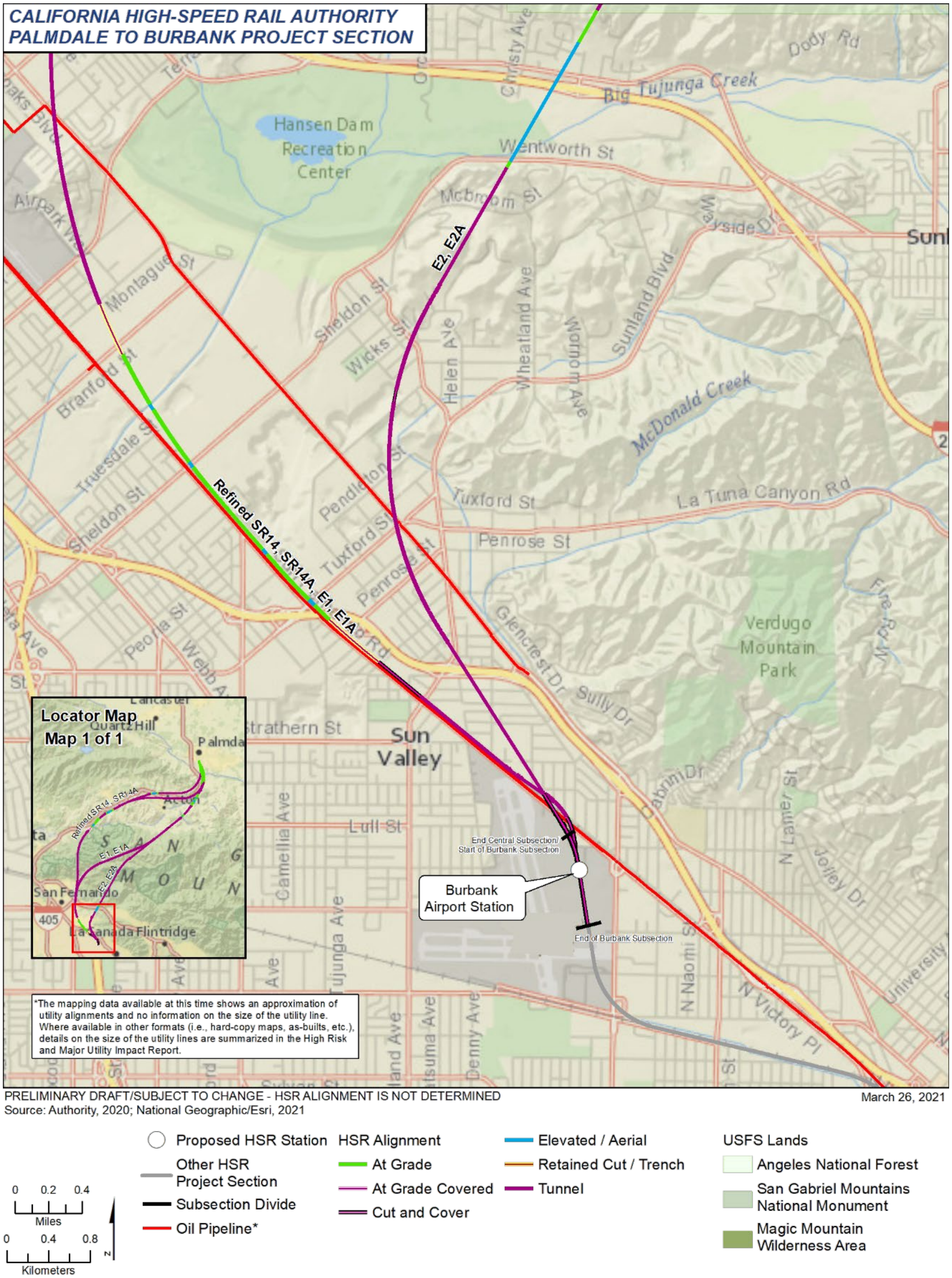


Figure 3.6-5 Petroleum and Fuel Pipelines Map

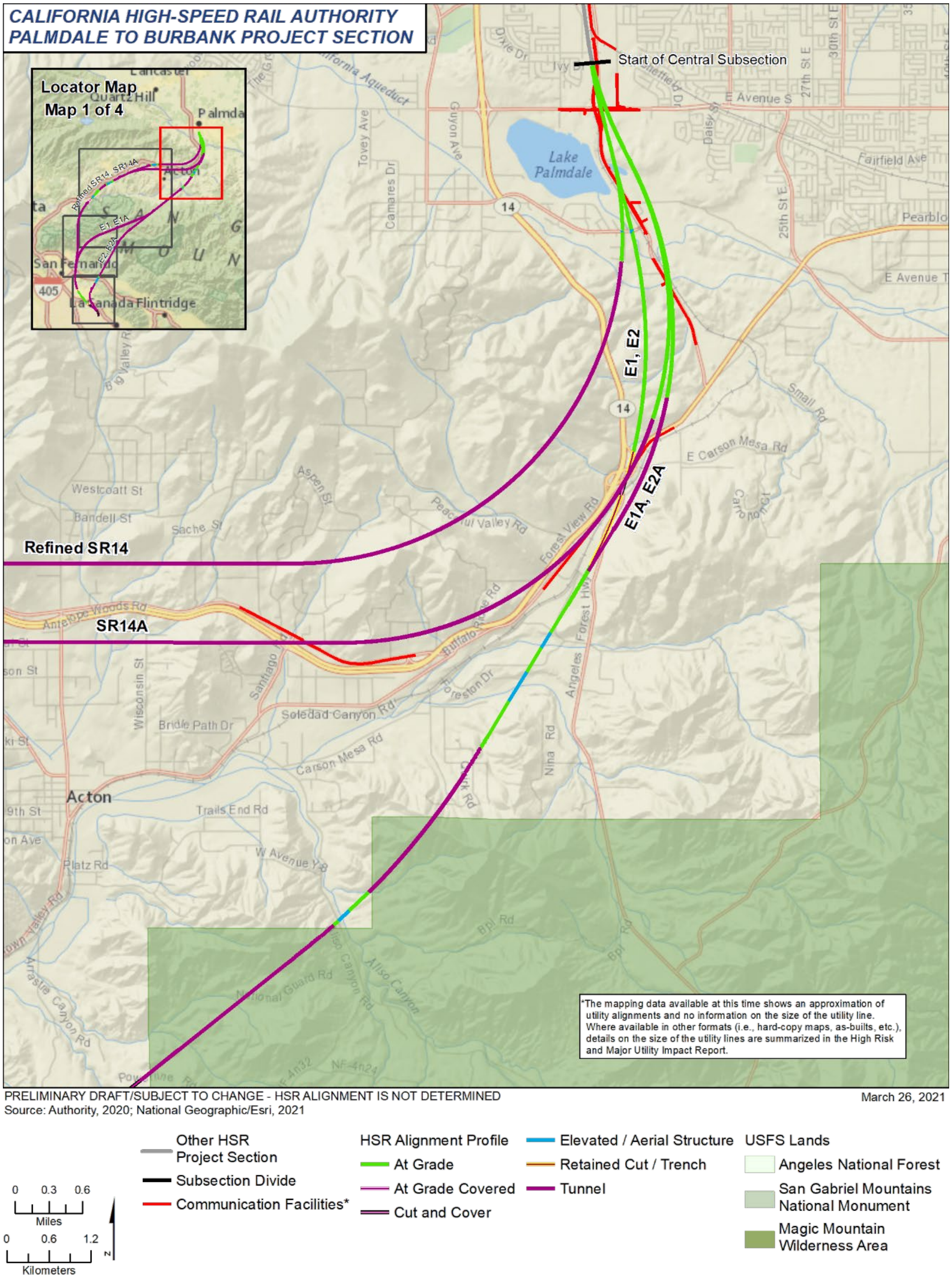


Figure 3.6-6 Communications Map (Map 1 of 4)

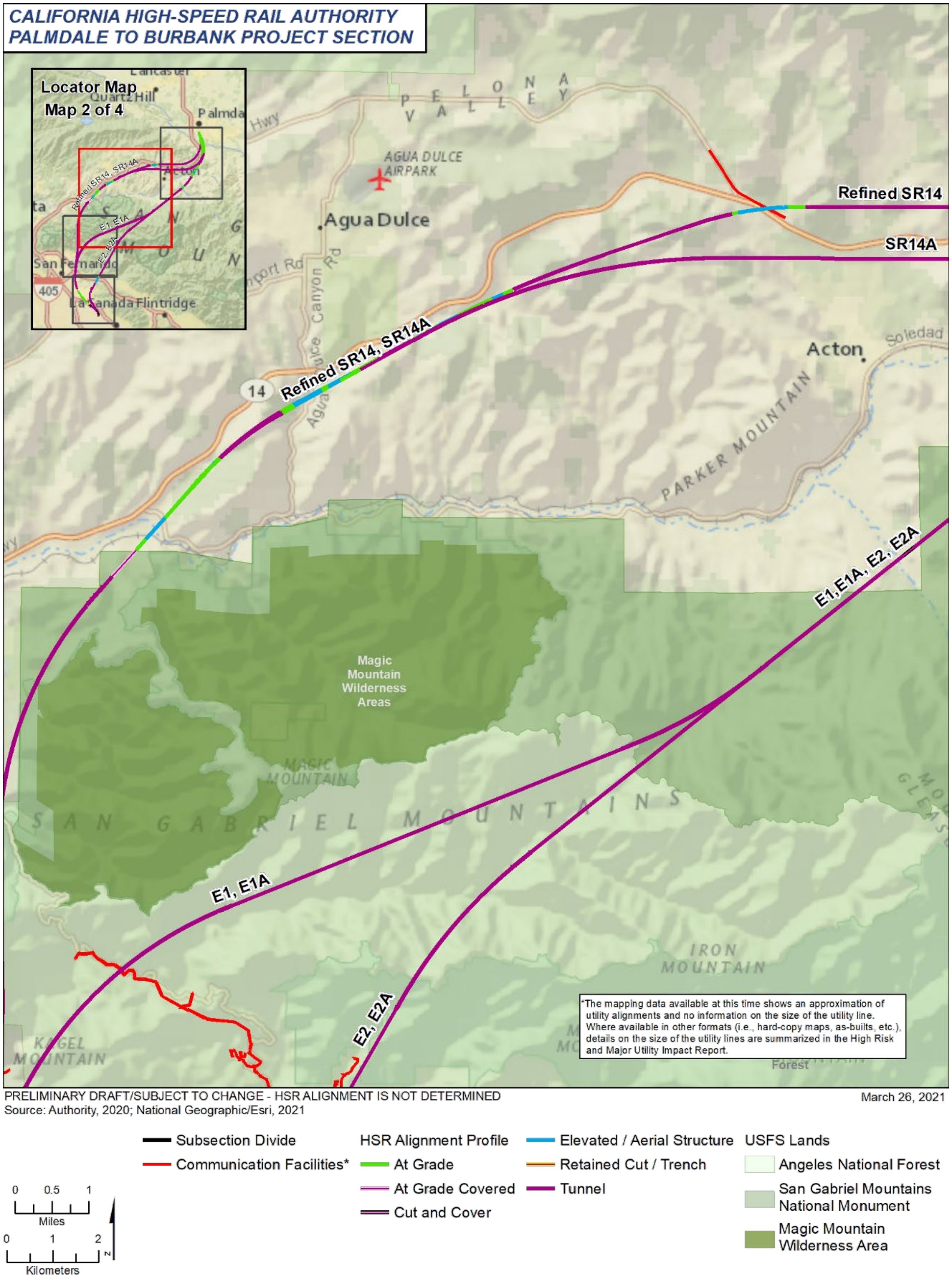
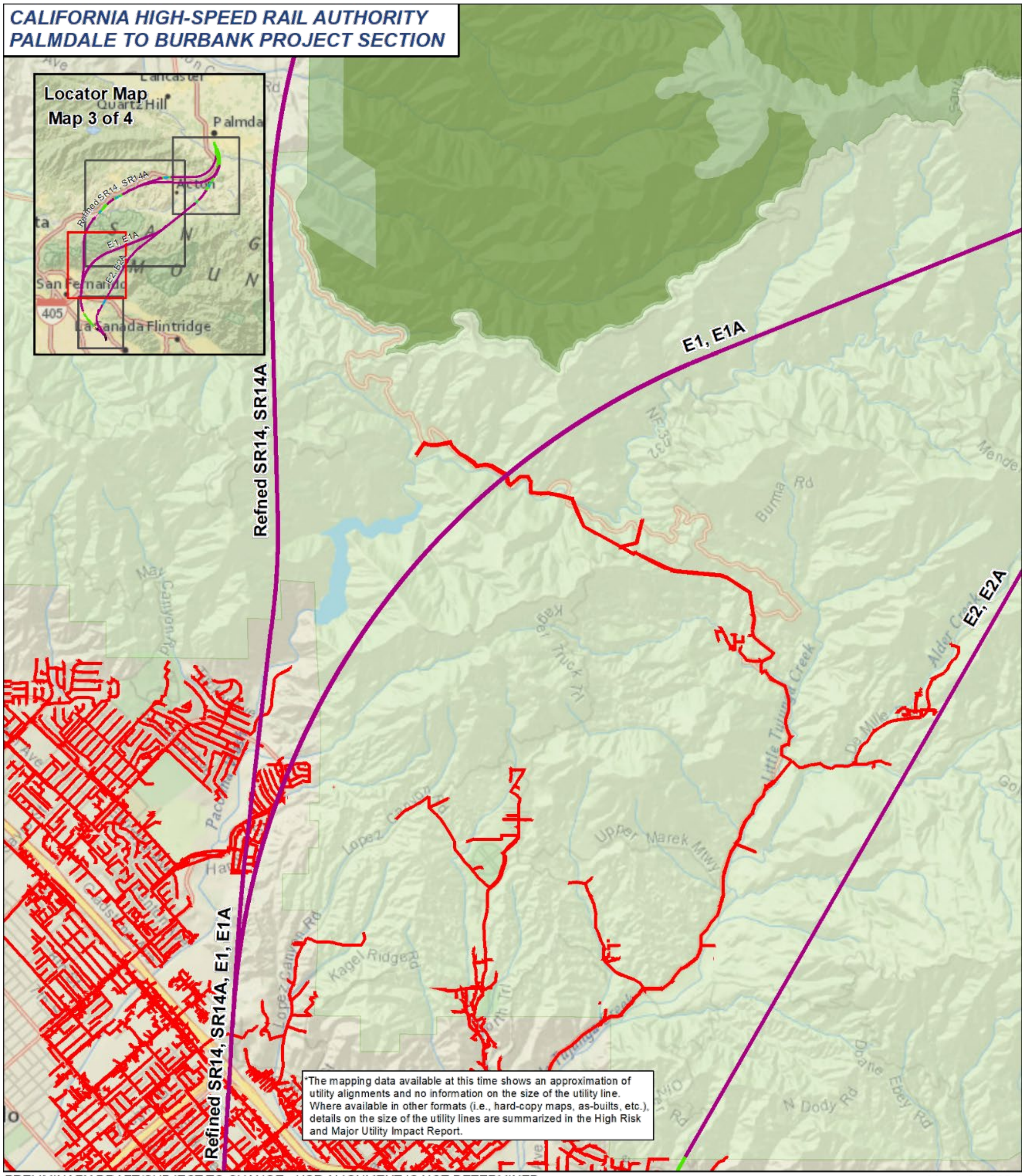


Figure 3.6-7 Communications Map (Map 2 of 4)



PRELIMINARY DRAFT/SUBJECT TO CHANGE - HSR ALIGNMENT IS NOT DETERMINED
Source: Authority, 2020; National Geographic/Esri, 2021

March 26, 2021

Subsection Divide
Communication Facilities*

HSR Alignment Profile
At Grade
At Grade Covered
Cut and Cover
Elevated / Aerial Structure
Retained Cut / Trench
Tunnel

USFS Lands
Angeles National Forest
San Gabriel Mountains National Monument
Magic Mountain Wilderness Area

0 0.25 0.5 Miles
0 0.55 1.1 Kilometers
N

Figure 3.6-8 Communications Map (Map 3 of 4)

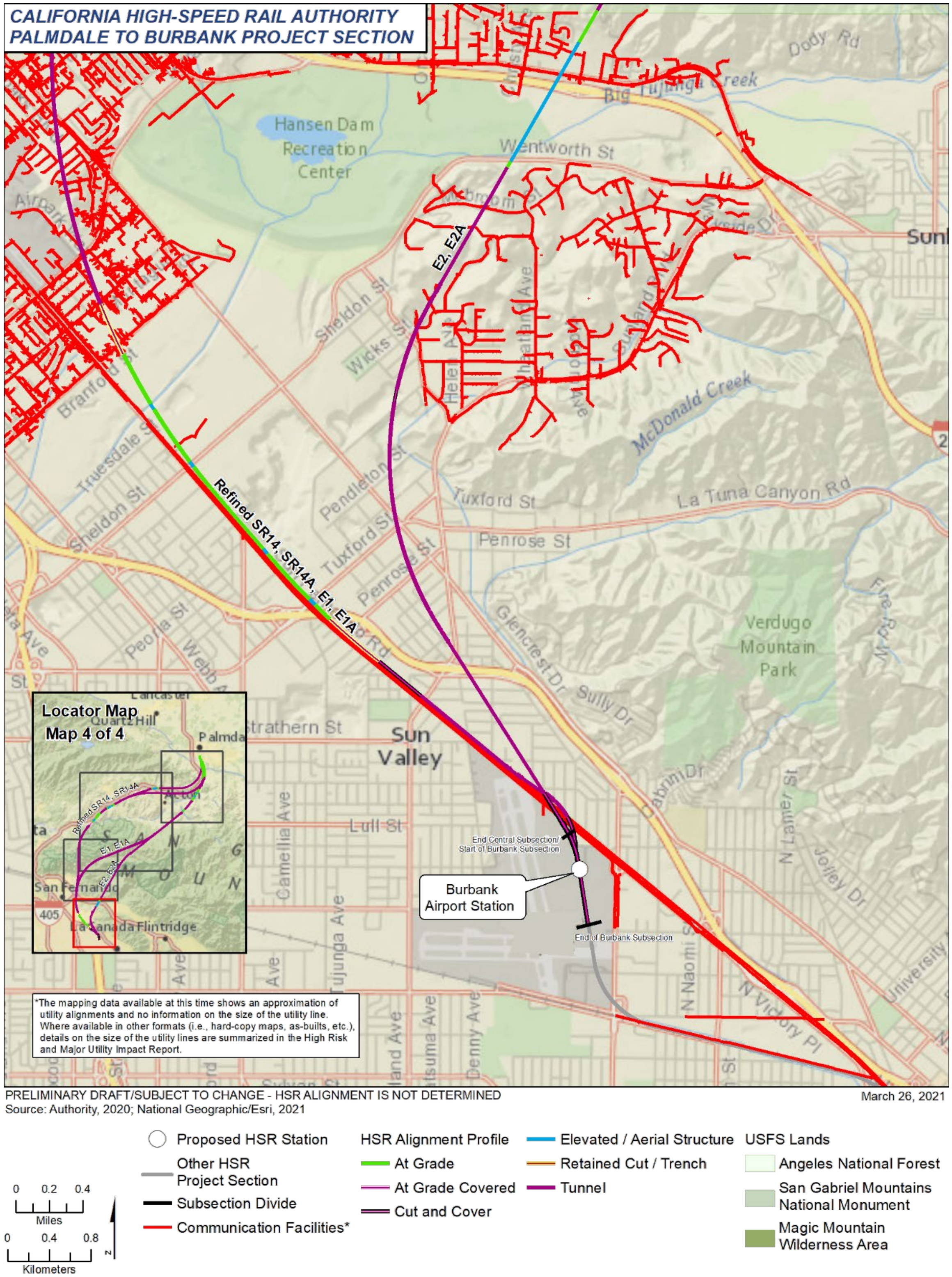


Figure 3.6-9 Communications Map (Map 4 of 4)

Table 3.6-11 Most Likely Water Distributers and Suppliers for the Construction and Operation of the Palmdale to Burbank Project Section

Water Providers	Source	Subsection
Palmdale Water District	▪ California Aqueduct ▪ Littlerock Dam ▪ Los Angeles County Sanitation District	Central Subsection
Los Angeles County Waterworks Districts	Antelope Valley-East Kern Water Agency	Central Subsection
Los Angeles County Waterworks Districts	Metropolitan Water District	Central Subsection and Burbank Subsection
Burbank Water and Power	Metropolitan Water District	Burbank Subsection

Sources: AVEK, 2016; Authority, 2017b; Burbank Water and Power, 2016; Los Angeles County Waterworks Districts, 2017; Metropolitan Water District, 2015; Palmdale Water District, 2016

Table 3.6-12 Potential Water Line Encounters

Build Alternative	Potential Water Line Encounters
Refined SR14	193
SR14A	159
E1	160
E1A	142
E2	114
E2A	109

Source: Authority, 2021a

California Aqueduct

The California Aqueduct, a critical part of the State Water Project, carries water from the Sacramento-San Joaquin Delta to the San Joaquin Valley and Southern California. The East Branch of the California Aqueduct passes through the Central Subsection near Barrels Springs Road and south of Lake Palmdale (Figure 3.6-11). The East Branch of the California Aqueduct empties into Silverwood Lake then continues underground to Lake Perris; two large water reservoirs associated with the State Water Project. The Refined SR14, E1, and E2 Build Alternatives would cross the East Branch of the California Aqueduct approximately 0.2 mile west of where the aqueduct passes beneath Sierra Highway, while the SR14A, E1A, and E2A Build Alternatives would cross at the intersection of the East Branch of the California Aqueduct and the Sierra Highway.

Palmdale Ditch Enclosure

The 48-inch Palmdale Ditch enclosure conveys watershed runoff from Little Rock Reservoir to Lake Palmdale, supplying water to residences and agricultural land uses. The Palmdale Ditch passes through the Central Subsection near Barrels Springs Road and south of Lake Palmdale (Figure 3.6-13). The Refined SR14, E1, and E2 Build Alternatives would cross the East Branch of the California Aqueduct approximately 0.2 mile west of where the aqueduct passes beneath the Sierra Highway, while the SR14A, E1A, and E2A Build Alternatives would cross at the intersection of the East Branch of the California Aqueduct and the Sierra Highway.

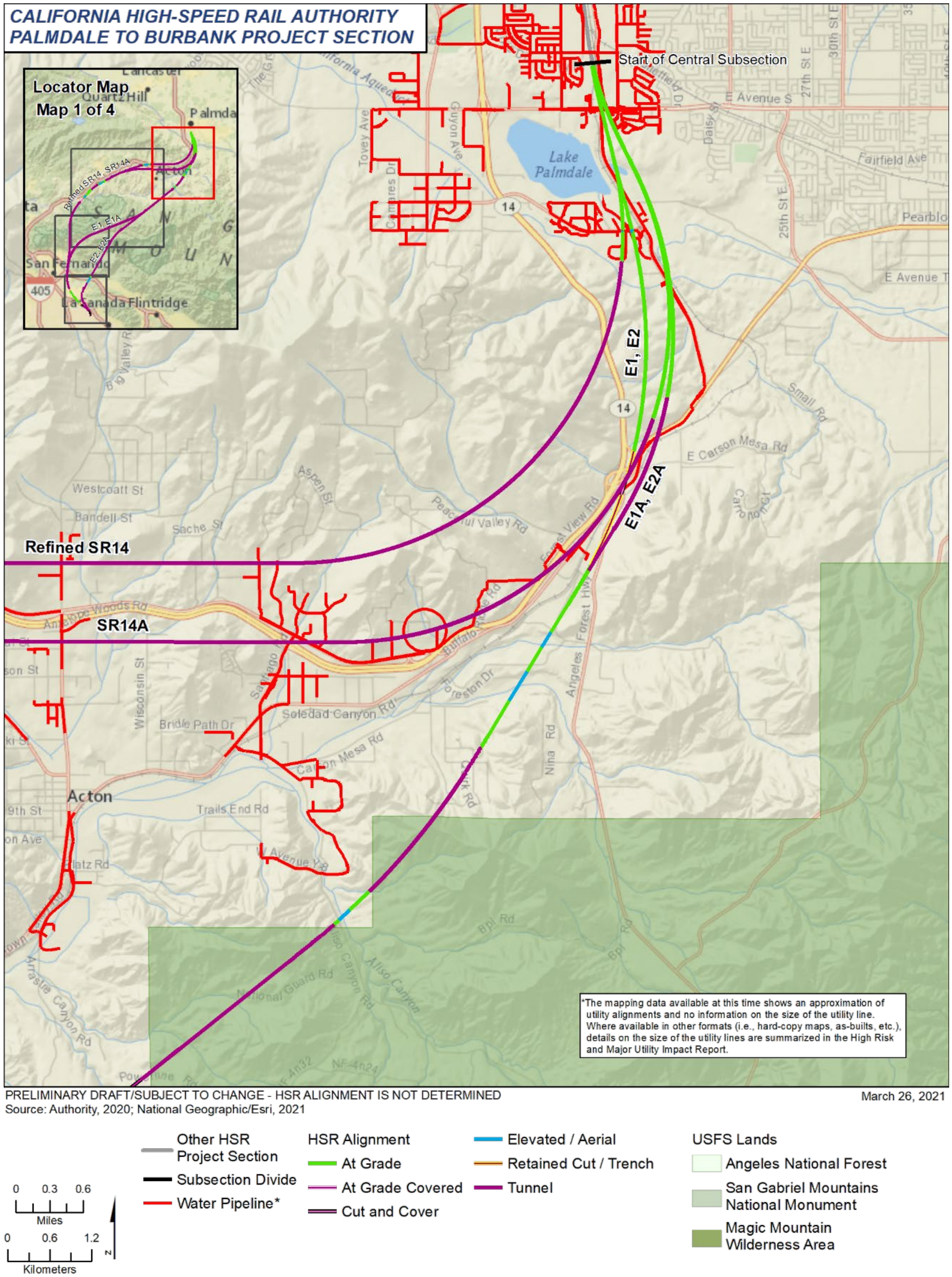


Figure 3.6-10 Water Pipelines Map (Map 1 of 4)

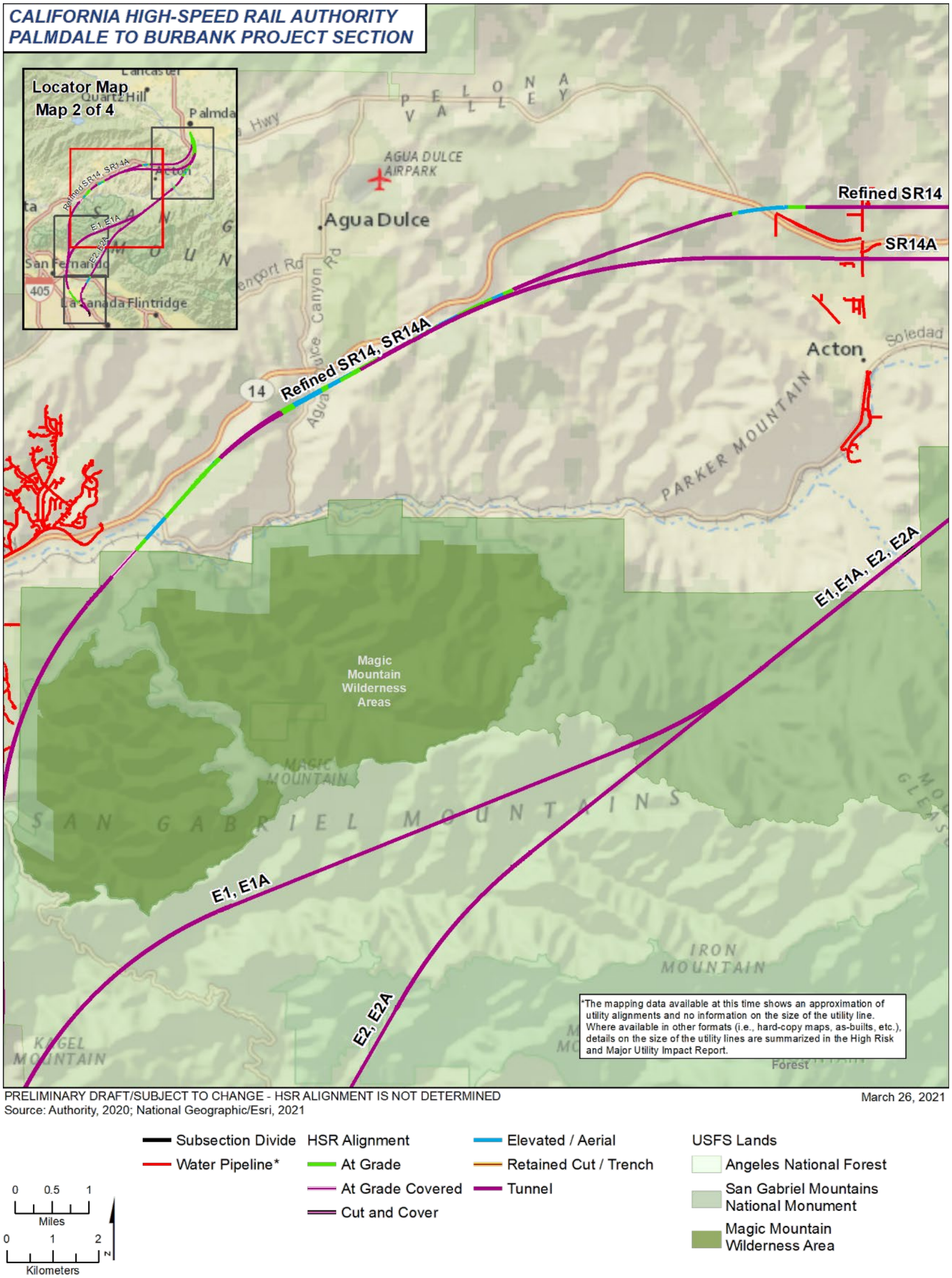


Figure 3.6-11 Water Pipelines Map (Map 2 of 4)

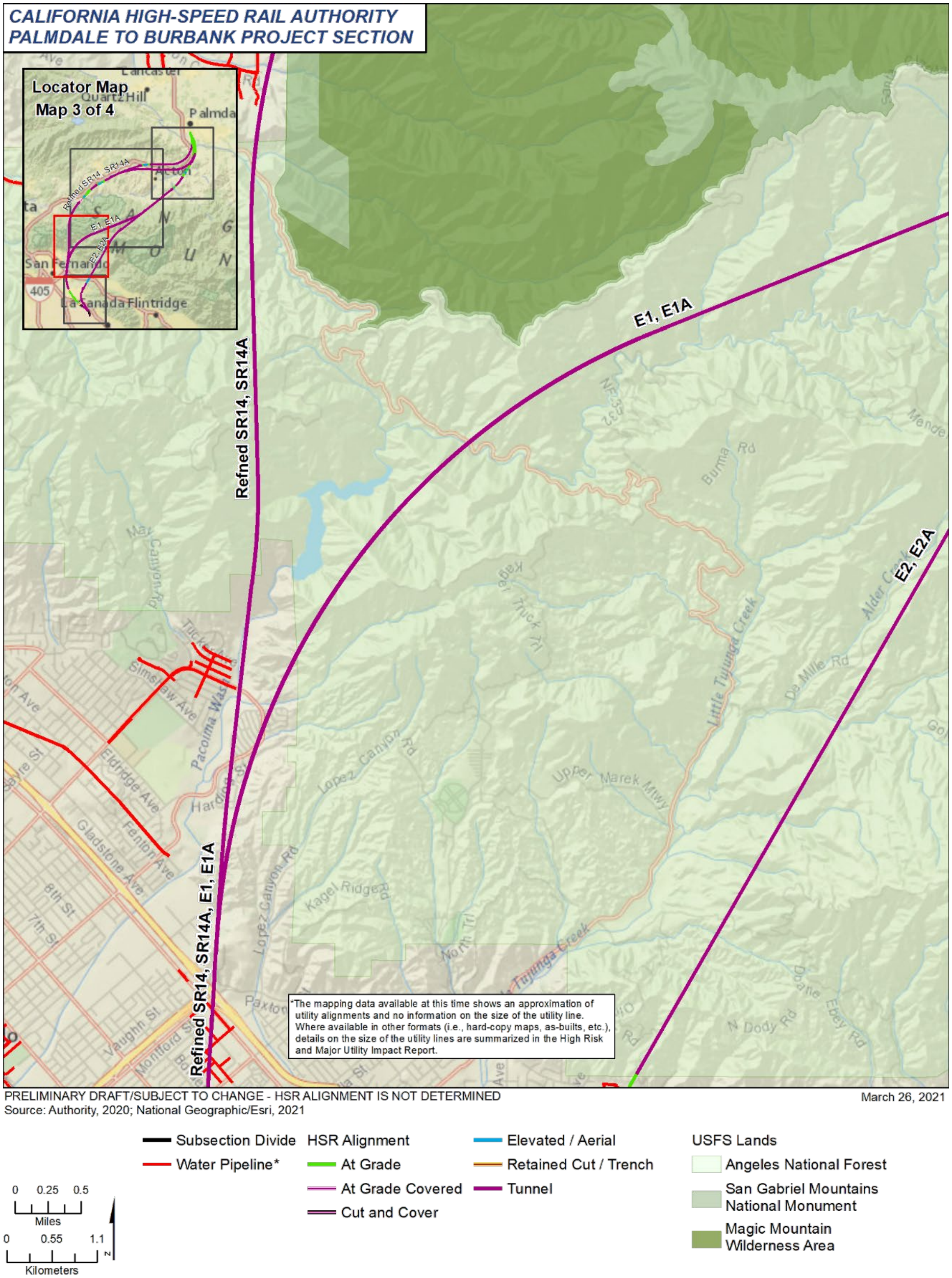


Figure 3.6-12 Water Pipelines Map (Map 3 of 4)

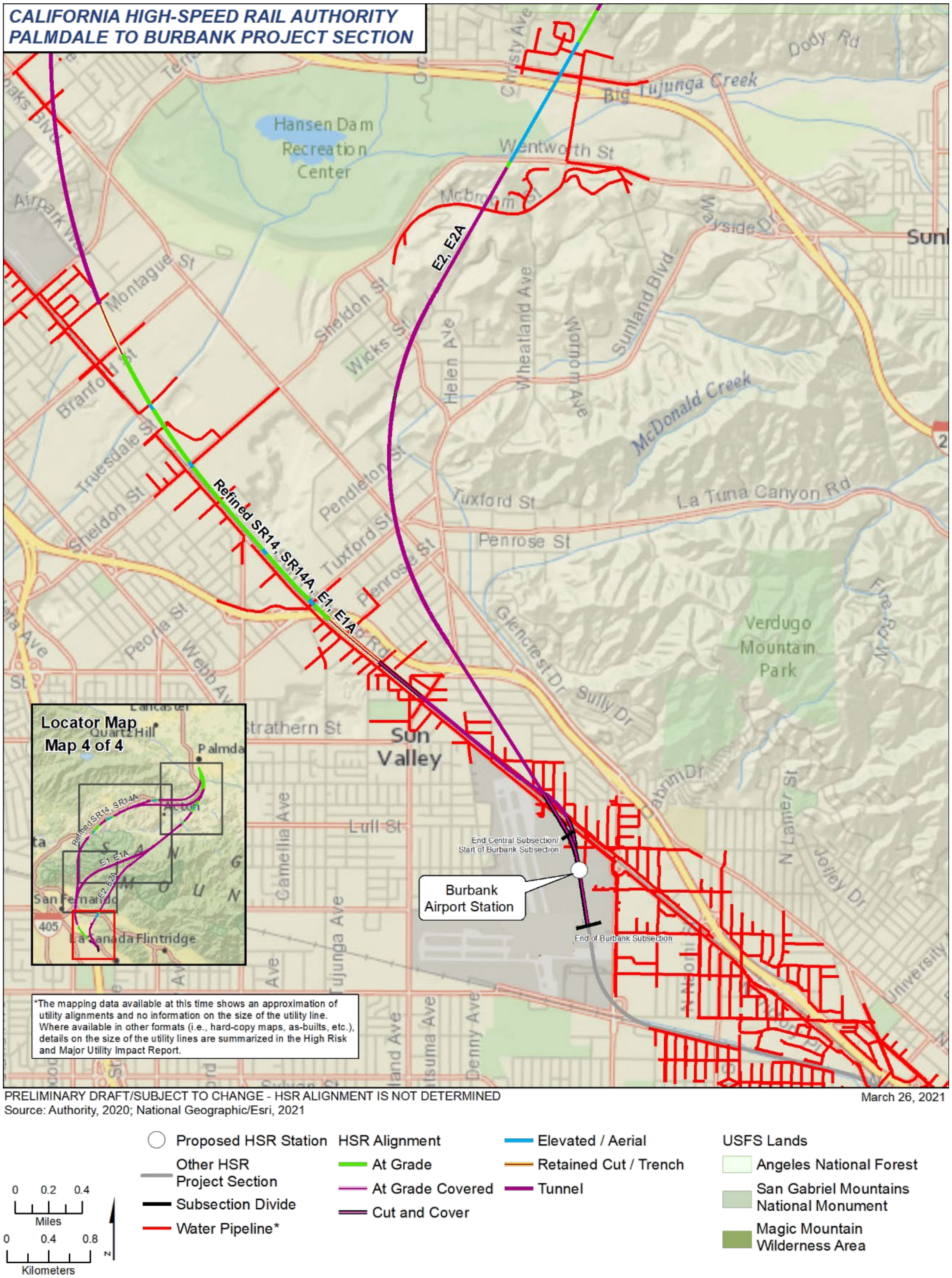


Figure 3.6-13 Water Pipelines Map (Map 4 of 4)

Acton Water Treatment Plant

The Acton Water Treatment Plant is a water treatment facility owned by AVEK. After treatment, the Acton Water Treatment Plant pumps about 4 million gallons of water per day from the plant site into a Los Angeles County Waterworks pipeline. The plant is capable of supplying water to 17,000 residents in the Acton area (AVEK 2021). The SR14A, E1A, and E2A Build Alternative alignments would intersect through approximately 500 feet of the eastern portion of the property, exiting just south of a large tank.

3.6.5.6 Wastewater Infrastructure

Wastewater Treatment

The Los Angeles County Sanitation Districts (LACSD) are a confederation of independent county organizations that operate under one or more joint powers agreements. The LACSD provide wastewater and solid waste management. The wastewater collection systems within the LACSD service area are owned either by the LACSD or by the governing city and are maintained by the Consolidated Sewer Maintenance District of the Los Angeles County Department of Public Works.

The LACSD own and operate several wastewater treatment facilities that service the expanded utility RSA. Wastewater would only be generated at the Maintenance Facility in Lancaster, the Palmdale Station, and the Burbank Station. Therefore, wastewater treatment facilities included within the affected environment are limited to those that serve the cities of Lancaster, Palmdale, and Burbank, where these facilities would be located (see Table 3.6-13).

Table 3.6-13 Wastewater Treatment Service Providers in the Palmdale to Burbank Project Section

Jurisdiction	Facilities	Service Area	Applicable Subsections	Capacity Wastewater Flow (mgd)
Los Angeles County Sanitation Districts	Lancaster Water Reclamation Plant	City of Lancaster	Maintenance Facility	18.0
	Palmdale Water Reclamation Plant	City of Lancaster City of Palmdale	Palmdale Subsection, Maintenance Facility	12.0
	Saugus Water Reclamation Plant	Los Angeles County (unincorporated)	Central Subsection	6.5
	Valencia Water Reclamation Plant	Los Angeles County (unincorporated)	Central Subsection	21.6
City of Los Angeles Department of Public Works	Los Angeles/Glendale Water Reclamation	City of Los Angeles City of Burbank	Burbank Subsection	20.0
	Tillman Water Reclamation	City of Los Angeles City of Burbank	Burbank Subsection	80.0
	Hyperion Treatment Plant	City of Los Angeles City of Burbank	Burbank Subsection	450

Jurisdiction	Facilities	Service Area	Applicable Subsections	Capacity Wastewater Flow (mgd)
City of Burbank Public Works Department	Burbank Water Reclamation Plant	City of Los Angeles City of Burbank	Burbank Subsection	12.5
City of Lancaster Department of Public Works	City of Lancaster Advanced Wastewater Treatment Plant	City of Lancaster and surrounding communities	Maintenance Facility	32.8

Source: LACSD, 2016b
mgd = million gallons per day

Recycled Water

The LACSD also own and operate wastewater recycling programs, providing recycled water to public and private water suppliers to help meet the water supply needs within its service areas. The water reclamation facilities listed in Table 3.6-13 produce treated and disinfected recycled water. The recycled water is used at more than 800 sites in Los Angeles County for a variety of purposes, including industrial, commercial, and recreational applications; groundwater replenishment; agriculture; and the irrigation of parks, schools, golf courses, roadways, and nurseries.

Sanitary Sewer Transmission and Collection Lines

Wastewater generated in the urban centers throughout the expanded utility RSA is conveyed through local collection systems to the city of Burbank, city of Los Angeles, or the LACSD trunk lines, and then to wastewater treatment plants. Some rural areas within the RSAs, such as the community of Acton, utilize septic tanks for wastewater disposal.

The City of Burbank and the City of Los Angeles maintain local wastewater collection lines. For the most part, the concentration of wastewater pipelines per square mile is similar throughout these areas. In these densely populated areas, which contain some of the oldest wastewater collection systems in the state, the cities are reconstructing and rehabilitating wastewater lines regularly with capital improvement projects that follow master planning documents.

All six Build Alternatives cross many subsurface sanitary sewer pipelines within the direct conflicts RSA. These pipelines range in diameter of 6 to 48 inches. Table 3.6-14 quantifies potential sanitary sewer transmission and collection line encounters (i.e., 12-inch diameter or greater) by Build Alternative. Figure 3.6-14 through Figure 3.6-17 illustrate the approximate location of potential wastewater collection line encounters throughout the direct conflicts RSA.

Table 3.6-14 Potential Sanitary Sewer Transmission and Collection Line Encounters

Build Alternative	Potential Sanitary Line Encounters
Refined SR14	89
SR14A	84
E1	86
E1A	75
E2	60
E2A	57

Source: Authority, 2021a

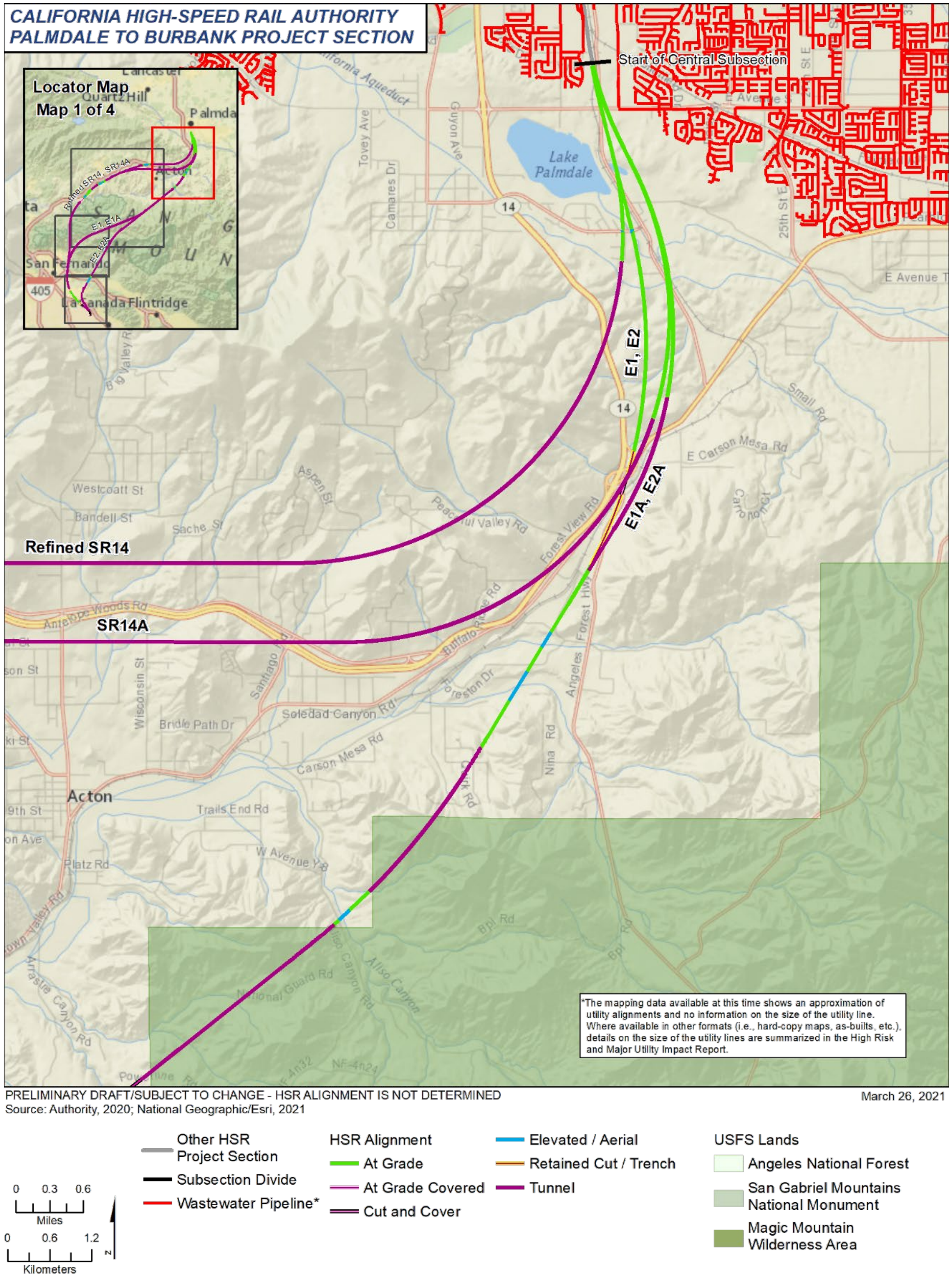


Figure 3.6-14 Wastewater Infrastructure Map (Map 1 of 4)

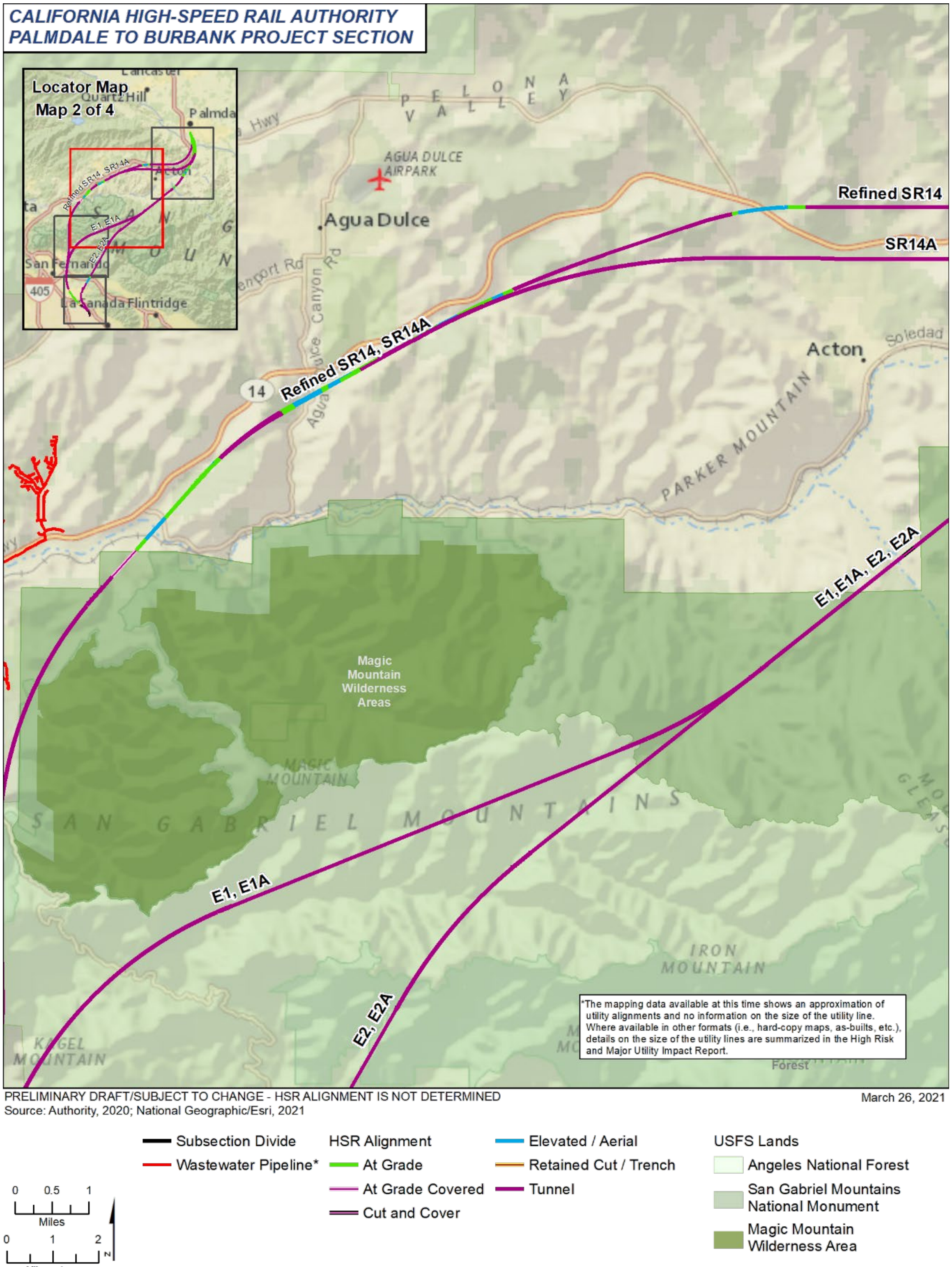


Figure 3.6-15 Wastewater Infrastructure Map (Map 2 of 4)

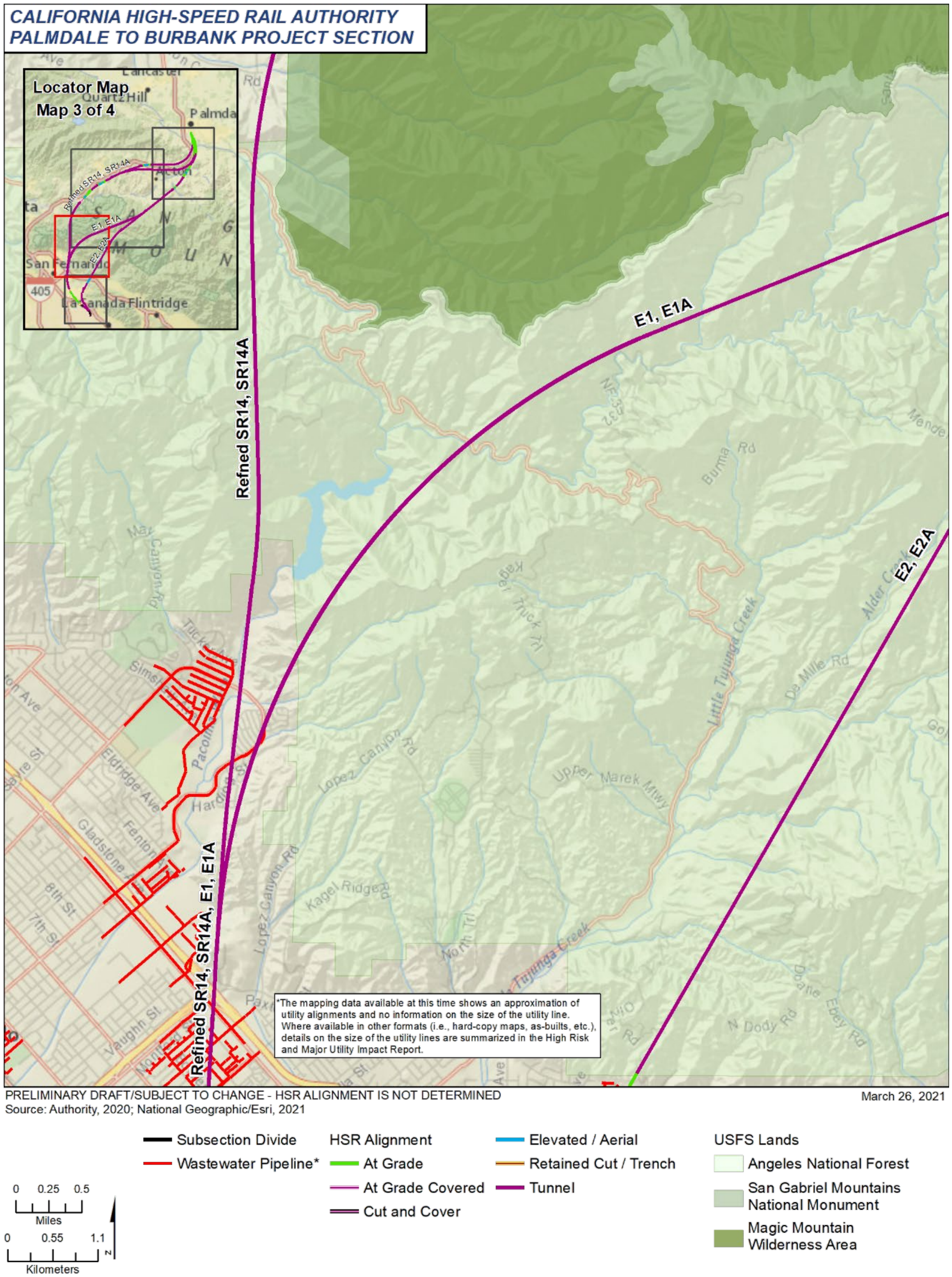


Figure 3.6-16 Wastewater Infrastructure Map (Map 3 of 4)

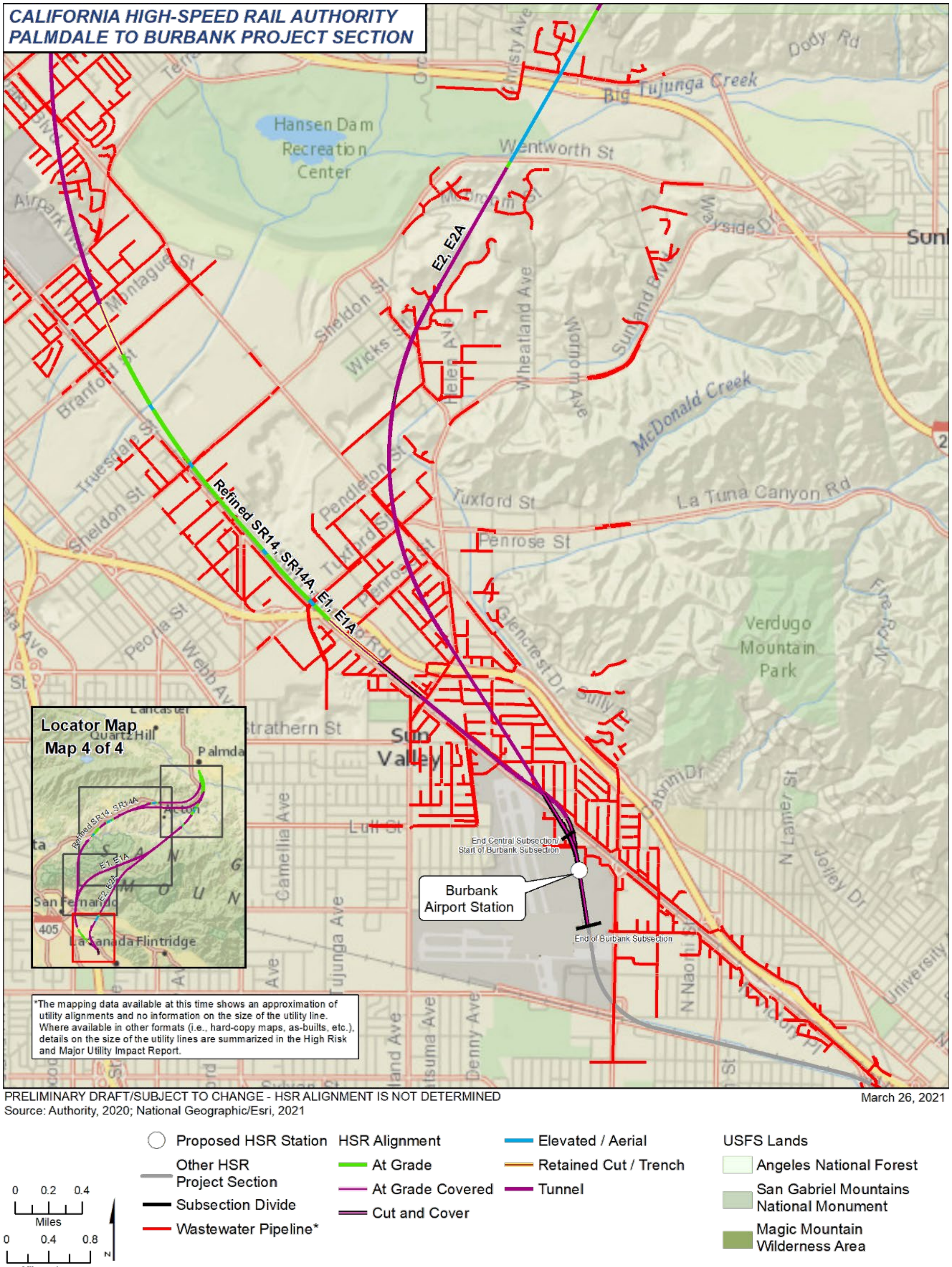


Figure 3.6-17 Wastewater Infrastructure Map (Map 4 of 4)

3.6.5.7 *Stormwater Facilities and Infrastructure*

This section provides a brief description of the stormwater management systems within the expanded utility RSA for the Refined SR14, SR14A, E1, E1A, E2, and E2A Build Alternatives. Generally, storm drain systems are more prominent in developed urban areas. In rural areas, roadside ditches, irrigation canals, and natural drainages convey stormwater runoff.

Palmdale Subsection

Stormwater infrastructure within the City of Palmdale is managed by the City's Department of Public Works and comprises a storm drainage system that connects to both earthen channels and local retention basins. According to the *Sewer System Management Plan* (City of Palmdale 2009), this drainage flows north into the city of Lancaster along the Littlerock and Amargosa Creeks. As stated above, improvements in the Palmdale Subsection area are included in this section for context; however, the HSR facilities and their resulting environmental effects are evaluated in the Bakersfield to Palmdale Project Section EIR/EIS.

Central Subsection

The Los Angeles County Flood Control District oversees most drainage infrastructure within incorporated and unincorporated areas of Los Angeles County, which includes 500 miles of open drainage channel, 2,800 miles of subsurface stormwater pipelines, and 120,000 catch basins (LADPW 2016a) (Figure 3.6-18 through Figure 3.6-21).

Hansen Dam Spreading Grounds

The Los Angeles County Department of Public Works maintains spreading grounds adjacent to river channels and in soft-bottom channels to allow water to percolate into groundwater basins for pumping at a later date. Such groundwater recharge facilities are in areas where the underlying soils are composed of permeable formations and in hydraulic connection with the underlying aquifer. The Hansen Dam Spreading Grounds are within the city of Los Angeles southeast and downstream of the Hansen Dam in an area where the underlying soils are permeable and in hydraulic connection with the underlying aquifer. All six Build Alternatives would traverse through the spreading grounds and create impervious surfaces in groundwater recharge areas. Section 3.8, Hydrology and Water Resources, evaluates impacts on the Hansen Spreading Grounds.

Maintenance Facility

The Los Angeles County Flood Control District is responsible for planning and managing flood control areas in the city of Lancaster. These systems typically transport stormwater runoff to retention or detention basins, often to provide groundwater recharge. As stated above, improvements in the Maintenance Facility area are included in this section for context; however, the HSR facilities and their resulting environmental effects are evaluated in the Bakersfield to Palmdale Project Section EIR/EIS.

Burbank Subsection

The City of Burbank's stormwater infrastructure includes a system of storm drains and channels. Figure 3.6-21 depicts major and high-risk stormwater pipelines in the Burbank Subsection. Burbank is a participant in the Upper Los Angeles River Enhanced Watershed Management Program, which focuses on capturing, treating, and reusing its stormwater. Stormwater in Burbank that is not treated and reused is channeled into the Los Angeles County Drainage Area, which is drained by the Los Angeles and San Gabriel Rivers.

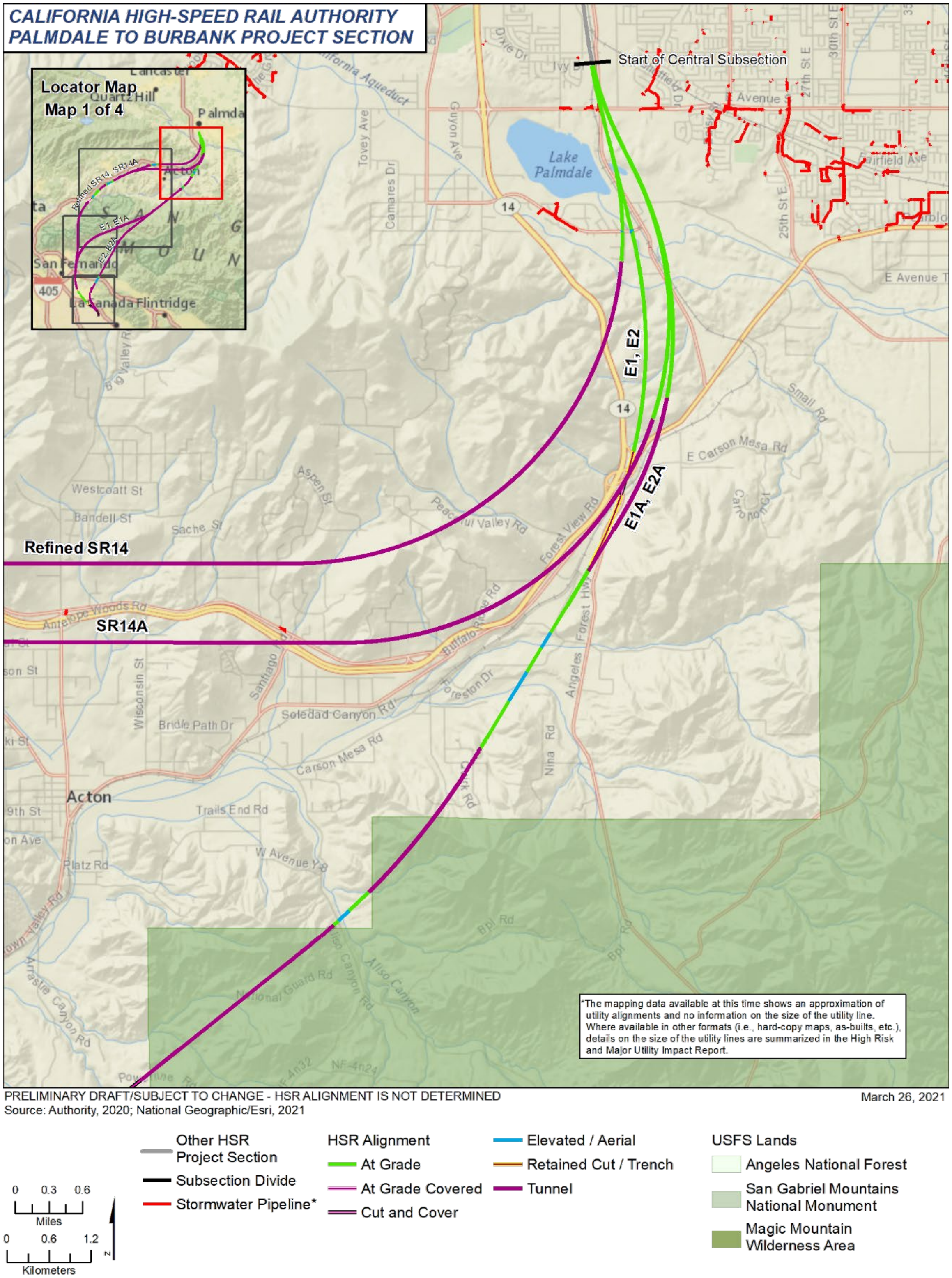


Figure 3.6-18 Stormwater Facilities and Infrastructure Map (Map 1 of 4)

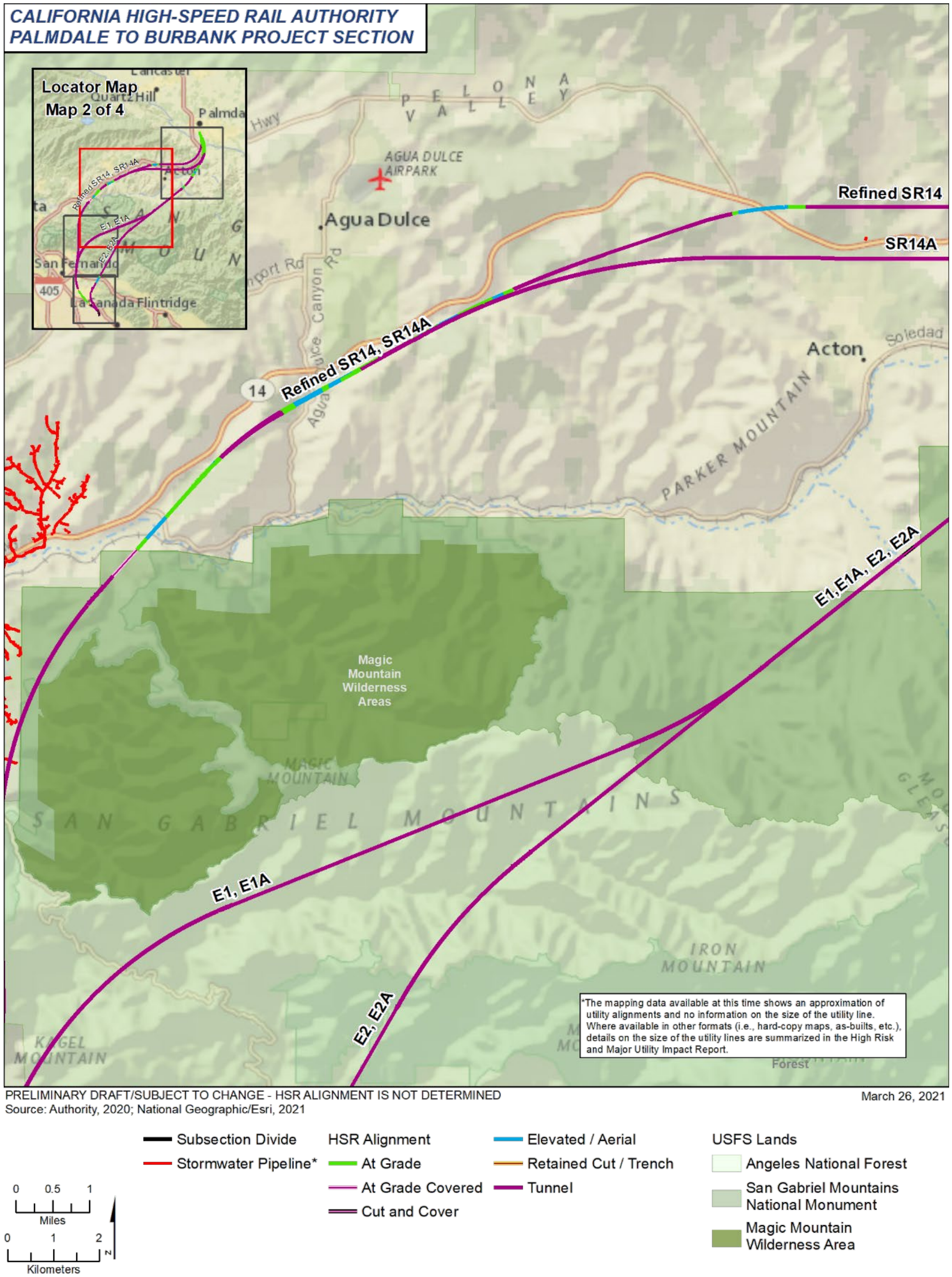
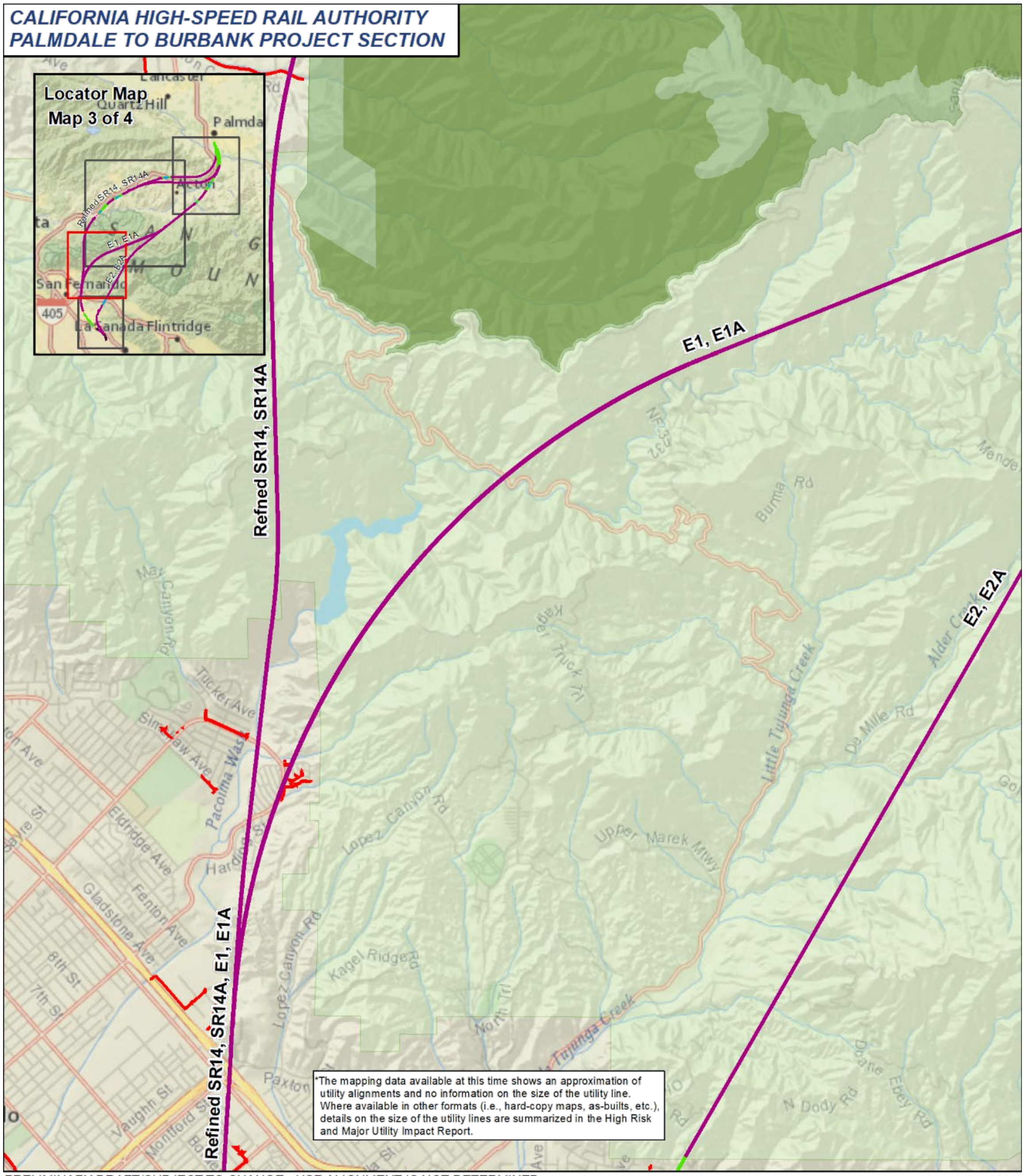


Figure 3.6-19 Stormwater Facilities and Infrastructure Map (Map 2 of 4)



PRELIMINARY DRAFT/SUBJECT TO CHANGE - HSR ALIGNMENT IS NOT DETERMINED
Source: Authority, 2020; National Geographic/Esri, 2021

March 26, 2021

Subsection Divide
Stormwater Pipeline*

HSR Alignment
At Grade
At Grade Covered
Cut and Cover
Elevated / Aerial
Retained Cut / Trench
Tunnel

USFS Lands
Angeles National Forest
San Gabriel Mountains National Monument
Magic Mountain Wilderness Area

0 0.25 0.5 Miles
0 0.55 1.1 Kilometers
N

Figure 3.6-20 Stormwater Facilities and Infrastructure Map (Map 3 of 4)

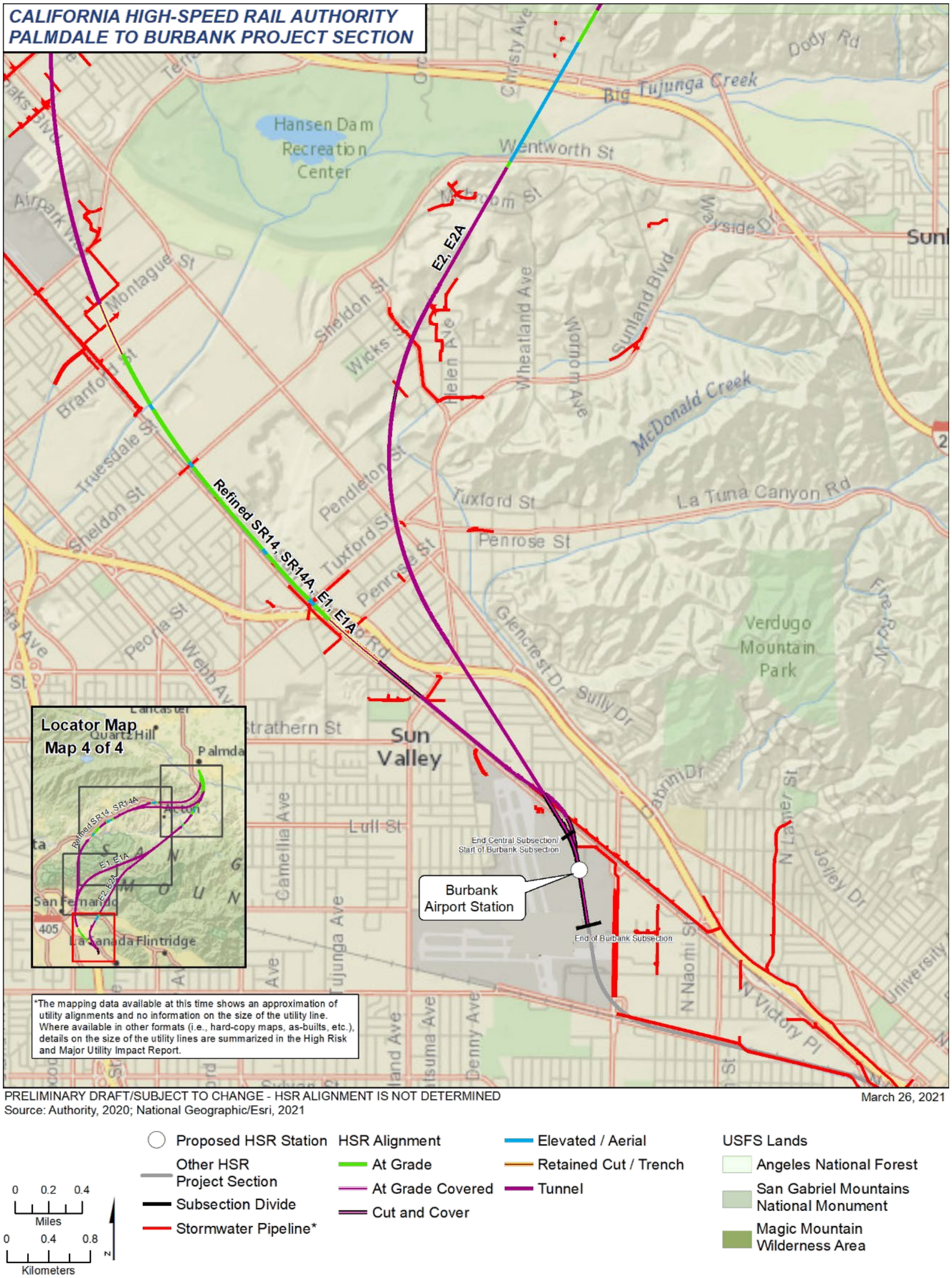


Figure 3.6-21 Stormwater Facilities and Infrastructure Map (Map 4 of 4)

3.6.5.8 *Solid Waste Disposal Facilities*

Landfills that would serve the expanded utility RSA are operated by several regional and local sanitation districts or private solid waste franchises. CalRecycle has regulatory authority over all the permitted solid waste facilities in the state. Table 3.6-15 lists the nearest landfills that would be utilized for solid waste disposal services, by subsection.

Table 3.6-15 Solid Waste Facilities for Construction and Operation Waste of the Palmdale to Burbank Project Section

Landfill[1]	Subsection	City/County	Distance from HSR features (miles)	Daily Capacity (tons per day)	Estimated Remaining Landfill Capacity (mcy)	Estimated closure year
Antelope Valley Recycling and Disposal Facility	Palmdale Subsection and Maintenance Facility	City of Palmdale	1.1	3,564	18.3	2042
Sunshine Canyon Landfill	Central Subsection	Sylmar	5.8	12,100	80.1	2037
Burbank Landfill	Burbank Subsection	City of Burbank	2.3	240	5.2	2053
Lancaster Landfill	Maintenance Facility	Los Angeles County (unincorporated)	5.5	3,000	14.5	2044
Mojave-Rosamond Landfill		Kern County	22.9	3,000	76.3	2033

Sources: Antelope Valley Waste Management, 2017; Browning-Ferris Industries of California, Inc., 2017; CalRecycle Solid Waste Information System, 2017; City of Burbank, 2017; Kern County Administrative Office, 2018

[1] After 56 years of operation, the Puente Hills Landfill closed on October 31, 2013. This landfill previously serviced Los Angeles County. Since its closure, the facility is only accepting clean (nonhazardous) fill dirt.

HSR = high-speed rail

mcy = million cubic yards

The Central Subsection Refined SR14, SR14A, E1, and E1A Build Alternatives would cross under the Lopez Canyon Landfill, which was formerly operated by the City of Los Angeles, but has been closed since 2009. Potential hazards associated with construction of the Build Alternatives near landfills are discussed in Section 3.10, Hazards and Hazardous Materials.

3.6.5.9 *Overhead and Underground Power Utilities*

Southern California Edison and LADWP provide electricity for most of Southern California. Southern California Edison provides electricity for 15 million people over 180 cities across a 50,000-square-mile service area (Southern California Edison 2021). LADWP provides electricity for more than 4 million people in the Los Angeles region across a 473-square-mile service area (LADWP 2019). Table 3.6-16 quantifies potential overhead and underground power utility encounters by Build Alternative. Figure 3.6-22 through Figure 3.6-25 illustrate the approximate location of potential power lines throughout the direct conflicts RSA.

Table 3.6-16 Overhead and Underground Power Utility Conflicts

Build Alternative	Potential Overhead Power Line Encounters	Potential Underground Power Line Encounters
Refined SR14	85	7
SR14A	70	7
E1	64	7
E1A	55	7
E2	53	7
E2A	50	7

Source: Authority, 2021a

Los Angeles Department of Water and Power Transmission Towers

In the Central Subsection are two existing electrical transmission towers, within the LADWP receiving station at San Fernando Road and Sheldon Street. These two towers connect to an electrical corridor adjacent to the Tujunga Wash channel, which leads to the Fulton Distribution Station. The information provided by LADWP does not disclose the voltage rating for this electrical line; however, The Center for Land Use Interpretation indicates that the voltage in this location ranges from 115 to 230 kV (Center for Land Use Interpretation 2021).

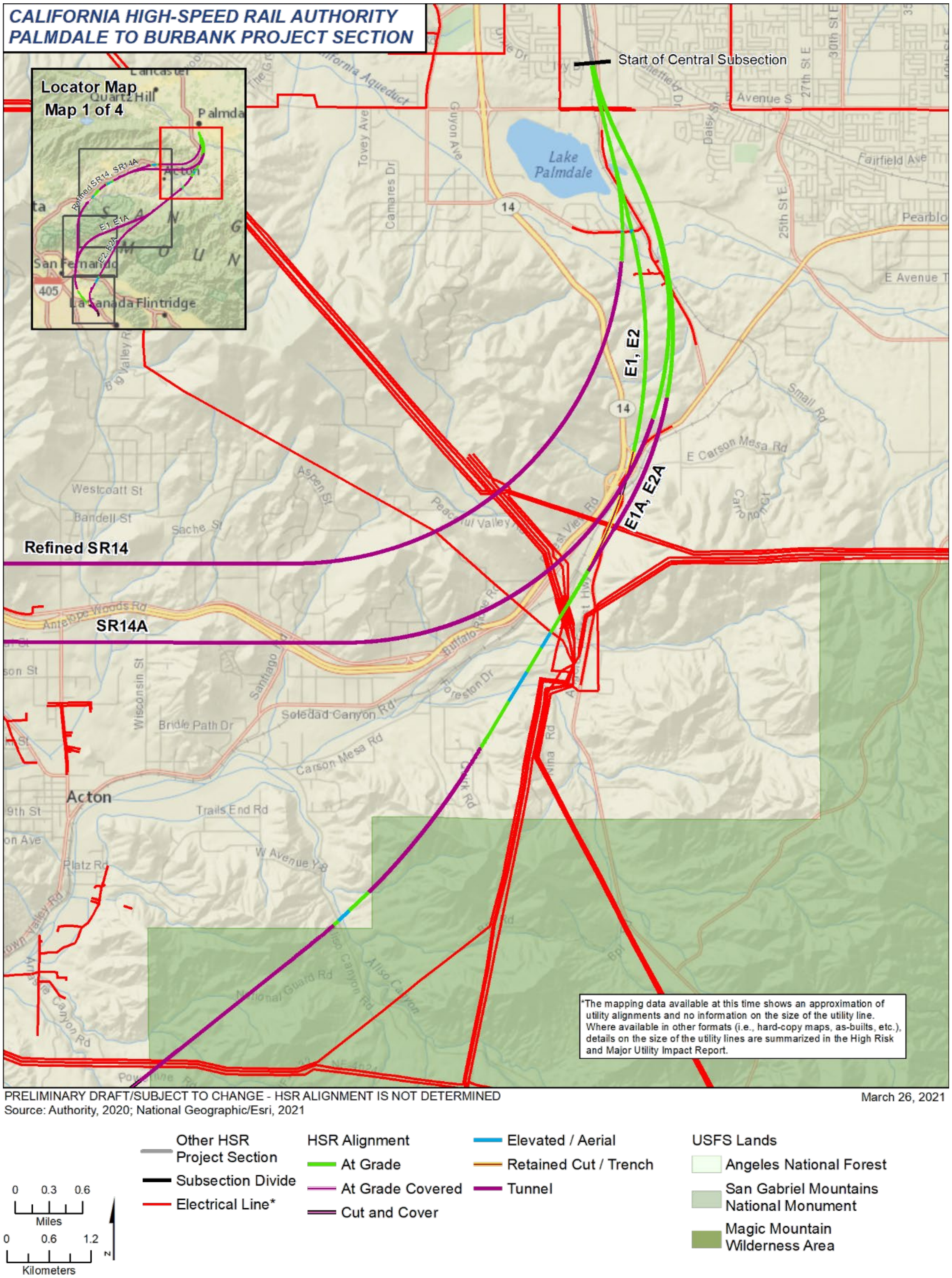


Figure 3.6-22 Electrical Lines Map (Map 1 of 4)

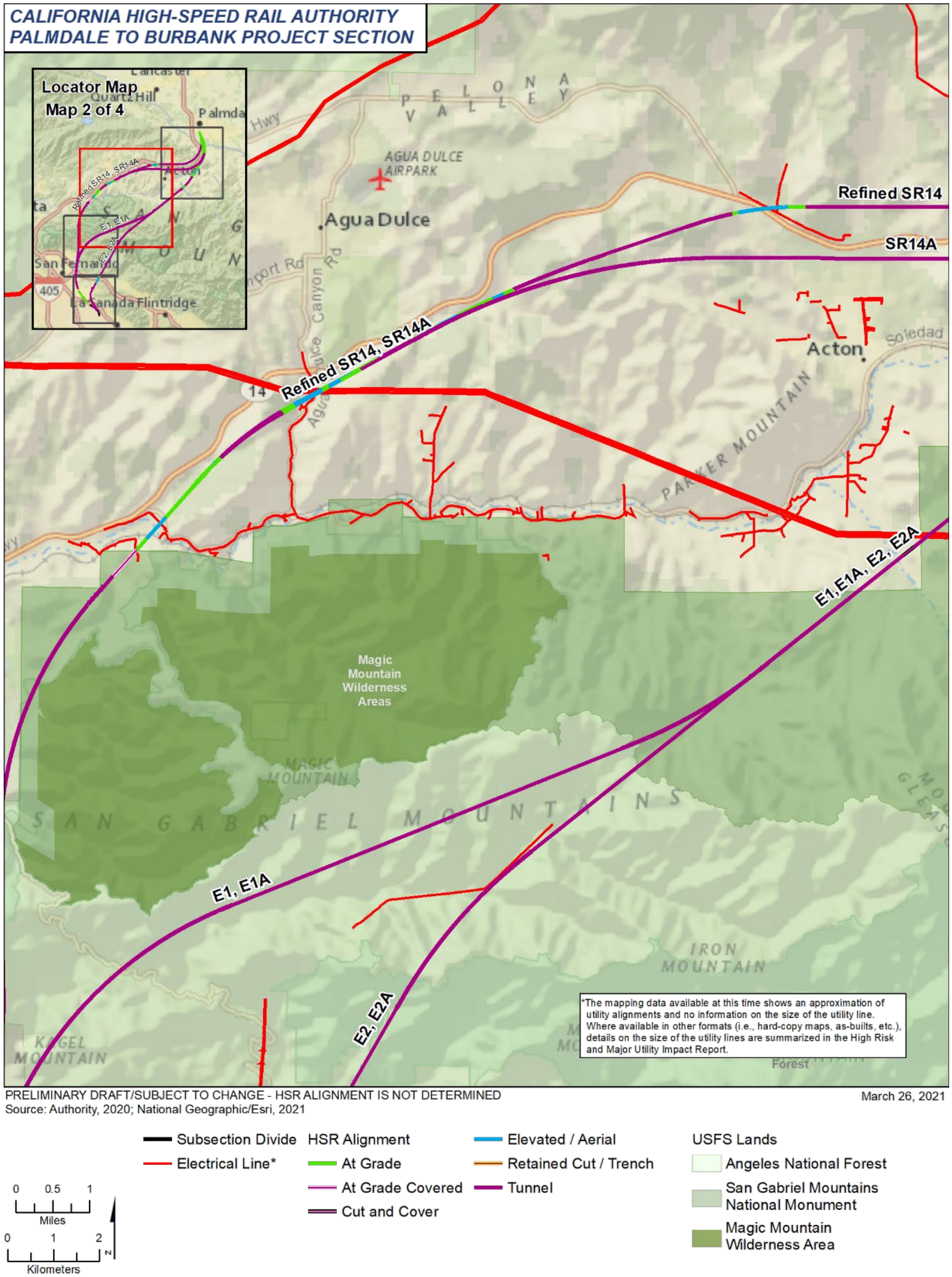


Figure 3.6-23 Electrical Lines Map (Map 2 of 4)

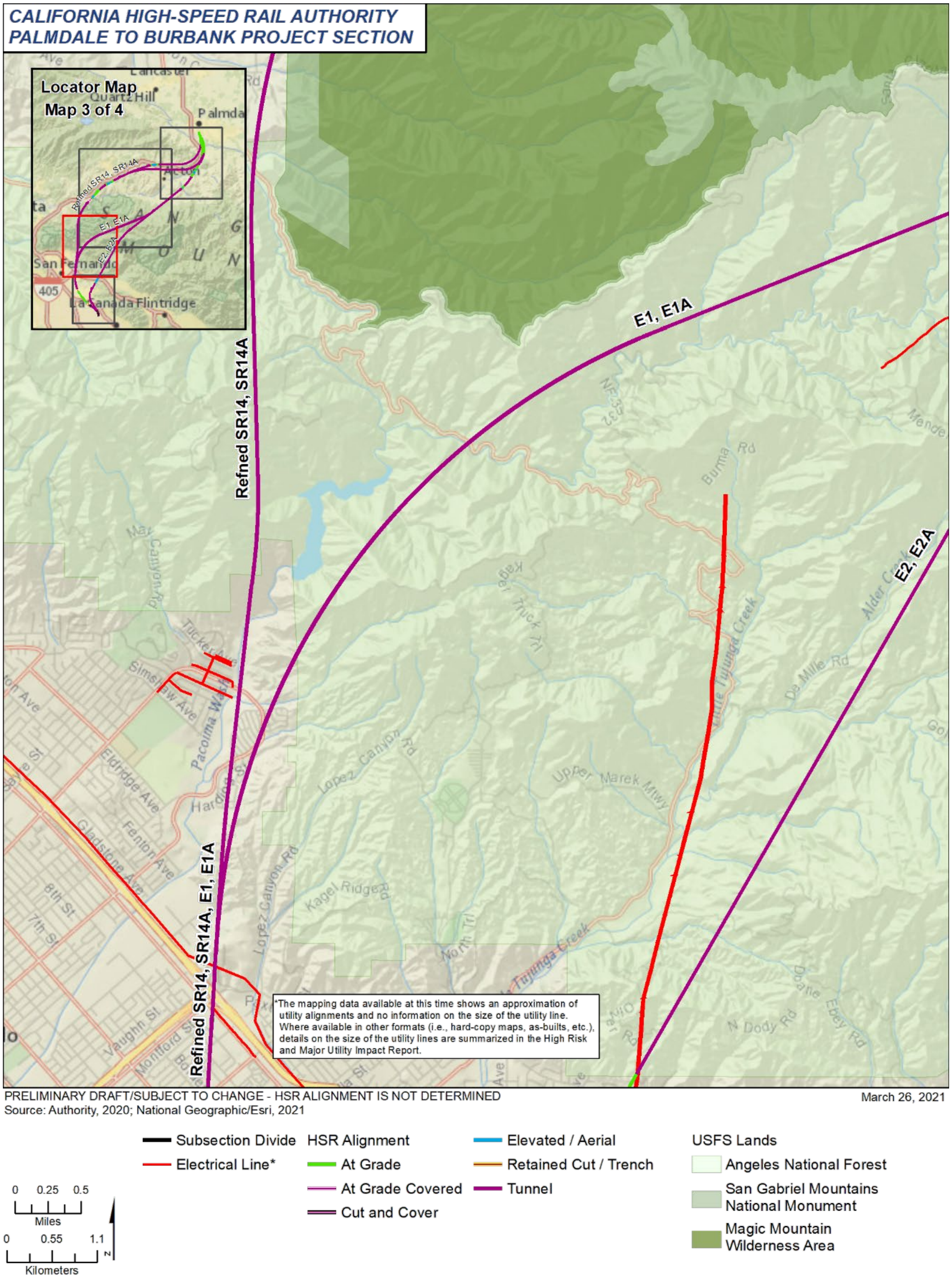


Figure 3.6-24 Electrical Lines Map (Map 3 of 4)

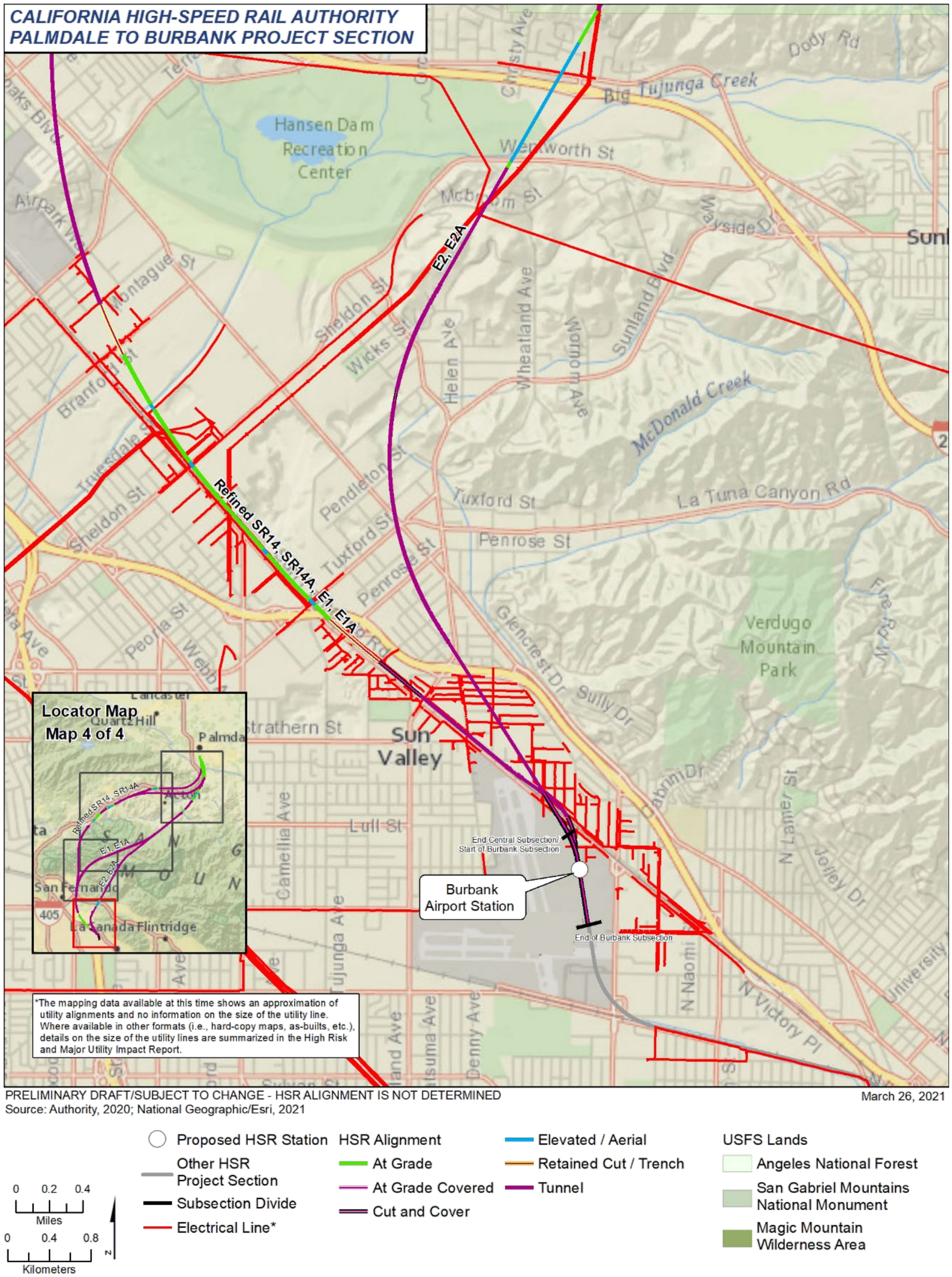


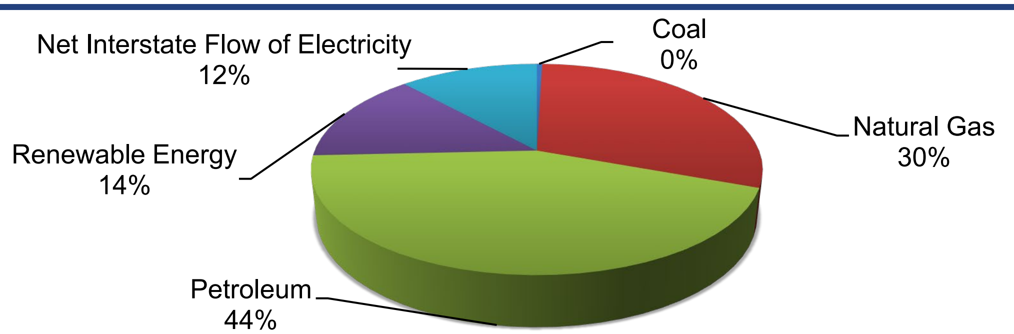
Figure 3.6-25 Electrical Lines Map (Map 4 of 4)

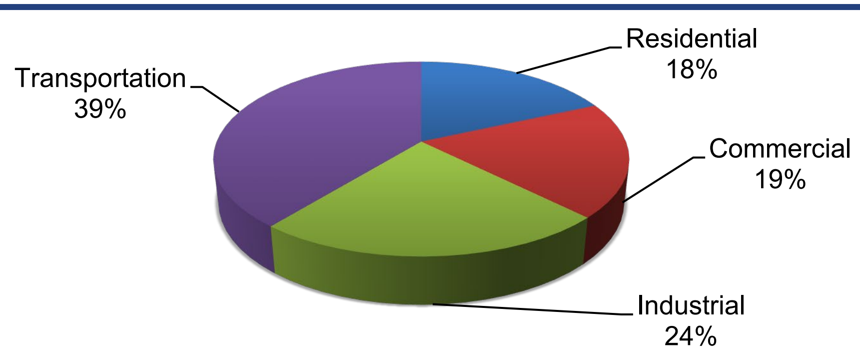
3.6.5.10 Energy

The 2018 Integrated Energy Policy Report Update (CEC 2018a), the updated energy consumption and peak demand values from the California Energy Demand 2014-2024 Final Forecast (CEC 2013), and the California Energy Demand 2018-2030 Revised Forecast (CEC 2018b) provide a summary of existing energy resources within the expanded utility RSA. The analysis of existing energy resources considers current estimates of peak demand and supply capacity within the electricity grid controlled by the California Independent System Operator. The fuel usage from other modes of transportation affected by the Palmdale to Burbank Project Section is also reviewed.

As displayed in Figure 3.6-26, the largest source of energy consumed in California is petroleum at 44 percent, followed by natural gas at 30 percent. In 2018, coal supplied less than 1 percent of California's energy consumption at just 33.3 trillion British thermal units (Btu). The transportation sector alone constitutes 39 percent of all petroleum consumption, with motor gasoline comprising the largest amount at 1,716.3 trillion Btu (EIA 2020a).

California is ranked second in energy consumption in the United States, behind Texas. In California, the transportation sector is the largest energy consumer at 39 percent. The industrial sector is the second largest energy consumer at 24 percent, followed by the commercial sector at 19 percent, and the residential sector at 18 percent, as shown on Figure 3.6-26 (EIA 2020a).





Source: EIA, 2020a

Figure 3.6-26 California Energy Consumption by Source and End-Use Sector (2018)

Petroleum

Domestic crude oil production increased steadily between 2010 and 2019 (EIA 2019a). According to the United States Energy Information Administration, 65 percent of U.S. crude oil comes from Texas, North Dakota, California, Alaska, and Oklahoma, while approximately 16 percent of crude oil came from offshore wells in the Gulf of Mexico in 2015 (EIA 2019a). In April 2019, Texas, North Dakota, and California produced 149,002, 40,778, and 13,543 thousand barrels of crude oil, respectively (EIA 2019a).

As of November 2018, California was ranked third in the nation in petroleum refining capacity, and accounts for more than one-tenth of the total U.S. capacity. Crude oil pipelines connect the State's oil production to the refining centers in the Central Valley, Los Angeles, and the San Francisco Bay Area. California refineries also process large volumes of Alaskan and foreign crude oil received at ports in Los Angeles, Long Beach, and the Bay Area. Crude oil production in California and Alaska has declined, and California refineries have become increasingly dependent on foreign imports to meet the state's needs. As of 2018, California sourced approximately 31.1 percent of its crude oil in-state, while 11.4 percent came from Alaska, and 57.5 percent came from foreign sources (CEC 2019b). Of the foreign sources, crude oil imports to California were led by Saudi Arabia (36 percent), Ecuador (20 percent), Colombia (13 percent), and Kuwait (8 percent) (EIA 2018).

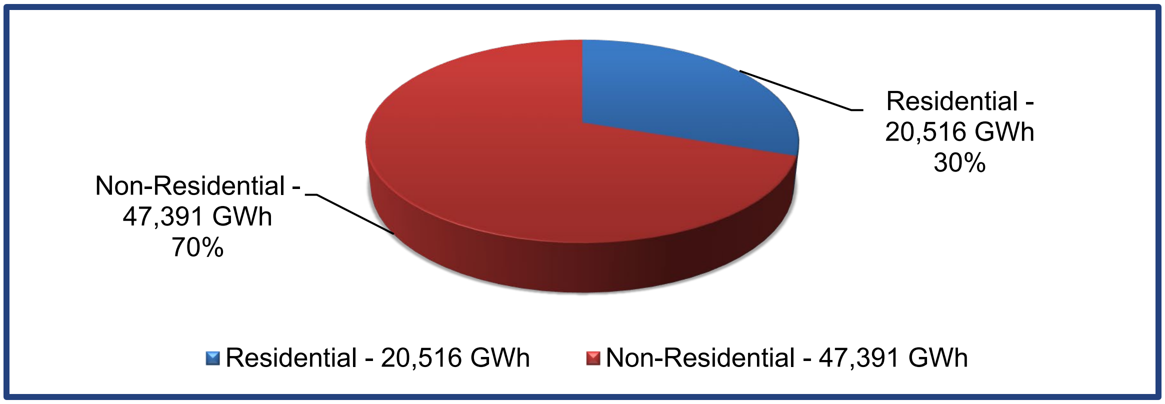
California's 18 largest refineries can process a wide variety of crude oil types. According to the CEC, California has a combined capacity of almost 2 million barrels per day. To meet strict federal and state environmental regulations, California refineries are configured to produce cleaner fuels, including reformulated gasoline and low-sulfur diesel. California refineries often operate at or near maximum capacity because of the high demand for those petroleum products.

Electricity

Existing Electricity Demand

Electricity demand is measured in two ways: total consumption and peak demand. Total electricity consumption is the amount of electricity—measured in gigawatt-hours (GWh)—used by consumers in the state. Electric energy is also measured in watts, kilowatts (equivalent to 1,000 watts), and megawatts (MW [equivalent to 1,000 kilowatts]). A single MW is enough power to meet the expected electricity needs of 1,000 typical California homes (Authority 2004). For comparison, 1 gigawatt would be enough to power 1,000,000 typical homes. Electric consumption over time is measured in kilowatt-hours, megawatt-hours, and GWh. According to the CEC, total statewide electricity consumption grew from 274,254.6 GWh in 2010 to 284,027 GWh in 2016.

In contrast to the concept of total energy consumption, peak demand (measured in MW) is the amount of generation needed to keep electrons flowing in the electricity system at any given moment of peak demand, usually integrated over a 1-hour interval. California's peak demand typically occurs on a day in August between 3:00 p.m. and 5:00 p.m. High temperatures lead to increased use of air conditioning, which—in combination with industrial loads, commercial lighting, office equipment, and residential refrigeration—comprise the major consumers of electricity in the peak demand period in California. According to the CEC, peak electricity demand for California in 2016 was 60,713 MW (CEC 2018b). Figure 3.6-27 shows electricity consumption for Los Angeles County in 2018.



Source: CEC, 2018cf

Figure 3.6-27 Los Angeles County Electricity Consumption by Sector (2018)

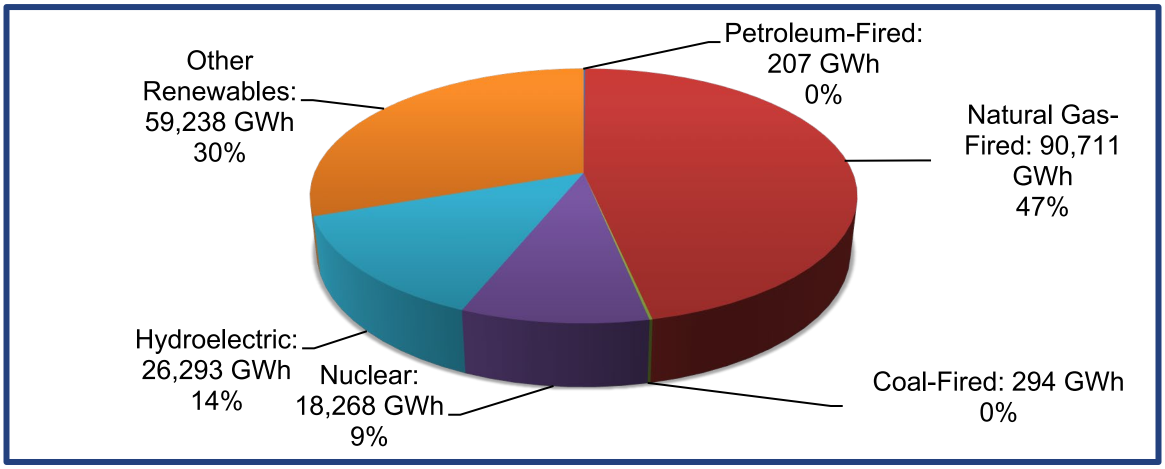
Existing Electricity Generation Capacity

Electricity in California is produced from a variety of energy sources. Table 3.6-17 shows the different sources and respective quantities of energy consumed to provide electricity for the electric power industry in California. Additionally, Figure 3.6-28 shows California's net electricity generation by source in 2018.

Table 3.6-17 Annual Energy Consumption for Electricity Generation in California by Energy Source

Energy Source	Consumption for Electricity (Various Units)
Coal	67,400 (tons)
Geothermal	110,691 (Btu)
Natural Gas	68,140,689 (million cubic feet)
Other Gases	10,310 (billion Btu)
Petroleum	31,628 (barrels)

Source: CEC, 2016a
Btu = British thermal units



Source: CEC, 2020a

Figure 3.6-28 California Net Electricity Generation by Source (2018)

The above-mentioned energy sources are converted to electrical energy both in-state and out-of-state. In-state generation capacity in 2016 equaled 70,857 GWh from governmental and utility-owned in-state facilities and 124,170 GWh from commercial in-state generation facilities (CEC 2020a). Energy imports in 2018 equaled 39,561 GWh from the Pacific Northwest and 63,531 GWh from the Pacific Southwest, totaling 103,092 GWh (CEC 2020b).

Existing Electric Power Generation Capacity

According to the CEC, California had an installed in-state electric generation capacity of 292,039 GWh in 2017. The reliability of Southern California's electricity system has been challenged in recent years by several factors, including the closure of the San Onofre Nuclear Generating Station and the impending retirement of several fossil-generating units using once-through cooling technologies.

The CEC's records show that total system power for California decreased approximately 2 percent in 2018, and that in-state electricity production dropped by 6 percent, compared to 2017 data. However, while California's in-state electricity production was down, net imports were up by 6 percent, partially offsetting the decline. According to the CEC, this overall decrease is consistent with the trends (energy savings associated with solar photovoltaic systems) observed in energy demand, and due in part to reduced generation from hydroelectric power plants as dry conditions returned to the state (CEC 2019c).

Projected Electricity Demand and Generation Capacity

According to the CEC's 2016 Annual Energy Outlook, within the electric power sector, several planned changes to the state's energy resources would affect the fuel sources for California's existing generation capacity. Namely, the anticipated retirement of several out-of-state nuclear facilities, including the James A. Fitzpatrick, Pilgrim, and Oyster Creek plants, which were retired in December 2016, June 2019, and December 2019, respectively.

In addition, Pacific Gas and Electric recently announced a joint proposal with labor and leading environmental organizations that would increase investment in energy efficiency, renewables, and storage beyond current state mandates while phasing out Pacific Gas and Electric's production of nuclear power in California by 2025. The joint proposal would replace power produced by two nuclear reactors at the Diablo Canyon Power Plant with a cost-effective, GHG-free portfolio of energy efficiency, renewables, and energy storage. It includes a Pacific Gas and Electric commitment to a 55 percent renewable energy target in 2031. Pacific Gas and Electric intends to operate Diablo Canyon to the end of its current operating licenses, which expire on

November 2, 2024 (Unit 1) and August 26, 2025 (Unit 2) (San Luis Obispo Chamber of Commerce 2016).

The California Energy Demand 2016–2026 Revised Forecast was adopted in 2016 (CEC 2016a). By 2025, energy consumption is projected to be 2.8 percent lower than in 2014, approximately 9,000 GWh. The projected average annual growth rate between 2014 and 2025 is 0.97 percent per annum for the highest energy demand projection, which incorporates the assumptions that there would be relatively high economic/demographic growth, low electricity rates, low self-generation, and low climate change impacts during the projection period.

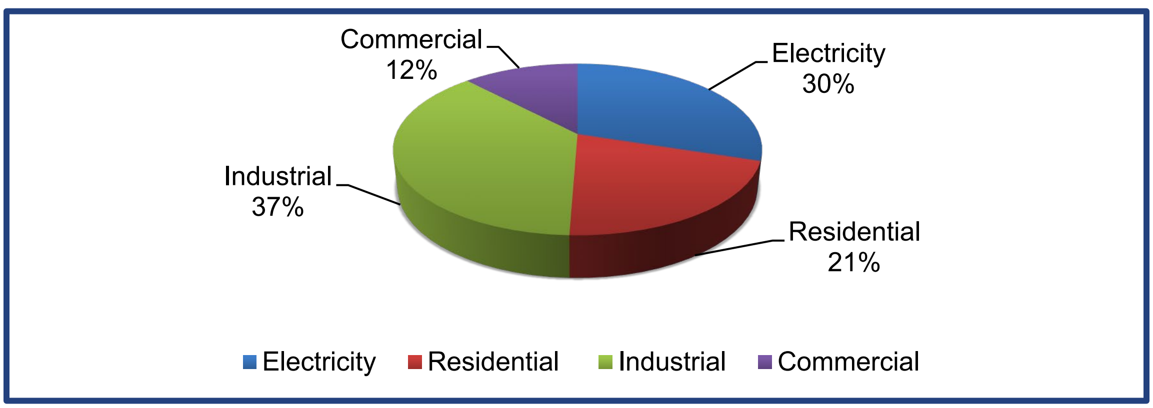
Projected Electricity Transmission Capacity

With the more stringent standards accompanying Governor Brown's Executive Order B-30-15, California is currently moving away from a carbon-based energy system. To facilitate improved electric transmission, while maintaining California's rigorous renewables standards, several agencies initiated the Renewable Energy Transmission Initiative 2.0.[6] The purpose of the initiative is to explore the plentiful renewable resources within California, consider the environmental constraints, and identify and implement transmission opportunities that could integrate renewable energy efficiently within the statewide electrical grid.

In addition to Renewable Energy Transmission Initiative 2.0, the California Independent System Operator's 2016–2017 Transmission Planning Process outlines the approach that state agencies are assuming to meet increased transmission demand, as well as to improve existing transmission capacity (CAISO 2016).

Natural Gas

Natural gas contributed to 32 percent of energy consumption in the United States in 2018 with California consuming approximately 30 percent of the country's natural gas (EIA 2020b). Additionally, natural gas-fired power plants account for approximately three-fifths of California's in-state electricity generation. Figure 3.6-29 illustrates the consumption of natural gas in California by sector.



Source: EIA, 2020c

Figure 3.6-29 California Natural Gas Consumption by Sector (2018)

[6] Agencies implementing Renewable Energy Transmission Initiative 2.0 include the CEC, the CPUC, and the California Independent System Operator.

Renewable Energy Resources

In October 2015, Governor Brown signed SB 350 to codify ambitious climate and clean energy goals. One key provision of SB 350 is for retail sellers, and publicly owned utilities to procure "half of the state's electricity from renewable sources by 2030." The CEC estimates that about 32 percent of its electricity retail sales in 2018 were served by renewable energy generated from sources such as wind, solar, geothermal, biomass, and small hydroelectric (CEC 2019c).

California's operating renewable energy capacity is composed of facilities both within and outside the state. The CEC collects data from power plants with a total nameplate capacity of 1 MW or more that are within California, or physically located outside California with a first point of interconnection into California. Statewide, operating capacity of renewable resources was 34,112 MW as of February 2019. The total includes nearly 9,460 MW of solar photovoltaic self-generation capacity and very small amounts of self-generation wind and biomass capacity (CEC 2020c).

Transportation Energy Consumption

Existing Transportation Energy Consumption

Transportation accounts for a large portion of California's energy budget, with approximately 39 percent of the state's energy consumption resulting from the transport of goods and people. The population of California is projected to increase 28 percent by 2030. Because of trends in travel demand, congestion, and other adverse travel conditions, the market for intercity travel in California that would be served by the California HSR System is projected to increase by up to 46 percent over the next 30 years. In 2019, motor gasoline accounted for about 45 percent of petroleum consumption in the United States, at 9.27 million barrels (EIA 2020d).

Although those traveling to, visiting, or leaving the expanded utility RSA have several options for intercity travel—automobiles on interstate and state highways, commercial airlines, conventional passenger trains (i.e., Amtrak) on freight and/or commuter rail tracks, and long-distance commercial bus transit—the automobile is the predominant mode for intercity trips. Table 3.6-18 shows the high scenario estimate for annual VMT and total energy consumed from the transportation sector in 2015. Energy rates were determined using carbon balance equations as recommended by CARB.

Table 3.6-18 Total Energy Consumption from the Transportation Sector in 2015 (High Ridership Scenario)

Region	Annual Use	Total Energy Consumed (MMBtu)
Roadway		
Los Angeles County	73,236,845,700 VMT	344,443,866
State of California	203,997,417,634 VMT	918,295,574
Planes		
Southern California[1]	100,674 flights	12,078,343
State of California	250,276 flights	30,026,781

Source: Authority, 2021b
[1] For this energy analysis, Southern California consists of Los Angeles County, Ventura County, Kern County, Santa Barbara County, and San Bernardino County.
MMBtu = million metric British thermal units
VMT = vehicle miles traveled

Projected Transportation Energy

Fuel price increases have generated renewed interest in more fuel-efficient cars and in living closer to the workplace. Although it is a slow process to transform an automobile fleet, drivers are increasingly making automobile purchasing decisions based on fuel consumption concerns.

Automobiles powered by diesel engines, cars with hybrid engines (composed of both electrical and gasoline components), and fully electric automobiles offer substantial fuel-efficiency upgrades over vehicles with traditional gasoline engines.

According to the Federal Highway Administration, as of 2015, more than 29 million automobiles were registered to drivers in California (FHWA 2019). Because of this dependence on petroleum fuels, world geopolitical events can immediately and adversely affect the price and adequacy of California's fuel supply.

Governor Brown's Executive Order B-32-15 mandates that California's GHG emissions be reduced to 40 percent below 1990 levels by 2030. This executive order establishes targets aimed at increasing energy efficiency and promotes competition within emissions reduction research and adoption of zero-emission technologies. With implementation of the executive order, annual GHG emissions are projected to decrease by 2030. Additionally, SB 100 mandates that renewable resources and zero-carbon resources supply 100 percent of all retail sales of electricity to California end-use customers and all state agencies by December 31, 2045.

Table 3.6-19 shows the high scenario projected annual VMT and energy consumed from the transportation sector in 2040 (without the California HSR System), including the associated energy consumed from fueling cars and planes. Energy rates were determined through the use of carbon balance equations as recommended by CARB.

Table 3.6-19 Projected Total Energy Consumption from the Transportation Sector in 2040 without the California HSR System (High Ridership Scenario)

Region	Annual Use	Total Energy Consumed (MMBtu)
Roadway		
Los Angeles County	87,075,870,799 VMT	224,562,553
State of California	269,784,125,131 VMT	685,845,702
Planes		
Southern California[1]	162,667 flights	19,515,859
State of California	416,659 flights	49,988,443

Source: Authority, 2021b
[1] For this energy analysis, Southern California consists of Los Angeles County, Ventura County, Kern County, Santa Barbara County, and San Bernardino County.
MMBtu = million metric British thermal unit
VMT = vehicle miles traveled

3.6.6 Environmental Consequences

3.6.6.1 Overview

This section evaluates how the No Project Alternative and the Build Alternatives could affect public utilities and energy. The impacts of the Build Alternatives are described and organized as follows:

- **Construction Impacts**
  - Impact PUE#1: Planned Temporary Interruption of Utility Services.
  - Impact PUE#2: Accidental Disruption of Utility Systems.
  - Impact PUE#3: Effects from Water Demand during Construction.
  - Impact PUE#4: Effects from Wastewater Generated during Construction.
  - Impact PUE#5: Effects from Solid Waste Generated during Construction.

- Impact PUE#5: Temporary Energy Consumption during Construction.
- Impact PUE#7: Permanent Reduced Access to Existing Utilities.

- **Operations Impacts**
  - Impact PUE#8: Operational Water Supply Demand.
  - Impact PUE#9: Operational Wastewater Service Demand.
  - Impact PUE#10: Effects of Permanent Operations Generation of Solid Waste.
  - Impact PUE#11: Permanent Operations Energy Demand.

3.6.6.2 No Project Alternative

The No Project Alternative assumes that the Palmdale to Burbank Project Section would not be constructed. The No Project Alternative is based on a review of all City of Los Angeles and Los Angeles County general plans, the effects of growth planned for the region, regional transportation plans for all modes of travel, and agency-provided lists of pending and approved projects within Los Angeles County. In assessing future conditions, it was assumed that all currently known, programmed, and funded improvements to the intercity transportation system (highway, rail, and transit) and reasonably foreseeable local development projects (with funding sources already identified) would be developed as planned by 2040.

Under the No Project Alternative, population is projected to increase in Los Angeles County by 13.2 percent between 2015 and 2040 as discussed in Chapter 1, Project Purpose, Need, and Objectives. The general plans for Palmdale and Burbank, the two main urban centers in the expanded utility RSA, also anticipate growth associated with new and improved transportation hubs. Section 3.18, Regional Growth, discusses the anticipated population and housing growth within the expanded utility RSA. The No Project Alternative would likely result in little to no development of the ANF or the SGMNM due to existing development restrictions on USFS lands.

Planned growth anticipated within the expanded utility RSA assumes an associated increase in utility infrastructure needs under the No Project Alternative. Section 3.19, Cumulative Impacts, discusses foreseeable future projects, which include commercial centers, road network improvements, and residential developments, between the cities of Palmdale and Burbank. These projects are planned or approved to accommodate the growth projections of the area. Upgrades to existing utility suppliers may therefore still occur due to population or development growth.

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 2014), 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 County would be anticipated to trend along the forecast state average during this same time period (2015-2040).

Under the No Project Alternative, the projects listed in the regional transportation plans are expected to encourage both compact development and greater investment in local transit modes as a means of reducing VMT. Table 3.6-19 shows the projected 2040 estimate of energy consumed from fueling cars and planes, without the California HSR System. Under the No Project Alternative, the daily VMT in Los Angeles County would increase by the year 2040. In 2040, daily VMT would undergo an estimated increase of 9 percent under baseline conditions without implementation of the Southern California Association of Governments' *2016–2040 Regional Transportation Plan/Sustainable Communities Strategy* (SCAG 2016). With implementation of this plan, which includes operation of the California HSR System, it is estimated that VMT would be reduced by 0.7 percent in 2040.

3.6.6.3 Build Alternatives

Construction and operations of the Build Alternatives could result in temporary and permanent impacts on public utilities and energy.

Construction Impacts

Impact PUE#1: Planned Temporary Interruption of Utility Services.

Construction of the Palmdale to Burbank Project Section would require the temporary shutdown of utility lines (i.e., water, sewer, electricity, or gas) to coordinate safe relocation, protection, or extension. Impacted utilities would be protected in place or relocated within the selected Build Alternative footprint, in conformance with required utility agency permits or approvals.

Most high-risk and major utility conflicts would be located within the urban centers of Palmdale and Burbank. Whether the Build Alternatives would cross over or under utility corridors is dependent on the utility depth and the relative depth of the HSR alignment. It is likely that most tunneled portions of the Build Alternatives would cross beneath existing utility lines; however, as discussed in Section 3.6.4.3, relative depths to underground utility lines within the direct conflicts RSA are not available at this time. The Authority would work with utility owners during final engineering design to locate existing utilities at a higher level of detail. While the total number of permanent utility line conflicts would differ between the Build Alternatives (Table 3.6-20), the planned temporary disruption of utility services would have the same impact on residents and businesses.

Table 3.6-20 Summary of Potential High-Risk and Potential Major Low-Risk Utility Conflicts

Build Alternative	Potential High-Risk Conflicts	Potential Major Low-Risk Conflicts	Total
Refined SR14	291	170	461
SR14A	260	150	410
E1	254	146	400
E1A	219	126	345
E2	169	109	278
E2A	161	103	264

Source: Authority, 2021a

Temporary interruption of utility services would affect residential, commercial, industrial, agricultural, and other utility customers. IAMFs are incorporated as part of the Build Alternatives design to help avoid and minimize impacts. The following IAMFs require that construction of the Build Alternatives is coordinated or phased to minimize or eliminate utility service disruption time:

- PUE-IAMF#2—Prior to disconnecting the original facility, the contractor will verify the new facility is operational prior to disconnecting the original facility, where relocating an irrigation facility is necessary and feasible. Such coordination would help avoid/minimize the impact of service disruption.
- PUE-IAMF#3—Prior to construction in areas where utility service interruptions are unavoidable, the contractor will be required to notify the public through a combination of communication media (e.g., by phone, email, mail, newspaper notices, or other means) within that jurisdiction and the affected service providers of the planned outage. The notification will specify the estimated duration of the planned outage and would be published no less than 7 days prior to the outage.

- PUE-IAMF#4—Prior to construction, the contractor will prepare a technical memorandum documenting how construction activities will be coordinated with service providers to minimize or avoid interruptions. This will give utility providers an opportunity to plan appropriately for service interruptions. For example, HSR construction work would be scheduled to coincide with routine shutdowns of major conveyance structures (i.e., the East Branch of the California Aqueduct and Metropolitan Water District water lines). Such schedule coordination would help avoid/minimize the impact of service disruption.

Potential Interruption in Water Service

The Authority would work with irrigation agencies and landowners to protect pipelines, ditches, and related irrigation systems. Canals/ditches may be bridged or placed in pipelines beneath the HSR right-of-way. Irrigation pipelines crossing the HSR would be either re-routed or buried and placed in protective casing so that future maintenance of the line would be accomplished outside of the HSR right-of-way. PUE-IAMF#2, described above, requires new or relocated systems to be operational prior to disconnecting the original system, to the extent feasible. With implementation of PUE-IAMF#2, temporary utility conflicts and/or relocations associated with irrigation infrastructure would not result in lengthy and harmful interruption of service.

All six Build Alternatives would traverse several major components of the regional water infrastructure system as well as electrical infrastructure. Potential effects to the California Aqueduct, the Palmdale Ditch, and the LADWP transmission towers are detailed below.

California Aqueduct

The Refined SR14 Build Alternative would cross beneath the East Branch of the California Aqueduct in a tunnel approximately 50 feet below ground surface (Figure 3.6-30). Construction of the tunnel may require that a portion of the aqueduct within the Build Alternative footprint be temporarily diverted during construction, which would require temporary stoppage of water delivery through the aqueduct. Water delivery through the aqueduct is regularly halted for maintenance purposes and is not an uncommon occurrence.

After continuing east of the Harold neighborhood and passing over Barrel Springs Road, the E1 and E2 Build Alternatives would reach the East Branch of the California Aqueduct approximately 0.2 mile west of where the aqueduct crosses beneath Sierra Highway. The E1 and E2 Build Alternatives propose to relocate a 0.9-mile-long portion of the aqueduct to allow for construction of an at-grade crossing at this location.[7] Figure 3.6-30 illustrates the preliminary concept for the relocation of the East Branch of the California Aqueduct under the E1 and E2 Build Alternatives.

The SR14A, E1A, and E2A Build Alternatives would cross the East Branch of the California Aqueduct in an elevated viaduct where the aqueduct crosses beneath the Sierra Highway.

The East Branch of the California Aqueduct carries water to two reservoirs associated with the State Water Project (Silverwood Lake in San Bernardino County and Lake Perris in Riverside County). Silverwood Lake has a capacity of 73,000 acre-feet of water; Lake Perris can hold more than 131,000 acre-feet. Owing to the size of these reservoirs, in the event of a temporary halt in water delivery due to Palmdale to Burbank Project Section construction/diversion, it is unlikely that downstream users would experience changes in water delivery. The Authority reviewed preliminary designs/concepts of temporary diversion with the California Department of Water Resources to assess feasibility. The Build Alternative footprint in this area has been drawn to accommodate the preliminary diversion concepts reviewed with the California Department of Water Resources.

IAMFs are incorporated as part of the Build Alternatives design to help avoid and minimize impacts. PUE-IAMF#2 requires new or relocated irrigation systems to be operational prior to disconnecting the original system, to the extent feasible. PUE-IAMF#3 requires the contractor to prepare and adhere to a public communication plan where utility service interruptions are

---

[7] As part of the Palmdale to Burbank Project Section, relocation of the East Branch of the California Aqueduct is included in the E1 and E2 Build Alternative project descriptions and factored into the impact analyses throughout this EIR/EIS.

unavoidable. PUE-IAMF#3 also requires construction to be coordinated to avoid interruptions of utility services to hospitals and other critical users. With implementation of PUE-IAMF#2 and PUE-IAMF#3, temporary utility conflicts and relocations associated with the Refined SR14, E1, and E2 Build Alternatives’ crossing of the East Branch of the California Aqueduct will be minimized and temporary service interruptions will be limited to short durations during construction. Construction of the SR14A, E1A, and E2A Build Alternatives would not result in temporary stoppage of water delivery through the aqueduct because those Build Alternatives cross over the Sierra Highway via an elevated viaduct and would not require realignment of the aqueduct.

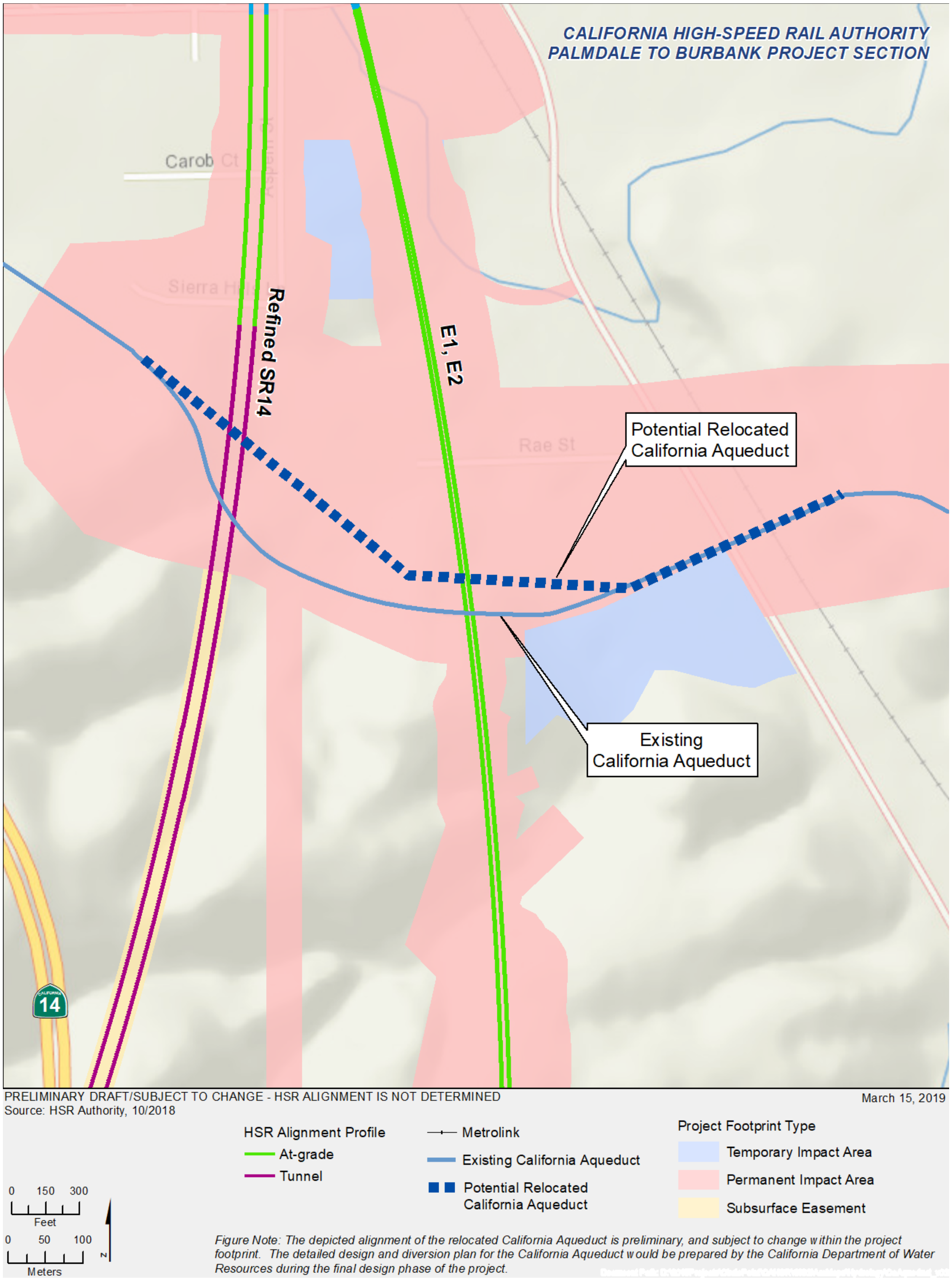


Figure 3.6-30 Potential Relocated California Aqueduct for the Refined SR14, E1, and E2 Build Alternatives

Palmdale Ditch Enclosure

The Refined SR14, E1, and E2 Build Alternatives would require relocation of a portion of the existing Palmdale Ditch within the Build Alternative footprint (Figure 3.6-11). The SR14A, E1A, and E2A Build Alternatives would entail the construction of an at-grade track over the resource and would include culverting up to 0.06 mile (320 feet) of the Palmdale Ditch alignment. The 48-inch ditch enclosure conveys watershed runoff from the Little Rock Reservoir to Lake Palmdale (Lake Palmdale also receives water from the East Branch of the California Aqueduct). Little Rock Reservoir has a capacity of approximately 3,500 acre-feet of water and Lake Palmdale has a capacity of 4,250 acre-feet of water (Palmdale Water District 2017). Owing to the size of these reservoirs, in the event of a temporary halt in water delivery due to Palmdale to Burbank Project Section construction and diversion or culverting, it is unlikely that downstream users would experience changes in water delivery. The temporary diversion of the water conveyance would not be expected to create a situation where residents and/or other land uses would stop receiving water supplies.

IAMFs are incorporated as part of the Build Alternatives design to help avoid and minimize these potential impacts. PUE-IAMF#2 requires new or relocated irrigation systems to be operational prior to disconnecting the original system, to the extent feasible. PUE-IAMF#3 requires the contractor to prepare and adhere to a public communication plan where utility service interruptions are unavoidable. PUE-IAMF#3 also requires construction to be coordinated to avoid interruptions of utility services to hospitals and other critical users. With implementation of PUE-IAMF#2 and PUE-IAMF#3, utility relocations associated with the Palmdale Ditch will be minimized and temporary disruptions will be limited to short durations during construction.

Acton Water Treatment Plant

The SR14A, E1A, and E2A Build Alternatives would require the reconfiguration of multiple buildings and equipment that would intersect with the alignments. This reconfiguration would not require acquisition of new property for AVEK. The reconfiguration of facilities at the Acton Water Treatment Plant may require temporarily halting water pumping through the plant. The temporary diversion of the water pumping may create a situation where residents and/or other land uses would stop receiving water supplies down the Los Angeles County Waterworks pipeline.

IAMFs are incorporated as part of the Build Alternatives design to help avoid and minimize these potential impacts. PUE-IAMF#2 requires new or relocated irrigation systems to be operational prior to disconnecting the original system, to the extent feasible. PUE-IAMF#3 requires the contractor to prepare and adhere to a public communication plan where utility service interruptions are unavoidable. PUE-IAMF#3 also requires construction coordination to avoid interruptions of utility services to hospitals and other critical users.

However, construction of the SR14A, E1A, and E2A Build Alternatives may interrupt water utility services to the Acton area and would result in the construction of expanded water facilities as part of the reconfiguration at this site, which would be a significant impact under CEQA.

Potential Interruption in Energy Service

Southern California Gas Control Structure

All six Build Alternatives would require the relocation or removal of several natural gas lines owned by SoCalGas in southern Palmdale. Roadway improvements associated with implementation of the Build Alternatives would require the relocation three gas lines, including a 30-inch gas line along East Avenue S. One 4-inch gas line would also be permanently removed. Encroachment into the SoCalGas property line would require the relocation of other components of the control structure, such as telephone and water lines.

With the incorporation of IAMFs, the temporary halt of natural gas conveyance will not be expected to create a situation where residents and/or other land uses would stop receiving energy supplies. PUE-IAMF#3 requires the contractor to prepare and adhere to a public communication plan where utility service interruptions are unavoidable. PUE-IAMF#3 also requires construction to be coordinated to avoid interruptions of utility services to hospitals and other critical users. PUE-IAMF#4 requires preparation of a final temporary diversion plan, identifying temporary shutdowns, in consultation with SoCalGas during the final design phase. With implementation of PUE-IAMF#3 and PUE-IAMF#4, utility relocations associated with SoCalGas infrastructure will be minimized and any temporary disruptions will be limited to short durations during construction.

Los Angeles Department of Water and Power Transmission Towers

The Refined SR14, SR14A, E1, and E1A Build Alternatives would require relocation of two existing LADWP electrical transmission towers within the LADWP receiving station at the San Fernando Road/Sheldon Street intersection (Figure 3.6-25). Implementation of the Refined SR14, SR14A, E1, and E1A Build Alternatives would also require relocation of two adjoining transmission towers south of San Fernando Road, to accommodate the elevated track that would cross over the existing Metrolink alignment. IAMFs are incorporated as part of the Build Alternatives design to help avoid and minimize these potential impacts. In the event of a temporary halt in energy delivery due to Palmdale to Burbank Project Section construction/relocation, it is unlikely that users would experience changes in energy delivery.

With the incorporation of IAMFs, the temporary halt of energy conveyance would not be expected to create a situation where residents and/or other land uses would stop receiving energy supplies. PUE-IAMF#3 requires the contractor to prepare and adhere to a public communication plan where utility service interruptions are unavoidable. PUE-IAMF#3 also requires construction to be coordinated to avoid interruptions of utility services to hospitals and other critical users. PUE-IAMF#4 requires preparation of a final temporary diversion plan, identifying temporary shutdowns, in consultation with LADWP during the final design phase. With implementation of PUE-IAMF#3 and PUE-IAMF#4, utility relocations associated with LADWP transmission infrastructure will be minimized and any temporary disruptions will be limited to short durations during construction.

CEQA Conclusion

Construction of all six Build Alternatives would conflict with utility corridors throughout the expanded utility RSA. For low-risk conflicts, the Build Alternatives would result in less than significant impacts because the utility would remain unchanged after temporary relocation or adjustment. Conflicts with major or high-risk utilities, including nonlinear fixed facilities, could create lengthy interruptions of service.

IAMFs incorporated as design characteristics of the Build Alternatives include effective measures to minimize temporary interruption of utility services. PUE-IAMF#2 requires the contractor to ensure that a new or relocated irrigation facility is operational prior to disconnecting the original system, where feasible. PUE-IAMF#3 requires public notification and preparation of/adherence to a communication plan where utility service interruptions are unavoidable. PUE-IAMF-#4 requires preparation of a technical memorandum documenting how construction activities will be coordinated with relevant service providers to minimize or avoid utility service interruptions. With implementation of PUE-IAMF#2 through PUE-IAMF#4, temporary utility conflicts and/or relocations would not result in lengthy and harmful interruption of service.

Without close coordination with AVEK, the reconfiguration of the Acton Water Treatment Plant due to construction of the SR14A, E1A, and E2A Build Alternatives could interrupt water utility services and would cause the construction of expanded utility facilities at the plant site. This would be a significant impact despite incorporation of PUE-IAMF#2 and PUE-IAMF#3. PUE-MM#2 (described in Section 3.6.7, Mitigation Measures) requires the Authority to coordinate with AVEK to reconfigure the Acton Water Treatment Plant to ensure that the facility will remain operable during and after construction, mitigating impacts due to interruption of service. With implementation of PUE-MM#2, this impact would be less than significant under CEQA for the Refined SR14, SR14A, E1, E1A, E2, and E2A Build Alternatives after mitigation.

Impact PUE#2: Accidental Disruption of Utility Systems.

During construction of the Build Alternatives, the potential for accidental disruption of utility systems would be low because established practices of utility identification and notification are included as part of the Palmdale to Burbank Project Section (PUE-IAMF#4). In addition, California Government Code Section 4216 establishes procedures for identifying buried utilities prior to excavation.

CEQA Conclusion

Given the standard precautions that would be instituted prior to and during construction, the Palmdale to Burbank Project Section would be unlikely to result in accidental disruption of utility systems. PUE-IAMF#4 is incorporated as part of the project design to ensure construction activities will be coordinated with service providers to minimize or avoid disruptions. The impact from potential accidental disruption of utility systems during construction would be less than significant under CEQA for the Refined SR14, SR14A, E1, E1A, E2 and E2A Build Alternatives and no mitigation is required.

Impact PUE#3: Effects from Water Demand during Construction.

Construction of the Build Alternatives would require water use for the following activities: increasing the water content of soil to optimize tunneling and compaction for dust control; preparing concrete; and re-seeding disturbed areas (Table 3.6-21). The difference in water demand between the Build Alternatives is a function of the total trackway length and tunneling amounts with the SR14A Build Alternative having the highest demands overall as summarized in Table 3.6-21, because it would have the most TBMs operating at the same time. The specific type of TBM used for construction would be determined as part of the tunnel design process, however it is anticipated that the selected TBMs would require cooling with recirculated water during operation. Water used during construction activities would be obtained from existing permitted commercial sources in the cities of Palmdale, Santa Clarita, Burbank, and Los Angeles, as well as in unincorporated Los Angeles County.

As shown in Table 3.6-21, without the construction of the Build Alternatives, water providers predict that sufficient water supplies would be available to meet demand in year 2020 assuming normal water year conditions.[8] However, in the event of single or multiple dry year conditions, demands would exceed supplies in 2020; This provides a worst-case scenario and conservative estimate given the uncertainty of exact water conditions and supply during construction. Additional water supplies would be needed to meet demands under such conditions, with or without construction of the Palmdale to Burbank Project Section.

[8] As described in Section 3.6.4.3, for the purposes of this analysis, construction calculations are based on the original anticipated construction timeframe of 2020 through 2029. While the year 2020 has passed, the construction years listed remain the same because the scope and scale of impacts on public utilities and energy are based on the number of construction years and construction activities, which would not change in an updated construction timeline.

Table 3.6-21 Estimated Construction Phase Water Demand Summary

Water Providers	Water Supply – Normal Water Year 2020 (ac-ft/yr)	Water Supply – Single Dry Year 2020 (ac-ft/yr)	Water Supply – Multiple Dry Years 2020 (ac-ft/yr)	Predicted Annual Demand 2020 (ac-ft/yr)	Construction Water Demand by Build Alternative (ac-ft/yr)
Central Subsection					
Antelope Valley-East Kern Water Agency	89,010	46,750	74,350	83,670	Refined SR14: 928 SR14A: 1,266 E1: 743 E1A:1,064 E2: 498 E2A: 840
Burbank Subsection					
Burbank Water and Power (Imported from MWD)	28,251	28,473	28,448	28,251	105 (all six Build Alternatives)
Totals	**117,261**	**75,223**	**102,798**	**111,921**	**Refined SR14: 1,033** **SR14A: 1,371** **E1: 848** **E1A:1,169** **E2: 603** **E2A: 945**

Sources: Antelope Valley-East Kern Water Agency, 2016; Authority, 2017b; Burbank Water and Power, 2016; LA County Waterworks Districts, 2017
ac-ft/yr = acre-feet per year
UWMP = Urban Water Management Plan

The average annual water use over the construction period for the Build Alternatives in the Central and Burbank Subsections is 907 acre-feet per year. The SR14A Build Alternative would result in the greatest amount of water demand over the construction period at 1,266 acre-feet per year. 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). Under worst-case scenario conditions, annual construction water usage for the SR14A Build Alternative would account for 2.7 percent and 0.3 percent of single-dry year water supply in the Central and Burbank Subsections, respectively.

CEQA Conclusion

Without the allocation of additional water entitlements, there would not be sufficient water supplies available for construction of the Build Alternatives during dry and multiple dry years for AVEK. Therefore, the impact from construction water demand is conservatively assumed to result in a significant impact under CEQA. PUE-MM#1 (described in Section 3.6.7) will require the Authority to prepare an updated water supply analysis for the selected Build Alternative that details and describes the minimum adequate water supply for the RSA during normal, dry, and multiple dry years based on a more detailed project design. 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 and would pay the water agencies its fair share of the State Water Project fees. Additionally, PUE-MM#1 will require the Authority to utilize non-potable water from regional water utility service providers for construction activities where feasible, as well as recycling/reusing water used for tunnel construction, further minimizing demand for water supplies. With implementation of PUE-MM#1, this impact would be less than significant under CEQA for the Refined SR14, SR14A, E1, E1A, E2, and E2A Build Alternatives after mitigation.

Impact PUE#4: Effects from Wastewater Generated during Construction.

As discussed under Impact PUE#3, water would be required to construct the tunnels associated with the Build Alternatives. As stated above, the Authority has estimated that each TBM operating from each twin tunnel portal would require a total of 1,829 acre-feet (366 acre-feet per year) for maintenance and cleaning of the excavated sections of the tunnel; operation of conveyor belts and hoppers; dust control and vehicles/engine wash down; operation of tunnel excavation-area workshops; and potable water for construction workers. This water would mix with the soil as it is extracted from the tunnel construction areas and would be treated as wastewater.

The construction contractor would recycle and reuse water on-site to reduce water consumption for construction of the tunnels. Some of this wastewater would also be collected in water retention ponds or treated in the same capacity, and like the tunnel spoils, would be hauled off-site. Although the total amount of wastewater generated during construction would differ between the six Build Alternatives based on construction factors (e.g., length of tunnels), the Build Alternatives would result in similar types of wastewater effects during construction. However, none of the wastewater from the tunneling activities would be directly piped back into local wastewater treatment facilities, collection systems, or treatment plants.

The management and discharge of construction wastewater is governed by federal and state law, and is implemented through regulations such as the National Pollutant Discharge Elimination System General Construction Permit and Statewide General WDRs (refer to Section 3.8, Hydrology and Water Resources, for more details regarding federal and state wastewater laws and regulations). Adherence to federal and state regulations would prevent dewatering discharges from contributing to exceedance of water quality standards.

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.

IAMFs incorporated into the Build Alternatives include effective measures to minimize these potential impacts. HYD-IAMF#1 requires on-site stormwater management facilities to capture runoff from pollutant-generating surfaces. Potentially contaminated runoff will be captured and treated within these stormwater management facilities prior to discharge. HYD-IAMF#3 requires 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. These project features would reduce impacts from stormwater during construction activities through the preparation and implementation of a construction SWPPP, including best management practices (BMP) to provide hydromodification controls to maintain pre- Palmdale to Burbank Project Section hydrology and to manage the amount of stormwater runoff emanating from the construction sites. These BMPs will provide permeable surfaces where feasible and systems to retain or detain and treat stormwater from construction areas on-site. The SWPPP under the State Water Resources Control Board Construction General Permit for construction of the project will include BMPs that would minimize discharges of sediment from the construction site and manage construction equipment and materials to prevent leaks, spills, and accidental discharges to stormwater management facilities.

These project features would reduce the amount of construction-area wastewater discharged to stormwater management systems and would therefore reduce the impacts on the capacity of existing stormwater management system facilities managed by local stormwater management authorities. In addition, these project features would improve the quality of the stormwater discharge from construction areas by requiring the contractor to develop and implement the SWPPP under the State Water Resources Control Board Construction General Permit.

CEQA Conclusion

Although construction of the Build Alternatives would generate wastewater, none of the wastewater would be directly piped back into local wastewater treatment systems. Therefore, construction would not exceed available capacity for wastewater treatment providers in the expanded utility RSA. This impact would be less than significant under CEQA for all of the Build Alternatives.

HYD-IAMF#1 requires the control and treatment of stormwater runoff associated with the Palmdale to Burbank Project Section prior to discharge. Additionally, HYD-IAMF#3 requires effective measures to avoid or minimize temporary hydrologic impacts associated with construction activities 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- Palmdale to Burbank Project Section hydrology and to manage the amount of stormwater runoff emanating from the construction sites. With implementation of HYD-IAMF#1 and HYD-IAMF#3 and adherence to applicable dewatering regulations and permitting requirements, the dewatering discharges during construction would not contribute to exceedances of water quality standards. Therefore, the impact from wastewater generated during construction would be less than significant under CEQA for the Refined SR14, SR14A, E1, E1A, E2, and E2A Build Alternatives and no mitigation is required.

Impact PUE#5: Effects from Solid Waste Generated during Construction.

Vegetation clearing, removal of existing asphalt and gravel, and demolition of existing structures during HSR construction would generate solid waste. Construction of the Refined SR14 Build Alternative would generate 4.04 million cubic yards of solid waste; more than half of this total (2.34 million cubic yards) would originate from construction of the Central Subsection, including tunneling. Construction of the SR14A Build Alternative would lead to a slightly greater amount of solid waste, at 4.18 million cubic yards (2.57 million cubic yards would be generated in the Central Subsection). Owing to the shorter length of the E1, E1A, E2, and E2A Build Alternatives, the amount of solid waste that would be generated would be 3.12 million, 3.11 million, 2.35 million, and 2.63 million cubic yards, respectively.

Table 3.6-15 shows the estimated remaining capacity of the respective landfills that would be utilized for waste disposal during the construction of the Build Alternatives. Solid waste that would be generated by the construction of the Refined SR14 and SR14A Build Alternatives represent approximately 2.1 and 2.15 percent, respectively, of the total remaining capacity of the landfills that would be utilized. The solid waste that would be generated by the construction of the E1 and E1 Build Alternatives represent approximately 1.6 percent and the solid waste that would be generated by the construction of the E2 and E2A Build Alternatives represent approximately 1.2 percent and 1.35 percent of the remaining landfill capacity, respectively.

In accordance with SB 1374, the contractor would divert construction and demolition waste from landfills by reusing or recycling to aid with implementing the Local Government Construction and Demolition Guide (CalRecycle 2010) 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.

The 2010 Green Building Standards Code requires cities and counties in California to develop a waste management plan and to divert at least 50 percent of the generated construction materials (California Building Standards Commission 2012). The Authority’s 2016 sustainability policy specifies that all (100 percent of) steel and concrete would be recycled, and a minimum 75 percent of construction waste would be diverted from landfills (Authority 2016b). The landfills to which Palmdale to Burbank Project Section construction and demolition material would be sent have not been identified. However, as described above, all of the landfills within the relevant regions of the California HSR System have sufficient capacity to accommodate solid waste from construction of the Palmdale to Burbank Project Section, even if waste is not recycled to the extent recommended under the Authority’s policy.

As discussed in Section 3.10, Hazardous Materials and Wastes, construction of the Build Alternatives 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). HMW-IAMF#7 requires a certified hazardous waste collection company to deliver the waste to an authorized hazardous waste management facility for recycling and disposal. The Authority will adhere to relevant laws related to hazardous waste handling and storage. Hazardous wastes will be disposed of at permitted landfills throughout Southern California in accordance with federal, State, and local regulations.

CEQA Conclusion

Solid waste generated by the construction of the Build Alternatives would comply with federal, State, and local regulatory standards and the project would implement construction recycling requirements. Furthermore, landfills within the Palmdale to Burbank Project Section have sufficient capacity to accommodate the construction waste, even if waste is not ultimately recycled to the extent recommended under the Authority's policy. Therefore, the Palmdale to Burbank Project Section would not 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. Furthermore, as described in Section 3.10, Hazardous Materials and Wastes, HMW-IAMF#7 requires a certified hazardous waste collection company to deliver the waste to an authorized hazardous waste management facility for recycling or disposal, and there will be sufficient permitted capacity for the project's hazardous waste disposal needs. Therefore, the impact from waste generated by construction would be less than significant under CEQA for the Refined SR14, SR14A, E1, E1A, E2, and E2A Build Alternatives and no mitigation is required.

Impact PUE#6: Temporary Energy Consumption during Construction.

During construction of the Palmdale to Burbank Project Section, energy would be consumed for the construction of trackway, stations, and ancillary facilities; production and transportation of construction materials; and the operation and maintenance of construction equipment. These construction activities typically utilize diesel- or gasoline-powered equipment and vehicles. Table 3.6-22 shows estimates of construction-related indirect energy consumption for the construction phase of the Build Alternatives.

Table 3.6-22 Estimated Energy Consumption for Construction of the Build Alternatives

Build Alternative	Central Subsection (MMBtu)	Burbank Airport Station (MMBtu)	Total Consumption (MMBtu)
Refined SR14	2,982,239	173,589	3,155,828
SR14A	3,061,181	173,589	3,234,770
E1	2,522,664	173,589	2,696,253
E1A	2,532,424	173,589	2,706,013
E2	2,838,622	173,589	3,012,211
E2A	2,850,812	173,589	3,024,401

Source: Authority, 2017a
Btu = British thermal units

Energy used during construction of the Palmdale to Burbank Project Section would represent a one-time, nonrecoverable energy cost. The temporary demand for energy utilized during construction would not require additional permanent electricity transmission capacity and would not increase peak- or base-period demands for electricity from the electrical grid system.

In addition, the Authority is committed to ensuring that the Palmdale to Burbank Project Section would be implemented in a sustainable manner, based on the following energy-relevant BMPs for HSR construction (Authority 2016b):

- Require environmental product declarations for construction materials, including steel products and concrete mix designs, to improve disclosure of materials information and incentivize the selection of better environmental performing products
- Require optimized life-cycle scores for major materials, including global warming potential, while maintaining durability and quality
- Make life-cycle performance of components, systems, and materials a priority

As the Authority enters contracts for the construction and implementation of the Palmdale to Burbank Project Section, it will require energy-saving measures to be implemented by the contractor (PUE-IAMF#1). While the total fuel consumption would differ between the Build Alternatives, adherence to the Authority's sustainability policies (PUE-IAMF#1) will ensure that construction-period energy savings, to the extent feasible, are integrated into the Palmdale to Burbank Project Section.

Furthermore, energy consumed during construction would be offset by full operations, as operation of the Palmdale to Burbank Subsection would reduce regional energy consumption (i.e., the Palmdale to Burbank Project Section would remove more energy-inefficient cars and planes from the system) (refer to Impact PUE#11).

Table 3.6-23 provides the total construction energy use assumptions and payback information for all six Build Alternatives. Depending on the Build Alternative selected, the payback period for energy consumed during construction would range from 0.17 year (2 months and 2 days) to 0.21 year (2 months and 17 days) for the medium ridership, and from 0.11 year (1 month and 10 days) to 0.14 year (1 month and 21 days) for the high ridership forecast.

Table 3.6-23 Construction Energy Payback Period

Build Alternative	Total Construction Energy Consumption (MMBtu/year)	Medium Ridership Forecast		High Ridership Forecast	
		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)
Refined SR14	3,155,828	15,427,699	0.20	23,641,108	0.13
SR14A	3,234,770		0.21		0.14
E1	2,696,253		0.17		0.11
E1A	2,706,013		0.18		0.11
E2	3,012,211		0.20		0.13
E2A	3,024,401		0.20		0.13

Source: Authority, 2017a

Section 3.6.2.3 outlines the regional and local plans and policies related to renewable energy and energy efficiency. Based on the preceding discussion, the Build Alternatives would be consistent with the plans and policies listed in Section 3.6.2.3 and in Table 3.6-1. As a project under federal and state jurisdiction, the Palmdale to Burbank Project Section would also be consistent with the state energy policies outlined in Section 3.6.2.2.

CEQA Conclusion

Construction of the Palmdale to Burbank Project Section would temporarily increase energy consumption. The Authority has adopted a sustainability policy under PUE-IAMF#1 as part of the Build Alternatives that establishes design elements and policies intended to reduce energy consumption, including but not limited to, energy-saving equipment, energy-saving measures during construction, and regenerative braking. With implementation of PUE-IAMF#1 and standard BMPs, project construction would not result in wasteful, inefficient, or unnecessary consumption of energy resources. Construction of the Palmdale to Burbank Project Section would also be consistent with state and local plans and policies related to renewable energy and energy efficiency. With adherence to the Authority's policy on sustainability under PUE-IAMF#1, construction of the Build Alternatives would not result in a substantial demand on regional energy supplies, require additional energy capacity, or substantially increase peak or base period electricity demand. Therefore, the impact on energy consumption during construction would be less than significant under CEQA for the Refined SR14, SR14A, E1, E1A, E2, and E2A Build Alternatives and no mitigation is required.

Impact PUE#7: Permanent Reduced Access to Existing Utilities.

The HSR right-of-way would be fenced and secured after construction. Underground utilities that conflict with the HSR right-of-way would be relocated or reinforced underneath the HSR right-of-way inside a casing pipe strong enough to carry the California HSR System utilities, and that would allow for utility maintenance access from outside the HSR right-of-way. Underground wet utilities such as water, sewer, storm drains, gas, and petroleum lines are conveyed inside pipeline material with a service life that is typically 50 years or more. Dry utilities such as electrical, fiber optics, and telephone lines are encased in a durable pipeline—for example, one made of steel—that protects the dry utilities from deterioration and has a service life of 50 years or more. If the utility conveyance pipeline needs repair or replacement, the casing pipe would stay in place so that HSR operations would continue while the utility agency maintained the line. Before field visits, it is common practice for utility agencies to coordinate with the owner of the property in which their facilities lie.

CEQA Conclusion

With the inclusion of standard casing and maintenance access requirements of utilities located underneath the HSR right-of-way, impacts associated with reduced access to existing utility lines would be less than significant under CEQA for the Refined SR14, SR14A, E1, E1A, E2, and E2A Build Alternatives and no mitigation is required.

Operations Impacts

Impact PUE#8: Operational Water Supply Demand.

Operation of high-speed trains and stations would require the use of water. Water would be purchased from the closest available water agencies servicing the areas traversed by the Build Alternatives. The largest operations water use would occur at the Burbank Airport Station, as discussed in more detail below.

As previously discussed under Impact PUE#3, without the construction of the Palmdale to Burbank Project Section, the local water providers predict that sufficient water supplies would be available to meet demands in 2020, assuming normal rainfall conditions. However, in the event of single or multiple dry year conditions, water demands would exceed supplies in the 2020 construction year. Additional water supplies would be needed to meet demands under such conditions, with or without construction of the Palmdale to Burbank Project Section.

Central Subsection

Based on the Palmdale to Burbank Project Section design, with no planned stations or maintenance facilities in the Central Subsection, the operation of the railway tracks would have no permanent operations water demand. Water used to maintain HSR facilities in the Central Subsection would be drawn from the Maintenance Facility or from portable sources.

Burbank Subsection

Estimates of existing water use were generated by applying water use factors from appropriate districts for the current land use types (i.e., residential, commercial, etc.) within the Build Alternative footprint (Section 3.6.4.3). Existing land uses that would be permanently converted to HSR improvements are predominantly "other" public/open space (approximately 64 percent), industrial (approximately 25 percent), and commercial (approximately 9 percent). These existing land uses result in a water demand of approximately 192 acre-feet per year for the Burbank Airport Station area for all six Build Alternatives.

Annual operations water use estimates for the Burbank Airport Station are based on full buildout of the Palmdale to Burbank Project Section in 2040, and consider domestic water use per passenger/employee (i.e., bathroom use), cleaning, and landscaping (Section 3.6.4.2). The average annual water use for the Burbank Airport Station would be 164.8 acre-feet. The Burbank Airport Station would represent an approximate 15 percent decrease in water use when compared with existing land uses.

The Burbank Water and Power UWMP shows adequate capacity to serve the planned land uses within its service area. Planned water supplies for the Burbank Water and Power service area, under normal year rainfall conditions, are estimated to be 28,130 acre-feet per year by 2025 and 27,250 acre-feet per year by 2040 (BWP 2016). The water demand for the operation of the Burbank Airport Station (164.8 acre-feet per year) would represent approximately 0.58 percent of the estimated total annual water supply for Burbank Water and Power.

CEQA Conclusion

Operation of high-speed trains, stations would require the use of water and the permanent conversion of existing land uses (for all six Build Alternatives). This would result in 164.8 acre-feet per year of water demand total for the Palmdale to Burbank Project Section, representing a fraction (0.58 percent) of projected water supplies. The operation of the Burbank Airport Station would result in a 15 percent decrease in water use when compared with existing land uses. Therefore, the impact from water demand generated by operations of the Burbank Airport Station would be less than significant under CEQA for the Refined SR14, SR14A, E1, E1A, E2, and E2A Build Alternatives and no mitigation is required.

Impact PUE#9: Operational Wastewater Service Demand.

Operational wastewater would only be generated by the Burbank Airport Station. Therefore, wastewater treatment facilities included in this operations impact analysis are limited to those that serve Burbank where this facility would be located (Table 3.6-13). With no planned stations or maintenance facilities in the Central Subsection, the operation of the railway tracks would have no wastewater generation impacts.

Table 3.6-24 estimates the anticipated wastewater generation from the operation of the Build Alternatives in relation to the total capacity of the wastewater treatment facilities that would service the Palmdale to Burbank Project Section. As shown in Table 3.6-24, the volume of wastewater that would be generated by the Build Alternatives would be less than 1 percent of the capacity of the local wastewater treatment facility.

Table 3.6-24 Wastewater Capacity and Estimated Wastewater Generated by the Burbank Airport Station

Facility	Estimated Wastewater Generation (gallons/day)	Existing Capacity (million gallons/day)	Excess Capacity (million gallons/day)	Excess Capacity Used by Facility (Percent)
Burbank Airport Station	22,302[1]	12.5	4	0.6

Source: Authority, 2016a
[1] Uses wastewater generation estimates from Los Angeles County Sanitation District No. 19 Service Charge Report for Fiscal Year 2015–16. For the Burbank Airport Station generation rate, the "service shop" generation rate was used.

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 receive WDRs 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 publicly owned treatment works may discharge.

These permits also contain pollutant monitoring, recordkeeping, and reporting requirements. Each publicly owned treatment work that intends to discharge into the nation's waters must obtain a WDR prior to initiating its discharge. The Build Alternatives would result in a connection to the existing sewer system that would be ultimately routed to one of the wastewater treatment plants previously identified in Table 3.6-13. Since all wastewater generated by the Build Alternatives would be treated by publicly owned treatment works, discharge flows would be required to comply with the WDR for the facility. Compliance with condition or permit requirements established by Burbank and WDR at the publicly owned treatment works would ensure that discharges into the wastewater treatment facility system from Build Alternatives operations would not exceed applicable Los Angeles RWQCB 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 3.6-24, the regional wastewater treatment facilities have the capacity to treat wastewater demand for the Burbank Airport Station. The Build Alternatives would not trigger the need for new or expanded facilities. This impact would be less than significant for the Refined SR14, SR14A, E1, E1A, E2, and E2A Build Alternatives. Therefore, CEQA does not require any mitigation.

Impact PUE#10: Effects of Permanent Operations Generation of Solid Waste.

Annual operations solid waste estimates are based on full buildout of the Palmdale to Burbank Project Section in 2040. Operation activities that would generate solid waste include passenger/employee refuse disposal at the Burbank Airport Station and materials used for HSR maintenance. Maintenance of the HSR trackway would generate small amounts of waste. Table 3.6-25 shows the estimated operation waste from the Build Alternatives and the remaining capacity at the landfill. As shown in Table 3.6-25, there is sufficient capacity at the respective landfills to accommodate solid waste generated by operations of the Burbank Airport Station for all the Build Alternatives.

Table 3.6-25 Estimated Operations Solid Waste Generation (all Six Build Alternatives)

Subsection	Estimated Annual Operations Solid Waste Generation	Estimated Remaining Landfill Capacity
Burbank Airport Station	3,209 cubic yards	5,170,000 cubic yards

Source: Authority, 2017d

Under the Resource Conservation and Recovery Act and AB 939 (described in Section 3.6.2), affected county or municipal solid waste disposal facilities are required to plan for nonhazardous solid waste facility expansions from all anticipated sources. The anticipated disposal of nonhazardous solid wastes to landfills due to operations would not alone trigger the need for new or expanded facilities beyond dates that disposal capacities are currently projected to be reached. The Palmdale to Burbank Project Section operations solid waste generation would be consistent with the Resource Conservation and Recovery Act and AB 939 in that the County and relevant municipalities would not require new or expanded solid waste disposal facilities to serve the Palmdale to Burbank Project Section.

CEQA Conclusion

Landfills within the Palmdale to Burbank Project Section expanded utility RSA have sufficient capacity to accommodate anticipated volumes of operation waste generated by the Burbank Airport Station. The Palmdale to Burbank Project Section would not 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. Therefore, the impact from waste generation during operations would be less than significant under CEQA for the Refined SR14, SR14A, E1, E1A, E2, and E2A Build Alternatives and no mitigation is required.

Impact PUE#11: Permanent Operations Energy Demand.

The Palmdale to Burbank Project 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. These elements would affect energy across the state and within the Palmdale to Burbank Project Section expanded utility RSA.

The operation energy analysis uses a dual baseline approach. That is, the Palmdale to Burbank Project Section operation's energy impacts are evaluated against existing conditions and expected 2040 background (No Project) conditions, with additional consideration of impacts in the HSR opening year. The Authority calculated operation energy consumption for medium and high ridership scenarios; ridership scenarios do not differ by Build Alternative. The medium and high ridership scenarios are based on the level of ridership as presented in the Authority's 2016 Business Plan (Authority 2016a).[9] The complete statewide analysis is included in Appendix 3.6-A, with detailed calculations on the reduction in energy consumption from transportation. Results for ridership scenarios are shown in Table 3.6-26, Table 3.6-27, and Table 3.6-28. Energy rates were determined using carbon balance equations as recommended by CARB.

On-Road Vehicle Energy Use

Operation of the Palmdale to Burbank Project Section would reduce regional energy consumption from transportation by approximately 3.3 to 3.7 percent, and statewide energy consumption from transportation by approximately 2.7 to 3.8 percent, depending on the ridership scenarios and the comparison to either 2015 or 2040 conditions. In the opening year of California HSR System operations, the regional and statewide energy consumption would be lower than identified for 2040 in Table 3.6-27, but would increase over time.

---

[9] The Authority's 2016 Business Plan and ridership scenarios were produced inclusive of the Palmdale Subsection and Maintenance Facility. Thus, the regional and statewide energy data presented in Appendix 3.6-A, and used in the operational energy demand impact discussion, is also inclusive of the Palmdale Subsection and Maintenance Facility.

As previously discussed, Section 3.6.2.3 outlines the regional and local plans and policies related to renewable energy and energy efficiency. The Build Alternatives would be consistent with the plans and policies listed in Section 3.6.2.3 and in Table 3.6-1. As a project under federal and state jurisdiction, the Palmdale to Burbank Project Section would also be consistent with the state energy policies outlined in Section 3.6.2.2.

Aircraft Energy Use

The results of the aircraft energy analysis for Southern California are shown in Table 3.6-28. The number of intrastate airplane flights would decrease with the California HSR System when analyzed against both the future conditions and existing condition baselines, as some travelers would choose to use the California HSR System rather than fly to their destinations. Operation of the Build Alternatives would reduce Southern California energy consumption from aircraft transportation by approximately 32 to 28 percent for medium and high ridership scenarios, respectively.

Electrical Requirements of the High-Speed Rail System

The proposed California HSR System would obtain electricity from the statewide grid. None of the Build Alternatives would involve construction of a separate power source, but instead, would require the extension of existing power lines to traction power substations positioned along the HSR corridor. Impacts that might result from the proposed California HSR System would not affect statewide electricity reserves or transmission capacity. In September 2008, the Authority adopted a policy goal of utilizing renewable energy for all traction power. An industry survey in April 2013 indicated that there is sufficient renewable energy capacity to meet the system demand (Authority 2014b). 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 working to collaborate with utilities and 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 impact negotiations with utilities and renewable energy developers. Furthermore, the Authority is developing a strategic renewable energy procurement plan that requires extensive collaboration and 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 California HSR System (Authority 2011).

As described in PUE-IAMF#1, the California HSR System design incorporates utilities and design elements that minimize electricity consumption (e.g., regenerative braking, energy-saving equipment on rolling stock and at station facilities, implementation of energy-saving measures during construction, and automatic train operations to maximize energy efficiency during operations). The net change in energy use (i.e., after the energy savings from reduction in roadway VMT and in air trips are factored in, inclusive of the Palmdale Subsection and the Maintenance Facility) would result in statewide energy savings of 15,427,699 MMBtu per year under the medium ridership scenario and 23,641,108 MMBtu per year under the high ridership forecast compared to the 2040 No Project Alternative (Table 3.6-26).

Table 3.6-26 Estimated Change in Energy Consumption Due to the Palmdale to Burbank Project Section

Projected Outcome	Medium Ridership Forecast[1]		High Ridership Forecast[1]	
	Change in Energy Usage in Current Conditions (2015) with Project vs. Current (2015) No Project Conditions (MMBtu/year)	Change in Energy Usage in 2040 vs. 2040 No Project Conditions (MMBtu/year)	Change in Energy Usage in Current Conditions (2015) with Project vs. Current (2015) No Project Conditions (MMBtu/year)	Change in Energy Usage in 2040 vs. 2040 No Project Conditions (MMBtu/year)
Statewide				
Reduced VMT	-15,444,606	-7,412,180	-21,234,520	-16,666,656
Reduced Airplane Travel	-9,614,377	-13,362,107	-9,250,003	-12,855,699
Increased Electricity Consumption	5,346,588	5,346,588	5,881,246	5,881,246
Net Change in Energy Use	**-19,712,395**	**-15,427,699**	**-24,603,276**	**-23,641,108**
Regional				
Reduced VMT	-6,534,374	-5,054,908	-9,013,367	-6,838,231
Reduced Airplane Travel	-4,143,532	-5,758,701	-3,904,461	-5,426,438
Increased Electricity Consumption	213,864	213,864	235,250	235,250
Net Change in Energy Use	**-10,464,042**	**-10,599,745**	**-12,682,578**	**-12,029,419**

Source: Authority, 2021b
[1]These figures include the Palmdale Subsection and the Maintenance Facility.
Note: The No Project Alternative represents the region's (and state's) transportation system (highway, air, and conventional rail) as it is today and in the future with implementation of programs or projects that are in adopted regional transportation plans and have identified funds for implementation by 2050.
MMBtu = million metric British thermal units
MMT/yr = million metric tons per year
VMT = vehicle miles traveled

Table 3.6-27 Annual On-Road Vehicle Energy Changes for Los Angeles County from the Build Alternatives

Year	Annual VMT		Energy			Percent Change in Energy
	Existing	Existing Plus Project[1]	Total Energy — No Project (MMBtu)	Total Energy — Plus Project[1] (MMBtu)	Changes in Energy (MMBtu)	
Medium Ridership						
Existing (2015)	73,394,193,078	72,724,087,184	345,183,894	342,032,286	-3,151,609	-0.9
2040	86,055,909,405	85,124,593,011	221,932,144	219,530,345	-2,401,800	-1.1
High Ridership						
Existing (2015)	73,236,845,700	72,310,888,632	344,443,866	340,088,951	-4,354,915	-1.3
2040	87,075,870,799	85,788,971,213	224,562,553	221,243,730	-3,318,824	-1.5

Source: Authority, 2021b

[1]These figures include the Palmdale Subsection and the Maintenance Facility.

Note: The No Project Alternative represents the region's (and state's) transportation system (highway, air, and conventional rail) as it is today and in the future with implementation of programs or projects that are in adopted regional transportation plans and have identified funds for implementation by 2050.

MMBtu = million metric British thermal units

MMT/yr = million metric tons per year

Table 3.6-28 Annual Aircraft Energy Changes for Southern California from the Build Alternatives

Year	Number of Flights		Energy			Percent Change in Energy
	Existing	Existing Plus Project[1]	Total Energy — No Project (MMBtu)	Total Energy — Plus Project[1] (MMBtu)	Changes in Energy (MMBtu)	
Medium Ridership						
Existing (2015)	107,915	73,378	12,947,020	8,803,488	-4,143,532	-32
2040	149,961	101,962	17,991,503	12,232,803	-5,758,701	-32
High Ridership						
Existing (2015)	100,674	68,130	12,078,343	8,173,882	-3,904,461	-32
2040	162,667	117,437	19,515,859	14,089,421	-5,426,438	-28

Source: Authority, 2021b
[1]These figures include the Palmdale Subsection and the Maintenance Facility.
Note: The No Project Alternative represents the region's (and state's) transportation system (highway, air, and conventional rail) as it is today and in the future with implementation of programs or projects that are in adopted regional transportation plans and have identified funds for implementation by 2050.
Note: For this energy analysis, Southern California consists of Los Angeles County, Ventura County, Kern County, Santa Barbara County, and San Bernardino County.
MMBtu = million metric British thermal units
MMT/yr = million metric tons per year

Backup and Emergency Power Supply Sources

During normal California HSR System operations, power would be provided by the local utility service 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 Build Alternatives, 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 would also be transported to other trackside facilities to reduce the impacts on system operations.

CEQA Conclusion

With implementation of PUE-IAMF#1, the project would not place a substantial demand on regional energy supply, require significant additional capacity, or significantly increase peak- and base-period electricity demand, nor would it conflict with or obstruct a state or local plan for renewable energy or energy efficiency. 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, which is a project benefit. Therefore, the impact of operational demand for electricity would be less than significant under CEQA for the Refined SR14, SR14A, E1, E1A, E2, and E2A Build Alternatives and no mitigation is required.

3.6.7 Mitigation Measures

PUE-MM#1: Water Supply Analysis for Construction

While the Palmdale to Burbank Project Section includes connections to the water supply infrastructure in the area, the Build Alternatives cannot rely entirely on the existing and planned local water supply allocations, particularly in the event of a dry year. The Authority will prepare an updated water supply analysis for the selected Build Alternative that identifies the detailed water supply needs for construction. Based on the results of this water supply analysis, the Authority would coordinate with relevant water agencies to determine if allocations for additional water supply are needed for construction. In the event that additional water supply is needed from 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 and operating the State Water Project conveyance facilities. In addition, the Authority will be required to utilize non-potable water during construction, to the extent feasible. In addition, water used for tunnel construction and water coming out of tunnel construction areas could be recycled/reused for construction purposes. Water coming from the tunnels would be treated to reduce turbidity, and then recycled. This water would be used several times during construction for lubrication and cooling purposes, reducing demand from municipal water sources.

PUE-MM#2: Reconfiguration of the Acton Water Treatment Plant

Prior to the start of construction, the Authority will coordinate with AVEK to facilitate the reconfiguration of the Acton Water Treatment Plant. The Authority will ensure that the Acton Water Treatment Plant would remain operable in conjunction with implementation of the Build Alternatives. The Authority will pay its fair share of the impact fee for reconfiguration of the Acton Water Treatment Plant.

3.6.7.1 Impacts from Implementing Mitigation Measures

PUE-MM#1 and PUE-MM#2 will require the preparation of a water supply analysis and wastewater analysis to determine if additional water delivery or wastewater conveyance systems would be required to serve the Build Alternatives. Expansion of water delivery and wastewater conveyance facilities, if required, could result in secondary or offsite environmental impacts typical of utility upgrades. Such impacts could include emissions and fugitive dust from construction equipment, construction-related noise, construction-related road closures or traffic delays, mobilization of extant hazardous materials or wastes, private property acquisitions or displacements, and impacts on biological and cultural resources. These types of impacts are common to most infrastructure construction and are typically reduced to less than significant through adhering to applicable regulations, obtaining regulatory permits, incorporating BMPs, and applying standard mitigation measures.

3.6.8 NEPA Impacts Summary

The Refined SR14, SR14A, E1, E1A, E2, and E2A Build Alternatives would result in two general types of effects on public utilities and energy:

1. Direct conflicts with utility lines and infrastructure that have the potential to result in a disruption of services
2. Utility and energy demands for Build Alternative construction and operation that have the potential to exceed the capacities of the utility providers

Impacts PUE#1 through PUE#7 address construction impacts; Impacts PUE#8 through PUE#11 describe operations impacts. While the number of utility line conflicts and the demands for utility services differ between the Build Alternatives, there are no deviations large enough that would make one Build Alternative substantially less impactful than another. Inclusion of the applicable IAMFs and implementation of the mitigation measures identified in Section 3.6.7 would avoid, minimize, reduce, or compensate for all impacts on utilities and energy. Table 3.6-29 provides a comparison of impacts by Build Alternative.

The discussion following Table 3.6-29 provides a summary comparison of the impacts by Build Alternative and No Project Alternative. Please refer to the detailed impact analysis in Section 3.6.6 for additional information that substantiates the conclusions summarized below.

Table 3.6-29 Comparison of High-Speed Rail Build Alternative Impacts for Public Utilities and Energy

Impacts	Build Alternatives: Refined SR14	SR14A	E1	E1A	E2	E2A	NEPA Conclusion before Mitigation (All Build Alternatives)	Mitigation	NEPA Conclusion post Mitigation (All Build Alternatives)
Construction Impacts									
Impact PUE#1: Planned Temporary Interruption of Utility Services. Construction would require the temporary shutdown of utility lines, such as water, sewer, electricity, or gas, to safely move or extend these lines. Shutdown would interrupt utility services to industrial, commercial, agricultural, and residential customers. However, construction would be coordinated or phased to minimize or eliminate utility service disruption time.							Adverse Effect	PUE-MM#2	No Adverse Effect See Section 3.6.8.1
High-Risk Utility Conflicts	291	260	254	219	169	161			
Major Low-Risk Utility Conflicts	170	150	146	126	109	103			
Total Utility Conflicts	*461*	*410*	*400*	*345*	*278*	*264*			
Impact PUE#2: Accidental Disruption of Utility Systems. The potential for accidental disruption of utility systems during construction is low due to the established practices of utility identification and notification and requirements of California Government Code Section 4216.							No Adverse Effect	No mitigation needed	N/A See Section 3.6.8.1
Impact PUE#3: Effects from Water Demand during Construction. Construction activities would periodically increase demand for water beyond the planned allocation of water supplies to the local water agencies.							Adverse Effect	PUE-MM#1	No Adverse Effect See Section 3.6.8.2
Total Construction Water Demand	1,033 acre-feet/year	1,371 acre-feet/year	848 acre-feet/year	1,169 acre-feet/year	603 acre-feet/year	945 acre-feet/year			
Requires additional allocation of water supplies to the local water agencies?	Yes	Yes	Yes	Yes	Yes	Yes			

Impacts	Build Alternatives						NEPA Conclusion before Mitigation (All Build Alternatives)	Mitigation	NEPA Conclusion post Mitigation (All Build Alternatives)
	Refined SR14	SR14A	E1	E1A	E2	E2A			
Impact PUE#4: Effects from Wastewater Generated during Construction. Construction would temporarily increase wastewater generation. Local wastewater treatment facilities would not be affected by the construction of the Palmdale to Burbank Project Section, because none of the wastewater from construction would be directly piped back into local wastewater treatment systems							No Adverse Effect	No mitigation needed	N/A See Section 3.6.8.2
Impact PUE#5: Effects from Solid Waste Generated during Construction. Clearing of vegetation, removal of existing asphalt and gravel, and demolition of existing structures during construction would generate solid waste. All of the landfills within the expanded utility RSA have sufficient capacity to accommodate the construction waste, even if the waste is not recycled to the extent recommended under the Authority's policy goals							No Adverse Effect	No mitigation needed	N/A See Section 3.6.8.2
Total Construction Solid Waste	4.04 million cubic yards	4.18 million cubic yards	3.12 million cubic yards	3.11 million cubic yards	2.35 million cubic yards	2.63 million cubic yards			
Impact PUE#6: Temporary Energy Consumption during Construction. Construction would represent a one-time energy cost. The Authority's policy on sustainability would help ensure construction-period energy savings, to the extent feasible, is integrated into the project							No Adverse Effect	No mitigation needed	N/A See Section 3.6.8.3
Total Construction Energy Consumption	3,155,828 MMBtu	3,234,770 MMBtu	2,696,253 MMBtu	2,706,013 MMBtu	3,012,211 MMBtu	3,024,401 MMBtu			
Impact PUE#7: Permanent Reduced Access to Existing Utilities. The HSR right-of-way would be fenced and secured after construction. Underground utilities that conflict with the HSR right-of-way would be relocated or reinforced underneath the HSR right-of-way inside a casing pipe that allows for utility maintenance access from outside the HSR right-of-way.							No Adverse Effect	No mitigation needed	N/A See Section 3.6.8.4
Operations Impacts									
Impact PUE#8: Operational Water Supply Demand. Operation of high-speed trains, stations, and maintenance facilities would require the use of water. Water would be purchased from the closest available water agencies servicing the areas traversed by the Build Alternatives. Operation of the Burbank Airport Station would decrease the demand on existing water supplies by 15 percent.							No Adverse Effect	No mitigation needed	N/A See Section 3.6.8.5
Operational Water Demand	164.8 acre-feet/year								

Impacts	Build Alternatives						NEPA Conclusion before Mitigation (All Build Alternatives)	Mitigation	NEPA Conclusion post Mitigation (All Build Alternatives)
	Refined SR14	SR14A	E1	E1A	E2	E2A			
Requires additional allocation of water supplies to the local water agencies?	No (for the Burbank Airport Station)								
Impact PUE#9: Operational Wastewater Service Demand. Operations wastewater would only be generated by the Burbank Airport Station and would be the same across all six Build Alternatives. The effect on operational wastewater usage would not be adverse because the regional wastewater treatment facilities have the capacity to treat wastewater demand for the Burbank Airport Station and there would be no need for construction of new or expanded wastewater facilities.							No Adverse Effect	No mitigation needed	N/A See Section 3.6.8.5
Operations Wastewater Generation	22,302 gallons per day (0.6 percent of the excess capacity)								
Impact PUE#10: Effects of Permanent Operations Generation of Solid Waste. Operation activities that would generate solid waste include passenger/employee refuse disposal at stations and materials used for HSR maintenance, which would be the same between all six Build Alternatives. Landfills within the Palmdale to Burbank expanded utility RSA have sufficient capacity to accommodate the operation waste from the Build Alternatives.							No Adverse Effect	No mitigation needed	N/A See Section 3.6.8.5
Operations Waste, Burbank Airport Station	3,209 cubic yards per year								
Impact PUE#11: Permanent Operations Energy Demand. Operation would require the use of a substantial amount of electricity. However, the Palmdale to Burbank Project Section would also contribute to the HSR statewide annual energy savings (i.e., the California HSR System would remove more energy-inefficient cars and planes from the system). It is anticipated that the Palmdale to Burbank Project Section would reduce regional energy consumption in 2040 from transportation by 10,599,745 MMbtu/year to 12,029,419 MMbtu/year, and statewide emissions from transportation by 15,427,699 MMbtu/year to 23,641,108 MMbtu/year, depending on the ridership scenarios. There is no substantial difference in energy demands between the Build Alternatives.							No Adverse Effect	No mitigation needed	N/A See Section 3.6.8.5

Authority = California High-Speed Rail Authority
RSA = resource study area
MMBtu/year = million metric British thermal units per year

3.6.8.1 Utility Conflicts

Construction of the Build Alternatives would require the temporary shutdown of utility lines (i.e., water, sewer, electricity, or gas), to coordinate safe relocation, protection, or extension. PUE-IAMF#2 through PUE-IAMF#4 will ensure that construction of the Palmdale to Burbank Project Section is coordinated or phased to minimize or eliminate utility service disruption time and ensure that temporary utility conflicts and/or relocations would not result in lengthy and harmful interruption of service. The potential for accidental disruption of utility systems during construction would be low for all six Build Alternatives, owing to established practices of utility identification and notification that have been included as part of the Palmdale to Burbank Project Section (PUE-IAMF#3 and PUE-IAMF#4). Utility maintenance access would be permitted by the Authority to local service providers for utilities reinforced within the HSR right-of-way. While the total number of potential utility line conflicts would differ between the Build Alternatives (Table 3.6-14), the planned temporary disruption of utility services, and planned relocation and encasement of utility lines, would not have a different effect to residents and businesses when comparing the Build Alternatives. PUE-MM#2 will require that the Authority coordinate with AVEK to reconfigure the Acton Water Treatment Plant to ensure that the facility will remain operable during and after construction, mitigating impacts due to interruption of service. Construction of the six Build Alternatives would be coordinated or phased to minimize or eliminate utility service disruption time.

3.6.8.2 Utility Demands during Construction

Construction of the Build Alternatives would use water for the following activities: (1) increasing the water content of soil to optimize tunneling and compaction for dust control; (2) preparing concrete; and (3) reseeding disturbed areas. Wastewater would be generated as a byproduct of these construction activities. Clearing of vegetation, removal of existing paved/impervious surfaces, and demolition of existing structures during construction would generate solid waste. The difference in construction-period utility demands between the Build Alternatives is a function of the total trackway length and tunneling, with the SR14A Build Alternative having the highest demands overall because it would have the most TBMs operating at the same time.

Regardless of the Build Alternative selected, the water use during construction would periodically increase demand for water beyond the planned allocation of water supplies to the local water agencies. PUE-MM#1 will ensure that the local water supplies can support the construction of the Palmdale to Burbank Project Section. Solid waste generated by the construction of the Build Alternatives will be accommodated within the existing capacities of the local service providers and landfills. Although construction of all six Build Alternatives would generate wastewater, none of the wastewater would be directly piped back into local wastewater treatment systems.

3.6.8.3 Temporary Energy Consumption during Construction

During construction, energy would be consumed for the construction of trackway, stations, and ancillary facilities; production and transportation of construction materials; and operation and maintenance of construction equipment. Energy used for the construction would be a one-time, non-recoverable energy cost. As the Authority enters into contracts for Build Alternative construction, it will require energy-saving measures to be implemented by the contractor (PUE-IAMF#1). While the total energy consumption during construction would differ between the Build Alternatives, adherence to waste reduction, energy efficiency, and sustainability policies will ensure that construction-period energy savings, to the extent feasible, are integrated into the Palmdale to Burbank Project Section. Construction-period energy consumption would not require additional capacity nor significantly increase peak- or base-period demands for electricity.

3.6.8.4 Permanent Reduced Access to Utilities from Construction

The HSR right-of-way would be fenced and secured after construction. Underground utilities that conflict with the HSR right-of-way would be relocated or reinforced underneath the HSR right of way inside a casing pipe strong enough to carry the California HSR System utilities, and that would allow for utility maintenance access from outside the HSR right-of-way.

3.6.8.5 *Utility and Energy Demands during Project Operation*

Water

Under the No Project Alternative, local water providers predict availability of sufficient water supplies to meet future demands, assuming normal rainfall conditions. However, in the event of single or multiple dry year conditions, water demands would exceed supplies during the construction years. Additional water supplies would be needed to meet demands under such conditions, with or without construction of the Palmdale to Burbank Project Section. Operation of high-speed trains, stations, and maintenance facilities would require the use of water. Regardless of the Build Alternative selected, the operation of the Burbank Airport Station would result in a decrease in water demand when compared to the existing land uses.

Wastewater

Estimated wastewater that would be generated by operation of the Build Alternatives represents less than 1 percent of the capacity of the relevant nearby wastewater treatment facilities that would serve the facilities. Because the regional wastewater treatment facilities have the capacity to treat wastewater demand for the Burbank Airport Station, there would be no need for construction of new or expanded wastewater facilities due to operations of the Build Alternatives.

Solid Waste

Operation activities that would generate solid waste include passenger/employee refuse disposal at stations and materials used for HSR maintenance. Because the station parameters for determining solid waste generation rates are the same between the Build Alternatives, the generation of solid waste would be the same between the design options. The planned projects that constitute the No Project Alternative would undergo project-specific environmental review, and, if required, would include feasible measures to minimize adverse effects associated with the increased generation of solid waste. At this time, there is sufficient capacity at the respective landfills to accommodate the solid waste generated by the operation of the Build Alternatives or No Project Alternative.

Energy

When compared to the No Project Alternative, the operation of the Build Alternatives would reduce regional energy consumption from transportation by approximately 3.3 to 3.7 percent and statewide energy consumption from transportation by approximately 2.7 to 3.8 percent, depending on the ridership scenarios. Because the operation energy savings is based on Palmdale to Burbank Project Section ridership scenarios for the California HSR System, there would be no difference between the Build Alternatives.

3.6.9 CEQA Significance Conclusions

Table 3.6-30 summarizes impacts and the level of CEQA significance after mitigation. Public utilities and energy impacts would be reduced to a less than significant level under CEQA with the implementation of the mitigation measures identified in this section.

Table 3.6-30 Summary of CEQA Significance Conclusions and Mitigation Measures for Public Utilities and Energy

Impact	Level of CEQA Significance before Mitigation	Mitigation Measures	Level of CEQA Significance after Mitigation
Construction Impacts			
Impact PUE#1: Planned Temporary Interruption of Utility Services.	Significant	PUE-MM#2	Less than Significant
Impact PUE#2: Accidental Disruption of Utility Systems.	Less than Significant	No mitigation measures are required.	N/A
Impact PUE#3: Effects from Water Demand during Construction.	Significant	PUE-MM#1	Less than Significant
Impact PUE#4: Effects from Wastewater Generated during Construction.	Less than Significant	No mitigation measures are required.	N/A
Impact PUE#5: Effects from Solid Waste Generated during Construction.	Less than Significant	No mitigation measures are required.	N/A
Impact PUE#6: Temporary Energy Consumption during Construction.	Less than Significant	No mitigation measures are required.	N/A
Impact PUE#7: Permanent Reduced Access to Existing Utilities.	Less than Significant	No mitigation measures are required.	N/A
Operations Impacts			
Impact PUE#8: Operational Water Supply Demand.	Less than Significant	No mitigation measures are required.	N/A
Impact PUE#9: Operational Wastewater Service Demand.	Less than Significant	No mitigation measures are required.	N/A
Impact PUE#10: Effects of Permanent Operations Generation of Solid Waste.	Less than Significant	No mitigation measures are required.	N/A
Impact PUE#11: Permanent Operations Energy Demand.	Less than Significant	No mitigation measures are required.	N/A

N/A = not applicable

3.6.10 United States Forest Service Impact Analysis

This section summarizes potential effects to public utilities and energy resources associated with the Refined SR14, SR14A, E1, E1A, E2, and E2A Build Alternatives on the ANF including lands within the SGMNM. In general, all six Build Alternatives would result in similar types of effects to public utilities and energy resources within the ANF, including the SGMNM.

3.6.10.1 Consistency with Applicable United States Forest Service Policies

Appendix 3.1-B, USFS Policy Consistency Analysis, contains a comprehensive evaluation of relevant laws, regulations, plans, and policies relative to areas within the ANF, including SGMNM, affected by the six Build Alternative alignments. Policies in the Angeles National Forest Management Plan regarding public utilities are primarily focused on such features as avoiding impacts on wildlife movement. Utility infrastructure would be installed as part of the California HSR System (e.g., electrical and water lines to adits) within the ANF and would follow existing roads and utility corridors, and thus would not result in creating new barriers to wildlife movement.

Existing utilities within the ANF include telecommunication lines (Figure 3.6-9) and electrical lines (Figure 3.6-23 and Figure 3.6-24), which also appear in the SGMNM. Water pipelines (Figure 3.6-11 and Figure 3.6-12) also exist within the ANF but would not be impacted by construction or operation. USFS policies related to energy are specific to the extraction of minerals and energy resources. The project is the construction of a high-speed public transportation rail system and does not involve the extraction of mineral or energy resources. The following USFS policies pertain to public utilities and energy:

- Fac 1—Facility Maintenance Backlog: The backlog of facilities that do not meet the desired condition or complement the recreation setting is reduced by replacing outdated substandard facilities with safe, efficient, durable, environmentally sensitive infrastructure. Accommodate the facilities needs of new employees and equipment.
- ME 1—Minerals Management: Manage minerals and energy resources commensurate with the conservation of forest resource values and the long-term health and biological diversity of ecosystems.
- ME 2—Biomass Utilization: Seek opportunities to use debris from forest thinning and mortality removal for producing energy.
- S22—Except where it may adversely affect threatened and endangered species, linear structures such as fences, major highways, utility corridors, bridge upgrades or replacements, and canals will be designed and built to allow for fish and wildlife movement.

3.6.10.2 United States Forest Service Resource Analysis

Construction Effects

Construction would require the temporary shutdown of utility lines located within or servicing the ANF, including the SGMNM, to facilitate utility relocation or extension. All impacted utilities would be protected in place or relocated within the Build Alternative footprint, in conformance with required utility agency permits or approvals. As discussed in Section 3.6.6.3, Impact PUE#1, temporary interruption of utility services could affect utility customers. However, inclusion of PUE-IAMF#2 through PUE-IAMF#4 (discussed in Section 3.6.4.2) will ensure that the construction of the Build Alternatives would be coordinated or phased to minimize or avoid utility service disruption time. With the inclusion of these IAMFs, construction of the Palmdale to Burbank Project Section would not result in adverse utility effects on USFS lands.

As discussed in Section 3.6.6.3, Impact PUE#2, the potential for accidental disruption of the utility systems in the ANF would be low, owing to established practices of utility identification and notification that have been included as part of construction (PUE-IAMF#3 and PUE-IAMF#4) and California Government Code Section 4216.

As discussed in Section 3.6.6.3, Impact PUE#7, underground utilities within the ANF, that conflict with the HSR right-of-way would be relocated. If utilities encountered do not require relocation, they will be reinforced in-place while facilitating utility maintenance access. Dry utilities, such as electrical and telecommunication, would be encased in a durable pipeline—for example, one made of steel—that would protect dry utilities from deterioration. With the inclusion of standard casing and maintenance access requirements of utilities located underneath the HSR right-of-way, construction of any of the Build Alternatives would not result in adverse effects to utilities on USFS lands.

Utility Demands during Construction

As discussed in Section 3.6.6.3, Impact PUE#3, construction activities would use water to increase the water content of soil to optimize tunneling and increase compaction for dust control. Construction of the Build Alternatives would periodically increase demand for water beyond the planned allocation of water supplies to the local water agencies. However, with the implementation of PUE-MM#1, an updated water supply analysis will be prepared that identifies water supply needs for construction and operation of the Build Alternatives. Based on its results, the Authority will coordinate with the water agencies to determine if allocations for additional water supply are needed. If additional water supply is needed, the Authority would pay the water agencies its fair share of fees.

In accordance with Impact PUE#4, construction activities would temporarily lead to increased wastewater generation. Some of this wastewater would be collected in water retention ponds or treated in the same capacity as the soil spoils that would be hauled off site. The Authority would adhere to all applicable dewatering regulations and permitting requirements.

Clearing of vegetation, removal of existing asphalt and gravel, and demolition of existing structures during construction would generate solid waste. Table 3.6-15 shows the estimated remaining capacity of the respective landfills that would be utilized for waste disposal during construction of the Palmdale to Burbank Project Section. The solid waste that would be generated by the construction of the Build Alternatives represents less than two percent of the total remaining capacity of the landfills that would be utilized (refer to Impact PUE#5).

In accordance with SB 1374, the contractor would divert construction and demolition waste from landfills by reusing or recycling to aid with implementing the Local Government Construction and Demolition Guide (CalRecycle 2010), 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. Solid waste would be properly disposed of and would not affect the ANF, including the SGMNM.

Operations Effects

Operations of the Palmdale to Burbank Project Section would not affect existing underground utilities in the ANF. Because there are no stations or maintenance facilities proposed within the ANF or the SGMNM, wastewater or solid waste would not be generated within the ANF or the SGMNM (see Impacts PUE#9 and PUE#10). As discussed in Impact PUE #11, the Build Alternatives would require the use of existing or extended power lines to underground traction power substations positioned along the HSR corridor within the ANF (see Chapter 2, Alternatives, for the locations of the underground traction power facilities). These operations would not affect the ANF, including the SGMNM. See Section 3.6.6.3 for the full description of operations impacts on public utilities and energy use.

Utility Demands during Operations

Based on the Palmdale to Burbank Project Section design, with no planned stations or maintenance facilities in the ANF the operation of the railway tracks would have no permanent operations water demand (refer to Impact PUE#8). As discussed in Section 3.6.6.3, water that might be used to maintain HSR facilities within the ANF would be drawn from the Maintenance Facility or from portable sources.

This page left intentionally blank