7.16 Population and Housing

This section describes the environmental setting and potential impacts on population and housing that may result from changes in hydrology or changes in water supply. Activities that would have an impact on population and housing would be development or infrastructure projects that could induce substantial population growth in an area or activities that could result in displacement of substantial numbers of people or existing housing, necessitating the construction of replacement housing elsewhere. As discussed in this section, changes in hydrology and changes in water supply would not result in activities that would affect population and housing.

Section 7.4, *Agriculture and Forest Resources*, evaluates impacts on agricultural irrigation water supply as it relates to conversion of farmland to nonagricultural land use. Section 7.13, *Land Use and Planning*, evaluates impacts on established communities or potential for conflict with plan policies. Section 7.20, *Utilities and Service Systems*, evaluates impacts on municipal water supplies generally. Growth-inducing effects are discussed in Section 7.25, *Growth-Inducing Effects*.

Section 7.1, *Introduction, Project Description, and Approach to Environmental Analysis*, describes reasonably foreseeable methods of compliance and response actions, including actions that would require construction. These actions are analyzed for potential environmental effects in Section 7.21, *Habitat Restoration and Other Ecosystem Projects*, and Section 7.22, *New or Modified Facilities*.

7.16.1 Environmental Checklist

XIII. Population and Housing	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Would the project:				
a. Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	☐	☐	☐	☒
b. Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒
c. Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒

7.16.2 Environmental Setting

This section broadly describes the regional and local population and housing setting to inform the impact discussion in this section and in Section 7.21, *Habitat Restoration and Other Ecosystem Projects*; Section 7.22, *New or Modified Facilities*; Chapter 9, *Proposed Voluntary Agreements*; and Chapter 13, *Revised Proposed Plan Amendments*.

There are a number of large cities located throughout the study area—Sacramento, Oakland, San Jose, Stockton, Fresno, and Bakersfield—and a noticeably higher concentration of incorporated cities and population densities in southern California, including Los Angeles, San Bernardino, Riverside, Santa Ana, and San Diego (see Figure 2.8-2 in Chapter 2, *Hydrology and Water Supply*). Developed land is generally concentrated around these population centers, while other areas consist of agricultural or undeveloped land, including forested and shrub/grassland. As shown on Figure 2.8-2, there are numerous smaller cities and unincorporated communities, particularly in the plan area; throughout the Central Valley and coastal areas; and further inland in southern California. These areas typically consist of lower-density rural communities and agricultural areas.

Population in California generally has been increasing over the past 10 years; most of this growth has come from natural increase (births), with only a small amount stemming from net migration to the state (DOF 2018a). All of the 10 most populous counties are located within the study area. Two of these counties, Riverside and San Diego, accounted for 24 percent of the population growth in the state in the 2017–2018 year (DOF 2018a). Inland counties, particularly those in the Central Valley, are experiencing greater growth from migration than coastal counties. Housing in the state continues to increase modestly annually; in 2017, housing increased by 0.6 percent (DOF 2018b). In the year between July 2017 and July 2018, wildfires were the cause of the greatest housing losses in the state, with Napa, Sonoma, and Mendocino Counties seeing the greatest wildfire losses (DOF 2018b). Fires since then, such as the Camp Fire in Butte County, have continued this trend. Multifamily housing net growth has outpaced single family housing net growth for the past 6 years (DOF 2018b). Chapter 8, *Economic Analysis and Other Considerations*, describes the population projections for California and the study area geographic regions (see Table 8.2-3).

7.16.2.1 Sacramento River Watershed

The 2016 population estimate of the Sacramento River watershed was approximately 2.9 million people (^U.S. Census Bureau 2017) (Table 8.2-2). The most populous cities in the region are Sacramento, Elk Grove, and Roseville (Figure 2.8-2). The Sacramento metropolitan area is the largest metropolitan area in the region. Sacramento County, with over one-fifth of the population, has been growing about 1.0 percent per year, with net migration accounting for more than 40 percent of this growth. Much of this growth was driven by people seeking lower-cost housing. That growth rate is anticipated to continue in the near term but with net migration accounting for almost half of the growth (^California Economic Forecast 2017).

In contrast to the growing urban areas surrounding Sacramento, 7 counties (Lake, Lassen, Modoc, Nevada, Plumas, Sierra, and Siskiyou) of the 20 counties in the Sacramento River watershed have been identified in the California Economic Forecast report as *vulnerable counties*, meaning population growth rates have been minimal or negative, and other associated economic indicators (e.g., job growth, income growth) are also weak (^California Economic Forecast 2017).

Disadvantaged communities are primarily in the Sacramento metropolitan area and in the eastern Yolo County rural area along the Sacramento River north of the city of Sacramento.

7.16.2.2 Delta Eastside Tributaries

The 2016 population estimate of the Delta eastside tributaries region was approximately 452,000 people (^U.S. Census Bureau 2017) (Table 8.2-2). The Delta eastside tributaries region includes portions of Alpine, Amador, Calaveras, El Dorado, San Joaquin, and Sacramento Counties. Larger

communities within this region are Lodi and Stockton (Figure 2.8-2). There are many smaller cities and rural unincorporated areas in southern El Dorado and Sacramento Counties. The Sierra Nevada foothill counties of Alpine, Amador, and Calaveras also are sparsely populated.

The region's growth was modest (at 1.6 percent) from 2010 to 2016 (^U.S. Census Bureau 2017) (Table 8.2-2), and the foothill counties were identified as vulnerable (^California Economic Forecast 2017). However, future rapid growth is anticipated in this region, led by San Joaquin County as one of the fastest-growing counties in the state (^California Economic Forecast 2017).

7.16.2.3 Delta

The 2016 population estimate of the Delta region was approximately 774,000 people (^U.S. Census Bureau 2017) (Table 8.2-2). The Delta region includes portions of Sacramento, San Joaquin, Solano, Yolo, and Contra Costa Counties. There are several small communities in the Delta region, including Rio Vista, Bethel Island, Clarksburg, Courtland, Freeport, Hood, Isleton, Knightsen, Rio Vista, Ryde, Locke, and Walnut Grove (^2013 Water Plan, V2, Sacramento-San Joaquin Delta). The cities of Tracy, Antioch, and Stockton are the largest in the region (Figure 2.8-2).

Past growth has been higher in this region than either the Sacramento River watershed or Delta eastside tributaries region. Future population growth is anticipated to be at a much higher rate than for the state as a whole and will be driven by in-migration and demand for low-cost housing in suburban areas characteristic of the region (^California Economic Forecast 2017).

7.16.2.4 San Francisco Bay Area

Population estimates for the San Francisco Bay Area counties in 2016 was approximately 7.0 million people, or 17.8 percent of the state's population (^U.S. Census Bureau 2017) (Table 8.2-2). The San Francisco Bay Area region includes portions of Marin, Napa, Sonoma, Solano, Contra Costa, Alameda, Santa Clara, and San Mateo Counties (Figure 2.8-2).

The San Francisco Bay Area grew at a rate of 7.5 percent between 2010 and 2016 (^U.S. Census Bureau 2017) (Table 8.2-2). This higher-than-statewide growth rate is expected to continue in the future. The above-average growth has been attributed in part to high levels of migration. In Santa Clara County, which includes Silicon Valley, 40 percent of the population growth between 2011 and 2016 was attributed to migration for employment opportunities in this area. In Alameda and Contra Costa Counties, the second and third largest counties in this region, over half the population growth in this period was attributed to migration. Some of the migration in both locations was from people leaving higher-priced housing markets, and some was from people moving into the area for its strong job market. In the near future, employment growth, although still strong relative to other regions, is expected to be more moderate in this area than in the recent past. (^California Economic Forecast 2017.)

Between 2011 and 2016, San Francisco County grew 1.2 percent per year, mostly from net migration with people moving into the area for high-paying jobs, but this growth rate is expected to slow in the near term. San Mateo County grew at a similar rate but is also expected to grow at a slower rate in the near term. (^California Economic Forecast 2017.)

Sonoma, Solano, Marin, and Napa Counties all grew at less than 1.0 percent per year during the 2011 to 2016 period, with migration contributing a significant share of this growth. Growth rates in these counties will continue to be moderate in the near term, with migration contributing 60 percent or more of this growth. (^California Economic Forecast 2017.)

7.16.2.5 San Joaquin Valley

The population in the San Joaquin Valley region in 2016 was approximately 3.6 million people, or 9.3 percent of the state's population (^U.S. Census Bureau 2017) (Table 8.2-2). The San Joaquin Valley region is made up of Stanislaus, Tuolumne, Mariposa, Merced, Madera, Fresno, Tulare, Kings, and Kern Counties (Figure 2.8-2). Between 2010 and 2016, the San Joaquin Valley region grew at a rate of 4.7 percent, a slightly lower rate than the state (^U.S. Census Bureau 2017) (Table 8.2-2). However, in much of the region, future growth is expected to be considerably faster than the state as a whole (^California Economic Forecast 2017).

In recent years, most of the population growth in this region has been from natural increase. Fresno County, the largest county in this group, had a low rate of net migration between 2011 and 2016. While the populations of Kern, Madera, Merced, and Tulare Counties grew in this same period, all four had negative net migration. Kings County lost population during the 2011 to 2016 period due to out-migration. In contrast, Stanislaus County grew both from natural increase and from net migration of more than 1,600 people each year during this period. (^California Economic Forecast 2017.)

In the near future, Kings, Madera, Merced, and Tulare Counties' population growth is expected to increase, and net migration is expected to be flat or positive (^California Economic Forecast 2017). Fresno, Kern, and Stanislaus Counties are expected to continue with growth rates and migration patterns similar to recent years (Applied Development Economics 2017); (^California Economic Forecast 2017).

Mariposa and Tuolumne Counties are both considered to be vulnerable because population growth rates have been minimal or negative, and other associated economic indicators (e.g., job growth, income growth) are also weak (^California Economic Forecast 2017).

7.16.2.6 Central Coast

The population in the Central Coast region in 2016 was approximately 1.5 million people, or just 3.8 percent of the state's population (^U.S. Census Bureau 2017) (Table 8.2-2). The Central Coast region is made up of Santa Cruz, San Benito, Monterey, San Luis Obispo, and Santa Barbara Counties (Figure 2.8-2).

While California grew 5.5 percent from 2010 to 2016, the Central Coast region grew at a slightly lower rate of 5.1 percent over the same time (^U.S. Census Bureau 2017) (Table 8.2-2). The projected growth through 2030 is expected to increase at a slightly slower rate than the state. Santa Barbara County, the largest of the five counties in this region, grew about 1.1 percent per year in the 2011 to 2016 period, with a positive migration rate of 1,900 people per year. Growth in the near future is expected to continue at a slightly slower pace. (^California Economic Forecast 2017.)

Monterey County, the second largest county in this region, grew about 1.0 percent per year between 2011 and 2016; most of this growth was from natural increase, given that net migration was low. Near-term growth of Monterey County is expected to be at a slightly lower rate, with positive but low rates of migration. Santa Cruz County grew at an average annual rate of 0.8 percent between 2011 and 2016, with high levels of in-migration. In the near term, annual growth rates are expected to slow to 0.5 percent per year, with about 17 percent of that growth coming from migration. San Luis Obispo County has an older population profile, and the birth rate is low. Population growth was 0.6 percent in recent years and is expected to continue at a slow rate, with 85 percent of the

growth rate coming from in-migration. Population growth in San Benito County was primarily due to natural increase. (^California Economic Forecast 2017.)

7.16.2.7 Southern California

The Southern California region had approximately 22.2 million people in 2016, or 56.6 percent of the state's population. While California grew 5.5 percent from 2010 to 2016, the Southern California region grew at a slightly slower rate of 5.0 percent over the same time. (^U.S. Census Bureau 2017) (Table 8.2-2). This region is made up of Inyo, a portion of Mono, San Bernardino, Riverside, Imperial, San Diego, Orange, Los Angeles, and Ventura Counties (Figure 2.8-2). Future population growth in this region varies, with San Bernardino, Riverside, Imperial Counties projected to be at a higher rate than for the state and Inyo, Mono, San Diego, Orange, Los Angeles, and Ventura Counties to be similar or at a lower rate than for the state (^California Economic Forecast 2017).

Los Angeles County, the largest county in this region, grew primarily from natural increase during the 2011 to 2016 period. Net migration was negative. In the near term, Los Angeles County is expected to grow at a slightly slower pace than recent years, again with births rather than migration being the driver of this growth. (^California Economic Forecast 2017.)

San Diego County, the second largest in this region, grew faster than Los Angeles County between 2011 to 2016 but with net migration contributing to that growth. San Diego County is projected to increase employment in the near term, but population growth is expected to slow slightly with a reduction in migration. (^California Economic Forecast 2017.)

Orange County, the third largest county in this region, grew 0.9 percent per year between 2011 and 2016, with much of the growth driven by net migration. Net migration rates are expected to decrease from recent levels, and population growth is also expected to be moderate. (^California Economic Forecast 2017.)

Riverside County, the fourth largest county in the region, grew at a more rapid pace than Los Angeles, San Diego, and Orange Counties in recent years and is expected to continue at this pace in the near term. Net migration was significant and is expected to remain strong in the near future, with net migration contributing almost half of the population growth. (^California Economic Forecast 2017.)

San Bernardino County's population grew at 0.8 percent in recent years, with the growth all coming from natural increase, with negative migration. It is expected to grow slightly faster in the near term, with low but positive migration. (^California Economic Forecast 2017.)

Ventura County population growth was slower than any of the larger counties in recent years, and growth was all from natural increase as net migration was negative. These patterns of slow growth and negative migration are expected to continue in the near term. (^California Economic Forecast 2017.)

Imperial, Inyo, and Mono Counties are the three least-populated counties in the Southern California region. Each had low average annual growth rates (1.0 percent or less) in the 2011 to 2016 period, with flat or negative net migration. In the near term, some modest growth and reversal in migration patterns is anticipated. (^California Economic Forecast 2017.)

7.16.3 Impact Analysis

Activities that would have an impact on population and housing would be development or infrastructure projects that can induce substantial population growth in an area or activities that may result in displacement of substantial numbers of people or existing housing, necessitating the construction of replacement housing elsewhere. A project can induce population growth in an area through the construction of development projects such as new homes and businesses, or by creating jobs that generate a need for new housing for new employees. Infrastructure projects, such as extension of roads, may also induce population growth. Projects also may result in displacement of substantial numbers of people or existing housing, necessitating the construction of replacement housing elsewhere if, for example, they involve demolishing existing housing, converting existing housing to nonresidential uses, or converting housing to another type of housing that results in the displacement of existing residents. Changes in hydrology and changes in water supply do not involve these types of projects.

Changes in hydrology and changes in water supply would not induce substantial population growth either directly or indirectly. Changes in hydrology include changes in flows and reservoir levels and would not involve the construction of housing or businesses, or other projects that may induce substantial population growth in an area. There would be no impacts resulting from changes in hydrology under Impact POP-a.

Changes in water supply include reduced Sacramento/Delta supply for some agricultural and municipal uses and would not involve the construction of housing or businesses, or other projects that may induce substantial population growth in an area. As described in Section 7.4, *Agriculture and Forest Resources,* reduced irrigation may lead to the conversion of agricultural lands to other uses. However, those lands could be dryland farmed, rotated, deficit irrigated, or fallowed—all of which would be compatible with agricultural uses and would not lead to the inducement of substantial population growth, which is driven by other factors such as new housing developments or job creation.[1]

Reduced municipal supply would not result in the substantial inducement, directly or indirectly, of population growth. Changes in water supply include replacement groundwater pumping, as well as use of other water management actions such as groundwater storage and recovery, water transfers, increased use of recycled water, and water conservation. Potential shifts in municipal water supply sources are discussed in Section 7.20, *Utilities and Service Systems*, and Chapter 8, *Economic Analysis and Other Considerations*. These response actions would utilize existing infrastructure, would not result in the construction of new infrastructure, and would not create additional water supply to support population growth. There would be no impacts resulting from changes in water supply under Impact POP-a.

Changes in hydrology and changes in water supply would not result in the displacement of substantial numbers of existing housing or people, necessitating the construction of replacement

[1] IMPLAN modeling results indicate changes in agricultural production may result in a reduction of approximately 2,214 (45 scenario) to 8,149 (65 scenario) agricultural-related jobs in the Sacramento/Delta and 4,216 (45 scenario) to 19,012 (65 scenario) statewide (Appendix A4, *Regional Economic Analysis Modeling Procedure*, Tables A4-7 and A4-8, respectively; Chapter 8, *Economic Analysis and Other Considerations*, Tables 8.4-30 and 8.4-31, respectively). This reduction may lead individuals to seek housing and employment elsewhere in the state; however, these jobs exist over a broad geographical area and the number of potentially affected people represents less than 1 percent of California's total population of approximately 40 million.

housing elsewhere, either directly or indirectly. Changes in hydrology include changes in the quantity and timing of flows and reservoir levels; however, water would remain within existing channels and within existing reservoirs. With one exception for Clear Creek, changes in hydrology would not increase the likelihood of flooding, and mitigation is proposed to avoid adverse flood impacts on Clear Creek (see Section 7.12.1, *Surface Water*, Mitigation Measure MM-SW-i). Therefore, changes in hydrology would not result in the displacement of substantial numbers of people or existing housing. There would be no impacts resulting from changes in hydrology under Impact POP-b and Impact POP-c.

Changes in water supply include reduced Sacramento/Delta water supply for some agricultural and municipal uses. Agricultural conversion is discussed in Section 7.4, *Agriculture and Forest Resources*, and agricultural land use policies are discussed in Section 7.13, *Land Use and Planning*. Statewide changes in agricultural production may result in a reduction of agricultural jobs (see Chapter 8, *Economic Analysis and Other Considerations*), but this would not result in displacement of a substantial number of people or housing. As discussed in Section 7.20, *Utilities and Service Systems*, some communities may be vulnerable, particularly in dry years, if they lack sufficient water supplies to meet demand. This would be true for municipal users that rely primarily on one water source that could be reduced under the proposed Plan amendments and that do not have access or funding to develop or utilize alternate supplies. Health and safety protection for municipal use is a serious issue and is addressed in Chapter 5, *Proposed Changes to the Bay-Delta Plan for the Sacramento/Delta*, and Section 7.20, *Utilities and Service Systems*. These instances are not widespread and would not result in the displacement of substantial numbers of people or existing housing that would necessitate the construction of replacement housing elsewhere.

Most municipalities have or are developing alternate water supplies to supplement reduced Sacramento/Delta supplies and ensure adequate water for their communities. Changes in water supply include replacement groundwater pumping, as well as use of other water management actions such as groundwater storage and recovery, water transfers, increased use of recycled water, and water conservation. These response actions would utilize existing infrastructure and would not result in the construction of new infrastructure. Other water management actions would help mitigate reductions of Sacramento/Delta municipal supply and would not result in the displacement of substantial numbers of people or existing housing that would necessitate the construction of replacement housing elsewhere. There would be no impacts resulting from changes in water supply under Impact POP-b and Impact POP-c.

Section 7.21, *Habitat Restoration and Other Ecosystem Projects*, and Section 7.22, *New or Modified Facilities,* describe and analyze potential impacts on population and housing from various actions that involve construction.

7.16.4 References Cited

7.16.4.1 Common References

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7.16.4.2 Section References

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