

INTRODUCTION TO THE ADAPTING TO RISING TIDES EXISTING CONDITIONS AND STRESSORS REPORT

The Adapting to Rising Tides (ART) project evaluated the current condition of shoreline and community assets, and the stressors affecting them, because understanding existing conditions and stressors can inform an understanding of individual asset resilience (or lack thereof) to projected climate impacts, including sea level rise and storm events. Stressors can also provide information on current and future trends and how those trends may affect resilience. The existing conditions and stressors were analyzed and summarized for each asset category included in the ART project assessment. This analysis served as a foundation for the ART vulnerability and risk assessment, which examined asset exposure to five potential climate impacts, sensitivity of assets to these impacts, and the ability of assets to accommodate or adjust to these impacts with little financial or structural intervention.

The following Existing Conditions and Stressors report chapter includes:

- a definition of the asset category;
- a synthesis of information about current conditions and stressors; and
- discussion of these conditions through the lenses of sustainability organized by society and equity, environment, economy and governance.

The complete ART Existing Conditions and Stressors Report is available at the ART Portfolio website.

COMMUNITY LAND USE

Part A. Community Land Use, Facilities and Services

I. Definition

Community land use describes the buildings and infrastructure that together make up the neighborhoods and communities in the ART project area. Land use is the foundation upon which people in an area live. Understanding the existing conditions and stressors for community land use means examining the facilities and services that support and maintain the social and economic interactions and activities that tie communities together, and identifying the challenges residents face to maintain their communities.

Alameda County is located on the eastern shore of San Francisco Bay. Along with neighboring Contra Costa County to the north, Alameda County makes up what is commonly referred to as the East Bay of the greater San Francisco Bay Area. As of the 2010 U.S. Census, Alameda County had a population of 1,510,271, making it the second most populous county in the Bay Area (second to Santa Clara), and the seventh most populous county in the state. The county encompasses 821 square miles, of which 90% is land and 10% is water; has an average population density of 2,048 residents per square mile; and is home to approximately 712,850 jobs (again, second to Santa Clara). Oakland is the county's largest city and the county seat.



Alameda County Courthouse in Oakland. Source: www.panoramio.com.

The ART project is located in the western part of Alameda County, along the shoreline from the City of Emeryville to the City of Union City (see **Error! Reference source not found.**). As a whole, Alameda County has a variety of landscapes, from wetlands and marshes along the Bay to redwood forests in the coastal hills to grasslands and oak woodlands in the east. The portion of the county selected to be the project area is a relatively flat coastal plain that gradually increases in elevation until it meets the East Bay hills. The northern part of this coastal plain includes the traditional urban core of the Bay Area, including the cities of Oakland, Emeryville, and Alameda, which share the characteristics of pre-automobile-era land use patterns and densities. These cities were developed along electric streetcar lines in the late nineteenth and early twentieth centuries. The density gradient gradually decreases further south along the coastal plain, approaching the unincorporated community of San Lorenzo and the Cities of San

Leandro, Hayward, and Union City. These previously agricultural communities were developed during the suburban housing boom following World War II and thus share a more Euclidian zoning pattern, with lower densities and separated residential, commercial, and industrial land uses.

Today, Alameda County is home to a diverse mix of land uses (see Table 1), from traditional single-family residential to modern transit-oriented development, from seaport and airport to light manufacturing, and from neighborhood-serving retail to big-box commercial. The county’s diverse land use reflects its diverse population and employment mix.

Table 1. Major Land Uses in Alameda County

Land Use	Acres
Residential	74,074
Commercial	20,213
Industrial	14,808
Mixed-use	1,461
Total non-urban	290,946
Total urban	180,503
Grand total	471,449

Source: ABAG, 2008a

II. Overview of Land Use Patterns

The county’s residential areas are made up of approximately 582,549 housing units (US Census County Quick Facts, 2011). Within the ART project area, Oakland has the largest number of housing units at 172,774, followed by Hayward (48,296) and San Leandro (32,419). Over half of the county’s housing is in the form of detached, single-family units (52%), followed by housing in structures of 20 units or more (16%). Cities in the northern, more urban part of the county have a smaller share of housing in single-family homes relative to the more suburban south. For example, 41% of Oakland’s housing is single-family, compared with 61% in Union City. Comparatively, a smaller share of housing in the southern cities is in large, multi-family units, with Hayward at 12%, versus Oakland with 19%.

Over half of the county’s residential land is zoned for medium density housing, from between three to eight dwelling units per acre (ABAG, 2010). Over a quarter of residential land is zoned for high-density housing (>8 dwelling units per acre). As shown in Table 2 below, Alameda County has a higher percentage of higher density housing than the nine-county Bay Area average, a reflection of it being located within the traditional core of the region.

Table 2. Percentage of Residential Land by Density

	Rural Residential (<1 unit/acre)	Low-Density (1-3 units/acre)	Medium-Density (3-8 units/acre)	High-Density Residential (>8 units/acre)	Mobile Home Parks	Mixed-Use
Alameda County	9.6%	11.0%	51.9%	26.1%	1.1%	0.2%
9-County Bay Area	37.9%	12.0%	33.5%	15.4%	1.0%	0.3%

Source: ABAG Multi-Jurisdictional Local Hazard Mitigation Plan, 2010.

Over a quarter (26%) of all jobs in Alameda County are concentrated in Oakland, with half of that total, or roughly 90,000 jobs, located within downtown Oakland and Jack London Square (ABAG, 2010). Emeryville, a former industrial and warehouse city, has redeveloped much of its built spaces into a hub for light industrial, research and development space, as well as regional retail. Today Emeryville has over 18,000 jobs within its small 1.2 square mile limits. Employment outside these two cities, although considerable, is much more dispersed. For example, Hayward has the second largest employment total within the ART project area at over 70,000 jobs, but only 6,200 of those jobs are within downtown Hayward. Similarly, San Leandro has over 40,000 jobs within its city limits, but only 2,700 of those are within its downtown. Instead, employment is dispersed in industrial and commercial business parks that are vital to the southern Alameda County economy. In fact, manufacturing and wholesale jobs account for 34%, 36%, and 38% of San Leandro, Hayward, and Union City's total jobs, respectively, compared with a county-wide average of 24% (ABAG Projections, 2009).

Land Use: Northern Alameda County—Emeryville, Oakland, Alameda

City of Emeryville

The City of Emeryville occupies 1.2 square miles of land and 0.8 square miles of water. It is bordered by the City of Oakland to the south and east and the City of Berkeley to the north. As of the 2010 U.S. Census, Emeryville had a population of 10,080 residents at a population density of 8,089 residents per square mile, which is higher than Alameda County's average population density of 2,048 residents per square mile (US Census State and County Quick Facts, 2011).

According to the Emeryville General Plan (City of Emeryville, 2009), about 20% of the city's total land area, 153 acres, are roads, highways, and other rights-of-way, leaving about 615 acres of developable land. Approximately half of the city's developable land is commercial (36%) or industrial (14%) uses, and just under a quarter (21%) is housing. The remainder of the city land is in public use (7%), parks and open space (7%), or a mix of uses (7%). Only around 20 acres, or 4% of the land, are vacant.

While Emeryville was once dominated by heavy industrial land uses, over the past 30 years almost all of the bayfront and land west of the Union Pacific Railroad tracks has been redeveloped into regional retail, high-rise office or residential buildings, and mixed-use residential. The residential developments in this area are large in size and high in density, comprising about 2,750 housing units—half of the housing in the city. The Emeryville Crescent lies west of Interstate 80. This area extends into the Bay and includes the Emeryville marina as well as high-rise office, hotel, and residential buildings (zoning regulations allow buildings over 100 feet). Just east of the freeway are major retail, entertainment, and commercial facilities.

Development to the east of the railroad is more diverse in use, scale, and age. Block, parcel, and building sizes generally diminish toward the east, where pre-war structures are supplemented with new residential and commercial construction. The area north of Powell Street contains a wide variety of uses, including offices, old homes and new residential complexes, and industry. Corporate campuses and "big box" retail occupy much of the area south of Powell Street. Emeryville's public schools and many of its locally oriented retail businesses lie along or near

San Pablo Avenue, a major boulevard and state route that connects Emeryville with Oakland, Berkeley, and other East Bay cities. The residential neighborhoods east of San Pablo Avenue include lower density single-family homes, many of which are California bungalows.

Emeryville is planning to continue to grow as a mixed-use, higher-density inner-ring suburb with a projected 71% increase in population and 46% increase in jobs by 2030 (City of Emeryville, 2009).

City of Oakland

In 2010, the City of Oakland had a population of 390,724, making it the largest city in the ART project area, the third largest in the San Francisco Bay Area, and the eighth largest in the state. The city encompasses 56.8 square miles of land and 22.2 square miles of water, and has a population density of 7,002 residents per square mile (US Census State and County Quick Facts, 2011). Of Oakland's 35,742 total acres of land, about a third, or 12,165 acres, is residential, with smaller percentages of commercial (10%, 3,517 acres) and industrial (5%, 1,744 acres) (ABAG, 2006a).

Oakland is a primary urban center within the greater Bay Area and is a regional hub for transportation, employment, and cultural resources. Downtown Oakland is a primary central business district in the San Francisco Bay Area and has the highest density of high-rise buildings in Alameda County. Certain sections of Broadway, Telegraph, and San Pablo Avenues have no building height limits in the zoning code (City of Oakland, 2011). Lake Merritt, a lagoon lined with public trails and parks, forms the eastern boundary of downtown.

The eastern part of the city includes the Oakland Hills, composed mostly of single-family homes and quiet, neighborhood-serving commercial districts, while the western part of the city is home to a wide variety of land uses, including California bungalow-style single-family homes, high-density transit-oriented residential and commercial development along the BART line and within downtown, and industry along the Interstate 880 corridor. West Oakland, the community west of Interstate 980 and south of the San Francisco-Oakland Bay Bridge, is a neighborhood of mixed residential and light industrial uses, rail yards and the Seaport.

With the exception of a few public parks, the Oakland waterfront is highly urbanized and owned and operated by the Port of Oakland, a semi-autonomous entity of the city. The Port manages the seaport (the fifth largest container port in the country), Oakland International Airport (OAK), and commercial real estate, including Jack London Square, a mixed-use entertainment district fronting the Oakland Estuary just south of downtown. The southern part of Oakland contains the Oracle Arena and Oakland Coliseum (O.co Coliseum) sports facilities and the Coliseum Industrial Complex.

City of Alameda

The City of Alameda had a 2010 population of 73,812 and encompasses 10.6 square miles of land and 12.3 square miles of water (US Census State and County Quick Facts, 2011). The city

has a population density of 6,957 people per square mile. Of Alameda’s 6,827 total acres, 2,663 acres are residential, followed by commercial (698 acres) and industrial (196 acres) (ABAG, 2006a).

Most of Alameda is on an island immediately south of downtown Oakland and the Port of Oakland. The western 918-acre portion of the island is home to the former Alameda Naval Air Station. The Station closed in 1997 and is now owned by the city, which hopes to redevelop the property with mixed-use housing, commercial, and industrial development with 6,000 jobs and 2,700 units of housing. The central and eastern portions of the island are home to the traditional core of the city, including its downtown. This section of the city is an example of an old “streetcar suburb” of Oakland and San Francisco, with dense neighborhoods of older Victorian and craftsman-style homes, narrow residential lots, and compact shopping districts built around the historic Key System and East Bay Electric streetcar lines. Crown Memorial State Beach lines the southern shore of Alameda Island and offers one of the few sandy beaches along the San Francisco Bay shoreline. Physically part of the East Bay mainland and adjacent to OAK is Bay Farm Island. Built in the 1980s, Bay Farm Island is a mostly residential community lined with lagoons and community parks, with some office, retail, and light industrial uses along its southern boundary.

Land Use: Southern Alameda County—San Leandro, San Lorenzo, Hayward, Union City

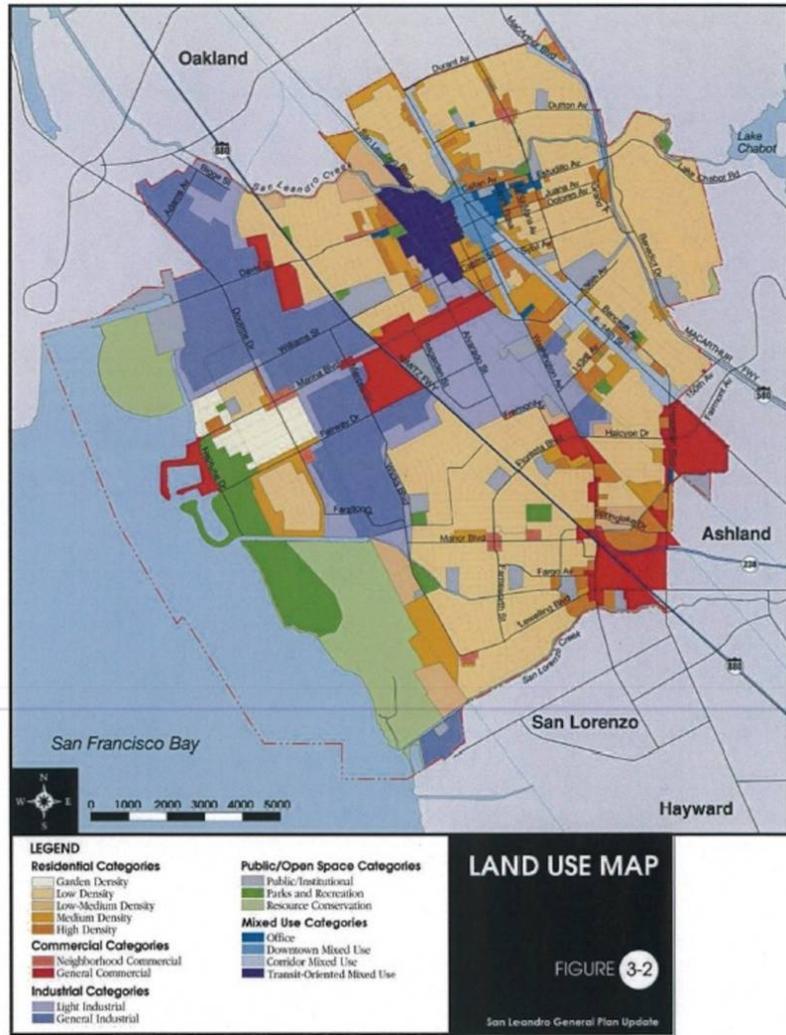
City of San Leandro

The City of San Leandro comprises 13.3 square miles of land and 2.3 square miles of water, and in 2010 had a population of 84,950. An older, inner-ring suburb developed largely in the 1940s and 1950s, San Leandro has a population density of 6,366 residents per square mile. Of San Leandro’s 9,924 acres, residential uses occupy 3,402 acres, followed by industrial (1,643 acres) and commercial (1,533 acres) (ABAG, 2006a) (see Figure 1).

Over half of the city is residential, ranging from low-density, single family homes to high-density developments along the BART corridor (City of San Leandro, 2002). Commercial/mixed land uses account for 12% of the city’s land area, and public/open space almost 6%.

San Leandro has taken steps to preserve its industrial base. Over 20% of the city’s land area (much of which is west of Interstate 880 and relatively close to the bay) is zoned industrial. Along San Francisco Bay, the city also owns the San Leandro Marina, which consists of a full service marina with 455 berths, a boat launch ramp, and two yacht clubs. The bayfront also has two golf courses, restaurants, a hotel, parks, picnic areas, and walking trails. Oyster Bay Regional Shoreline, owned and maintained by the East Bay Regional Park District, is located just to the north of the San Leandro Marina and offers additional bayfront open space and recreational opportunities.

Figure 1. Land Use Map of San Leandro



Village of San Lorenzo

San Lorenzo is an unincorporated census-designated area with a 2010 population of 23,452 residents in its 2.8 square miles of land (8,488 residents per square mile) governed by the Alameda County Board of Supervisors (Alameda County, 2010).

Most of San Lorenzo is west of Interstate 880 and north of the Hayward Regional Shoreline. Nearly all of San Lorenzo’s houses, infrastructure, and community facilities were constructed as part of a master-planned community called San Lorenzo Village between 1944 and 1958. The Village consisted of 3,000 homes, schools, churches, a shopping center, and civic buildings and is a prototypical example of a large-scale, postwar suburban housing development akin to Levittown in New York and Lakewood in southern California (Hope, 2005).

Today, the San Lorenzo Village Homes Association enforces the covenants, conditions, and restrictions (CC&Rs) on the deeds of most properties within San Lorenzo Village. Homeowners whose properties are subject to these CC&Rs must seek permission from the association board of directors if they wish to alter their property (second-story addition, exterior color choice, etc.). In addition, a homeowner seeking a variance from county zoning rules must first get a recommendation from the association board.

City of Hayward

The City of Hayward had a 2010 population of 144,186 within its 35 square miles of land and 26 square miles of tidal marsh and managed wetlands (City of Hayward, 2002). The city's population density is 4,120 residents per square mile. Of Hayward's 28,181 total acres, 5,628 are residential, followed by industrial (2,763 acres) and commercial (1,917 acres) (ABAG, 2006a).

Before World War II, Hayward was a rural agricultural town with a population of 7,000. Explosive growth in the 1950s, facilitated by the opening of Interstate 880, brought about a substantial increase in the city's population, which exceeded 72,000 by 1960 (City of Hayward, 2010). As vast tracts of agricultural land were annexed, pushing the city limits south to Union City and west toward the bay, farmland gave way to more subdivisions, shopping centers, and industrial parks. As a result of the post-war housing construction boom, Hayward was transformed into a suburban bedroom community. More than 70% (approximately 15,000 units) of Hayward's single-family detached homes were built between 1950 and 1960. During the late 1960s and 1970s, Hayward experienced a surge in industrial development that created numerous employment opportunities, balancing to some extent the housing that was developed earlier. Much of the industrial development is west of Interstate 880. Construction of multifamily housing and small-lot single family housing on infill lots became more common throughout the 1980s and 1990s as available land decreased and the city matured. Today, townhouse and mixed-use developments have become more common, especially in the downtown area.

The Hayward shoreline is not urbanized like the shorelines in northern Alameda County. Much of the Hayward shoreline is owned and maintained by the East Bay Regional Park District and the Hayward Area Recreation and Park District (HARD). The Hayward Regional Shoreline consists of 1,713 acres of salt, fresh, and brackish water marshes, seasonal wetlands, and public trails. South of the San Mateo-Hayward Bridge are the marshes of the Eden Landing Ecological Reserve, which is owned and maintained by the California Department of Fish and Game. The reserve comprises 5,040 acres of former industrial salt ponds that are now being restored to marsh habitat as part of the South Bay Salt Ponds Restoration Project.

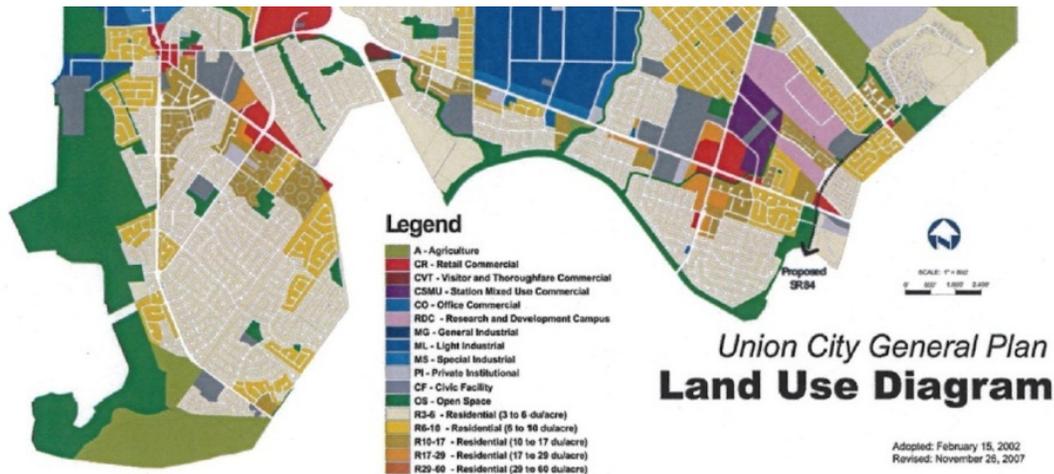
City of Union City

The City of Union City, the southernmost city in the ART project area, had a 2010 population of 69,516 within its land area of 19.5 square miles, resulting in a population density of 3,571 residents per square mile (US Census State and County Quick Facts, 2011). Of Union City's 12,365 total acres, 2,772 are residential, followed by industrial (964 acres) and commercial (664 acres) (ABAG, 2006a).

Union City is bounded by the City of Hayward on the north and west sides, the City of Fremont



Figure 2. Land Use Map of Union City



on the south and east sides, and salt marshes on the west. The western half of the city lies on a flat coastal plain and is intensely developed, while the remainder is composed of hillside areas devoted mainly to agricultural activities (i.e., grazing) and permanent open space.

Single-family residential development is a predominant land use in the city (see Figure 2). The community also has a sizable industrial base located primarily in three industrial parks (City of Union City, 2002). Commercial activities are limited primarily to uses serving the immediate needs of residential neighborhoods. During the 1960s and 1970s, suburban, single-family home developments and industrial parks shaped much of Union City’s land use pattern. New infill development has continued and several local businesses have expanded, including Union Landing, a subregional entertainment and retail center along I-880. Recent efforts to redevelop the Union City BART station area as a transit village with office, research and development, and residential uses have yielded higher-density, mixed-use development.

III. Critical Facilities

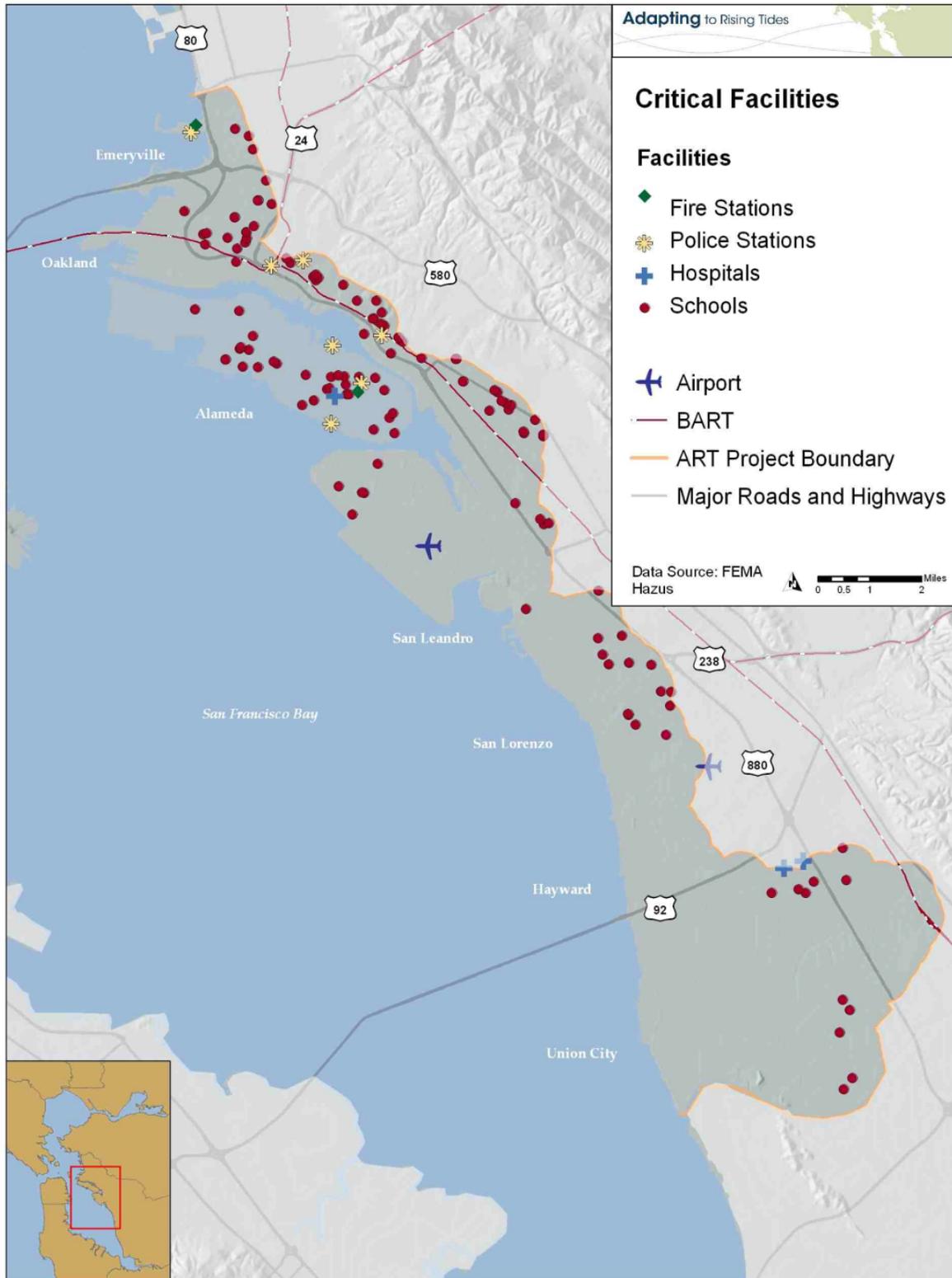
While the above descriptions offer a brief snapshot of land use within each jurisdiction of the ART project area, it is also important to identify critical facilities in each city. These include schools, hospitals, police stations, and fire stations. Within the ART project area there are 126 schools, three hospitals, nine police facilities, and two fire stations (see Figure 3).

**Representative Critical Facilities
in the ART Project Area**

- Alameda County Sheriff Headquarters
- Alameda High School, Alameda
- Alameda Hospital, Alameda
- Alameda Police Department Headquarters
- Arroyo High School, San Lorenzo
- City of Alameda Fire Department
- Emeryville Fire Department
- Emeryville Police Department
- Kaiser Hospital, Hayward
- McClymonds Senior High School, Oakland
- Oakland Police Administration Building
- St. Rose Hospital, Hayward

These community facilities are critical to the health and public welfare of the cities and contribute to the community's capacity for resilience. Therefore, the ART project will provide a special focus on these and other essential community land uses.

Figure 3. Map of Critical Facilities in ART Project Area



IV. Land Use Policies and Governance

In California, local municipalities (cities and the county in unincorporated areas) have primary authority over the planning and regulation of land use. The state has traditionally given local governments wide discretion over land use planning policy decisions. However, California state law requires every local jurisdiction to prepare a General Plan to establish comprehensive, long-range policies for physical development within the community (OPR, 2003). The broad policies and statements of the General Plan are intended to act as the vision upon which all land use decisions are made.

Each General Plan includes a number of required elements, and some cities include additional elements focused on sustainability, climate change, public health and economic development. All cities within Alameda County have a General Plan, as do the unincorporated areas that fall under the jurisdiction of the county. The broad goals and policies of each General Plan are implemented through municipal Specific Plans, zoning ordinances, subdivision regulations, development agreements, and capital improvement programs. These policies describe more detailed information on the regulation of the use, height, bulk, and other land development controls. With the exception of zoning regulations in charter cities in California, all zoning, land use plans and decisions must be consistent with the goals and policies of the General Plan.

While cities have broad latitude with regards to their land use decisions, their policies are shaped by the Bay Area's strong tradition in regional planning. The San Francisco Bay Area has four regional government agencies that respectively address the critical issues of housing, transportation, air quality, and land use.

- **Association of Bay Area Governments (ABAG)**—the Bay Area's council of governments covering the nine counties and 101 cities of the San Francisco Bay Area. ABAG's chief responsibility is to determine the region's proper amount of housing through the state-mandated Regional Housing Needs Allocation (RHNA). The RHNA dictates how many housing units at specific affordability levels are needed within each local government's jurisdiction.
- **Metropolitan Transportation Commission (MTC)**—the nine-county Bay Area's metropolitan planning organization. As such, it is responsible for updating the Regional Transportation Plan and Transportation Improvement Program, which includes a list of all transportation projects eligible to receive state and federal funding.
- **Bay Area Air Quality Management District (BAAQMD)**—the public agency in charge of regulating stationary sources of air pollution within the nine-county San Francisco Bay Area. The Air District also develops regional air quality plans in order to attain state and federal air quality standards.
- **San Francisco Bay Conservation and Development Commission (BCDC)**—a state agency that has planning and regulatory responsibility for San Francisco Bay, its marshes, and a 100-foot shoreline band. BCDC maintains its state-mandated *San Francisco Bay Plan*, which addresses the beneficial and priority uses of the Bay and its shoreline, including areas for recreation, ports, water-related industry, and transportation. Local government land use decisions within BCDC's jurisdiction must be consistent with the Bay Plan and projects must receive permits from BCDC.

These four regional agencies coordinate their planning efforts through the Joint Policy Committee (JPC). One of the JPC’s core responsibilities is the FOCUS program (Bay Area Vision). This Bay Area-wide voluntary program encourages focused infill development in strategic urban areas, including within the urban core, along high-capacity transportation corridors, and within a half-mile radius of major transit stations. These locations, approved by both the JPC and the local government, are called Priority Development Areas (PDAs). Altogether, these areas cover only about 115,000 acres of urban and suburban land, less than 5% of the Bay Area’s total land area; however, the proposed PDAs could accommodate over half of the Bay Area’s projected housing growth to the year 2035. A total of eighteen PDAs are located within the boundaries of the cities in the ART subregion, and 10 of these are located within the ART project area (see Table 3).

Table 3. Planned Priority Development Areas (PDAs) in the ART Project Area

Priority Development Area	Lead Agency	Jobs (2010)	Acres (approx)	Households (2010)	Future Land Use Designation
Alameda: Naval Air Station	Alameda	1,307	1,052	1,088	Transit town center
Emeryville: Mixed-Use Core	Emeryville	11,487	584	3,525	City center
Hayward: South Hayward BART	Hayward	483	226	1,658	Urban neighborhood
Oakland: Coliseum BART Station Area	Oakland	5,000	1,014	3,436	Transit town center
Oakland: Downtown and Jack London Square	Oakland	91,477	803	10,626	Regional center
Oakland: Eastmont Town Center	Oakland	3,567	578	5,960	Urban neighborhood
Oakland: Fruitvale and Dimond Areas	Oakland	8,211	1,510	12,835	Urban neighborhood
Oakland: MacArthur Transit Village	Oakland	10,415	935	8,025	Urban neighborhood
Oakland: Transit-Oriented Development Corridors	Oakland	32,177	8,049	60,971	Mixed-use corridor
Oakland: West Oakland	Oakland	6,603	1,630	9,025	Transit town center

While the Alameda County Planning Commission and Board of Supervisors implements County land use policies, there are a number of other agencies with land use planning and management responsibilities in including:

- **Hayward Area Shoreline Planning Agency (HASPA)**—established in 1970, a JPA of the Hayward Area Recreation and Park District, the East Bay Regional Park District, and the City of Hayward. The primary purpose of HASPA is to coordinate efforts to plan for the management and improvement of the Hayward shoreline.
- **East Bay Regional Park District (EBRPD)**—a bi-county independent special district that owns and operates 91,000 acres of land within its network of 55 parks and 15 trails within Alameda and Contra Costa Counties. The District owns and/or manages

numerous parks within the ART project area, including Oyster Bay Regional Shoreline in San Leandro and Hayward Regional Shoreline in Hayward.

- **California Department of Fish and Game (DFG)**—a state agency that manages the state’s fish, wildlife, and plant species and their critical habitat. The Department owns and maintains Eden Landing Ecological Reserve in Hayward.
- **California Department of Parks and Recreation**—a state agency that owns and operates a network of 270 natural and cultural areas for the public’s use. The Department owns Crown Memorial State Beach in Alameda and Eastshore State Park in Emeryville (although both are managed under contract by the East Bay Regional Park District).
- **Alameda County Flood Control and Water Conservation District (ACFCWCD)**—a department of the County of Alameda that plans, designs, and inspects the construction of flood control projects. The District also maintains flood control infrastructure, owning a vast system of levees and maintaining the creeks and waterways throughout Alameda County.

V. Existing Stressors

Alameda County is highly subject to natural hazards. The Hayward Fault runs parallel to the East Bay hills throughout the entire ART project area and is a major threat to Alameda County’s most urbanized areas, which happen to be located along the San Francisco Bay shoreline and portions of some are constructed on top of bay fill. Thus, as is the case in much of the Bay Area, earthquake-induced shaking and liquefaction are major threats to the county that could be exacerbated by sea level rise. ABAG has identified the percent of land within each county that is located in high-hazard areas (see Table 4).

Table 4. Percentage of Land in Alameda County in High Hazard Areas (as of 2005)

Hazard	Percent
Fault study zone	3.2
Earthquake shaking potential	51.3
Liquefaction susceptibility	27.7
100-year flood zone	8.1
Rainfall-induced landslide areas	26.8
Wildfire threat	57.2
Dam failure inundation	18.7

Source: ABAG, 2010.

ABAG has also calculated the number of properties located within the Federal Emergency Management Agency’s (FEMA’s) 100-year and 500-year flood plains. The 100-year flood plain is an area mapped by FEMA for the National Flood Insurance Program (NFIP). The NFIP program components include flood insurance, flood management, and flood hazard mapping (FEMA, 2010). According to FEMA standards, the 100-year flood plain is an area having a 1% chance of flooding in any given year and the 500-year flood plain is an area with a 0.2% annual chance of flooding. Table 5 describes land uses within Alameda County located within the current 100-year or 500-year flood plain.

Table 5. Acres of Alameda County by Land Use in FEMA Flood Zones

Type of Land Use	100-Year Flood Plain (acres)	500-Year Flood Plain (acres)	Total (acres)
Residential and mixed-use	8,764	16,189	342,263
Commercial and recreational	265	763	14,128
Industrial and other	238	601	11,729
Alameda County total	9,265	17,553	368,120

Source: ABAG, 2006a.

Part B. Socio-economic Trends

I. Demographic Trends

Alameda County is one of the most racially and ethnically diverse regions in the nation. Of the county's 1,510,271 residents, 43% are White, 26.1% are Asian, 22.5% are Hispanic/Latino, 12.6% are Black/African American, and 0.6% are American Indian/Alaska Native (US Census State and County Quick Facts, 2011). English is the most commonly spoken language in the county (63.7% of households), although many other languages are spoken as well, for example Asian/Pacific Island languages (14.5%), Spanish (12.8%), and other Indo-European languages (7.7%) (ACPH, 2006a).

Income is often used as an important indicator of public health and poverty, and to inform the capacity for resilience. In Alameda County, the median household income is \$68,258, slightly higher than the statewide average of \$58,925. Countywide, 10.8% of the population lives below the poverty level, which is lower than the statewide average of 14.2% (US Census Bureau, 2009); however, 13.8% of children in the county are living in poverty (ACPH 2006b). Education levels in the county are relatively high, with 85.7% of residents having a high school diploma and 39.9% having a bachelor's degree or higher.

II. Economic Trends

Alameda County has a highly diversified economy (See Table 6) including major employment in health care and social assistance, retail trade, manufacturing, and professional and technical services. Other industries include educational services, utilities, management, and transportation. The county has also seen significant growth in recent years in emerging green industries (East Bay EDA, 2010).

Table 6. Major Industries and Employment in Alameda County

Industry Type	Number of Establishments	Number of Paid Employees
Manufacturing	2,355	94,682
Wholesale trade	3,047	54,671
Retail trade	4,420	66,883
Information	904	33,261
Professional, scientific, and technical services	4,936	53,436
Administrative and support and waste management and remediation service	1,741	55,971
Health care and social assistance	4,001	69,127
Accommodation and food services	2,937	42,053

Source: US Economic Census, 2011.

III. Vulnerable Populations and Existing Inequalities

Social factors, such as disparities in income, education, and access to resources, indicate how communities or individuals may be disproportionately affected by a climate-related impact. Recent disasters, such as the 2005 hurricanes in the USA, demonstrate the ways that social factors and vulnerability can play a role in the devastation experienced by different communities (Vogel, 2007). A number of studies have begun to examine how existing issues of equity will affect the way communities might be affected by climate change. In “The Climate Gap,” published by University of California, Berkeley (Morello-Frosch, 2009), researchers highlight the fact that climate change is interlinked with human rights, public health, and social fairness. In California, heat waves, increased air pollution, the cost of basic necessities, job opportunities, and the cost of insurance were all cited as factors that could disproportionately affect vulnerable communities. This information is compounded with knowledge of existing disparities in the state. When California’s cost of living is taken into account, it has one of the highest poverty rates in the nation, with Los Angeles, Monterey, and San Francisco having especially high poverty rates (Reed, 2006).

Income inequalities have grown in recent years in the United States, a trend that also has occurred in Alameda County. While there has been employment growth in service industries, these jobs often pay below the living wage. In the Bay Area, almost 40% of the workforce is employed in this industry, which includes service, sales, and office work (BARHII, 2008). Across the state of California, poverty rates are highest among adults without a high school diploma, families of single mothers, and foreign-born Latinos (Reed, 2006). Housing takes up a significant portion of income for Alameda County residents: 21% of renters spend 50% or more of their income on rent, while owner-occupied households spend more than 30% of income (ACPH, 2006a). Recent studies indicate that the Bay Area is also becoming more segregated by income, and that income disparities have been on the rise since 1990 (Pastor, M. et al., 2008). This trend has been exacerbated by gentrification and displacement in many communities.

Racial disparities are also apparent in Alameda County, including significant health inequalities. African American residents within the county have the highest rates of morbidity and mortality. In addition, the size of the gap between African Americans and other ethnic groups for several health indicators, such as overall mortality, has grown in the past decade (ACPH, 2006a). These gaps continue to widen, as public health indicators are improving faster for other ethnic groups than for African Americans.

Inequalities among youth populations track similar patterns of race and income. Poverty, violence, mental health issues, and lack of role models have been highlighted as major issues for youth. Homicide is the leading cause of death for youth in Alameda County (ACPH, 2006b). African American youth within the County experience the greatest level of health disparities, including the greatest rates of poverty, homicides, foster care placements, and high school dropout (ACPH, 2006b). Young people within the county are also important and vital assets for community health and well being. Groups such as Youth Uprising and PUEBLO develop youth-centered programming around leadership development, arts and education, community safety, and urban greening.

IV. Community Organizations and Social Capital

A number of community-based organizations provide services that contribute to community resiliency. To help bring this information to those in need, Alameda County provides a searchable map of community-based organizations (www.acgov.org/ms/cbomaps/). Many organizations have worked to build partnerships with local and county governments around issues similar to those addressed in the ART project, such as transportation, housing, conservation, public outreach and education, ecological restoration, and scientific research. These groups have had varying levels of success in advocating for community benefits strategies for new developments and in addressing widespread inequalities in the region through policy, planning and advocacy (Pastor, M. et al., 2008). However, new and innovative partnerships are leading to success in planning for climate change. For example, the City of Oakland worked with the Oakland Climate Action Coalition to develop a Climate Action Plan for the city. This Coalition included a broad range of groups, including Bay Localize, Causa Justa: Just Cause, the Center for Progressive Action, Communities for a Better Environment, the Local Clean Energy Alliance, the Ella Baker Center for Human Rights, Movement Generation, the Pacific Institute, TransForm, and the West Oakland Environmental Indicators Project (Ella Baker Center, 2011).



Oakland Climate Action Coalition, Oakland Fruitvale meeting. Source: planet a., Flickr Creative Commons.

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