3.14 PUBLIC UTILITIES AND FACILITIES

This section describes the environmental setting and assesses the potential for implementation of the proposed Plan to have an impact on public utilities, facilities, and services within the nine counties of the Bay Area. The public utilities, facilities, and services addressed in this EIR are water supply, wastewater (sanitary sewer), stormwater, solid waste, telecommunications, electric power, and natural gas. The analysis is focused on those areas where demand for services may increase as a result of implementation of the proposed Plan to accommodate forecasted growth in the region. For a discussion of water quality and flooding, see Section 3.10, "Hydrology and Water Quality."

Comments received in response to the Notice of Preparation (NOP) expressed concerns about the additional strain placed on existing water sources and infrastructure from the regional growth forecast. Water supply comments included requests to consider whether there is sufficient water supply to meet the regional growth forecast demands; new water supply sources are likely to have environmental impacts; existing water supplies are likely to be less reliable due to climate change; existing water distribution infrastructure is not appropriately sized to provide sufficient fire-fighting needs. The comments also included requests to include mitigation measures related to water conservation and grey water for landscaping. One comment requested the inclusion of water supply assessments.

The CEQA Guidelines note that comments received during the NOP scoping process can be helpful in "identifying the range of actions, alternatives, mitigation measures, and significant effects to be analyzed in depth in an EIR and in eliminating from detailed study issues found not to be important" (CEQA Guidelines Section 15083). Neither the CEQA Guidelines nor the statutes require a lead agency to respond directly to comments received in response to the NOP, but they do require that they be considered. Consistent with these requirements, the comments received in response to the NOP have been carefully reviewed and considered by MTC and ABAG in the preparation of the impact analysis in this section. Appendix B includes all NOP comments received.

3.14.1 Environmental Setting

PHYSICAL SETTING

This section describes existing water, wastewater, stormwater, solid waste, telecommunications, electricity, and natural gas providers and infrastructure within the Plan area and provides some data regarding existing capacity.

Water Supply

Climatic conditions and annual precipitation are described in Section 3.10, "Hydrology and Water Quality."

San Francisco Bay Hydrologic Region

As defined by the San Francisco Bay Regional Water Quality Control Board (RWQCB), the San Francisco Bay Hydrologic Region (Bay Region) encompasses numerous individual watersheds that drain into the San Francisco Bay and directly into the Pacific Ocean. It covers approximately 4,550 square miles and includes portions of all nine Bay Area counties, as well as Santa Cruz County. Bay Region watersheds are listed in **Table 3.14-1**, and the largest watersheds are depicted in **Figure 3.14-1**.

Table 3.14-1: Watersheds of the San Francisco Bay Hydrologic Region

Sub Region	Watershed
North Bay	Mendocino Coast, Russian River, Bodega, Marin Coastal, **San Pablo**, **Bay Bridges**, Upper Elmira, Putah Creek, **Suisun**, Valley Putach-Cache, Sacramento Delta
East Bay	**Bay Bridges**, **San Pablo**, **Suisun**, San Joaquin Delta, North Diablo Range, **South Bay**, **Santa Clara**
South Bay	Santa Clara, South Bay, Pajaro River
West Bay	**Bay Bridges**, San Mateo, **South Bay**, Big Basin

Note: Bold type indicates watersheds that span multiple Bay Area subregions.
Source: Data compiled by MTC and ABAG based on data from DWR 2004

Water Supply Agencies

Water supply for each county is provided by its respective water supply department or a collection of agencies or companies. Most counties contain several water providers. The focus of this EIR is on a regional analysis of water supply. According to the 2019 San Francisco Bay Integrated Regional Water Management Plan, the agencies and departments included in this description are the major contributors to the water sources in each Bay Area county (SFPUC 2019).

Alameda County Water District

The Alameda County Water District (ACWD) serves the Cities of Fremont, Newark, and Union City and the southern portion of the City of Hayward. ACWD is a retail water purveyor that allocates 67 percent of its water to residential customers and approximately 33 percent to commercial, industrial, institutional, and large landscape customers. In the 2014-2015 fiscal year, it provided water for a total of 83,007 customers, or over 344,300 individuals (ACWD 2016). ACWD also manages groundwater through comprehensive programs that protect and improve water supplies. ACWD is the exclusive Groundwater Sustainability Agency for the portion of the Niles Cone Groundwater Basin that underlies ACWD's statutory area.

Bay Area Water Supply & Conservation Agency

The Bay Area Water Supply & Conservation Agency (BAWSCA) was created on May 7, 2003, and represents 26 water suppliers that purchase water from the San Francisco Regional Water System on a wholesale basis and deliver water to people, businesses, and community organizations in San Mateo, Santa Clara, and Alameda Counties. BAWSCA's goals are to ensure a reliable water supply, high-quality water, and a fair price for its customers. BAWSCA has the authority to coordinate water conservation, supply, and recycling activities for its agencies; acquire water and make it available to other agencies on a wholesale basis; finance projects, including improvements to the regional water system; and build facilities jointly with other local public agencies or on its own to carry out the agency's purposes. It should be noted that the other water agencies discussed herein contain members of BAWSCA.

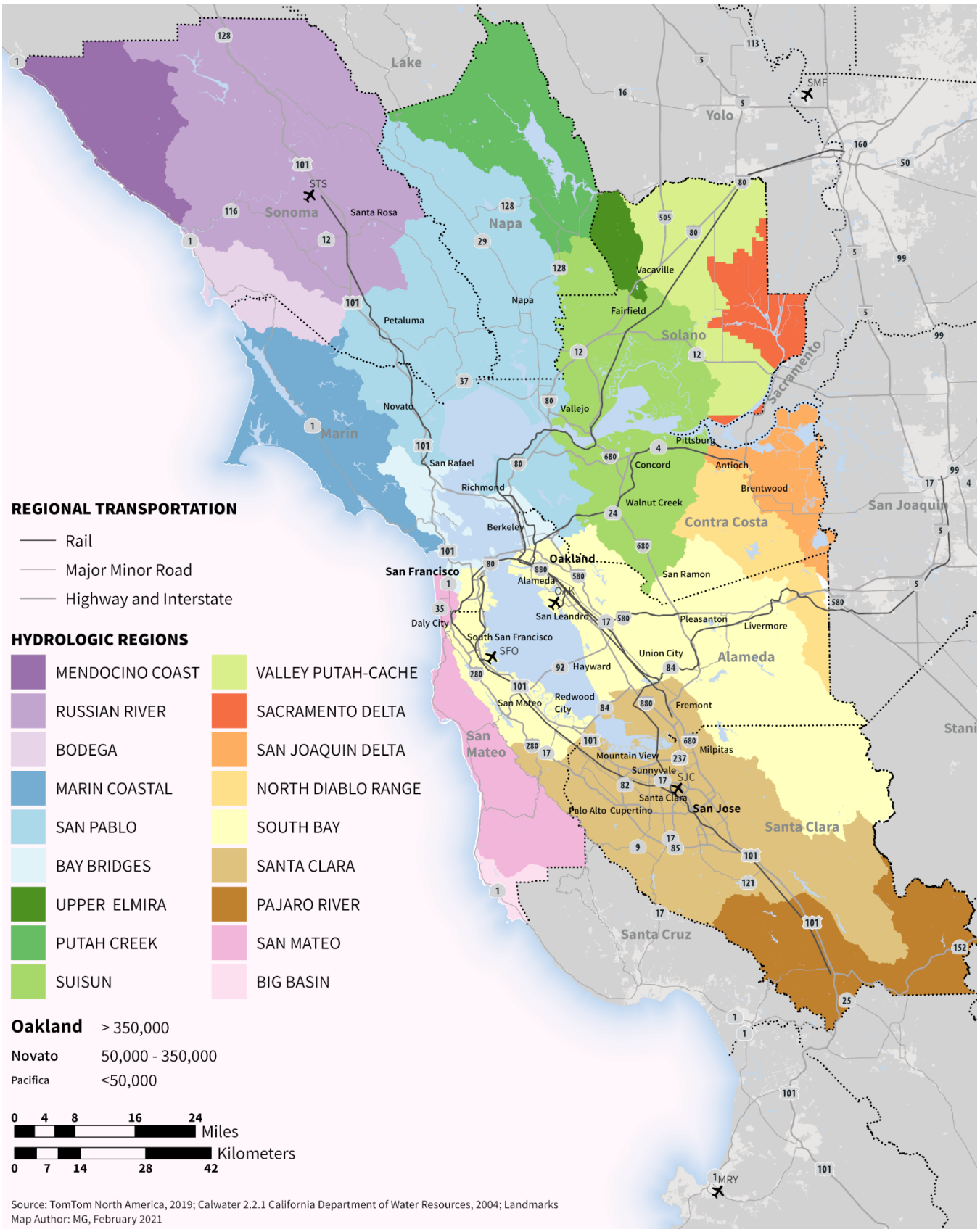


Figure 3.14-1: Major Local Watersheds in the San Francisco Bay Hydrologic Region

Contra Costa Water District

The Contra Costa Water District (CCWD) provides water to approximately 520,000 people in Contra Costa County, covering a total area of 140,000 acres. It operates and maintains a complex system of water transmission, treatment, and storage facilities to supply both treated and untreated (raw) water to its customers. It provides treated water to approximately 200,000 customers in Clayton, Clyde, Concord, Pacheco, Port Costa and parts of Martinez, Pleasant Hill, and Walnut Creek. In addition, CCWD provides wholesale treated water to the City of Antioch, the Golden State Water Company in Bay Point, the Diablo Water District in Oakley, and the City of Brentwood. It also sells untreated water to the Cities of Antioch, Martinez, and Pittsburg, as well as to industrial and irrigation customers. CCWD pumps water from four intakes in the Sacramento–San Joaquin Delta (Delta). The intakes are located at Rock Slough, on Old River, on Victoria Canal, and at Mallard Slough. The backbone of the district's water conveyance system is the 48-mile Contra Costa Canal, which starts at Rock Slough and ends at the Martinez Reservoir. In 2015, CCWD served approximately 119,000 acre-feet of water to its customers (CCWD 2016).

East Bay Municipal Utility District

The East Bay Municipal Utility District (EBMUD) serves Alameda, Alamo, Albany, Berkeley, Castro Valley, Crockett, Danville, Diablo, El Cerrito, El Sobrante, Emeryville, Hayward, Hercules, Kensington, Lafayette, Moraga, Oakland, Orinda, Piedmont, Pinole, Pleasant Hill, Richmond, Rodeo, San Leandro, San Lorenzo, San Pablo, San Ramon, Selby, and Walnut Creek. EBMUD's principal water source is the Mokelumne River Basin in the Sierra Nevada. EBMUD has water rights and facilities to divert up to 325 million gallons per day (mgd) from the Mokelumne River, which makes up approximately 90 percent of the agency's water supply. The other 10 percent originates as runoff from the watershed lands in the East Bay Area. EBMUD's Mokelumne River facilities include Pardee Dam and Reservoir, located near Valley Springs, and Camanche Dam and Reservoir, located 10 miles downstream of Pardee. Snowmelt from Alpine, Calaveras, and Amador Counties that feeds the upper Mokelumne River is collected in Pardee and Camanche Reservoirs, where it is stored for use by EBMUD. Overall, the basin serves approximately 1.4 million people throughout areas of Alameda and Contra Costa Counties, including services to residential, industrial, commercial, institutional, and irrigation waters (EBMUD 2016).

Marin Municipal Water District

The Marin Municipal Water District (MMWD) serves the populous eastern corridor of Marin from the Golden Gate Bridge northward up to, but not including, Novato, and is bounded by the San Francisco Bay on the east and stretches through the San Geronimo Valley in the west. The incorporated cities and towns of San Rafael, Mill Valley, Fairfax, San Anselmo, Ross, Larkspur, Corte Madera, Tiburon, Belvedere, and Sausalito are within the district's service area. The service area covers approximately 147 square miles, and MMWD serves a population of approximately 190,000 through about 61,000 service connections. MMWD's potable water distribution system includes approximately 941 miles of water mains, 90 pump stations, and 124 treated water storage tanks with a total storage capacity of 82 million gallons. Demand for potable and raw water was 22,610 acre-feet of water per year in the most recent Urban Water Management Plan (afy) (MMWD 2016).

City of Napa Water Department

The City of Napa is a major water supply source in Napa County, receiving its annual State Water Project (SWP) entitlement through the Napa County Flood Control and Water Conservation District, which is the contract administrator. The designated water service areas include most of the lower Napa Valley, encompassing all areas within the city limits of the City of Napa and extending up the foothills on the east and west sides of the valley. The city exports water to the Cities of American

Canyon, St. Helena, and Calistoga; the Town of Yountville; and the California Veterans Home. The predominant use of land in the area is residential development. As of 2015, the population served by the City of Napa Water Department was 87,615. In the City of Napa Urban Water Management Plan the demand is met by supplying water from three major sources: Lake Hennessey, the Milliken Reservoir, and the SWP, as delivered through the North Bay Aqueduct (City of Napa 2017).

San Francisco Public Utilities Commission

The San Francisco Public Utilities Commission (SFPUC) operates the Regional Water System, which provides water to nearly 2.6 million people within San Francisco, San Mateo, Santa Clara, Alameda, and Tuolumne Counties. The Regional Water System consists of more than 280 miles of pipeline and 60 miles of tunnels, 11 reservoirs, five pump stations, and two water treatment plans. The SFPUC provides water to both retail and wholesale customers (approximately 35 and 65 percent, respectively) (SFPUC 2016).

The Tuolumne River watershed on the western slope of the central Sierra Nevada, which provides water to the Regional Water System, has three regional water supply and conveyance systems: the Hetch Hetchy System, the Alameda System, and the Peninsula System. The amount of Tuolumne River supplies delivered depends on annual water conditions. In normal years, approximately 85 percent of SFPUC water supply is provided by runoff from the upper Tuolumne River watershed (SFPUC 2016). This percentage may increase up to 93 percent in dry years, based on the severity and timing of drought conditions. Three major reservoirs collect runoff: Hetch Hetchy Reservoir, Lake Lloyd, and Lake Eleanor. Water is diverted from the Hetch Hetchy Reservoir into a series of tunnels, aqueducts, and pipelines (the Hetch Hetchy System) that cross the San Joaquin Valley to facilities located in Alameda County (the Alameda System). The Alameda System includes conveyance facilities that connect the Hetch Hetchy System to facilities located in the San Francisco Peninsula (the Peninsula System), which also connects to the City and County of San Francisco's distribution system. This water supply serves customers in San Francisco, as well as 28 wholesale customers located in Alameda, Santa Clara, and San Mateo Counties.

Reservoirs and tanks within San Francisco have the capacity to hold approximately 413 million gallons of water. The SFPUC estimates this capacity to be a 5-day supply at the current average water consumption rate for the city. In addition, there is an emergency supply of existing non-potable water immediately available within the city at Lake Merced, which currently holds approximately 1.9 billion gallons of water. In 2015, the total retail demand for water in the city was 65.6 mgd, and the nonresidential demand was 23.6 mgd (SFPUC 2016).

The primary water source for San Mateo County is SFPUC's Regional Water System. In addition to supplies from Hetch Hetchy, the system uses two reservoirs in San Mateo County, Crystal Springs and San Andreas, which collect runoff from the San Mateo Creek watershed. Crystal Springs Reservoir also receives water from the Hetch Hetchy System. Water from the Pilarcitos Reservoir, on Pilarcitos Creek, directly serves one of the wholesale customers, the Coastside County Water District (which serves Half Moon Bay, Miramar, Princeton by the Sea, and El Granada) and can also deliver water to Crystal Springs and San Andreas Reservoirs. San Mateo County wholesale customers of the SFPUC include the Cities of Brisbane, Burlingame, Daly City, East Palo Alto, Menlo Park, Millbrae, San Bruno, and Redwood City; the Town of Hillsborough; the Coastside County Water District; the Cordilleras Mutual Water Association; the Estero Municipal Improvement District; the Guadalupe Valley Municipal Improvement District; the Mid-Peninsula Water District; the North Coast County Water District; and the Westborough Water District. The SFPUC also serves the California Water Service Company Bear Gulch and Bayshore Districts.

Santa Clara Valley Water District

The Santa Clara Valley Water District (SCVWD) is the county's primary water provider, serving Santa Clara County's population of 1,927,852 (U.S. Census 2019). Notably, the SCVWD and SFPUC's wholesale service areas overlap. The SCVWD service area encompasses all the county's 1,300 square miles, and SCVWD serves its 15 cities. Eight retailers in Santa Clara County have contracts with SFPUC to receive water from the SPFUC Regional Water System. The eight retailers, considered to be wholesale customers of SFPUC are the Cities of Palo Alto, Mountain View, Sunnyvale, Santa Clara, San Jose, and Milpitas; Purissima Hills Water District; and Stanford University. SCVWD does not control or administer SFPUC supplies in the county, but the supply reduces the demands on SCVWD sources of water supply. These eight retailers, however, benefit from the comprehensive water management programs and services provided by SCVWD.

The SCVWD manages groundwater and provides comprehensive water management as authorized by the Santa Clara Valley District Act. SCVWD's water supply system comprises storage, conveyance, recharge, treatment, and distribution facilities that include 11 local reservoirs, the groundwater basin, groundwater recharge facilities, treatment plants, imported supply, and raw treated water conveyance facilities. The primary source of water for SCVWD is groundwater and surface water stored in the reservoirs. The reservoirs store up to 25 percent of Santa Clara County's water supply. The capacity of all the local reservoirs of SCVWD is 169,009 acre-feet, with 122, 924 acre-feet of restricted capacity (SCVWD 2016).

About half of the county's water supply currently comes from local sources, and about half comes from imported water sources. Groundwater pumping provides up to half of the county's water supply during normal years. SCVWD uses conjunctive use methods—the practice of storing surface water in a groundwater basin in wet years and withdrawing from the basin in the dry years—to ensure proper protection of groundwater aquifers in Santa Clara County. SCVWD manages two groundwater subbasins that transmit, filter, and store water: the Santa Clara Subbasin and the Llagas Subbasin. Santa Clara County also imports water supplies from the Delta through three main pipelines: the South Bay Aqueduct, which carries water from the SWP, and the Santa Clara Conduit and Pacheco Conduit, both of which bring water from the federal Central Valley Project (CVP). SCVWD is contracted to import 152,500 afy and 100,000 afy from the CVP and SWP, respectively (SCVWD 2016).

Solano County Water Agency

The Solano County Water Agency (SCWA) is a wholesale water agency that provides untreated water to cities and agricultural districts in Solano County and parts of Yolo County from the federal Solano Project and the North Bay Aqueduct of the SWP. SCWA's service area population in 2015 was 429,400. It has water contracts to deliver water to Fairfield; Suisun City; Vacaville; Vallejo; Solano Irrigation District; Maine Prairie Water District; the University of California, Davis; and the California State Prison in Solano. The SWP has rights to water originating from the Sacramento and San Joaquin Rivers, and it stores water on Lake Oroville on the Feather River. The SWP provides water to the SCWA through the North Bay Aqueduct, a 27-mile-long pipeline that delivers untreated municipal water from Barker Slough in the Delta to Napa and Solano Counties.

The major facilities of the Solano Project are the Monticello Dam, which captures water from Putah Creek in Lake Berryessa; the Putah Diversion Dam, which diverts water out of lower Putah Creek; and the Putah South Canal, which delivers water to local agencies. The Putah South Canal is 33 miles long.

SCWA has contracted with the California Department of Water Resources (DWR) for an ultimate allocation of 47,756 afy from the SWP. In 2015, SCWA delivered a total of 206,030 acre-feet of water to its respective agencies (SCWA 2016).

Sonoma Water

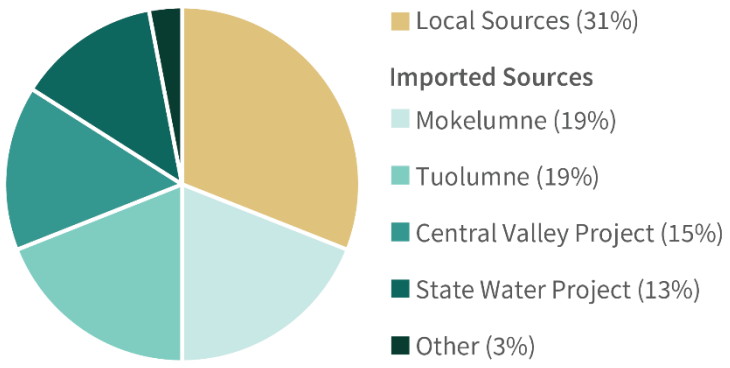
Sonoma Water, formerly known as the Sonoma County Water Agency, serves a large portion of Sonoma County, as well as the northern portion of Marin County. The primary water source for Sonoma Water is the Russian River. The Russian River originates in central Mendocino County and discharges into the Pacific Ocean near Jenner, about 20 miles west of Santa Rosa, and it is approximately 110 miles in length. Additionally, the Santa Rosa Plain provides groundwater. Groundwater is an important source of water in Sonoma County because it provides the domestic water supply for most of the unincorporated portion of the county and is a primary source of water for agricultural users. Three water agency wells located along the Russian River- Cotati Intertie Pipeline in the Santa Rosa Plain also provide a portion of the agency's water supply. Sonoma Water diverts water from the Russian River and delivers it to customers through a transmission system. The transmission system consists of six radial collector wells at the Wohler and Mirabel production facilities adjacent to the Russian River. In 2015, Sonoma Water provided 44,733 afy to its customers and contractors (including surplus and non-surplus customers) (Sonoma County Water Agency 2016).

Zone 7 Water Agency

The Zone 7 Water Agency (Zone 7) water service area, located about 40 miles southeast of San Francisco, encompasses an area of approximately 425 square miles of the eastern portion of Alameda County, including the Livermore-Amador Valley, Sunol Valley, and portions of the Diablo Range. The Zone 7 service area also overlies the Alameda Creek watershed. This watershed encompasses almost 700 square miles and extends from Altamont Pass to the east, San Francisco Bay to the west, Mount Diablo to the north, and Mount Hamilton to the south. Zone 7 is the water wholesaler for the Livermore-Amador Valley, as well as the area's flood control agency. It supplies untreated water for agriculture and treated drinking water to the California Water Service Company, Dublin San Ramon Services District, the City of Livermore, and the City of Pleasanton (Zone 7 Water Agency 2016).

Water Supply Sources

To service the region's residential, commercial, and agricultural water needs, Bay Area water agencies must manage diverse water supplies. These include supplies from local and imported sources, as well as through methods such as desalination and the use of recycled water. **Figure 3.14-2** shows the breakdown of typical Bay Area water use by source of supply.



Source: San Francisco Bay Area Integrated Regional Water Management Plan, 2019

Figure 3.14-2: Bay Area Water Use by Supply Source

Local Water

Local water supplies come from two interconnected sources: surface water and groundwater. Surface water is water that collects above ground in a stream, river, lake, reservoir, wetland, or ocean. Groundwater is water that has infiltrated into the subsurface that completely fills (saturates) the void space of rocks or sediment. They are physically connected in the hydrologic cycle when, at certain locations or times of the year, water infiltrates the bed of a stream to recharge groundwater or, at others, groundwater discharges, contributing to the base flow of a stream.

A long-term threat to groundwater sources is overdraft. Overdraft is the condition of a groundwater basin in which the amount of water withdrawn by pumping over the long term exceeds the amount of water that recharges the basin. Overdraft is characterized by groundwater levels that decline over a period of years and never fully recover, even in wet years. Overdraft can lead to increased extraction costs, land subsidence, water quality degradation, and environmental impacts. Although the Bay Region was not identified in DWR's last Statewide report on groundwater sources in 2020 as an area that is at short-term risk for widespread overdraft conditions (DWR 2021), many strategies identified in the *Bay Area Integrated Regional Water Management Plan* seek to reduce the likelihood of overdraft (SFPUC 2019).

Together, surface water and groundwater currently supply approximately 31 percent of Bay Area water (SFPUC 2019). Surface water from local rivers and streams (including the Delta) is an important source for all Bay Area water agencies but particularly so in the North Bay counties, where access to imported water is more limited because of infrastructure limitations. The Bay Area has 28 identified groundwater basins, which underlie approximately 30 percent of the region (see **Figure 3.14-3**). The basins that are most intensively used for water supply are the Santa Clara Valley, Napa-Sonoma Valley, Petaluma Valley, Livermore Valley, and Westside (on San Francisco Peninsula) basins (SFPUC 2019). Groundwater is also an important local supply source for ACWD, BAWSCA member agencies, SCVWD, SFPUC, and Sonoma Water.

Imported Water

The greatest proportion of Bay Area water is imported from Sierra Nevada and Delta sources, which make up approximately 66 percent of supply. As described for SFPUC and EBMUD above, the primary Sierra Nevada sources are the Mokelumne River and Tuolumne River watersheds. Several Bay Area water agencies receive Delta water through the SWP and CVP, which have a vast network of canals and aqueducts for the delivery of water throughout the Bay Area and the Central Valley. Major water conveyance infrastructure delivering water through the SWP and CVP is described in the "Water Supply Infrastructure" section, below.

Recycled Water

In the 1990s, a number of local agencies joined with DWR and the U.S. Bureau of Reclamation to study the feasibility of using high-quality recycled water to augment water supplies and help the Bay-Delta ecosystem. This cooperative effort, known as the Bay Area Regional Water Recycling Program, produced a master plan for regional water recycling in 1999 for the five counties south of the bay. Since then, local water agencies have built a number of projects consistent with the program, and recycled water has come to be widely used in the Bay Area for a number of applications, including landscape irrigation, agricultural needs, commercial and industrial purposes, and as a supply to the area's wetlands. A similar effort for North Bay counties was organized by the North Bay Regional Water Recycling Feasibility Study and Program. Together, these planning efforts have resulted in over 30 agencies in the region developing recycled water programs. In 2015, the Bay Area recycled 58,000 afy, almost 10 percent of the wastewater effluent generated, and supply is expected to more than double over the next 20 years (SFPUC 2019).

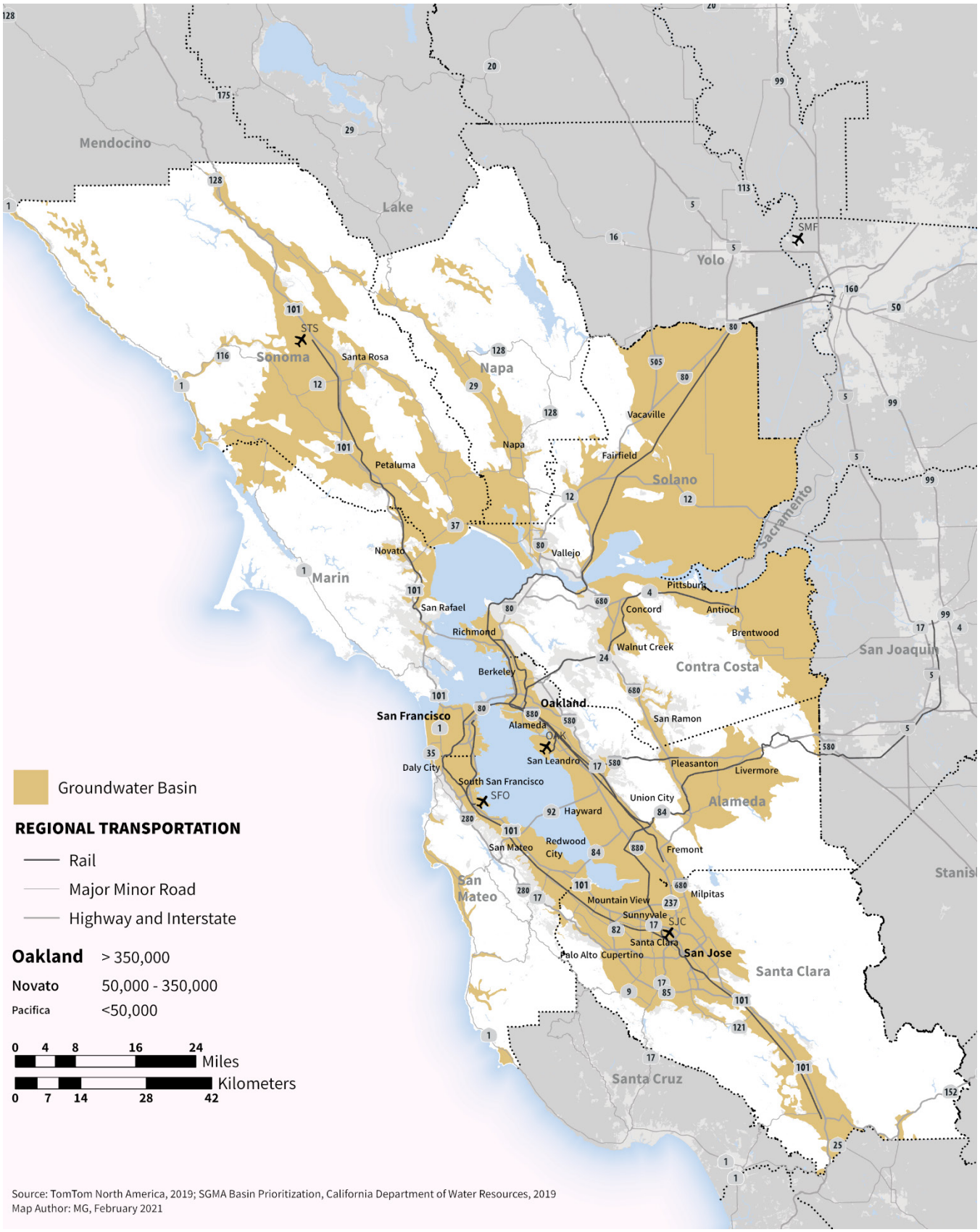


Figure 3.14-3: Bay Area Groundwater Basins

Desalination

Bay Area agencies have explored desalination as an alternative source of drinking water. In 2003, a number of water agencies formed the Northern California Salinity Coalition to formally join together to research and identify regional approaches for addressing salinity impacts, as well as the use and application of desalination (BARDP 2020). In 2005–2006, MMWD operated a desalination pilot plant, enabling it to conduct environmental studies, test equipment, refine operating costs, and demonstrate the technology to MMWD customers. The agency used the results of the pilot plant operations to refine the design requirements and costs of a full-scale desalination facility. This project is not currently being pursued; other measures like water efficiency, recycled water, and interties are being pursued to increase water reliability with lower costs.

In 2003, ACWD opened the Newark Desalination Facility, the first brackish water desalination facility in northern California, with a capacity of 5 mgd, and it doubled the production to 10 mgd for a total blended production of 12.5 mgd to the distribution system. Eight water agencies in the Bay Area (ACWD, BAWSCA, CCWD, EBMUD, MMWD, SFPUC, SCVWD, and Zone 7 Water Agency) are working together to investigate opportunities for collaboration. The purpose of this planning effort, known as Bay Area Regional Reliability (BARR), is to identify projects and processes to enhance water supply reliability across the region, leverage existing infrastructure investments, facilitate water transfers during critical shortages, and improve climate change resiliency. Projects to be considered will include interagency interties and pipelines, treatment plan improvements and expansion, groundwater management and recharge, potable reuse, desalination, and water transfers. While no specific capacity or supply has been identified, this program may result in addition of future supplies that would benefit Bay Area Customers (Brown and Caldwell 2017).

Water Transfers

Water transfers allow suppliers with excess water supplies to sell their water to those agencies in need. In addition, agriculture-to-urban transfers can allow agricultural districts with marginal lands to be fallowed (taken out of production). Water transfers also provide reduced vulnerability to water shortages resulting from drought, catastrophic events, and system security breaches. Several Bay Area regional water agencies, including ACWD, CCWD, EBMUD, SCVWD, SFPUC, Solano CWA, and Zone 7, have participated in various types of water transfers to supplement their existing water supplies. Historic and existing water transfer arrangements occurring in the region include, but are not limited to, the following:

- **CCWD Long-Term and Short-Term Water Transfers**. CCWD has long-term agreements that enable it to purchase up to 12,000 acre feet per year (AFY) from East Contra Costa Irrigation District (ECCID) during droughts.
- **SFPUC Water Transfers**. The SFPUC participated in the DWR Drought Bank to help meet demands during the 1987–1992 drought and has also purchased water from the Kern County Water Bank. SFPUC is also investigating the possibility of a dry-year water transfer in the Tuolumne River basin with Modesto Irrigation District/Turlock Irrigation District for 2 mgd.
- **SCVWD Short-Term Water Transfers**. SCVWD participates in water transfers and exchanges on a routine basis. For example, in 2003 when CVP and SWP allocations initially were low, SCVWD purchased 28,000 acre-feet through six separate transactions.

In 2014, the BARR partnership developed a drought contingency plan and have since begun work on a Bay Area Shared Water Access Program (SWAP). The goal of SWAP is to develop a strategy report that will facilitate transfers to and exchanges within the Bay Area, leveraging existing infrastructure

and institutional agreements. The SWAP effort of seven of the eight Bay Area Regional Reliability partners will outline an implementation plan that will facilitate transfers to and exchanges within the Bay Area, leveraging existing infrastructure and institutional agreements (BARR 2020).

Water Conservation

Reducing water demand through conservation is a key component of improving water supply reliability in the Bay Area. All of the 11 major water agencies in the region are members of the California Water Efficiency Partnership, formally known as the California Urban Water Conservation Council, which promotes the development and implementation of conservation best management practices (BMPs), such as metering, public information programs, conservation pricing, and washing machine rebates. Many local water agencies are also implementing conservation projects and programs that extend beyond these baseline BMPs.

Water Supply Infrastructure

As noted above, approximately two-thirds of the water used by Bay Area water agencies comes from nonlocal sources. The Mokelumne, Tuolumne, San Joaquin (CVP), and Sacramento (SWP) Rivers all flow from out of region mountain ranges through the Delta. As a result, the region relies on a diverse network of water infrastructure, including the following aqueducts and storage facilities to convey supplies to its residents (SFPUC 2019):

- **Contra Costa Canal**. Originally constructed to serve agricultural needs, the Contra Costa Canal is now the backbone of the CCWD transmission system. The canal spans 48 miles, conveying water from the Delta to CCWD's treatment facilities and raw water customers.

- **Hetch Hetchy Aqueduct**. The 167-mile Hetch Hetchy Aqueduct roughly parallels the Tuolumne River, conveying SFPUC supplies from the Hetch Hetchy Reservoir across the San Joaquin River and San Francisco Bay. Upon reaching the Bay Area near the city of Fremont, the Hetch Hetchy Aqueduct splits into the four Bay Division Pipelines. Pipelines 1 and 2 cross the San Francisco Bay to the south of the Dumbarton Bridge, while pipelines 3 and 4 run to the south of the bay. Water from Hetch Hetchy is stored in local facilities including Calaveras Reservoir, Crystal Springs Reservoir, and San Antonio Reservoir. Hetch Hetchy provides water to 2.4 million residential, commercial, and industrial customers in San Francisco and the Greater Bay Area.

- **Mokelumne Aqueducts**. The three aqueducts that make up the Mokelumne Aqueduct System convey most of EBMUD's supply 87 miles, from Pardee Reservoir on the Mokelumne River to Walnut Creek.

- **North Bay Aqueduct**. The North Bay Aqueduct is an underground pipeline operated remotely by DWR. It extends from the Delta to Benicia, Vallejo, and Napa County. SCWA and the Napa County Flood Control Water and Conservation District, which includes the City of Napa as a member agency, receive Delta supplies through the North Bay Aqueduct.

- **Russian River Transmission Facilities**. Sonoma Water operates diversion facilities at the Russian River and an aqueduct system composed of pipelines, pumps, and storage tanks.

- **San Felipe Division**. A set of pipelines and pumps convey CVP water from San Luis Reservoir to Santa Clara and San Benito Counties. In Santa Clara County, the San Felipe Division terminates at Coyote Pumping Plant, where it connects with SCVWD's Cross-Valley Pipeline.

- **South Bay Aqueduct**. The South Bay Aqueduct conveys water from the Delta through over 40 miles of pipelines and canals. ACWD, Zone 7, and SCVWD receive SWP supplies conveyed through the South Bay Aqueduct.

In addition to pipelines and aqueducts, each Bay Area water agency has its own extensive network of surface water storage reservoirs, groundwater extraction wells, water treatment plants, and distribution pipelines.

Regional Demographics and Water Demand

While numerous factors influence water demand, including employment growth, socioeconomic characteristics, geographic distribution of the population, variation in local precipitation levels, and water conservation practices, overall population growth is the most important factor. In general, demand management strategies will allow Bay Area water agencies to continue to meet projected demand through 2040 in average years. To date, demand management and conservation programs have helped to keep the overall increase of water use in the Bay Area stable, despite an increasing population (see **Figure 3.14-4**).

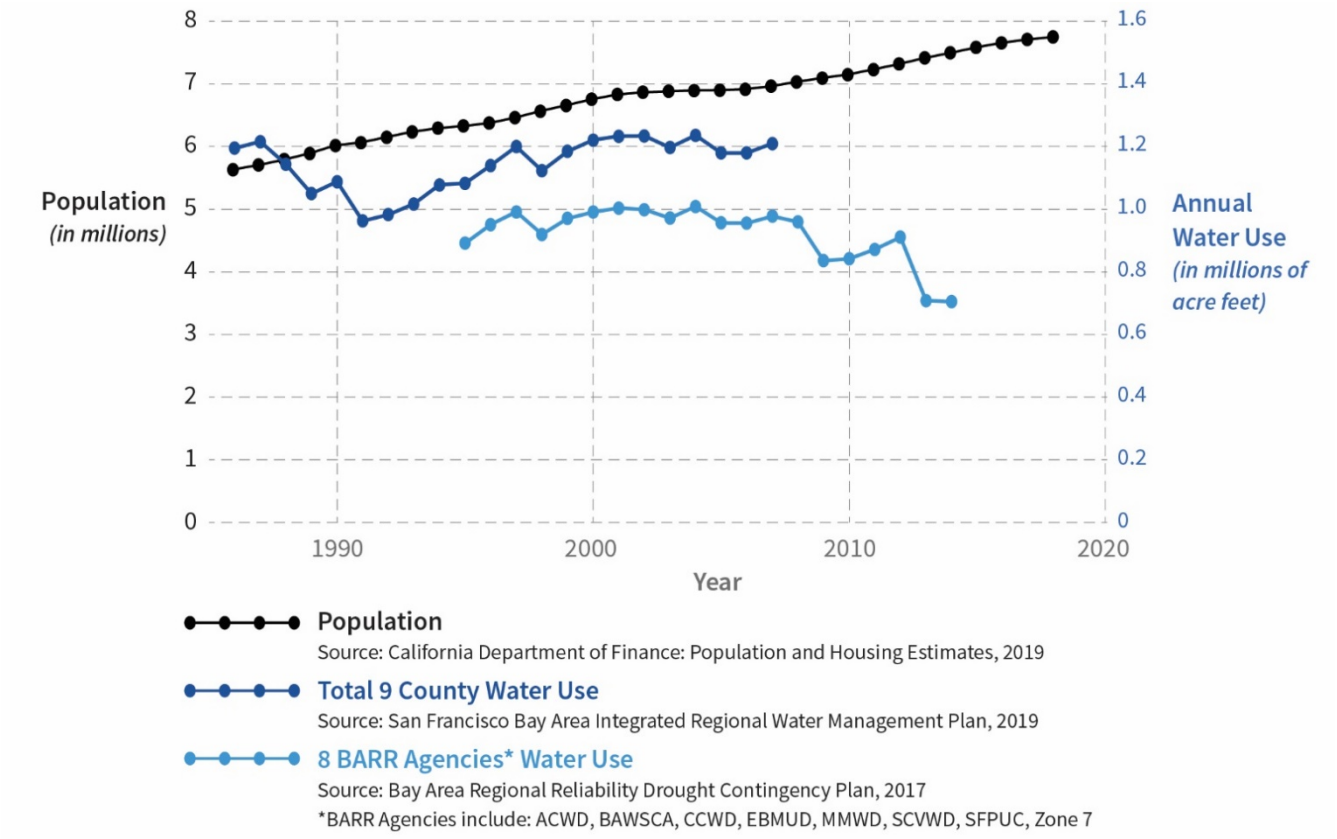


Figure 3.14-4: Population and Water Demand Trends

Table 3.14-2 shows the projected water supplies and demands from the most recent urban water management plans (UWMPs) for normal years in the near future (2020) and over the next 20 years (2035 or 2040). All the water districts, except for SCWA, will be able to provide adequate water supplies to meet projected demand in a year of normal precipitation, although doing so would require some districts to acquire additional supplies. It is possible that demand in the SCWA could exceed the county's supply, which would require the county to acquire additional sources from other counties in the region or elsewhere.

Table 3.14-2: Projected Normal Year Supply and Demand (Acre Feet/Year)

Agency	Current Supply	Current Demand	Future Supply	Future Demand
Alameda County Water District	77,000	63,000	76,000	70,000
Contra Costa Water District[1]	329,000	264,000	362,000	304,000
East Bay Municipal Utility District	217,000	217,000	230,000	230,000
Marin Municipal Water District	151,000	40,000	153,000	42,000
City of Napa[2]	32,000	15,000	33,000	17,000
San Francisco Public Utilities Commission[1]	280,000	280,000	295,000	295,000
Santa Clara Valley Water District	390,000	371,000	442,000	435,000
Solano County Water[1,2]	244,000	255,000	244,000	255,000
Sonoma Water	66,000	66,000	76,000	76,000
Zone 7 Water Agency[2]	79,000	72,000	100,000	93,000

Note: Numbers have been rounded to the nearest 1,000.

[1] Projected supply and demand include retail and wholesale customers (in SFPUC's case, including Bay Area Water Supply & Conservation Agency member agencies).

[2] Future supply and demand projections are for the year 2035.

Sources: Data compiled by MTC and ABAG based on data from ACWD 2016, CCWD 2016, EBMUD 2016, MMWD 2016, City of Napa 2017, SFPUC 2016, SCVWD 2016, SCWA 2016, Sonoma County Water Agency 2016, Zone 7 Water Agency 2016

Some Bay Area water agencies are projecting future water supply shortfalls in dry years, and some are already seeing such shortfalls, as shown in **Table 3.14-3**. Other agencies anticipate being able to handle a single dry year, largely because of reservoirs or other storage capacity. The severity and timing of dry year shortfalls differ greatly among the agencies because of the wide variation of supply sources, types of use, and climates within the region.

Table 3.14-3: Year of Projected Water Shortages (Single Dry Year)

Agency	First year in which demand is expected to outpace supply during single dry years	First year in which demand is expected to outpace supply during multiple dry years[1]
Alameda County Water District	2020	2025
Contra Costa Water District	none	none
East Bay Municipal Utility District	none	2025
Marin Municipal Water District	none	none
City of Napa Water Department[2]	none	none
San Francisco Public Utilities Commission	none	2040
Santa Clara Valley Water District	2040	2020
Solano County Water Agency[2]	2015	2015
Sonoma Water	2025	none
Zone 7 Water Agency[2]	none	none

[1] Agencies are required to analyze at least a 3-year dry period. Alameda County Water District and the City of Napa, respectively, studied 5- and 6-year dry periods with all others analyzing 3-year periods.

[2] Urban Water Management Plans projected water supply and demands to 2040, except for City of Napa, Solano County Water Agency, and Zone 7 which projected through 2035. For the City of Napa and Zone 7, demand does not outpace supply through 2035.

Sources: Data compiled by MTC and ABAG based on data from ACWD 2016, CCWD 2016, EBMUD 2016, MMWD 2016, City of Napa 2017, SFPUC 2016, SCVWD 2016, SCWA 2016, Sonoma County Water Agency 2016, Zone 7 Water Agency 2016

Drought

California has experienced several prolonged droughts, specifically (in recent times) in 1973, 1976 through 1977, 1987 through 1991, 2007 through 2009, and 2011 through 2016. During the most recent drought, the governor declared a state of emergency, calling on all Californians to reduce their water

usage by 20 percent characterizing it as the driest five years on record for the State (State of California 2014). The 2011–2017 drought eased in the winter of 2017, as many parts of California saw dramatically improved hydrologic conditions, with the governor lifting the Drought emergency with major State reservoirs above normal storage levels (State of California 2017).

In May 2015, the State Water Resources Control Board (SWRCB) adopted an emergency water conservation regulation in response to historic drought conditions and an executive order issued by the governor in April 2015. Under that regulation, SWRCB set specific conservation targets for large urban water suppliers, required reporting of water production information, prohibited wasteful water practices, and gave urban water agencies additional enforcement authority to prevent those practices. The regulations were adjusted in February of 2016 to further recognize regional differences and investments in new drinking water supplies. Public water use was reduced by 22 percent through 2017 as compared to 2013 (State of California 2017). In May 2016, new regulation allowed urban water suppliers to establish local conservation standards based on need and availability during continued drought.

In April 2017, Governor Brown ended the drought State of Emergency in most of California in Executive Order B-40-17, which lifted the drought emergency in all California counties except Fresno, Kings, Tulare, and Tuolumne Counties. Executive Order B-40-17 also rescinds two emergency proclamations from January and April 2014 and four drought-related Executive Orders issued in 2014 and 2015. Further, on April 26, 2017, SWRCB rescinded the water supply stress test requirements and remaining mandatory conservation standards for urban water suppliers (State of California 2017).

Climate change is expected to increase the number and severity of future droughts (SCVWD 2021). For this reason, the State has continued to pursue making water conservation a California way of life, passing further legislation in 2018 to develop new standards for indoor and outdoor residential use, commercial, industrial, and institutional water use for landscape irrigation, and water loss (SWRCB 2021).

In March 2021, drought conditions returned to 90 percent of the State with 64 percent of the State in a severe drought status with portions of Napa, Solano, and Sonoma Counties in an extreme drought intensity (USDM 2021). In addition to the local drought conditions within the boundaries of the nine counties, shortages in precipitation in the Sierra Nevada can have pronounced effects on water supply in the Bay Area because of the reliance of the region of water from the Tuolumne and Mokelumne River watersheds, as well as the SWP and CVP, which rely on out-of-region watersheds.

Wastewater Treatment

Wastewater is generated by residential, commercial, and industrial sources throughout the Bay Area. Treatment of wastewater provides protection for human health and receiving water bodies, preservation of the health of aquatic and riparian species, and improved supply reliability through the removal of harmful pollutants from discharges.

Urbanized and unincorporated areas of cities and counties throughout the Bay Area provide wastewater treatment facilities. These facilities include systems made up of pipelines, pipe stations, interceptor stations and discharge stations. Treatment plants send wastewater through up to three treatment processes (primary, secondary, tertiary) depending on treatment requirements established by the pertinent RWQCB for the particular plant. The level of treatment is often dictated by where treated effluent is discharged (land, water body) and if there is an end use that requires higher treatment levels (recycling). Many of the Bay Area's wastewater treatment plants include primary and secondary treatment for wastewater, as well as recycled water programs that require tertiary

treatment. In many cases, secondary effluent is discharged into the San Francisco Bay, and wastewater from Solano County is pumped into the Delta. Wastewater is also recycled for other uses, such as agriculture, irrigation, or landscaping. Treatment requirements are promulgated by the RWQCB and are typically reviewed, along with treatment capacity, every 5 years. As a result of this process, planning and upgrading of treatment plants is an ongoing process for each plant.

Wastewater treatment in the Bay Area is provided by various agencies, as well as individual city and town wastewater treatment systems. Bay Area wastewater treatment facilities are listed in **Table 3.14-4**. Some treatment plants serve individual cities, while others serve multiple jurisdictions. More than 50 agencies provide wastewater treatment throughout the Bay Area. Each plant is typically sized to accommodate growth over a 15- to 20-year horizon. Because of the dynamic nature of treatment plant planning/upgrading/expansion, it is not practical, at this regional and programmatic level of analysis, to characterize treatment plant technology, flows, and capacity.

Table 3.14-4: Wastewater Treatment Facilities in the Region

Treatment Agency	Service Area
Alameda County	
City of Hayward	City of Hayward
City of Livermore	City of Livermore and surrounding unincorporated areas
City of San Leandro, Environmental Services Division	City of San Leandro
Dublin San Ramon Services District	Cities of Pleasanton and Dublin
East Bay Municipal Utility District	Cities of Alameda, Albany, Berkeley, Emeryville, Oakland, and Piedmont
Oro Loma Sanitary District	City of San Leandro, City of Hayward and unincorporated areas San Lorenzo, Ashland, Cherryland, Fairview, and portions of Castro Valley
Union Sanitary District	Cities of Fremont, Newark, and Union City
Contra Costa County	
Central Contra Costa Sanitary District	Cities of Clayton, Concord, Lafayette, Orinda, Pleasant Hill, San Ramon, Walnut Creek, Towns of Danville, Moraga, and unincorporated area of Alamo
City of Brentwood	City of Brentwood
City of Hercules / City of Pinole	City of Hercules
City of Richmond Municipal Services District	City of Richmond
Crockett-Valona Sanitary District	Unincorporated area of Crockett
Delta Diablo Sanitation District	Cities of Antioch, Pittsburg, and unincorporated Bay Point area
East Bay Municipal Utility District	Cities of El Cerrito, Richmond
Ironhorse Sanitary District	City of Oakley and unincorporated area of Bethel Island
Mt. View Sanitary Eastern District	City of Martinez and surrounding unincorporated areas
Rodeo Sanitary District	Unincorporated Rodeo area
West County Wastewater District	City of Richmond and unincorporated El Sobrante area
Marin County	
Central Marin Sanitation Agency	City San Rafael and Towns of Corte Madera and Fairfax
Las Gallinas Valley Sanitary District	City of San Rafael and surrounding unincorporated areas
Marin County Sanitary District #5	Town of Tiburon
Novato Sanitary District	City of Novato and unincorporated Bel Marin, Ignacio and Hamilton areas
Ross Valley Sanitation District	City of Larkspur, Town of San Anselmo, and surrounding unincorporated areas
Sausalito Marin City Sanitary District	City of Sausalito and unincorporated Marin City area
Sewerage Agency of Southern Marin	City of Mill Valley and surrounding unincorporated areas

Treatment Agency	Service Area
Napa County	
City of American Canyon	City of American Canyon
City of Calistoga	City of Calistoga
City of St. Helena	City of St. Helena
Napa Sanitation District	City of Napa and unincorporated surrounding areas
Town of Yountville	Town of Yountville
San Francisco	
San Francisco Public Utilities Commission	City and County of San Francisco
San Mateo County	
City of Burlingame	City of Burlingame, Town of Hillsborough and unincorporated Burlingame Hills area
City of Millbrae	City of Millbrae
City of Pacifica	City of Pacifica
City of San Mateo/ Estero Municipal Improvement District	Cities of San Mateo and Foster City
Cities of South San Francisco and San Bruno	Cities of South San Francisco, San Bruno, Daly City and Millbrae and Town of Colma
North San Mateo County Sanitation District	Cities of Daly City and South San Francisco
Sewer Authority Mid- Coastside	City of Half Moon Bay and unincorporated Granada, Moss Beach and Montero areas
San Francisco Public Utilities Commission	Cities of Brisbane and Daly City
Silicon Valley Clean Water	Cities of Belmont, San Carlos, Redwood City, Menlo Park and Towns of Atherton, Portola Valley, Woodside
Santa Clara County	
City of Sunnyvale Water Pollution Control Plant	City of Sunnyvale
Palo Alto Regional Water Quality Control Plant	Cities of East Palo Alto, Los Altos, Mountain View, Palo Alto, Town of Los Altos Hills and unincorporated Stanford University area
San José/ Santa Clara County Water Pollution Control Plant	Cities of San José, Campbell, Saratoga, Monte Sereno, Cupertino, Milpitas and Town of Los Gatos
South County Regional Waste Water Authority	Cities of Morgan Hill and Gilroy
Solano County	
City of Benicia	City of Benicia
City of Dixon	City of Dixon
City of Rio Vista	City of Rio Vista
City of Vacaville	City of Vacaville
Fairfield-Suisun Sewer District	Cities of Fairfield and Suisun City
Vallejo Sanitation and Flood Control District	City of Vallejo
Sonoma County	
City of Cloverdale	City of Cloverdale
City of Petaluma	City of Petaluma and unincorporated Pengrove area
Sonoma Water	Town of Sonoma and surrounding unincorporated areas
Santa Rosa Water	Cities of Santa Rosa, Rohnert Park, Sebastopol, Cotati, and surrounding unincorporated areas
Town of Windsor	Town of Windsor

Source: ABAG 2016

Stormwater Treatment

Stormwater has been identified as urban runoff by the U.S. Environmental Protection Agency (EPA). After a precipitation event, polluted runoff is discharged over land or through storm sewer systems, often untreated with direct flow into water bodies. If left uncontrolled, this polluted water can result in the destruction of wildlife and aquatic ecosystems and can threaten public health. The National Pollutant Discharge Elimination System (NPDES) permitting program provides implementation measures for reducing potentially harmful pollutants found in stormwater runoff from entering water bodies or affecting public health. Additionally, stormwater capture systems assist in maintaining flood protection and create opportunities for ecosystem protection and restoration.

The Bay Area regulates stormwater at the regional, county, and city level. In the early 1990s, the RWQCB issued countywide municipal stormwater permits to operators of municipal separate storm sewer systems (MS4s) serving populations over 100,000. Subsequently, in 2015, the RWQCB reissued these countywide municipal stormwater permits as one Municipal Regional Stormwater NPDES Permit to regulate stormwater discharges from municipalities and local agencies in Alameda, Contra Costa, San Mateo, and Santa Clara Counties, as well as the Cities of Fairfield, Suisun City, and Vallejo. MS4s are defined as conveyance systems that are owned by cities or other public entities, are designed to collect, or convey stormwater (including gutters, storm drains, pipes, and ditches), and are not part of a combined sewer or a publicly owned sewage treatment plant.

Additionally, a General Permit for Discharge of Stormwater from small MS4s regulates the discharge of stormwater for the following municipalities: Marin County and its cities, Napa County and its cities, the City and County of San Francisco, Solano County and the City of Benicia, and Sonoma County and the Cities of Petaluma and Sonoma.

Additionally, each county has its own storm water pollution prevention programs (SWPPPs), which are intended to facilitate compliance with State and federal regulations through coordination with local municipalities, residents, businesses, and schools. These programs provide initiatives for preventing stormwater pollution; protecting and enhancing water quality in watersheds, waterways, creeks, and wetlands; and preventing water pollution in the San Francisco Bay and Pacific Ocean.

Solid Waste Disposal

Each Bay Area county, plus the Cities of Berkeley, Pittsburg, and San Jose, has a local enforcement agency (LEA) covering all solid waste facilities in the region. LEAs are responsible for ensuring the correct operation and closure of solid waste facilities in the State, as well as for guaranteeing the proper storage and transportation of solid wastes. In concurrence with the California Department of Resources Recycling and Recovery (CalRecycle), LEAs issue operating permits to facilities, including landfills, transfer stations, material recovery, and composting facilities. Solid waste is the garbage, refuse, and other discarded solid materials generated by residential, commercial, and industrial activities. CalRecycle identifies 10 categories of wastes: paper, glass, metal, electronics, plastic, other organic, construction and demolition (C&D), household hazardous waste, special waste, and mixed residue. Solid waste generation is measured by disposal and diversion. PRC Section 40192 defines disposal as “the final deposition of solid wastes onto land, into the atmosphere, or into the waters of the state.” Solid waste that is disposed of in landfills is measured in volume (cubic yards) and weight (tons). Diversion includes programs and practices such as waste prevention and source reduction, recycling, reuse, and composting that reduce the total amount of waste that requires disposal.

Landfills

The Bay Area is currently served by 14 privately operated landfills and one operated by the Sonoma County Public Works Department. The 14 landfills have a total remaining capacity of 259,634,000 cubic yards, a total daily throughput of 40,254 tons per day, and an estimated average of 46 percent remaining capacity. **Table 3.14-5** shows the remaining capacity of landfills located in the Bay Area and their estimated date of closure.

Table 3.14-5: Active Bay Area Landfills

Site Name	SWIS Number	Estimated Closure Date	Max. Throughput (tons/day)	Capacity (Cu Yd)	Remaining Capacity (Cu Yd)	% Capacity Remaining
Altamont Landfill & Resource Recovery	01-AA-0009	12/01/2070	11,150	124,400,000	65,400,000	53%
Vasco Road Sanitary Landfill	01-AA-0010	12/31/2022	2,518	32,970,000	7,379,000	22%
Acme Landfill	07-AA-0002	07/01/2021	1,500	6,195,000	506,590	8%
Keller Canyon Landfill	07-AA-0032	12/31/2030	3,500	75,018,280	63,408,410	85%
USS-Posco Industries Waste Mgmt Unit II	07-AC-0042	01/01/2118	8	86,000	not available	not available
Redwood Landfill	21-AA-0001	07/01/2024	2,300	19,100,000	26,000,000	136%
Clover Flat Resource Recovery Park	28-AA-0002	01/01/2047	600	4,560,000	2,620,000	57%
Corinda Los Trancos Landfill (Ox Mtn)	41-AA-0002	01/01/2034	3,598	60,500,000	22,180,000	37%
Zanker Material Processing Facility	43-AN-0001	11/01/2025	350	640,000	640,000	100%
Newby Island Sanitary Landfill	43-AN-0003	01/01/2041	4,000	57,500,000	21,200,000	37%
Kirby Canyon Recycle.& Disp. Facility	43-AN-0008	12/31/2059	2,600	36,400,000	16,191,600	44%
Guadalupe Sanitary Landfill	43-AN-0015	01/01/2048	1,300	28,600,000	11,055,000	39%
Potrero Hills Landfill	48-AA-0075	02/14/2048	4,330	83,100,000	13,872,000	17%
Central Disposal Site	49-AA-0001	06/01/2043	2,500	32,650,000	9,181,519	28%
TOTAL			40,254	561,719,280	259,634,119	46%

Source: Raw data as reported by CalRecycle 2020

Collection, Transfer, Recycling, and Material Recovery Facilities

There are 57 transfer stations in the Bay Area that receive solid waste and transfer it into containers or vehicles before it is finally disposed of in a landfill or transformation facility. The total maximum combined daily throughput capacity of transfer stations in the Bay Area is 54,136 tons per day. **Table 3.14-6** identifies the daily throughput of transfer facilities in the region. Several of the listed facilities also handle recycling services.

Table 3.14-6: Active Bay Area Transfer/Processing Facilities

Facility	SWIS Number	Max. Throughput (tons/day)
Pleasanton Garbage Service SW TS	01-AA-0003	720
Davis Street Transfer Station	01-AA-0007	5,600
Alameda Co Industries Direct Trans. Fac.	01-AA-0290	412
Fremont Recycling and Transfer Station	01-AA-0297	2,400
Livermore Sanitation Recy. Materials T/F	01-AA-0301	385
Bee Green Recycling & Supply	01-AA-0302	360
Certified Blue Recycling, Inc. (CDI Op.)	01-AA-0315	174
Hayward Transfer Station LLC	01-AA-0318	174
California Waste Solutions (Wood St.)	01-AA-0323	100

Facility	SWIS Number	Max. Throughput (tons/day)
California Waste Solutions (10th St.)	01-AA-0324	100
Tri-CED Community Recycling Facility	01-AA-0327	100
City of Berk Solid Waste Mgmt Center & TS	01-AC-0029	560
Contra Costa TS And Recovery	07-AA-0027	1,900
Central Processing Facility	07-AA-0034	1,200
Golden Bear Waste Recycling Center	07-AA-0056	1,000
El Cerrito Recycling Center	07-AA-0063	99
Brentwood Transfer Station	07-AA-0068	400
Recycling Center & Transfer Station	07-AC-0043	1,500
Marin Sanitary Service Transfer Station	21-AA-0005	2,640
Devlin Road Transfer Station	28-AA-0027	1,440
City of Napa Material Diversion Facility	28-AA-0030	360
San Francisco Solid Waste Tran & Rec Cnt	38-AA-0001	3,000
Recycle Central at Pier 96	38-AA-0012	2,100
SFR Recovery Inc.	38-AA-0024	175
San Bruno Transfer Station	41-AA-0014	120
Shoreway Environmental Center	41-AA-0016	3,000
Blue Line MRF And TS	41-AA-0185	1,200
Recology San Martin Transfer Station	43-AA-0003	500
Sunnyvale MRF & Transfer Station	43-AA-0009	1,500
Z-Best Composting Facility	43-AA-0015	1,500
Pacific Coast Recycling	43-AA-0021	100
Peninsula Sanitary Services Direct TF	43-AA-0032	149
Recology Pacheco Pass Wood Processing	43-AA-0035	175
Mission Trail Food Material Transfer Op.	43-AA-0037	99
Sunnyvale Food Materials T/P Operations	43-AA-0040	15
Zanker Material Processing Facility	43-AN-0001	1,800
Zanker Road Resource Recovery Operation	43-AN-0007	1,300
BFI Newby Island Recyclery	43-AN-0014	1,600
Guadalupe Sanitary Landfill	43-AN-0015	3,650
Greenwaste Recovery Facility	43-AN-0019	3,500
Premier Recycling Facility	43-AN-0023	550
California Waste Solutions, Inc. (CWS)	43-AN-0024	530
Rogers Avenue Transfer Station	43-AN-0025	500
Valley Recycling	43-AN-0028	175
Valley Recycling 2	43-AN-0034	175
Leo Recycle. Med. Vol. CDI Facility	43-AN-0039	175
Bay Area Scavenger and Recycling	43-AN-0041	175
Mission Trail Transfer Station	43-AO-0002	375
Recology Vallejo	48-AA-0089	600
Sonoma Transfer Station	49-AA-0144	760
Global Materials Recovery Systems	49-AA-0390	544
West College Transfer Station	49-AA-0391	99

Facility	SWIS Number	Max. Throughput (tons/day)
M and M Services, Inc.	49-AA-0398	175
Recology Sonoma Marin	49-AA-0399	498
Central Transfer Station	49-AA-0404	1,500
Recology Sonoma Marin	49-AA-0406	99
Pruitt Transload Facility	49-AA-0426	99
Total		54,136

Source: CalRecycle 2020

Composting, Chipping, and Grinding

There are 36 active composting facilities in the region that collect, grind, mix, pile, and add moisture and air to organic materials to speed natural decay and produce a soil amendment. Another 21 chipping and grinding facilities in the region are designed to reduce the size of compostable material (CalRecycle 2020). Recycling, composting, chipping, and grinding all reduce the amount of solid waste that must be disposed of in a landfill.

Construction and Demolition and Inert Debris Facilities

C&D materials include lumber, drywall, metals, masonry (e.g., brick, concrete), carpet, plastic, pipe, rocks, dirt, paper, cardboard, or green waste related to land development. Metals are the most commonly recycled material, while lumber makes up the majority of debris that still goes to a landfill. There are 20 C&D recyclers and inert fill–disposal operations in the Bay Area (CalRecycle 2020).

Energy Systems

Electric, liquid fuel, and natural gas energy sources make up most of the Bay Area energy systems, which are becoming increasingly diversified as newer, more renewable energy sources are developed and expanded. The Plan area includes key energy infrastructure within the region that is exported to other portions of the state and neighboring states. The Bay Area is also a consumer of energy resources that are produced elsewhere and imported into the Bay Area. A range of public and private providers operate the energy systems in the Plan area and maintain the regional infrastructure systems.

Energy System Providers

Pacific Gas and Electric Company (PG&E) is the major operator of electricity infrastructure in the nine-county San Francisco Bay Area. The company interfaces with a handful of municipal energy systems that have a mix of distribution and in some cases transmission and energy generation infrastructure, including SFPUC, City of Palo Alto Utilities, and Alameda Municipal Power. In addition to these municipal systems, local institutions are increasingly investing in on-site power generation or campus energy systems. Universities in the region have unique power operations as do a greater suite of buildings in the region that use microgrid technology that works independently of the main grid or in partial isolation during main system outages.

PG&E is one of the largest combination natural gas and electric utilities in the United States. The company, a subsidiary of PG&E Corporation, serves approximately 16 million people in 70,000 square miles of northern and central California. PG&E provides electric service to all nine counties in the Plan area with natural gas coverage to most areas in the region except in a few more remote locations where no natural gas service is available.

PG&E obtains its electricity from natural gas, fossil fuels, nuclear power, hydroelectric power, and eligible renewable resources. In 2018, 85 percent of the electricity PG&E delivered to its customers came from sources that do not generate greenhouse gases (GHGs). The mix of sources generating

electricity was 39 percent renewable resources (biomass, geothermal, small hydroelectric, solar, and wind), 34 percent nuclear power, 13 percent large hydroelectric power, and 15 percent natural gas and other fuels (PG&E 2019).

PG&E provides a number of incentives for rooftop solar, solar water heating, fuel cells, wind, battery storage, advanced LED lighting, and other advanced technologies that help customers reduce their energy bills and their carbon footprint. PG&E also continues to encourage customers to invest in cost-effective energy efficiency measures and offers electric vehicle–charging pricing plans (PG&E 2021a).

Community Choice Aggregations (CCAs) are not-for-profit public agencies that purchase contracts for electric generation with a lower GHG content. PG&E delivers electricity provided through CCAs, maintaining the power lines, and responding to service calls and emergencies. In the Plan area, there are seven CCAs: CleanPowerSF, East Bay Community Energy, Marin Clean Energy (which operates in Marin, Napa, Solano, and Contra Costa Counties), Peninsula Clean Energy, San Jose Clean Energy, Silicon Valley Clean Energy, and Sonoma Clean Power.

Chevron, Phillips 66, Valero, Shell, and Tesoro are the major companies that run fuel operations out of Bay Area refineries. In addition, Kinder Morgan pumps fuel in major transmission lines from its pumping facility in Concord across the region and out of the region to other portions of northern California and Reno, Nevada. From those locations, smaller companies across the region truck the fuel to gas stations and fueling stations across the region.

Energy System Infrastructure

Electric power delivery is largely composed of a four-phase process: generation, transmission, substation transformation (high voltage to lower voltage), and distribution. In 2011, the Bay Area consumed 55,000 gigawatt-hours of electricity, 60 percent of which was generated inside the nine-county region (CEC 2013a, 2013b). The remaining demand was met by power imports generated elsewhere in the state, the Pacific Northwest, and the Southwest. Ninety-eight percent of the regionally produced power is generated at 25 large facilities with the remaining 2 percent generated at 44 small facilities with less than 50-megawatt capacity (ABAG 2014).

Most of the Bay Area power is transmitted on 500-, 230-, 115-, and 60-kilovolt aboveground transmission lines by PG&E. A handful of local jurisdictions operate their distribution system, but most are reliant in some way on PG&E for power supply. The high-voltage transmission lines distribute electricity from regional and outside generation facilities to substations. Some substations are simply nodes along a stretch of transmission lines, while others drop the high-voltage transmission lines to lower-voltage distribution lines. From the substations, distribution lines route power at a lower voltage to the end user.

Bay Area liquid fuel infrastructure can be described in four primary stages: crude oil import, refinement, fuel transmission export, and fuel distribution. Crude oil is imported by pipeline from the east, rail from the north, and marine tankers from the west. Thirty-five percent of crude oil is extracted in California, mainly in Kern County, with the remainder coming from Alaska and foreign sources (CEC 2021a).

The San Francisco Bay Area has five refineries that, combined, processed 235 million barrels of crude oil in 2012, a 40-percent share of the state's total. As a state, California uses only 87 percent of its total 682-million-barrel capacity. The five Bay Area refineries are located along the San Pablo Bay and the Carquinez Strait. Once refined, the variety of fuel products is pumped and piped across the state to terminal facilities that serve all northern California and northern Nevada. In addition to refining all the fuel it uses, California refines 90 percent of Nevada's fuel and 50 percent of Arizona's fuel. The refineries in the Bay Area supply 100 percent of the Plan area's fuel, northern California's fuel, northern Nevada's

fuel, and a portion of central California counties' fuel (which is also supplied by Kern County refineries). Once refined, fuel is delivered to terminal facilities, where fuel tanker trucks distribute fuel locally using the road network.

Natural gas is primarily used for electric power generation and as a residential, commercial, and industrial energy resource. Natural gas–generated electricity accounted for nearly 50 percent of all power generated in California in 2016, the largest source of power in the state. Almost 90 percent of natural gas in California is generated out of state and is imported through interstate pipelines from the southwest, the Rocky Mountains, and Canada (CEC 2021b).

PG&E runs natural gas transmission pipelines throughout the Plan area. Local distribution lines exist under most urban and suburban local roads in the region with large transmission lines running along the Interstate 280 and U.S. 101 corridors from San Francisco to Palo Alto, along State Route 237 in northern Santa Clara County, along the Interstate 880 and 80 corridor from Santa Clara County to western Contra Costa County, along the Interstate 680 and State Route 84 corridor from western Alameda to eastern Alameda County and portions of the Interstate 580 corridor in eastern Alameda County, and along State Route 4 in eastern Contra Costa County. In the North Bay, transmission lines run along the U.S. 101 corridor from Mill Valley in Marin County through Cloverdale in Sonoma County, as well as along State Route 128 in Sonoma and Napa Counties and across State Route 12 in Sonoma, Napa, and Solano Counties (PG&E 2021b).

Telecommunication Services

Telecommunications are mainly a privately owned enterprise and are offered by a variety of companies with different service capacities across the Plan area. The number of providers offering the service, the type of service available, and the transmission speed of the service all affect the quality of telecommunications. This approach differs from that of most other utilities, which are generally publicly owned or offered by limited or individual service providers in a given area.

Telecommunication Providers

Many telecommunications providers offer phone, Internet, and/or television service in the Plan area for the proposed Plan, as shown in **Table 3.14-7**. Telecommunications providers will usually complete infrastructure and other service improvements for an area as the need arises to meet customer demand.

Table 3.14-7: Consumer Telecommunications Service Providers in the Plan Area

Consumer Telecommunications Service Provider	Type of Broadband	RTP/SCS Plan Area Service Reach by County (not complete coverage)[1]
AFES Network Services LLC	Terrestrial Fixed Wireless	Solano
AT&T Mobility	GSM, LTE	All
AT&T Service Inc.	Terrestrial Fixed Wireless	Contra Costa, San Mateo
	ADSL2/ADSL2+, Asymmetric xDSL	All
AVISP	Terrestrial Fixed Wireless	Sonoma
CalDSL	Terrestrial Fixed Wireless	Contra Costa
CalNeva Broadband	Cable Modem DOCSIS 3.0	Sonoma
Comcast	Cable Modem DOCSIS 3.0	San Mateo
	Cable Modem DOCSIS 3.1	All
Common Networks	Terrestrial Fixed Wireless	Alameda
Cruzio	Terrestrial Fixed Wireless	Santa Clara

Consumer Telecommunications Service Provider	Type of Broadband	RTP/SCS Plan Area Service Reach by County (not complete coverage)[1]
DigitalPath, Inc.	Terrestrial Fixed Wireless	Napa, Solano, Sonoma
Dillon Beach Internet Services	Terrestrial Fixed Wireless	Marin
Etheric Networks Inc.	Terrestrial Fixed Wireless	Alameda, Contra Costa, San Francisco, San Mateo, Santa Clara
Frontier Communications	ADSL2/ADSL2+, Asymmetric xDSL	Marin, Santa Clara, Solano, Sonoma
	VDSL	Santa Clara, Solano
Further Reach	Terrestrial Fixed Wireless	Solano
Google Fiber LLC	Optical Carrier/Fiber to the end user	Santa Clara
Hankins Information Technology	Terrestrial Fixed Wireless	Santa Clara
Horizon Cable TV	Cable Modem DOCSIS 3.0	Marin
Internet Free Planet	Terrestrial Fixed Wireless	Solano
Inyo Networks	Optical Carrier/Fiber to the end user	Marin
Napanet Internet Services	Terrestrial Fixed Wireless	Napa
Oasis Broadband	Terrestrial Fixed Wireless	Contra Costa, Santa Clara
Paxio	Optical Carrier/Fiber to the end user	Santa Clara
Race Communications	Optical Carrier/Fiber to the end user	San Francisco, San Mateo, Sonoma
Raw Bandwidth Communications	ADSL2/ADSL2+	Alameda, San Francisco, San Mateo, Santa Clara
	VDSL	San Francisco, San Mateo
Razzo Link, Inc.	Terrestrial Fixed Wireless	Santa Clara
San Bruno CityNet Services	Cable Modem DOCSIS 3.0, Optical Carrier/Fiber to the end user	San Mateo
Sonic.net	ADSL2/ADSL2+	All
	Optical Carrier/Fiber to the end user	Alameda, Contra Costa, San Francisco, San Mateo, Sonoma
	VDSL	All
SouthValleyInternet	ADSL2/ADSL2+, Asymmetric xDSL, Symmetric xDSL, Terrestrial Fixed Wireless	Santa Clara
Sprint Communications Inc.	CDMA, LTE	All
Surfnet Communications	Terrestrial Fixed Wireless	Santa Clara
T-Mobile	GSM, LTE	All
Tekify Fiber and Wireless	Optical Carrier/Fiber to the end user, Terrestrial Fixed Wireless	Alameda
Valley Internet	Terrestrial Fixed Wireless	Napa, Solano
Verizon Wireless	CDMA, LTE	All
Vista Broadband Networks, Inc.	Terrestrial Fixed Wireless	Marin, Napa, Solano, Sonoma
Wave Broadband	Cable Modem DOCSIS 1/1.0/2.0	Contra Costa, San Francisco, San Mateo
	Cable Modem DOCSIS 3.0, Cable Modem DOCSIS 3.1, Optical Carrier/Fiber to the end user	Contra Costa, San Francisco, San Mateo, Solano
Webpass, Inc.	Terrestrial Fixed Wireless	Alameda, San Francisco
WebPerception LLC	Terrestrial Fixed Wireless	All
Winters Broadband LLC	Terrestrial Fixed Wireless	Solano

[1] Service reach determined from 2018 map data and may vary from what is currently available.
Source: CPUC 2018

There are 39 telecommunications providers offering services across the Plan area. Some providers offer service across all nine counties, while others have focused service within a single jurisdiction. **Table 3.14-7** lists the consumer telecommunication service providers in the Plan Area (CPUC 2018).

Telecommunication Infrastructure

Telecommunication infrastructure includes phone, wireless, cable, and Internet platforms, each with infrastructure components that are stand alone or shared. Phone service providers use a combination of underground lines and aboveground cellular towers to provide telephone service to the Plan area. Cellular towers are located in range of areas and are often designed to blend into the surroundings.

Wireless technology is largely encompassed by 5G. "5G" is an umbrella term for a set of international wireless standards. Capabilities and advantages of a 5G wireless technology include enhanced mobile broadband; speeds faster than those available through 4G; less expensive connectivity; and reliable, resilient, and instantaneous connectivity that allows connection of a variety of devices (CPUC 2019).

Internet service may be provided through mobile (i.e., cellular phone), wireless (Wi-Fi), hotspots (i.e., wireless local area network), phone line (i.e., integrated services digital network), or broadband (i.e., DSL, cable) connections. Cable television is primarily provided by hardwired infrastructure and is also available via satellite connections. Cable fibers and copper wires are generally co-located and installed concurrently with other utility infrastructure. This infrastructure is usually installed underground within new development to reduce visual and aesthetic impacts and any potential safety hazards. Fiber cables, the fastest form of communications infrastructure, are also co-located and installed underground. However, fiber optic networks generally serve larger urban areas where demand offsets the high cost of installing the fiber optics. Additionally, television and Internet services can be provided through satellite connections and Wi-Fi networks that allow electronic devices to communicate using radio waves rather than a wire.

Broadband refers to a high-speed connection to the Internet that is always on, as opposed to other connections (e.g., dial-up) that need to be turned on with every use. The region is served by mobile broadband. Fixed wireless broadband service is available at varying speeds throughout the Plan area. Wireline broadband is the least available service because it is generally offered only near more developed areas.

3.14.2 Regulatory Setting

FEDERAL REGULATIONS

Federal Power Act of 1935

The Federal Power Act of 1935 (16 U.S. Code Section 791 et seq.) created the Federal Power Commission, an independent regulatory agency with authority over both the interstate transmission of electricity and the sale of hydroelectric power at the wholesale level. The act requires the commission to ensure that electricity rates are "reasonable, nondiscriminatory, and just to the consumer." The Federal Power Act also amended the criteria that the commission must apply in deciding whether to license the construction and operation of new hydroelectric facilities. The Federal Power Commission was dissolved and is now known as the Federal Energy Regulatory Commission (FERC). FERC acts under the legal authority of the Federal Power Act, the Public Utility Regulatory Policies, and the Energy Policy Act (EPAct) (42 U.S. Code Section 13201 note), as well as other federal acts.

Natural Gas Act of 1938

Together with the Federal Power Act, described above, the Natural Gas Act (15 U.S. Code Section 717 et seq.) helped to establish federal energy regulation. The Natural Gas Act became the first legislation to regulate the natural gas industry, enabling federal regulators to set prices for gas sold in interstate commerce in exchange for exclusive rights to transport the gas.

U.S. Department of Transportation – Act of Congress 1966

The U.S. Department of Transportation (DOT) was established by an act of Congress in 1966 as a federal department of the U.S. government concerned with transportation. Propane transportation is regulated by DOT. With authority stated in Title 49 of the Code of Federal Regulations, DOT requires that all shipping papers contain a 24-hour-a-day telephone number where emergency assistance and information can be obtained. This service must provide information about any cargo that DOT classifies as a hazardous material. There are several sources in the United States that an emergency response crew leader can contact in the case of a transportation accident.

Safe Drinking Water Act

Passed in 1974 and amended in 1986 and 1996, the Safe Drinking Water Act gives EPA the authority to set drinking water standards. Drinking water standards apply to public water systems that provide water for human consumption through at least 15 service connections or regularly serve at least 25 individuals. There are two categories of drinking water standards: the National Primary Drinking Water Regulations (NPDWRs) and the National Secondary Drinking Water Regulations. The NPDWRs are legally enforceable standards that apply to public water systems. NPDWR standards protect drinking water quality by limiting the levels of specific contaminants that can adversely affect public health and are known or anticipated to occur in water. The act protects against both naturally occurring and human-made contaminants in drinking water and requires that information on the quality of drinking water be made available to the public.

Clean Water Act

Section 402 of the Clean Water Act (CWA) establishes the NPDES permit program to regulate the discharge of pollutants from point sources. The CWA defines point sources of water pollutants as “any discernible, confined, and discrete conveyance” that discharges or may discharge pollutants. The 1972 amendments to the CWA prohibit the discharge of pollutants to navigable waters from a point source unless the discharge is authorized by an NPDES permit. The CWA requires NPDES permits for stormwater discharges caused by general construction activity, industrial activity, and municipal drainage collection. The purpose of the NPDES program is to establish a comprehensive stormwater quality program to manage urban stormwater, reducing pollution of the environment as much as possible. The NPDES program involves characterizing the quality of receiving water, identifying harmful constituents, targeting potential sources of pollutants, and implementing a comprehensive stormwater management program. In California, NPDES permits are issued by RWQCBs.

Provision C.3

On May 17, 1996, EPA published an Interpretive Policy Memorandum on Reapplication Requirements for Municipal Separate Storm Sewer Systems, which provided guidance on permit application requirements for regulated MS4s. MS4 permits include requirements for postconstruction control of stormwater runoff in what is known as Provision C.3. The goal of Provision C.3 is for the permittees to use their planning authorities to include appropriate source control, site design, and stormwater treatment measures in new development and redevelopment projects to address both soluble and insoluble stormwater runoff pollutant discharges and prevent increases in runoff flows from new

development and redevelopment projects. This goal is to be accomplished primarily through the implementation of low-impact development (LID) techniques.

Resource Conservation and Recovery Act of 1976

The Resource Conservation and Recovery Act of 1976, Subtitle D (Subtitle D) focuses on State and local governments as the primary planning, regulating, and implementing entities for the management of nonhazardous solid waste, such as household garbage and nonhazardous industrial solid waste. To promote the use of safer units for solid waste disposal, Subtitle D provides regulations for the generation, transportation, and treatment, storage, or disposal of hazardous wastes. EPA developed federal criteria for the proper design and operation of municipal solid waste landfills and other solid waste disposal facilities, but State and local governments are the primary planning, permitting, regulating, implementing, and enforcement agencies for management and disposal subject to approval by EPA. EPA approved the State of California's program, a joint effort of the California Integrated Waste Management Board (now CalRecycle), SWRCB, RWQCBs, and LEAs, on October 7, 1993.

Federal Energy Regulatory Commission of 1977

FERC was created by the Department to Energy Organization Act of 1977 and established within the U.S. Department of Energy. It replaced the Federal Power Commission, which was created by the Federal Power Act of 1935. FERC regulates the transmission and sale of electricity in interstate commerce, oversees licensing of hydroelectric projects, and provides oversight of related environmental matters.

Natural Gas Policy Act of 1978

The Natural Gas Policy Act (15 U.S. Code Section 3301 et seq.) granted FERC authority over intrastate and interstate natural gas production. It established price ceilings for wellhead first sales of gas that vary with the applicable gas category and gradually increase over time.

Public Utility Regulatory Policies Act of 1978

The Public Utility Regulatory Policies Act (PURPA) (Public Law 95-617), which was passed in response to the energy crisis of the late 1970s, sought to promote the conservation of electric energy. PURPA also created small power producers as a new class of nonutility generators from which utilities are required to buy more power.

The PURPA was also intended to augment electric utility generation with more efficiently produced electricity and to provide equitable rates to electric consumers. Utility companies are required to buy all electricity from "Qfs" (qualifying facilities) at avoided cost (avoided costs are incremental savings associated with not having to produce additional units of electricity). The PURPA expanded participation of nonutility generators in the electricity market and demonstrated that electricity from nonutility generators could successfully be integrated with a utility's own supply. The PURPA requires utilities to purchase whatever power is produced by Qfs (typically cogeneration or renewable energy).

Energy Policy Act of 1992

The EPAct of 1992 was passed to reduce the country's dependence on foreign petroleum and improve air quality. It addressed energy efficiency, energy conservation and management, natural gas imports and exports, alternative fuels, electric motor vehicles, radioactive waste, goal power and clean coal, renewable energy, and other issues. It reformed the Public Utility Holding Company Act (Wheeler-Rayburn Act) of 1935 (15 U.S. Code Section 79 et seq.) and amended parts of the Federal Power Act of 1935. For more information, see Section 3.6, "Climate Change, Greenhouse Gases, and Energy."

Energy Policy Act of 2005

The EPAct of 2005 was signed on August 8, 2005, by President George W. Bush. The comprehensive energy legislation provided several electricity-related provisions:

- Ensure that consumers receive electricity through dependable, modern infrastructure.
- Remove outdated obstacles to investment in electricity transmission lines.
- Make electricity reliability standards mandatory.
- Give federal officials the authority to site new power lines in U.S. Department of Energy–designated national corridors in limited circumstances.

The EPAct also created the Renewable Fuel Standard (RFS) program to reduce GHG emissions and expand the renewable fuels sector. The program regulations were developed in collaboration with stakeholders from many energy sectors, including refiners, renewable fuel producers, and others. As required under the EPAct, the original RFS program (RFS1) required 7.5 billion gallons of renewable fuel to be blended into gasoline by 2012.

Clean Air Act

Section 211(o) of the Clean Air Act, as amended by the Energy Policy Act of 2005, requires the EPA administrator to annually determine an RFS applicable to refiners, importers, and certain blenders of gasoline and to publish the standards in the *Federal Register* each year by November 30. On the basis of this standard, each obligated party must determine the appropriate proportion of renewable fuel as motor vehicle fuel. The standard is calculated as a percentage, dividing the amount of renewable fuel required by the Clean Air Act into the expected gasoline usage during that year, including certain adjustments. The most recent RFS established a 11.56% annual percentage standard for total renewable fuel in 2020 (Congressional Research Service 2020).

Telecommunication Act of 1996

The Telecommunications Act (47 U.S. Code) was the first major overhaul of U.S. telecommunications law in nearly 62 years, amending the Communication Act of 1934 (47 U.S. Code Section 151 et seq.). The act deregulates local phone service, allows long-distance carriers and cable television companies to provide local phone service, and allows local telephone companies to provide long-distance service.

Energy Independence and Security Act of 2007

The Energy Independence and Security Act (EISA) (Public Law 110-140) was signed into law by President George W. Bush on December 19, 2007. The EISA's goal is to achieve energy security in the United States by increasing the production and use of renewable fuels, reducing dependence on oil, improving energy efficiency and performance, protecting consumers, and promoting research on GHG capture and storage. The EISA updated the RFS program (RFS2) in several key ways:

- expanded the RFS program to include diesel in addition to gasoline,
- increased the volume of renewable fuel required to be blended into transportation fuel from 9 billion gallons in 2008 to 36 billion gallons in 2022,
- established new categories of renewable fuel with accompanying volume requirements, and
- required EPA to apply lifecycle GHG performance threshold standards to ensure that each category of renewable fuel emits fewer GHGs than the petroleum fuel it replaces.

RFS2 laid the foundation for achieving significant GHG reductions from the use of renewable fuels, reducing imported petroleum, and encouraging the development and expansion of the national renewable fuels sector. The EISA also included a variety of new standards for lighting and appliance equipment, such as residential refrigerators and metal halide lamps, and commercial coolers and freezers.

STATE REGULATIONS

Porter-Cologne Water Quality Control Act of 1969

The Porter-Cologne Water Quality Control Act established SWRCB and divided the State into nine regions, each overseen by a separate RWQCB. Each RWQCB region is required to prepare and update a basin plan for its jurisdictional area. The RWQCBs also issue waste discharge requirements (WDRs) for discharges of privately or publicly treated domestic wastewater to locations other than surface water, such as groundwater basins. The Plan area is largely within the San Francisco Bay RWQCB, with portions in the North Coastal, Central Coastal, and Central Valley RWQCBs.

New or expanded landfills must submit Reports of Waste Discharge to RWQCBs prior to landfill operations. In conjunction with CalRecycle approval of solid waste facility permits, RWQCBs issue Waste Discharge Orders, which regulate the liner, leachate control and removal, and groundwater monitoring systems at Class III landfills. While Waste Discharge Orders apply only to landfills, RWQCBs also regulate surface water runoff for all solid waste facilities by issuing stormwater discharge permits under the NPDES program. Separate NPDES permits are issued for the construction and operation of these facilities.

Construction General Permit

The California Construction Stormwater Permit (Construction General Permit), adopted by SWRCB, regulates construction activities that include clearing, grading, and excavation resulting in soil disturbance of at least 1 acre of total land area. The Construction General Permit authorizes the discharge of stormwater to surface waters from construction activities. It prohibits the discharge of materials other than stormwater and authorized non-stormwater discharges and all discharges that contain a hazardous substance in excess of reportable quantities, unless a separate NPDES permit has been issued to regulate those discharges. The Construction General Permit requires that all developers of land where construction activities will occur over more than 1 acre:

- complete a risk assessment to determine pollution prevention requirements pursuant to the three risk levels established in the permit,
- eliminate or reduce non-stormwater discharges to storm sewer systems and other waters of the United States,
- develop and implement a SWPPP that specifies BMPs that will reduce pollution in stormwater discharges to the Best Available Technology Economically Achievable/Best Conventional Pollutant Control Technology standards, and
- perform inspections and maintenance of all BMPs.

To obtain coverage under the NPDES Construction General Permit, the legally responsible person must electronically file all permit registration documents with SWRCB before the start of construction. Permit registration documents must include the following elements:

- notice of intent,
- risk assessment,

- site map,
- SWPPP,
- annual fee, and
- signed certification statement.

Typical BMPs contained in SWPPPs are designed to minimize erosion during construction, stabilize construction areas, control sediment, control pollutants from construction materials, and address postconstruction runoff quantity (volume) and quality (treatment). The SWPPP must also include a discussion of the program to inspect and maintain all BMPs.

California Department of Transportation NPDES Permit

The California Department of Transportation (Caltrans) was originally issued a Statewide NPDES permit (Order 99-06-DWQ) in 1999 that requires Caltrans to regulate nonpoint source discharge from its properties, facilities, and activities. The Caltrans permit requires development of a program for communication with local agencies and coordination with other MS4 programs where those programs overlap geographically with Caltrans facilities. As part of the permit, Caltrans is required to create and annually update a stormwater management plan (SWMP) that is used to outline the regulation of pollutant discharge caused by current and future construction and maintenance activities. SWMP requirements apply to discharges from Caltrans stormwater conveyances, including catch basins and drain inlets, curbs, gutters, ditches, channels, and storm drains. The SWMP applies to discharges consisting of stormwater and non-stormwater resulting from:

- maintenance and operation of State-owned highways, freeways, and roads;
- maintenance facilities;
- other facilities with activities that have the potential for discharging pollutants;
- permanent discharges from subsurface dewatering;
- temporary dewatering; and
- construction activities.

The discharges addressed by the SWMP flow through municipal stormwater conveyance systems or flow directly to surface water bodies in the State. These surface water bodies include creeks, rivers, reservoirs, lakes, wetlands, lagoons, estuaries, bays, and the Pacific Ocean and tributaries.

This SWMP applies to the oversight of activities performed by outside agencies or non-Caltrans entities (third parties) within Caltrans' MS4 to ensure compliance with stormwater regulations. Non-Caltrans activities include highway construction and road improvement projects, as well as residential use and business operations on leased property.

The SWMP must be approved by SWRCB, and as specified in the permit, it is an enforceable document. Compliance with the permit is measured by implementation of the SWMP. Caltrans' policies, manuals, and other guidance related to stormwater are intended to facilitate implementation of the SWMP. Caltrans also requires all contractors to prepare and implement a program to control water pollution effectively during the construction of all projects. In lieu of the more recently adopted Construction General Permit, as described above, Caltrans continues to modify its current policies and procedures to be consistent with the new permit.

California Code of Regulations, Title 22

Under Title 22, the California Department of Public Health establishes State-wide effluent bacteriological and treatment reliability standards for recycled water uses. The standards are based on the potential for human contact with recycled water. The RWQCB has established and enforces

requirements for the application and use of recycled water. Permits are required from an RWQCB for any recycling operation. Applicants for a permit are required to demonstrate that the proposed recycled water operation is in compliance with Title 22 and will not exceed the groundwater or surface water quality objectives in the regional basin management plan.

Water Conservation Act of 2009

The Water Conservation Act of 2009, enacted as Senate Bill (SB) X7-7, set water conservation targets and efficiency improvements for urban and agricultural water suppliers in Section 10608.16 and Section 10608.48, respectively, of the Water Code. The legislation establishes a State-wide target to reduce urban per capita water use by 20 percent by 2020. The State was required to make incremental progress toward this goal by reducing per capita water use by at least 10 percent on or before December 31, 2015. Urban water suppliers cannot impose conservation requirements on process water (water used in the production of a product) and are required to employ two critical efficient water management practices: water measurement and pricing. Urban retail water suppliers must include in a water management plan the baseline daily per capita water use, water use target, interim water use target, and compliance daily per capita water use. Notably, new water use efficiency targets that go beyond those established under this act will be developed as part of a long-term conservation framework for urban water agencies per Executive Order B-37-16, described below.

In 2018, new landmark water conservation legislation was signed into law. Together, Assembly Bill (AB) 1668 and SB 606 lay out a new long-term water conservation framework for California. Programs an initiatives are organized around four primary goals: use water more wisely, eliminate water waste, strengthen local drought resilience, and improve agricultural water use efficiency and drought planning.

Executive Order B-37-16

In May 2016, Governor Brown issued Executive Order B-37-16, which bolsters the State's climate and drought resilience. Built on the temporary Statewide emergency water restriction, Executive Order B-37-17 directs five State agencies to establish a long-term water conservation framework that will enhance the resiliency of California communities against climate change and drought. The Executive Order is intended to eliminate water waste, use water more wisely, strengthen local drought resilience, and improve agricultural water use efficiency and drought planning.

California Urban Water Management Planning Act

Section 10610 of the State Water Code, known as the California Urban Water Management Planning Act, states that each urban water supplier that provides water to 3,000 or more customers, or that provides over 3,000 acre-feet of water annually, must prepare a UWMP and update it every five years to ensure that the reliability of its water service is sufficient to meet the needs of its various categories of customers during normal, dry, and multiple dry years. The act describes the contents of UWMPs and requires each agency's UWMP to assess the reliability of the agency's water resources over a 20-year planning horizon.

Water Supply Assessment and Water Supply Verification

California SB 610 and SB 221 ensure that sufficient water supplies are available for growing communities by increasing the reporting in a water supply assessment (WSA) for new development projects. The WSA must document sources of water supply, quantify water demands, and compare future water supply and demand to show that sufficient water will be available to serve the development project. Water supply must be assessed for normal, single dry, and multiple dry water years during a 20-year forecast. If supplies are found to be insufficient to serve the project, the WSA must include plans for acquiring sufficient supplies. The WSA must be included in the CEQA document for the project. SB 221 applies to subdivisions of more than 500 dwelling units (Water Code

Section 10912). Like SB 610, it is intended to ensure an adequate water supply for new development. SB 221 requires that approval of a tentative map showing the design and improvement of a proposed subdivision include a requirement that a sufficient water supply is available.

In September 2016, the governor signed SB 1262 to amend SB 610 and SB 221 in order to address the relationship between California's water supply planning laws and groundwater management requirements under the Sustainable Groundwater Management Act (SGMA). SB 1262 requires that during environment review, a project reliant on groundwater as a water source must provide additional information in its WSA and negates the identification of hauled water as a water source in a WSA.

California Groundwater Management Act

The Groundwater Management Act (AB 3030, Water Code Section 10750 et seq.) provides guidance for applicable local agencies to develop voluntary groundwater management plans in State-designated groundwater basins. Groundwater management plans can allow agencies to raise revenue to pay for measures influencing the management of the basin, including extraction, recharge, conveyance, facilities' maintenance, and water quality.

Sustainable Groundwater Management Act of 2014

The SGMA (Water Code Sections 10720–10737.8) provides local agencies with the tools to manage groundwater basins in a sustainable manner over a long-term horizon and allows for limited State intervention when necessary to protect groundwater resources. It requires the formation of local groundwater sustainability agencies that must assess conditions in their local water aquifer basins and adopt locally based management plans by 2022 that address sustainable groundwater levels. SGMA requires governments and water agencies of high- and medium-priority basins to halt overdraft and bring groundwater basins into balanced levels of pumping and recharge. The SGMA provides 20 years for groundwater sustainability agencies to implement plans and achieve long-term groundwater sustainability.

State Water Resources Control Board and Regional Water Quality Control Boards

SWRCB issues individual and general NPDES permits for wastewater and stormwater through the authorization of EPA. Discharges that may affect surface water or groundwater, and that are not regulated by an NPDES permit, are issued a WDR that serves as a permit under the authority of the California Water Code. The RWQCBs issue land disposal WDRs that permit certain solid and liquid waste discharges to land to ensure that wastes do not reach surface water or groundwater. Land disposal WDRs contain requirements for liners, covers, monitoring, cleanup, and closure. The RWQCBs also permit certain point source discharges of waste to land that have the potential to affect surface water or groundwater quality. This category of discharges, known as "Non-15" discharges, are the most diverse and include sewage sludge and biosolids, industrial wastewater from power plants, wastes from water supply treatment plants, treated wastewater for aquifer storage and recovery, treated groundwater from cleanup sites, and many others.

SWRCB has issued the following regulations, which are related to wastewater collection and treatment facilities, stormwater drainage facilities, and landfills:

- Caltrans NPDES Permit (Order 99-06-DWQ) requires Caltrans to regulate nonpoint source discharge from its properties, facilities, and activities. Among other requirements, Caltrans must annually update an enforceable SWMP.
- Statewide General Waste Discharge Requirements for Sanitary Sewer Systems (Order No. 2006-0003-DWQ) require all federal and State agencies, municipalities, counties, districts, and other

public entities that own, operate, or are otherwise responsible for sanitary sewer systems greater than 1 mile in length that collect and/or convey untreated wastewater to a publicly owned treatment facility in California to prepare sewer system management plans and report all sanitary sewer overflows to SWRCB. Order No. WQ 2008-0002-EXEC, amended the Statewide Monitoring and Reporting Program for sanitary sewer overflows that reach surface waters or storm drains. The RWQCB issued Order No. R9-2007-0005 to reaffirm the prohibition of sanitary sewer overflows upstream of a wastewater treatment facility.

AB 885 - On-Site Wastewater Treatment Systems

AB 885 (Chapter 781, Statutes of 2000) required SWRCB to draft and implement regulations for siting, installation, operation, and maintenance of on-site wastewater treatment systems. Proposed regulations were issued in 2009 and adopted in June 2012.

Integrated Waste Management Regulations (AB 939, AB 341, and SB 1016)

To minimize the amount of solid waste that must be disposed of, the State Legislature passed the California Integrated Waste Management Act of 1989 (IWMA), effective January 1990. Under AB 939, all cities and counties were required to divert at least 50 percent of solid waste from landfill facilities by 2000 and every year thereafter. This act also requires every city and county to report to CalRecycle annually and requires jurisdictions to begin planning for new landfills when the jurisdiction's primary disposal site reaches its 15-year capacity.

The IWMA establishes a hierarchy of preferred waste management practices: (1) source reduction (waste prevention) to reduce the amount of waste generated at its source, (2) recycling (or reuse) and composting, (3) transformation, and (4) disposal by landfilling. The IWMA requires the preparation of a countywide integrated waste management plan, including a countywide siting element that must demonstrate a remaining landfill disposal capacity of at least 15 years to serve all the jurisdictions in the county. The countywide siting element must include a combination of strategies to demonstrate adequate capacity, including existing, proposed, and tentative landfills or expansions; increased diversion efforts; and the export of solid waste for disposal. As part of the countywide integrated waste management plan, the IWMA also requires that each jurisdiction (cities and the county) prepare a source reduction and recycling element, a household hazardous waste element, and a non-disposal facility element.

SB 1016, passed in 2008, builds on AB 939 compliance requirements by implementing a streamlined measure of jurisdictions' performance. SB 1016 accomplishes this by focusing on a disposal-based indicator rather than diversion rates. The per capita disposal rate uses two factors: a jurisdiction's residents/employees and its disposal amount as reported by disposal facilities. Thus, rather than mandating a 50-percent or more diversion of solid waste, SB 1016 requires a 50-percent or less disposal rate of solid waste per capita. In 2012, the California Legislature sought to further reduce solid waste disposal rates through AB 341, which set a goal of 75 percent recycling, composting, or source reduction of solid waste Statewide by 2020 (CalRecycle 2020).

Short-Lived Climate Pollutants Organic Waste Methane Emissions Reductions (SB 1383)

SB 1383 (2016) established methane emissions reduction targets in a statewide effort to reduce emissions of short-lived climate pollutants in various sectors of California's economy. The new law codifies the California Air Resources Board's Short-Lived Climate Pollutant Reduction Strategy and established targets to achieve a 50-percent reduction in the level of the statewide disposal of organic waste from the 2014 level by 2020 and a 75-percent reduction by 2025. The law granted CalRecycle the regulatory authority required to achieve the organic waste disposal reduction targets and established

an additional target that not less than 20 percent of currently disposed edible food is recovered for human consumption by 2025.

AB 1826

AB 1826 (Chapter 727, Statutes of 2014 [Chesbro]) requires businesses that generate a specific amount of organic waste per week to arrange for recycling services for that waste and requires jurisdictions to implement a recycling program to divert organic waste from businesses subject to the law, as well as report to CalRecycle on their progress in implementing an organic waste recycling program. CalRecycle has phased the requirements, starting first in 2016, requiring businesses with more than 8 cubic yards of organic waste per week, and expanding to businesses with 4 or more cubic yards in 2017. In 2020, CalRecycle initiated the final expansion to include all businesses with more than 2 cubic yards of organic waste, providing an exemption of rural areas through December 31, 2026.

California Renewables Portfolio Standard Program

The California Renewables Portfolio Standard (RPS) was established by SB 1078 in 2002 and has been revised multiple times, most recently by SB 100 (Chapter 312, Statutes of 2018). SB 100 established new goals for the RPS program of achieving a 50-percent renewable resources target by 2026 and a 60-percent target by 2030. It requires that retail sellers and local publicly owned electric utilities procure a minimum quantity of electricity products from eligible renewable energy sources so that the total kilowatt-hours of those products sold achieves 44 percent of retail sales by 2024, 52 percent by 2027, and 60 percent by 2030. It also requires that eligible renewable energy resources and zero-carbon resources supply 100 percent of retail sales of electricity to California end-use customers and 100 percent of electricity produced to serve all State agencies by 2045.

California Building Energy Efficiency Standards (Title 24, Part 6)

The energy consumption of new residential and nonresidential buildings in California is regulated by California Code of Regulations Title 24, Part 6, Building Energy Efficiency Standards (California Energy Code). Known by the shorthand name of "Title 24," this policy was established in 1978 in response to a legislative mandate to reduce California's energy consumption. The California Energy Commission (CEC) updates the California Energy Code every 3 years with more stringent design requirements for reduced energy consumption, which results in the generation of fewer GHG emissions. The current California Energy Code will require builders to use more energy-efficient building technologies for compliance with increased restrictions on allowable energy use. CEC estimates that the combination of required energy-efficiency features and mandatory solar panels in the 2019 California Energy Code will result in new residential buildings that use 53 percent less energy than those designed to meet the 2016 California Energy Code. CEC also estimates that the 2019 California Energy Code will result in new commercial buildings that use 30 percent less energy than those designed to meet the 2016 standards, primarily through the transition to high-efficacy lighting (CEC 2018).

Title 14, California Code of Regulations

California Code of Regulations, Title 14, Chapter 3 establishes minimum standards for solid waste handling and disposal. CalRecycle regulations pertaining to nonhazardous waste management in California include minimum standards for solid waste handling and disposal; regulatory requirements for composting operations; standards for handling and disposal of asbestos-containing waste; resource conservation programs; enforcement of solid waste standards and administration of solid waste facility permits; permitting of waste tire facilities and waste tire hauler registration; special waste standards; used oil recycling program; electronic waste recovery and recycling; planning guidelines and procedures for preparing, revising, and amending CIWMP; and solid waste cleanup program.

Title 27, California Code of Regulations

CalRecycle and SWRCB jointly issue regulations pertaining to waste disposal on land, including criteria for all waste management units, facilities, and disposal sites; documentation and reporting; enforcement; financial assurance; and special treatment, storage, and disposal units. Title 27 regulations require a significant proportion of the waste stream must be diverted from landfill disposal. Objectives of waste diversion programs address individual diversion techniques, including source reduction, curbside recycling, green waste collection, and load-checking to prevent illegal disposal at dump sites.

California Department of Water Resources

DWR is responsible for the planning, construction, and operation of SWP facilities. It also sets conditions on use of SWP facilities. In addition, DWR is responsible for Statewide water planning, evaluating UWMPs, overseeing dam safety and flood control, and transferring certain water rights permits (e.g., pre-1914).

California Model Water Efficient Landscape Ordinance

The California Model Water Efficient Landscape Ordinance (MWELO) sets restrictions on outdoor landscaping. The Bay Area contains several local agencies under the MWELO that require project applicants to prepare plans consistent with the requirements of the MWELO for review and approval. The MWELO was most recently updated by DWR and approved by the California Water Commission on July 15, 2015. All provisions became effective on February 1, 2016. The revisions, which apply to new construction with a landscape area greater than 500 square feet, reduced the allowable coverage of high-water-use plants to 25 percent of the landscaped area. The MWELO also requires use of a dedicated landscape meter on landscape areas for residential landscape areas greater than 5,000 square feet or nonresidential landscape areas greater than 1,000 square feet, it and requires weather-based irrigation controllers or soil moisture–based controllers or other self-adjusting irrigation controllers for irrigation scheduling in all irrigation systems. Local agencies may adopt local ordinances if they are at least as effective in conserving water as MWELO.

California Green Building Standards Code, Construction Waste Reduction Requirements

The 2016 California Green Building Standards Code requires builders/owners to divert 65 percent of the waste from covered projects (i.e., new construction, demolition, and/or addition to nonresidential and residential structures requiring construction or building permit). This can be met through three methods: (1) develop and submit a waste management plan to the jurisdiction's enforcement agency that identifies materials and facilities to be used and document diversion; (2) use a waste management company, approved by the enforcing agency, that can document 65 percent diversion; or (3) use the disposal reduction alternative, as appropriate for the type of project. If the waste management plan option is used, the plan should be developed before construction begins, and project managers should use the project's planning phase to estimate materials that will be generated and identify diversion strategies for those materials. The California Department of Housing and Community Development has developed suggested methods and compliance forms as options for residential builders and owners to demonstrate compliance with the requirement to reduce construction waste by 65 percent or greater.

California Green Building Standards Code (Title 24, Part 11)

Title 24, Part 11, of the California Code of Regulations (California Green Building Standards Code, or CALGreen) was first adopted in 2008 and made mandatory in 2010, and the updated 2019 CALGreen code, adopted May 9, 2018, became effective January 1, 2020. It includes mandatory and voluntary nonresidential standards related to green building that reduce GHG emissions, energy and water

consumption, and solid waste and stormwater generation. CALGreen establishes mandatory minimum green building standards and optional, more stringent Tier 1 and Tier 2 provisions. Cities and counties are required by State law to enforce Title 24 but have the discretion to adopt either optional tier as mandatory or to adopt their own stricter standards.

Warren-Alquist Energy Resources Conservation and Development Act of 1974

The CEC regulates energy resources by coordinating and funding energy supply and demand research to reduce the energy consumption rate of growth, through the Warren-Alquist Energy Resources Conservation and Development Act (Warren-Alquist Act) (Government Code Section 25000 et seq.). The CEC is the State's primary energy policy and planning agency. Its responsibilities include forecasting future energy needs and keeping historical energy data, licensing thermal power plants 50 megawatts or larger, promoting energy efficiency through appliance and building standards, developing energy technologies and supporting renewable energy, and planning for and directing State response to energy emergencies. CEC develops energy efficiency standards for residential and nonresidential buildings approximately every 3 years. In May 2018, it adopted the 2019 Building Energy Efficiency Standards, which became effective January 1, 2020.

REGIONAL AND LOCAL REGULATIONS

Planning for water management, wastewater and stormwater management, and solid waste disposal is conducted by local agencies to support their long-term resource planning and ensure adequate service to meet existing and future demands. In addition to federal and State regulations governing these planning efforts, cities, counties, and water districts may provide regulatory advisement on water resources, water treatment, and solid waste disposal. Many jurisdictions incorporate goals and policies relating to these topic areas in their municipal codes, general plans, development standards, or other regulations (e.g., utility master plans, solid waste management plans).

3.14.3 Impact Analysis

SIGNIFICANCE CRITERIA

The following significance criteria are based on CEQA Guidelines Appendix G, the criteria used in the 2017 Plan Bay Area 2040 EIR, and professional judgment. Under these criteria, implementation of the proposed Plan would have a potentially significant adverse impact if it would:

- require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities the construction or relocation of which could cause significant environmental effects (Criterion PUF-1);
- have insufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry, and multiple dry years (Criterion PUF-2);
- result in a determination by the wastewater treatment provider which serves or may serve the project that it has inadequate capacity to serve the project's projected demand in addition to the provider's existing commitments (Criterion PUF-3); or
- 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 and comply with federal, State, and local management and reduction statutes and regulations related to solid waste (Criterion PUF-4).

METHOD OF ANALYSIS

As described in Chapter 2, "Project Description," the regional growth forecast for the Bay Area projects that by 2050 the region will support an additional 2.7 million residents and 1.4 million jobs, resulting in 1.4 million new households. The proposed Plan designates growth geographies and identifies a set of land use strategies to accommodate the projected growth that result in focused housing and job growth concentrated primarily in or adjacent to already developed areas and along existing transit corridors. The land use growth footprint is derived from the UrbanSim 2.0 land use model and represents the development or redevelopment of parcels of land simulated to accommodate the region's forecasted growth of households and jobs from 2015 through 2050 through new building(s). Precise building site(s) on the parcels are not known, therefore the land use growth footprint incorporates the entire parcel. Because of this assumption, the area of potential effects tends to be overstated when considering the land use growth footprint.

This analysis includes a program-level, qualitative assessment of impacts related to water supply, wastewater/stormwater, and solid waste. The assessment of available water supply considers the current regional demand and supply of water based on analyses available in current UWMPs for major water providers (e.g., East Bay Municipal Utilities District, SFPUC, Santa Clara Valley Water District, Sonoma County Water Agency, Marin Municipal Water District). The projections included in the applicable UWMPs inform where additional demand may exceed the capacity of water districts as well as which water districts may have additional capacity. The EIR identifies areas where: 1) there is an existing forecasted shortage in long-term supplies that would need to be met by imported water or additional water conservation, reuse, and recycling; or 2) where the proposed Plan projects population or jobs beyond what is assumed in current UWMPs and could result in a potential shortage.

Impacts related to wastewater, stormwater, and solid waste are more localized in nature, and therefore the analysis is qualitative and focuses on the existing regulations, standards, and policy measures to address these localized impacts. Water and wastewater impacts related to implementation of the proposed Plan's land use development pattern, sea level rise adaptation infrastructure, and transportation projects would be inherently operational in nature, and the following analyses discuss effects of the proposed Plan following implementation, which may require construction of new facilities to meet increased demands. Therefore, land use development construction impacts are not addressed separately from operation impacts in Impacts PUF-1 through PUF-3. The physical effects of future construction are identified here and addressed in more depth in the other EIR technical sections. The baseline for the following analysis reflects existing conditions when the EIR NOP was released in September 2020. 2015 UWMPs were the best available source for water supply analysis in PUF-2, with 2020 UWMP updates expected to be completed following the public release of this Draft EIR.

This evaluation of public utilities and facilities impacts assumes that construction and development under the proposed Plan would adhere to applicable federal, State, and local regulations and would conform to appropriate standards in the industry, as relevant for individual projects. Where existing regulatory requirements or permitting requirements exist that are law and binding on responsible agencies and project sponsors, it is reasonable to assume that they would be implemented, thereby reducing impacts.

IMPACTS AND MITIGATION MEASURES

Impact PUF-1: Require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities the construction or relocation of which could cause significant environmental effects (PS)

Land Use Impacts

Operation

The proposed Plan's land use development pattern could result in a need for new or expanded water and wastewater treatment facilities to accommodate demand that exceeds the capacity at existing facilities. Much of the new treatment capacity is likely to be through expansion of existing facilities, because over 69 percent of the proposed Plan's development would occur within land designated as urban built-up (see Chapter 2, "Project Description") and therefore could connect to existing conveyance and treatment systems. Bay Area water and wastewater agencies are actively exploring the possibility of expanding existing water facilities. The Contra Costa Water District is studying expansion of the Los Vaqueros Reservoir to store 100,000 acre-feet of additional water. In addition, many wastewater agencies are currently implementing capital improvement programs to expand wastewater treatment capacity and build new functionality with water reuse (City of San Mateo 2021).

Some wastewater treatment facilities could face challenges expanding their discharge capacity because of pollutant load restrictions in receiving waters. In these instances, wastewater treatment capacity may need to be expanded along with the use of advanced treatment technology, reclaimed water distribution, or groundwater recharge. The expansions and updates to existing wastewater treatment facilities to meet future needs and requirements present opportunities to explore how to use a higher quality water output for beneficial reuse that could help sustain reliability of local water supplies.

The total land use growth footprint identified under the proposed Plan increases the total urban footprint by approximately 12,300 acres. This increase in the region's urban footprint by roughly 1.4 percent over existing conditions accommodates the over 50 percent increase in the number of regional households forecasted during the horizon of the proposed Plan. Development of the remaining acres outside of existing urban areas could be composed of a variety of land uses and impervious surfaces (e.g., paved areas, building rooftops, parking lots) that could result in incremental increases in the volume and rate of stormwater runoff, and possibly require the expansion or construction of new stormwater drainage facilities.

Urban infill can also increase impervious surfaces by converting permeable vacant or underused parcels into land with more paving or structures. Some redevelopment can reduce the amount of impervious surface, however, by converting pavement or buildings into permeable paving or landscape. Redevelopment can also increase the amount and rate of runoff by discharging greater amounts of water on a site than before development, typically because of excessive landscape irrigation. Because TPAs are already urbanized, most of the land use changes in these areas would be redevelopment, infill, and intensification of existing land uses. Infrastructure upgrades would accommodate the stormwater and water quality treatment needs of the individual development.

The successful and continued implementation of Regional Stormwater Permit Provision C.3 requirements would help mitigate increases in runoff flows from new development and redevelopment projects through post-construction controls such as LID techniques. As required by Provision C.3, for new development that would introduce 10,000 square feet of new impervious surfaces, the specific

project applicant would incorporate LID strategies, such as stormwater reuse, onsite infiltration, and evapotranspiration as initial stormwater management strategies. Secondary methods that could be incorporated include the use of natural, landscape-based stormwater treatment measures, as identified by Provision C.3. For a complete discussion of water quality impacts associated with stormwater runoff, see Section 3.10, “Hydrology and Water Quality.”

The infill nature of the proposed Plan’s development pattern, combined with compliance with existing stormwater regulations that mitigate runoff flows from the use of LID techniques, would result in less-than-significant impacts on the stormwater capacity of existing systems because much of the growth would occur on already impervious land built to lower standards and the slight increase of urbanized land would have to comply with current standards. However, development outside of urbanized areas could require the construction of new stormwater drainage systems.

It is possible that implementation of the proposed Plan's land use development pattern would result in the demand for new energy and telecommunication infrastructure. The specific nature of the infrastructure is difficult to predict because both the energy and telecommunication fields are evolving rapidly with new technologies. In the Bay Area, a number of cities are restricting natural gas use in new buildings which may limit expansion of natural gas infrastructure associated with the proposed Plan. As communities continue to implement strategies to electrify their communities and transition to a less carbon intensive electric system, upgrades to existing distribution systems would be expected, as well as increased use of micro infrastructure used at a small neighborhood or even single parcel scale. Where existing electric, natural gas, and telecommunications infrastructure cannot accommodate demand generated from increased land development associated with implementation of the proposed Plan, and where the capacity of existing infrastructure is exceeded, new or expanded infrastructure, including electric power, natural gas, and telecommunications may be required.

Environmental impacts could occur from both construction and the conversion of undeveloped land to accommodate new, expanded, or relocated water, wastewater treatment or stormwater drainage, electric power, natural gas, or telecommunications facilities. The construction process could result in environmental impacts related to air quality, greenhouse gas emissions, hazardous materials, stormwater runoff, cultural and tribal cultural resources, and noise. Moreover, it may be necessary to relocate existing electrical, natural gas, and telecommunication infrastructure if the proposed Plan's development pattern would require re-routing infrastructure. It is foreseeable that the removal or relocation of this infrastructure could result in potentially significant construction impacts related to aesthetics, agriculture and forest land, air quality, greenhouse gas emissions, hazardous materials, emergency response or evacuation plans, wildfire, stormwater runoff, cultural resources, and noise.

For a discussion of these impacts see Section 3.2, “Aesthetics and Visual Resources”; 3.3, “Agriculture and Forestry Resources”; 3.4, “Air Quality”; 3.6, "Climate Change, Greenhouse Gases, and Energy"; 3.9, “Hazards and Wildfire”; 3.10, “Hydrology and Water Quality”; Section 3.7, “Cultural Resources and Tribal Cultural Resources”; and Section 3.12, “Noise.” The conversion of underdeveloped land could result in the loss of agricultural land, increased stormwater runoff, loss of habitat, and damage to visual resources, among other impacts. For a discussion on these impacts see Section 3.3, “Agriculture and Forestry Resources” Section 3.5, “Biological Resources,” for habitat and biological resources, and Section 3.2, "Aesthetics and Visual Resources."

Construction-related impacts are typically short term and can be mitigated to less than significant through actions of the implementing agency. Similarly, land use conversion–related impacts may also be minimized through appropriate siting and mitigation developed during project-level environmental review. Nonetheless, project-level environmental review would be required for

construction of new, expanded, or relocated water, wastewater treatment or stormwater drainage, electric power, natural gas, or telecommunications facilities. Typically, improvements are identified in district master plans in advance of the need for expansion, and environmental review would identify project-specific mitigation based on impacts of the expansion project.

As discussed above, the land use development pattern that would result from implementation of the proposed Plan could result in construction of new or expanded stormwater drainage, water, wastewater treatment facilities, electric power, natural gas, and telecommunications infrastructure, the construction of which may have significant impacts. Therefore, this impact would be potentially significant (PS).

Sea Level Rise Adaptation Impacts

Construction

Sea-level rise adaptation infrastructure could have an effect on water treatment demand or wastewater treatment. Sea-level rise adaptation infrastructure would not generate wastewater such that new or expanded facilities would be required. Adaptation infrastructure that is designed with engineered environmental systems are likely to have no or minimal stormwater impacts. Construction of some "grey" engineered infrastructure like sea walls or levees with roadways or trails on their top surface could increase construction-related wastewater runoff or expand the extent of impervious surfaces. While it is not anticipated that sea level rise adaptation infrastructure would have an effect on wastewater treatment demand or water treatment demand, any increase in the extent of impermeable surfaces could increase stormwater demands, possibly requiring new or expanded facilities.

Moreover, it may be necessary to relocate existing electrical, natural gas, and telecommunications infrastructure if such facilities are located within the vicinity of sea level rise adaptation infrastructure. Environmental impacts could occur from both construction and the potential conversion of undeveloped land to accommodate relocated water, wastewater treatment or stormwater drainage, electric power, natural gas, or telecommunications facilities. This would be a potentially significant impact (PS). As noted above, the potential impacts related to construction and land conversion are discussed throughout this DEIR.

Operation

Notably, the implementation of sea level rise adaptation infrastructure under the proposed Plan would improve the resiliency of the Plan area from inundation from rising seas. Several wastewater treatment facilities such as the San Jose-Santa Clara Regional Wastewater Facility are in low-lying areas that are vulnerable to elevated sea levels, particularly when combined with 100-, 200-, and 500-year storm events, which deposit high volumes of precipitation over short periods while also facilitating storm surge.

For the reasons identified above, while sea level adaptation infrastructure would increase the Plan area's resiliency to this climate change impact, it may result in the construction or relocation of stormwater drainage, water, and wastewater treatment facilities and electric power, natural gas, and telecommunications infrastructure, the construction of which may have significant impacts. Thus, this impact would be potentially significant (PS).

Transportation System Impacts

Construction

Transportation projects resulting from implementation of the proposed Plan could have an effect on water treatment demand and wastewater treatment demand. Development of new roadway projects as part of the proposed Plan could create new impervious areas by converting existing permeable

surfaces into impervious surfaces through the expansion of existing roadways and construction of new traffic lanes. The proposed Plan calls for the addition of approximately 460 lane miles, consisting of freeway, expressway, and arterial lane-miles, to be constructed in the region, a two percent increase over existing conditions (see Chapter 2, "Project Description"). Any projects undertaken by Caltrans, or by a third party operating within its stormwater system, are subject to its Stormwater Management Plan which regulates discharges from Caltrans stormwater conveyances.

Transit projects may also increase impervious surfaces if new bus stops or supporting interchanges expand the right of way footprint. Notably, some rail systems are below ground (e.g., Bay Area Rapid Transit's [BART's] underground lines), use existing roadways and train tracks (e.g., light rail, cable cars, street cars), or are elevated (e.g., BART's aboveground lines), and therefore do not introduce new impervious surfaces. Additionally, some at-grade rail lines may be largely permeable.

As with land development, transportation projects under the proposed Plan can be a source of additional stormwater runoff. In locations with a combined stormwater and wastewater conveyance system, this increase in runoff could impact wastewater treatment capacity as well. Regulations exist to mitigate stormwater runoff from transportation projects. A summary of the regulatory mechanisms that would reduce potential adverse impacts to stormwater and wastewater infrastructure is presented in the following paragraphs.

Transportation projects that fall under Caltrans jurisdiction would be covered by the Caltrans NPDES Stormwater Program. As described in the regulatory setting for SWRCB, this NPDES permit regulates all stormwater discharges from Caltrans-owned conveyances, maintenance facilities and construction activities. Caltrans also has a Storm Water Management Plan that describes the procedures and practices used to reduce or eliminate the discharge of pollutants to storm drainage systems and receiving waters. Guidance documents have also been developed by Caltrans to implement stormwater BMPs in the design, construction, and maintenance of highway facilities.

Transportation projects where local agencies are the lead agency are subject to local and State regulations for post-construction runoff management requirements. The NPDES permit requirements described in the land use discussion above (project design including general site design control measures, LID features, treatment control measures, ordinances, and regulations) also apply to transportation impacts to reduce the discharge of sediments and other pollutants.

Overall, while existing regulations applying to transportation projects would minimize stormwater-related effects, the more stringent and effective Caltrans NPDES stormwater regulations apply only to some transportation projects under the purview of Caltrans. In addition, new roadway lane miles in areas lacking adequate stormwater drainage capacity could require expanded systems. As a result, the potential stormwater capacity impacts related to construction of transportation improvements from implementation of the proposed Plan would be potentially significant (PS).

Operation

The electrification of the transportation fleet as well as the increased use of communication systems for transportation could result in the need for new or realigned electric and telecommunication infrastructure. It may be necessary to relocate existing electrical, natural gas, and telecommunications infrastructure if such facilities are located within the vicinity of a transportation project. Environmental impacts could occur from both construction and the potential conversion of undeveloped land to accommodate new or relocated electrical, natural gas, and telecommunications infrastructure. As noted above, the potential impacts related to construction and land conversion are discussed throughout this DEIR.

Overall, while existing regulations applying to transportation projects would minimize stormwater-related effects, the more stringent and effective Caltrans NPDES Stormwater Regulations only apply to some transportation projects under the purview of Caltrans. In addition, new roadway lane miles in areas lacking adequate stormwater drainage capacity could require expanded systems. As a result, the potential stormwater capacity impacts related to transportation improvements from implementation of the proposed Plan would be potentially significant (PS).

Conclusion

Potential impacts on water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities would occur primarily from the land use development pattern that would result from implementation of the proposed Plan. Impacts from transportation projects would only be expected to occur in the case of a combined stormwater and wastewater conveyance system. Development outside of urbanized areas could require the construction of new stormwater drainage systems, and this impact would be potentially significant. Transportation projects that aren't subject to Caltrans NPDES Stormwater Regulations or in areas lacking adequate stormwater drainage capacity or hardened sea level rise adaptation infrastructure could result in impacts that would be potentially significant. Additionally, implementation of the proposed Plan may require new or expanded water, wastewater treatment or stormwater drainage, electric power, natural gas, or telecommunications facilities or the relocation of existing facilities. The construction or relocation of these facilities may have effects related to construction and to conversion of undeveloped land. Therefore, these impacts would be **potentially significant (PS**). Mitigation Measures PUF-1(a) through PUF-1(f) address these impacts and are described below.

Mitigation Measures

Mitigation Measure PUF-1(a) Implementing agencies and/or project sponsors shall implement measures, where feasible and necessary based on project- and site-specific considerations, that include those identified below:

- For projects that could increase demand on water and wastewater treatment facilities, coordinate with the relevant service provider to ensure that the existing public services and utilities could accommodate the increase in demand. If the current infrastructure servicing the project site is found to be inadequate, infrastructure improvements for the appropriate public service or utility shall be identified in each project's CEQA documentation. The relevant public service provider or utility shall be responsible for undertaking project-level review as necessary to provide CEQA clearance for new facilities.

Mitigation Measure PUF-1(b) Implementing agencies and/or project sponsors shall implement measures, where feasible and necessary based on project- and site-specific considerations, that include those identified below:

- During the design and CEQA review of individual future projects, determine whether sufficient stormwater drainage facilities exist for a proposed project. These CEQA determinations must ensure that the proposed development can be served by its existing or planned drainage capacity. If adequate stormwater drainage facilities do not exist, project sponsors shall coordinate with the appropriate utility and service provider to ensure that adequate facilities could accommodate the increased demand, and if not, infrastructure and facility improvements shall be identified in each project's CEQA determination. The relevant public service provider or utility shall be responsible for undertaking project-level review as necessary to provide CEQA clearance for new facilities.

- For projects of greater than 1 acre in size, reduce stormwater runoff caused by construction by implementing stormwater control best practices, based on those required for a SWPPP.
- Model and implement a stormwater management plan or site design that prevents the post-development peak discharge rate and quantity from exceeding pre-development rates.

Mitigation Measure PUF-1(c) Implementing agencies and/or project sponsors shall implement measures, where feasible and necessary based on project- and site-specific considerations, that include those identified below:

- For transportation projects, incorporate stormwater control, retention, and infiltration features, such as detention basins, bioswales, vegetated median strips, and permeable paving, early into the design process to ensure that adequate acreage and elevation contours are planned.

Mitigation Measure PUF-1(d) Implementing agencies and/or project sponsors shall implement measures, where feasible and necessary based on project- and site-specific considerations, that include those identified below:

- For transportation projects implemented by Caltrans or subject to Caltrans review, adhere to Caltrans' Stormwater Management Plan, which includes best practices to reduce the volume of stormwater runoff and pollutants in the design, construction, and maintenance of highway facilities.

Mitigation Measure PUF-1(e) Implementing agencies and/or project sponsors shall implement measures, where feasible and necessary based on project- and site-specific considerations, that include those identified below:

- Consider the use of onsite electric generation and storage systems that produce all or a portion of the energy used by a land use, sea level rise adaptation, or transportation project.

Further, Mitigation Measures PUF-2(a), PUF-2(b), and PUF-2(c), summarized under Impact PUF-2, and PUF-3, summarized under Impact PUF-3, would reduce water demand and wastewater generation, and subsequently reduce the need for new or expanded water and wastewater treatment facilities.

Mitigation Measure PUF-1(f) Implementing agencies and/or project sponsors shall implement, where feasible and necessary based on project- and site-specific considerations, the mitigation measures described throughout this EIR to address the effects related to the relocation or construction of new or expanded water, wastewater treatment or stormwater drainage, electric power, natural gas, or telecommunications facilities, including:

- Mitigation Measures AES-1 through AES-4
- Mitigation Measures AGF-1 through AGF-3
- Mitigation Measures AQ-2 through AQ-4
- Mitigation Measures BIO-1 through BIO-3 and BIO-5
- Mitigation Measures GHG-1 and GHG-3
- Mitigation Measures CUL/TCR-1, CUL/TCR-2, and CUL/TCR-4
- Mitigation Measure GEO-7
- Mitigation Measures HAZ-4, HAZ-6 and HAZ-7
- Mitigation Measures LU-1, LU-2, and LU-4
- Mitigation Measures NOISE-1 through Noise-4
- Mitigation Measures PSR-1 and PSR-2
- Mitigation Measures PUF-2 through PUF-4
- Mitigation Measure TRA-2

Significance after Mitigation

Implementation of Mitigation Measure PUF-1(a)) would reduce impacts associated with exceeding existing water and wastewater treatment capacity because application of such mitigation would require that land use and transportation projects comply with project-level CEQA review and identify infrastructure improvements to ensure adequate capacity. Implementation of Mitigation Measures PUF-1(b), and PUF-1(c), and PUF-1(d) would reduce impacts associated with exceedances of existing stormwater drainage capacity because application of such mitigation would require that land use, sea level rise, and transportation projects comply with project-level CEQA review, incorporate on-site stormwater control practices, and develop and implement stormwater management plans or stormwater control design features. Additionally, as stated above, implementation of Mitigation Measures PUF-2(a), PUF-2(b), and PUF-2(c) would lower water demand and wastewater generation, thus reducing the potential need for facilities. Implementation of Mitigation Measure PUF-1(f) would mitigate impacts related to the relocation or construction of new or expanded water, wastewater treatment or stormwater drainage, electric power, natural gas, or telecommunications facilities and to conversion of undeveloped land to accommodate new or expanded facilities. However, it cannot be concluded with certainty that all impacts related to this potential construction and land conversion would be mitigated to less than significant. Therefore, there may be instances where the relocation or construction of new or expanded water, wastewater treatment or stormwater drainage, electric power, natural gas, or telecommunications facilities would cause **significant and unavoidable (SU)** environmental effects.

Impact PUF-2: Have insufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years (SU)

Land Use Impacts

Operation

As shown in **Table 3.14-2**, the major water suppliers in the region are projected to be able to supply adequate water for their projected service populations through 2040 during normal years, apart from Solano County Water Agency which expects to meet water demand projections up to 2020 but has not analyzed beyond that horizon. Water demand projections beyond 2040 were unavailable for all Bay Area water agency UWMPs with some agencies only projecting water demand and supply through 2035. The ability to provide adequate water supply for many districts is dependent on successful achievement of water conservation targets and the completion of supply expansion projects, such as new water contracts, land acquisition, groundwater recharge, and reclaimed water distribution. In some areas, such as the City and County of San Francisco and the Santa Clara Valley, adequate supply through 2040 depends on substantial water conservation efforts. In San Francisco, the ability for supply projects to move forward depends on multiple factors such as environmental review, permitting requirements, public acceptance, and the availability of funding. Water suppliers are pursuing the water conservation targets set by the State under SB X7-7 (2009) and regularly updating their UWMPs. Future development projects would be required to comply with Water Code Section 10910 and Section 10912, as described above in the Regulatory Setting, under "Water Supply Assessment and Water Supply Verification.". The enforcement of these regulations by local jurisdictions would ensure that a water supply assessment is prepared to demonstrate that sufficient water would be available to serve development projects before their approval.

As shown in **Table 3.14-3**, major water supply agencies such as Alameda County Water District, Santa Clara Valley Water District, Solano County Water Agency, and Sonoma County Water Agency expect demand to exceed supply during a single dry year before 2040. In addition, Alameda County Water

District, East Bay Municipal Utility District, San Francisco Public Utilities Commission, Santa Clara Valley Water District, and Solano County Water Agency expect demand to exceed supply during multiple dry years before 2040. Therefore, in localized parts of the region, there is an existing forecasted shortage in long-term supplies during a single dry year and multiple dry years that will need to be met through additional water conservation, reuse, and recycling, and additional water supply sources.

The combined population projections (9,883,000) of the water supply agencies for 2040 (the projected year available) exceed the 2040 regional population projections for the proposed Plan (approximately 9,500,000 in 2040 and growing to over 10 million by 2050). **Table 3.14-8** includes the projected households served in 2050 by 11 of the largest agencies. San José, served by the Santa Clara Valley Water District, projects 2040 as the year wherein a water shortage may occur during a single dry year. San Francisco, served by SFPUC, does not project water shortages during a single dry year in their UWMP which runs through 2040, largely because of supplies from reservoir storage, but does project water shortages by 2040 in the event of multiple dry years. With implementation of the proposed Plan, land use development would not occur evenly around the region; therefore, the proposed Plan could result in population or job growth beyond what is assumed in current UWMPs and could result in a localized water supply shortage. As discussed in Section 3.14-1, "Environmental Setting," eight of the regions water agencies are working together to consider new approaches to drought contingencies and together produced a Drought Contingency Plan that included 15 potential drought mitigation measures including new interties between systems, expanded storage, as well as new treatment options for water reuse (Brown and Caldwell 2017).

Table 3.14-8: Projected Service Area Population of Major Bay Area Water Agencies

Agency	Projected 2050 Households
Alameda County Water District	152,800
Bay Area Water Supply & Conservation Agency (BAWSCA)[1]	457,200
Contra Costa Water District	255,700
East Bay Municipal Utility District	762,000
Marin Municipal Water District	113,600
City of Napa	33,800
San Francisco Public Utilities Comission[2]	569,200
Santa Clara Valley Water District	1,074,000
Solano County Water Agency	176,600
Sonoma County Water Agency[3]	189,400
Zone 7	131,800
TOTAL	3,916,000

Notes: Numbers have been rounded (between 1,000 and 1,000,000 to the nearest 100, above 1,000,000 to the nearest 1,000). Figures may not sum because of independent rounding.

[1] BAWSCA is composed of 26 member water agencies that purchase all or a portion of their water supply from the San Francisco Public Utilities Commission. In this table, BAWSCA households include only the 19 members in San Mateo County and City of Hayward in Alameda County. All Santa Clara County BAWSCA members are counted in the Santa Clara Valley Water District value.

[2] San Francisco Public Utilities Commission is a wholesale water provider to BAWSCA; however, the agencies' service populations are listed separately.

[3] Sonoma County Water Agency is a wholesale water provider to Marin Municipal Water District; however, the agencies' service populations are listed separately.

Sources: Data compiled by MTC and ABAG in 2021 based on data from DWR 2020

Locally, as shown in **Tables 3.14-2 and 3.14-3**, land development through 2040 served by the Contra Costa Water District, East Bay Municipal Utility District, Marin Municipal Water District, and SFPUC would have adequate water supplies in both regular and single dry years. The City of Napa and Zone 7 also have adequate water supplies in regular and single dry years through 2035, their furthest

reported projection. Contra Costa Water District, Marin Municipal Water District, Sonoma Water, City of Napa and Zone 7 would also have adequate water supplies in multiple dry years. However, at a regional level, changes in land use projected development from the proposed Plan may result in insufficient water supplies requiring the acquisition of additional water sources and the imposition of conservation requirements. Further, as discussed in the "Drought" subsection in Section 3.14-1, "Environmental Setting," California, including the Plan area, may face future water supply challenges associated with climate change-related periods of drought. The uncertainty of water supply availability is furthered by the Plan's 2050 horizon being 10–15 years further than water agency 2015 UWMPs which have a planning horizon of 2035 or 2040. The increase in population-, household-, and jobs-related demand on water supply coupled with potentially reoccurring drought conditions may result in insufficient water supply to serve the Plan area. For these reasons, these impacts would be potentially significant (PS).

Sea-Level Rise Adaptation Impacts

Construction and Operation

The construction and maintenance of sea level rise adaptation infrastructure could increase the demand for water. Construction activities such as dust control and operational activities such as landscape irrigation could increase water demand. Although these increases in demand are anticipated to be small on a per project basis, the collective demand from all the projects taken together could increase water demand that exceeds an applicable water supply agency's projected demand and supply. Because sea level rise adaptation infrastructure constructed under the proposed Plan may be in areas with constrained water supplies, especially during a dry year or extended drought period, these impacts would be potentially significant (PS).

Transportation System Impacts

Construction and Operation

The construction of new roadway capacity, bicycle and pedestrian facilities, transit facilities; maintenance on existing transportation facilities; and operation of new and existing facilities could increase the demand for water for construction activities such as concrete mixing or dust control and operational activities such as landscape irrigation or services such as restrooms and drinking fountains. Although these increases in demand are anticipated to be small on a per project basis, the collective demand from all the projects taken together could increase water demand that exceeds an applicable water supply agency's projected demand and supply. Because transportation projects under the proposed Plan may be constructed in locations with constrained water supplies, especially during a dry year or prolonged drought period, these impacts would be potentially significant (PS).

Conclusion

The land use development pattern that would result from implementation of the proposed Plan would generate most of the water demand generated as a result of accommodating the regional growth forecast. While the permanent demand on potable water supplies required by sea level rise adaptation infrastructure and transportation projects would be relatively small compared to the total demand associated with construction and operation of land use projects, the collective demand could result in water demand that exceeds an applicable water agency's projected demand and supply. Additionally, the construction phase of a sea level rise adaptation infrastructure or transportation project (water for mixing concrete, watering down topsoil, initial irrigation needs) could exceed local water supplies on a temporary basis, especially during dry years or prolonged drought periods. It is also possible that a transportation project that features significant landscaping that is not drought-

resistant could significantly impact local water supplies over a longer term. Because the construction and operation of land use, sea level rise adaptation, and transportation projects under the proposed Plan overall generate water demand that could result in insufficient water supplies, which could require the acquisition of additional water sources and the imposition of conservation requirements, these impacts would be **potentially significant (PS)**. Mitigation Measures PUF-2(a), PUF-2(b), and PUF-2(c) address these impacts and are described below.

Mitigation Measures

Mitigation Measure PUF-2(a) Implementing agencies and/or project sponsors shall implement measures, where feasible and necessary based on project- and site-specific considerations, that include those identified below:

- For projects that could increase demand for water, coordinate with the relevant water service provider to ensure that the provider has adequate supplies to accommodate the increase in demand. This can and should be documented in the form of an SB 610 Water Supply Assessment, an SB 221 Water Supply Verification, or other capacity analysis.
- Implement water conservation measures which result in reduced demand for potable water. This could include reducing the use of potable water for landscape irrigation (such as through drought-tolerant plantings, water-efficient irrigation systems, the capture and use of rainwater) and the use of water-conserving fixtures (such as dual-flush toilets, waterless urinals, reduced flow faucets).
- Coordinate with the water provider to identify an appropriate water consumption budget for the size and type of project and designing and operating the project accordingly.
- For projects located in an area with existing reclaimed water conveyance infrastructure and excess reclaimed water capacity, use reclaimed water for non-potable uses, especially landscape irrigation. For projects in a location planned for future reclaimed water service, projects should install dual plumbing systems in anticipation of future use. Large developments could treat wastewater onsite to tertiary standards and use it for non-potable uses onsite.
- Apply Tier 1 or Tier 2 CALGreen standards as mandatory local requirements, which reduce water use by 12 and 20 percent, respectively, and require additional qualifying elective actions.

Mitigation Measure PUF-2(b) Implementing agencies and/or project sponsors shall require the construction phase of transportation projects to connect to reclaimed water distribution systems for non-potable water needs, when feasible based on project- and site-specific considerations.

Mitigation Measure PUF-2(c) Implementing agencies and/or project sponsors shall require transportation projects with landscaping to use drought-resistant plantings or connect to reclaimed water distribution systems for irrigation and other non-potable water needs when available and feasible based on project- and site-specific considerations.

Significance after Mitigation

Implementation of Mitigation Measures PUF-2(a), PUF-2(b), and PUF-2(c) would reduce impacts associated with water supply because they would require that land use, sea level rise, and transportation project sponsors coordinate with water suppliers to ensure adequate water supplies exist or comply with project-level CEQA review and incorporate on-site water conservation strategies, water budgeting, and incorporation of recycled water for non-potable use. However, it cannot be concluded with certainty that all impacts related to water supply would be mitigated to a less-than-significant. Therefore, this impact would remain **significant and unavoidable (SU)**.

Impact PUF-3: Result in a determination by the wastewater treatment provider which serves or may serve the project that it has inadequate capacity to serve the project's projected demand in addition to the provider's existing commitments (PS)

Land Use Impacts

Operation

Increased volumes of wastewater from forecasted growth under the proposed Plan could exceed the wastewater treatment capacity of individual treatment facilities, if not properly planned. Generation of additional wastewater as a result of forecasted development would depend on the location of planned development and would not be spread evenly across each treatment facility system. Generally, capacity planning is undertaken in advance of need. Funding for new and expanded facilities is typically provided through developer impact fees, and through the rates customers pay for treatment. Building occupancy is prohibited if wastewater service is not available. Therefore, exceedance of the capacity of a wastewater treatment plant is not expected.

Furthermore, wastewater generation per capita would be expected to decrease by 2050 as compared to baseline conditions because of implementation of regional- and Statewide water conservation measures. Also, wastewater generation per capita will likely be reduced in future years as municipalities in the Bay Area adopt new versions of Part 11 of the Title 24 California Building Code (California Green Building Standards or CALGreen) which will require new development to incorporate low-flow, water-efficient appliances, and design. However, wastewater is not conveyed between different treatment agencies (this would require construction of an extensive network of major pipelines). One wastewater facility could approach its treatment capacity and require expansion, whereas other plants in the region may have substantial available capacity. This is a localized issue, therefore, and potential local impacts are discussed below.

Under the proposed Plan, population and job growth would be concentrated in areas of existing development. Overall, population in the Bay Area is projected to grow by 35 percent from 2015 to 2050. With implementation of the proposed Plan, Santa Clara, San Francisco, and Alameda Counties are projected to grow households by more than the regionwide rate, while all others would grow less. Areas with the most growth also are most likely to need additional wastewater treatment capacity. Therefore, the counties that would support the highest percentage of growth would also be the locations where treatment plant expansion is most likely. The City of San Mateo broke ground on a project to upgrade their 1935 wastewater treatment plant in 2020 to bring the facility up to a higher standard and expand capacity (City of San Mateo 2021).

It is likely that some treatment facilities would need to expand their capacity before 2050 to meet expected population growth, or to respond to RWQCB requirements to provide capacity to receive their NDPES permit. Because the changes to the land use pattern under the proposed Plan may result in insufficient wastewater treatment capacity, these impacts would be potentially significant (PS).

Sea-Level Rise Adaptation Impacts

Construction and Operation

Sea-level rise adaptation infrastructure would not affect wastewater treatment capacity. Instead, sea level rise adaptation infrastructure will help protect existing wastewater treatment facilities from future sea level rise and in some cases may become components of the wastewater treatment

process. Because sea level rise adaptation infrastructure would not generate significant wastewater, these impacts would be less than significant (LTS).

Transportation System Impacts

Construction and Operation

Implementation of transportation projects would not directly increase wastewater generation from forecasted growth. As noted in Impact HYDRO-4, the design of transportation projects that would have the potential to alter drainage patterns would conform to local stormwater drainage master plans and regional MS4 permit requirements. This could increase capacity in combined stormwater and wastewater conveyance systems. Transportation projects for which local agencies are the lead agency are subject to local and State regulations for construction and nonconstruction runoff prevention. The regional MS4 NPDES permit described above would also apply to transportation projects. Transportation projects would be required to incorporate BMPs and LID stormwater management principles. In addition, any enhancements or modifications to California State highways would be required to follow Caltrans guidelines, which include the preparation of a hydraulic study and submittal of a hydraulics study report for any project intercepting a waterway or encroaching upon a floodplain, to assess the potential impacts on natural processes and beneficial uses as part of the environmental review. These existing regulatory requirements address the potential for impacts on drainage patterns and rates.

In accordance with federal, State, and local stormwater management regulations, new construction must maintain preproject hydrology. Because transportation projects would comply with these requirements, implementation of the proposed Plan would not be expected to alter existing drainage patterns in a manner that would result in runoff that exceeds the capacity of existing or planned stormwater drainage systems or results in flooding. Therefore, impacts associated with the implementation of the proposed Plan's transportation infrastructure would be less than significant (LTS).

Conclusion

The land use development pattern that would result from implementation of the proposed Plan could result in potential impacts on wastewater treatment capacity. Because of the relatively small permanent generation of wastewater by transportation projects, and because projects would comply with federal, State, and local stormwater management regulations to maintain preproject hydrology, transportation projects would not contribute to a significant impact. Similar to transportation projects, sea level rise adaptation infrastructure projects are unlikely to contribute to a significant impact. Nonetheless, because new land use development under the proposed Plan could generate new volumes of wastewater that could contribute to a wastewater treatment facility meeting or exceeding its existing capacity, this impact would be **potentially significant (PS)**. Mitigation Measure PUF-3 addresses this impact and is described below.

Mitigation Measures

Mitigation Measure PUF-3 Implementing agencies and/or project sponsors shall implement measures, where feasible and necessary based on project- and site-specific considerations, that include those identified below:

- During the design and CEQA review of individual future projects, determine whether sufficient wastewater treatment capacity exists for a proposed project. These CEQA determinations must ensure that the proposed development can be served by its existing or planned treatment capacity. If adequate capacity does not exist, project sponsors shall coordinate with the relevant service provider to ensure that adequate public services and utilities could accommodate the

increased demand, and if not, infrastructure improvements for the appropriate public service or utility shall be identified in each project's CEQA documentation. The relevant public service provider or utility shall be responsible for undertaking project-level review as necessary to provide CEQA clearance for new facilities.

- Require compliance with Mitigation Measure PUF-2(a), and MTC shall require implementation of Mitigation Measures PUF-2(b) and PUF-2(c), as feasible based on project- and site-specific considerations to reduce water usage and, subsequently, some wastewater flows.

Significance after Mitigation

Implementation of Mitigation Measure PUF-3 would reduce impacts related to exceedance of existing wastewater capacity because application of this mitigation would require that land use and transportation projects comply with project-level CEQA review and incorporate on-site water conservation strategies, water budgeting, and incorporation of recycled water for non-potable use as mandated by Mitigation Measures PUF-2(b), PUF-2(c), and PUF-3 listed above, which would reduce the generation of wastewater. To the extent that an implementing agency requires an individual project to implement all feasible mitigation measures described above, the impact would be less than significant with mitigation (LTS-M).

Projects taking advantage of the CEQA streamlining provisions of SB 375 (Public Resources Code Sections 21155.1, 21155.2, and 21159.28) must apply the mitigation measures described above, as applicable, to address site-specific conditions. However, MTC/ABAG cannot require local implementing agencies to adopt the above mitigation measures, and it is ultimately the responsibility of a lead agency to determine and adopt mitigation. Therefore, this impact would be **significant and unavoidable (SU)** for purposes of this program-level review.

Impact PUF-4: 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, and comply with federal, state, and local management and reduction statutes and regulations related to solid waste (PS)

Land Use Impacts

Construction

The 2019 CALGreen code contains construction waste management requirements for certain new construction and additions, as well as demolition of nonresidential (i.e., State-owned buildings and commercial, industrial, and medical facilities) and residential buildings. Effective starting January 1, 2020, the construction activities must adhere to a 65-percent diversion standard and may be required to submit a construction waste management plan or contract with a waste management company that submits verifiable documentation. Newly constructed multifamily housing with more than five units are required to have accessible areas that serve the entire building and are identified for the depositing, storage, and collection of recycling. Projected development under the proposed Plan would be subject to the standards defined in the 2019 CALGreen code, as well as any future updates.

Because Countywide Integrated Waste Management Plans must demonstrate a remaining landfill disposal capacity of at least 15 years to serve all the jurisdictions in the county, landfill capacities are updated on a continuing basis to identify insufficient capacity. Future growth in the region may require the expansion of existing facilities or construction of new landfills, the identification of waste

disposal capacity outside of the region, and/or larger reductions in solid waste generation or diversion rates to serve the projected level of development.

There are also multiple additional laws intended to reduce solid waste in California, including AB 1826, which sought to greatly reduce the amount of organic material deposited into landfills by further mandating waste recycling services for organic material. At the beginning of 2016, local jurisdictions were required under AB 1826 to implement an organic waste recycling program and measure and monitor their efforts. Also, Section 5.408, "Construction Waste Reduction, Disposal and Recycling," of the 2019 CALGreen code requires all new construction and demolition projects to develop a construction waste management plan that documents how a minimum of 65 percent of nonhazardous construction and demolition waste will be recycled or salvaged. The construction-related impact would be less than significant (LTS).

Operation

The existing population and employment uses in the region will continue to generate solid waste that requires disposal in a licensed and regulated landfill. The expected growth in the region's population, which is expected to increase by 2.7 million to 10.3 million during the planning horizon of the proposed Plan (2015-2050), would result in an increase in solid waste production. As of January 2020, the nine-county Bay Area region had a population of 7.8 million (see Chapter 2, "Project Description"). CalRecycle estimates that the average resident over the last ten years in California disposes of 5.8 pounds of trash per day (CalRecycle 2021a). Assuming an average diversion (to recycling) rate of 50 percent, as required by AB 939, the region's solid waste generation would increase from approximately 11,069 tons of solid waste per day and 4.0 million tons per year, to approximately 14,927 tons per day and 5.4 million tons per year. Further, if California meets its goal of achieving the 75 percent diversion rate initiatives set by SB 1383 and AB 341, future rates of disposal would be 7,463 tons per day and 2.7 million tons per year in 2050. While the State of California is not on track to meet this goal, some Bay Area jurisdictions like the City and County of San Francisco are meeting the goal. San Francisco has achieved the 75% target since 2009 and surpassed it achieving 80% diversion in 2012 (City and County of San Francisco 2021).

Landfill closure dates typically reflect the year a landfill is projected to reach capacity and take many factors into account, including rates of solid waste generation, rates of diversion, and projected growth. All but three (i.e., Altamont Landfill and Resource Recovery, USS-Poscoe Industries Waste Management Unit II, and Kirby Canyon Recycling and Disposal Facility) of the fourteen landfills active in the region, listed in **Table 3.14-5**, have an estimated closure date before the year 2050 (CalRecycle 2020). It is unlikely these three remaining landfills, which make up around 33 percent of the region's existing remaining capacity, could accommodate the solid waste disposal needs of the entire region.

Land use development projects undertaken with implementation of the proposed Plan would be required to comply with federal, State, and local statues and regulations related to solid waste, including county and city general plans. Local jurisdictions also have goals and policies for recycling and diversion of solid waste to ensure compliance, see AB 939 and SB 341 in Section 3.14.2, "Regulatory Setting." Local governments submit an annual report to CalRecycle on the implementation of waste diversion plans to comply with their respective per capita disposal targets. CalRecycle reviews each local government's progress in implementing its unique diversion program and progress in sustaining or achieving compliance. CalRecycle may refer some local governments for a compliance evaluation review, although the number of local governments referred is generally less than 1 percent. If a more thorough analysis reveals a jurisdiction is not meeting the "good faith" standard for implementing its diversion programs or for reaching per capita disposal targets, CalRecycle will issue

a compliance order. If the jurisdiction fails to fulfill its implementation plan to correct the program deficiencies, then the jurisdiction will be subject to penalties.

As noted above, there are also multiple additional laws intended to reduce solid waste in California, including AB 1826, which sought to greatly reduce the amount of organic material deposited into landfills by further mandating waste recycling services for organic material. At the beginning of 2016, local jurisdictions were required under AB 1826 to implement an organic waste recycling program and measure and monitor their efforts.

While there are regulations in place intended to reduce solid waste in California, implementation of the proposed Plan's would concentrate growth in areas of existing development and land use development would not occur evenly around the region. Areas with the most growth could generate waste that could exceed the current permitted capacity at local landfills. Therefore, this impact would be potentially significant (PS).

Sea Level Rise Adaptation Impacts

Construction and Operation

Sea level rise adaptation infrastructure construction and maintenance in the proposed Plan have the potential to generate a substantial amount of solid waste during construction. This waste can come from typical construction activities, such as grading, excavation, and removal of existing structures. The amount of this waste is difficult to predict, but it could result in an exceedance of local landfill capacities for construction of sea level rise adaptation infrastructure in the future closer to expected closure dates of the landfills. Operation of sea level rise adaptation infrastructure are unlikely to produce substantial solid waste, if any. Nevertheless, construction would still generate a notable volume of solid waste. Thus, these impacts would be potentially significant (PS).

Transportation System Impacts

Construction and Operation

Roadway and transit construction and maintenance projects in the proposed Plan have the potential to generate a substantial amount of solid waste during construction. This waste can come from typical construction activities, such as grading, excavation, and removal of existing structures. The operation of transportation facilities may also generate solid waste. The amount of this waste is difficult to predict, but it could result in an exceedance of local landfill capacities for transportation projects constructed in the future closer to expected closure dates of the landfills. Transportation projects under the proposed Plan would be required to comply with AB 341, as well as the additional laws cited above which would further reduce anticipated solid waste generation. Nevertheless, construction of these projects would still generate a notable volume of solid waste that could exceed the capacity of local landfills. Thus, these impacts would be potentially significant (PS).

Conclusion

Implementation of the proposed Plan's land use development pattern, sea level rise adaptation infrastructure, and transportation projects has the potential to reduce the capacity of existing landfills, leading to earlier closure dates than currently anticipated and a need for increased landfill capacity. This impact is considered **potentially significant (PS)**. Mitigation Measure PUF-4 addresses this impact and is described below.

Mitigation Measures

Mitigation Measure PUF-4 Implementing agencies and/or project sponsors shall implement measures, where feasible and necessary based on project- and site-specific considerations, that include those identified below:

- Provide an easily accessible area that is dedicated to the collection and storage of non-hazardous recycling materials.
- Maintain or reuse existing building structures and materials during building renovations and redevelopment.
- Use salvaged, refurbished, or reused materials to help divert such items from landfills.
- Divert construction waste from landfills, where feasible, through means such as:

submitting and implementing a construction waste management plan that identifies materials to be diverted from disposal;

establishing diversion targets, possibly with different targets for different types and scales of development; and

helping developments share information on available materials with one another, to aid in the transfer and use of salvaged materials.

- Apply the specifications developed by the Construction Materials Recycling Association (CMRA) to assist contractors and developers in diverting materials from construction and demolition projects, where feasible (CalRecycle 2021b).

Significance after Mitigation

Implementation of Mitigation Measure PUF-4 would reduce impacts associated with solid waste generation because it would require that land use and transportation projects apply landfill diversion strategies including re-using building materials, maintaining structures where applicable, developing construction waste management plans, and using guidance from CMRA. However, it cannot be concluded with certainty that all impacts related to solid waste would be mitigated to a less-than-significant. Therefore, this impact would remain **significant and unavoidable (SU)**.