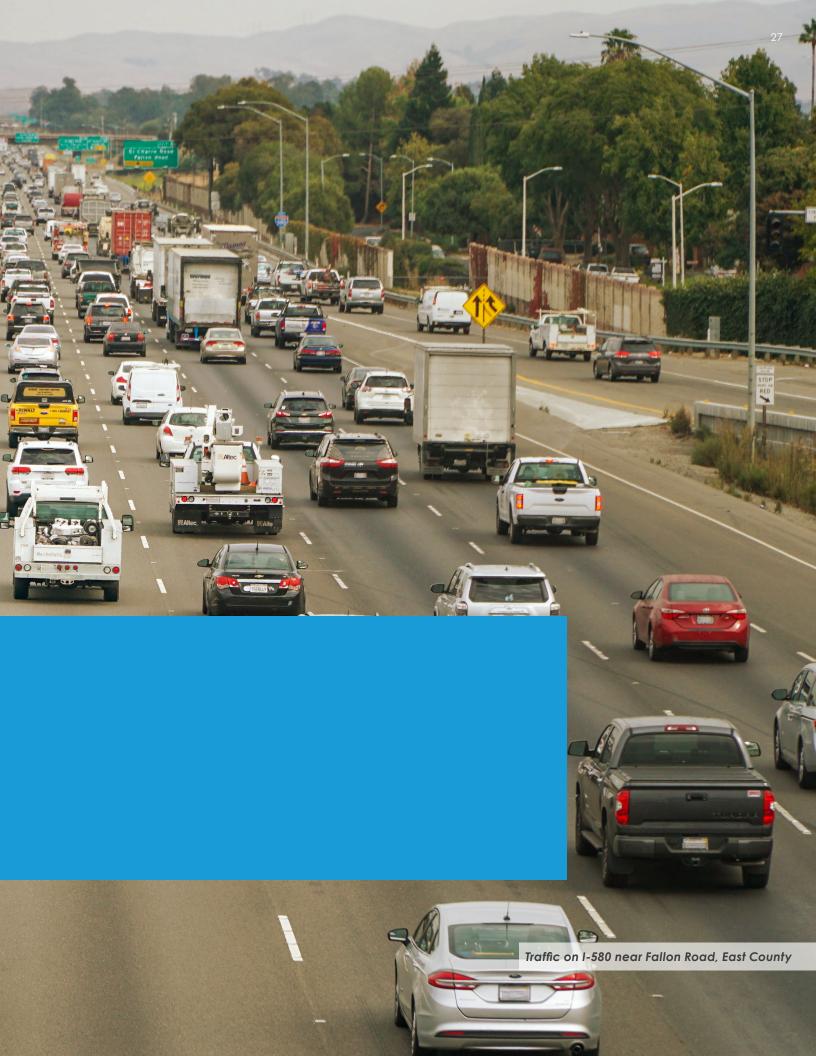


O4 Planning Area Challenges & Needs







TRANSPORTATION NEEDS VARY ACROSS THE COUNTY

The transportation needs of Alameda County residents depend on not only when, why, and how they travel, but also where they are located. While some needs are consistent across the county, the diversity of land use and transportation contexts in Alameda County means that there is also substantial variability in the needs and concerns of individual communities. As a result, Alameda CTC divides the county into four planning areas to allow for more refined analysis and tailored improvements during the planning process. Planning area definitions are used for assessment purposes only, and are not political units or funding designations.

NORTH PLANNING AREA

663,200 residents 224,000 jobs



Alameda Albany Berkeley Emeryville Oakland Piedmont

CENTRAL PLANNING AREA

388,300 residents 97,700 jobs



Ashland Cherryland Castro Valley Hayward San Leandro San Lorenzo

SOUTH PLANNING AREA

354,000 residents 73,800 jobs



Fremont Newark Union City

EAST PLANNING AREA

229,000 residents 72,600 jobs



Dublin Livermore Pleasanton



Based on findings from previous countywide modal plans, this chapter summarizes the current conditions and major challenges in low-income and minority communities and and opportunities for five different uses of the transportation system. Within each section, needs are assessed first on a countywide level and then specific to each planning area.



Communities of Concern (pg. 30)



Active Transportation (pg. 36)



Transit (pg. 46)



Arterials (pg. 56)



Freeways (pg. 66)



Goods Movement (pg. 76)

IMPACTS FROM THE COVID-19 PANDEMIC

The COVID-19 pandemic and shelter-in-place orders have affected the health, economy, and travel patterns of Alameda County in 2020. Although long-term impacts are uncertain, the needs identified in this chapter are likely to continue to be broadly relevant as the county emerges from the crisis. The effects of the pandemic have highlighted the importance of a resilient transportation system that meets the needs of all residents and workers, especially the most vulnerable.



UNDERSTANDING MOBILITY AND ACCESS NEEDS IN COMMUNITIES OF CONCERN

The Metropolitan Transportation Commission (MTC) has designated some communities in the Bay Area as Communities of Concern (CoCs). CoCs are communities that contain a high concentration of low-income households, in addition to a high concentration of minority households or high concentrations of several other characteristics that indicate additional focus is warranted. Understanding the needs of these communities is critical to equitable countywide planning, and Alameda CTC developed a Countywide Community-Based Transportation Plan (CBTP) to assess transportation needs within these communities in 2020. For the CBTP, CoC's have been grouped into CBTP study areas.

HOW ARE COMMUNITIES OF CONCERN SELECTED?

MTC designates CoCs by comparing select economic and demographic characteristics in a community to regional thresholds, based on US Census data. CoCs are those that meet thresholds for multiple factors, including containing a high proportion of low-income households. The criteria and threshold levels are shown below. For this study, the 2012-2016 American Community Survey data was used.

All CoCs must contain:





Developing the CBTP involved the following three key efforts:

- **Baseline Conditions** Analysis of current conditions to understand the current transportation characteristics of the CBTP study areas.
- Analysis of Past Planning Efforts Review of recent planning and outreach activities that have been conducted in the CBTP Study Areas.
- Community Engagement Outreach to gain an understanding of transportation needs directly from the communities in the CBTP study areas. This consisted of a countywide poll conducted in 2019, intercept surveys at pop-up events within the CBTP study areas, and interviews with community-based organizations.

This chapter of the Needs Assessment summarizes the findings of the CBTP by planning area. Detailed descriptions of the process and findings can be found in the full CBTP.

...and contain either:



Minority Residents 70%+

...or at least 3 of the following:



Limited English Proficiency 12%+



Residents
Over Age 75
10%+



Zero-Vehicle Households 10%+



Single-Parent Families 20%+



Disabled Residents 12%+



Rent-Burdened Households 15%+

NORTH PLANNING **AREA CBTP TRANSPORTATION NEEDS**



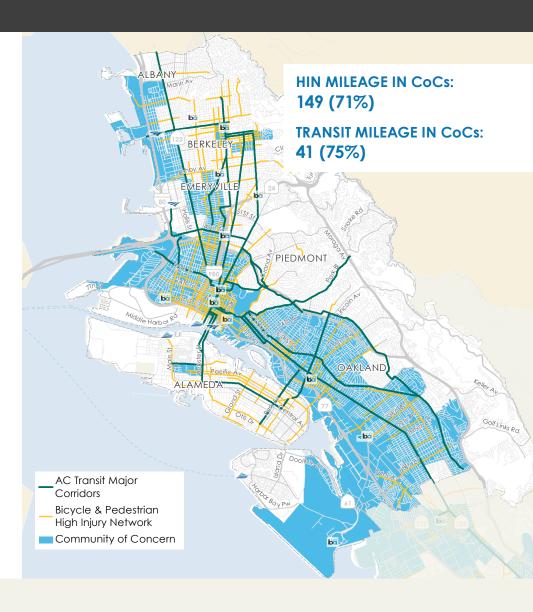
Improved Safety for Pedestrians and Cyclists



Improved Access to Frequent and Affordable **Transit**



Reduced Impacts on Communities from Truck Traffic and Parking



NORTH PLANNING AREA CBTP STUDY AREA CHARACTERISTICS

295,000

RESIDENTS IN COMMUNITIES OF CONCERN

MEETS O THRESHOLD

DOES NOT MEET √
⊚ THRESHOLD

53%

IOW-**INCOME RESIDENTS**

24%

VEHICLE

HOUSEHOLDS

ZERO-

83%

MINORITY RESIDENTS

28%

17%

RESIDENTS

OVER

AGE 75

13% **DISABLED** SINGI F-**PARENT RESIDENTS FAMILIES**

LIMITED ENGLISH **PROFICIENT RESIDENTS**

24%

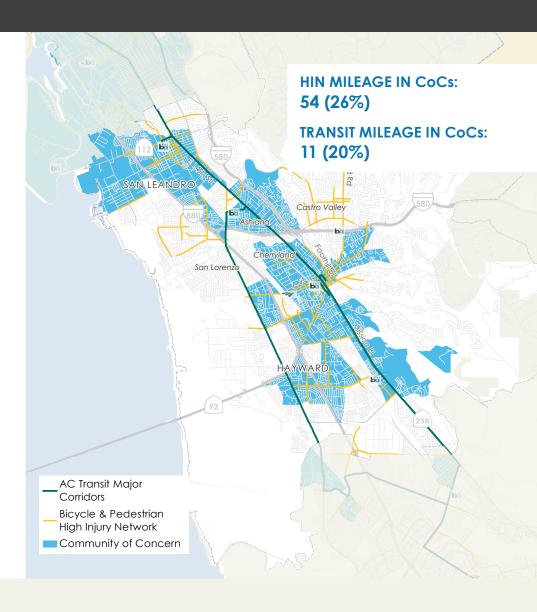
CENTRAL PLANNING AREA CBTP TRANSPORTATION NEEDS



Improved Access to Frequent and Affordable Transit



Improved Personal Safety for Pedestrians and Cyclists



CENTRAL PLANNING AREA CBTP STUDY AREA CHARACTERISTICS

175,000

RESIDENTS IN COMMUNITIES OF CONCERN

MEETS O THRESHOLD

DOES NOT MEET THRESHOLD

39%

IOW-INCOME **RESIDENTS**

ZERO-VEHICLE **HOUSEHOLDS** 84%

MINORITY RESIDENTS

10% DISABLED RESIDENTS 4%

RESIDENTS OVER **AGE 75**

24% SINGI F-

PARENT FAMILIES

16% LIMITED ENGLISH **PROFICIENT RESIDENTS**

17%

SOUTH PLANNING AREA CBTP TRANSPORTATION NEEDS



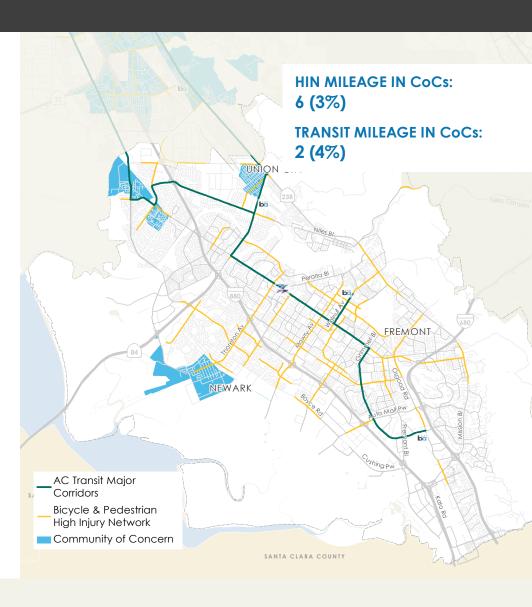
Less Traffic and/ or Smoother Traffic Flow



Improved Transit Services



Improved Safety for Pedestrians and Cyclists



SOUTH PLANNING AREA CBTP STUDY AREA CHARACTERISTICS

18,000 RESIDENTS IN

COMMUNITIES OF CONCERN

MEETS O THRESHOLD

DOES NOT MEET √
⊚ THRESHOLD

36%

I OW-**INCOME RESIDENTS**

ZERO-

88%

MINORITY

RESIDENTS

DISABLED VEHICLE **RESIDENTS HOUSEHOLDS**

RESIDENTS OVER AGE 75

16% SINGLE-

PARENT FAMILIES

LIMITED ENGLISH **PROFICIENT RESIDENTS**

EAST PLANNING AREA CBTP TRANSPORTATION NEEDS



Improved Transit Services



Improved Bicycle Infrastructure



EAST PLANNING AREA CBTP STUDY AREA CHARACTERISTICS

6,000

RESIDENTS IN COMMUNITIES OF CONCERN

MEETS O THRESHOLD



DOES NOT MEET √
⊚ THRESHOLD

41%

IOW-INCOME **RESIDENTS**

ZERO-VEHICLE **HOUSEHOLDS**

MINORITY RESIDENTS

DISABLED **RESIDENTS**

RESIDENTS OVER **AGE 75**

SINGI F-PARENT **FAMILIES** 16%

LIMITED ENGLISH **PROFICIENT RESIDENTS**

17%





COUNTYWIDE CONSIDERATIONS

MANY PEOPLE WALK & BIKE

Walking and biking make up 5% of all work trips in Alameda County—the second highest active mode share of all Bay Area counties.

SAFETY IS A TOP CONCERN

Statewide, Alameda County was ranked 5th worst for pedestrian collisions and 9th worst for bicycle collisions by the California Office of Traffic Safety.

CONNECTIVITY IS CRITICAL

Disconnected networks of streets and trails hinder people of all ages and abilities from walking and biking to meet their daily needs.

CHALLENGES AND NEEDS



About 65 percent of pedestrian and 59 percent of bike injury collisions occur on just four percent of roads.



Gaps in the protected pedestrian and bicycle network across the county limits access for people of all ages and abilities.



AT-GRADE RAIL CROSSINGS

At-grade rail crossings create safety challenges for people walk and biking, especially near schools



FIRST/LAST MILE CONNECTIONS

Limited first/last mile connections to major destinations, including transit stops, pose challenges to safe and convenient walking and bicycling.



ACCESS

Many destinations are located on arterials with high traffic stress. Sidewalks and curb ramps need to be enhanced to meet ADA compliance.



INFRASTRUCTURE FOR ALL AGES AND ABILITIES

Many bikeways and walkways are not comfortable for people of a wide range of abilities and ages, which can discourage people from walking and biking at all.



BARRIERS

Physical barriers, such as freeways and hills, create safety and comfort challenges for bicyclists and pedestrians.



SAFE ROUTES TO SCHOOLS

Around 1/4 of countywide school trips are made on foot. However, safety and connectivity enhancements are needed.



UNCOMFORTABLE ENVIRONMENT

High stress crossings of major arterials and gaps in multijurisdictional trails create barriers to safe and convenient travel along the regional trail network.



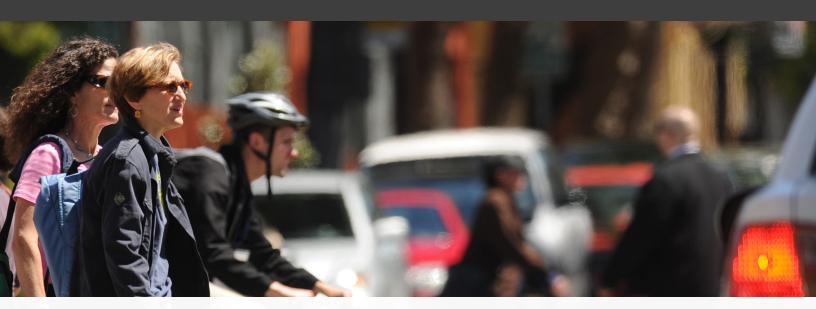












KEY TERMS

All Ages and Abilities: Describes walking and biking infrastructure that is designed for everyone, including children, the elderly, people with disabilities, and people riding a bike for the first time. Examples include separated bike lanes, slow streets, and safe crossings, all of which help people feel safer and more comfortable walking and biking.

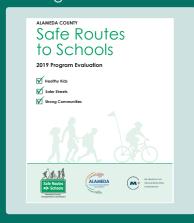
High Injury Network (HIN): A high percentage of collisions involving people walking and biking occur on a small number of streets. The streets with the most collisions and/or most severe collisions are identified as the HIN, which can help focus safety improvements where they will have the biggest impact. A countywide HIN was developed as part of the 2019 Countywide Active Transportation Plan.

PLANS AND DATA INFORMING NEEDS

Countywide Active Transportation Plan (2019)



Safe Routes to School 2019 **Program Evaluation**



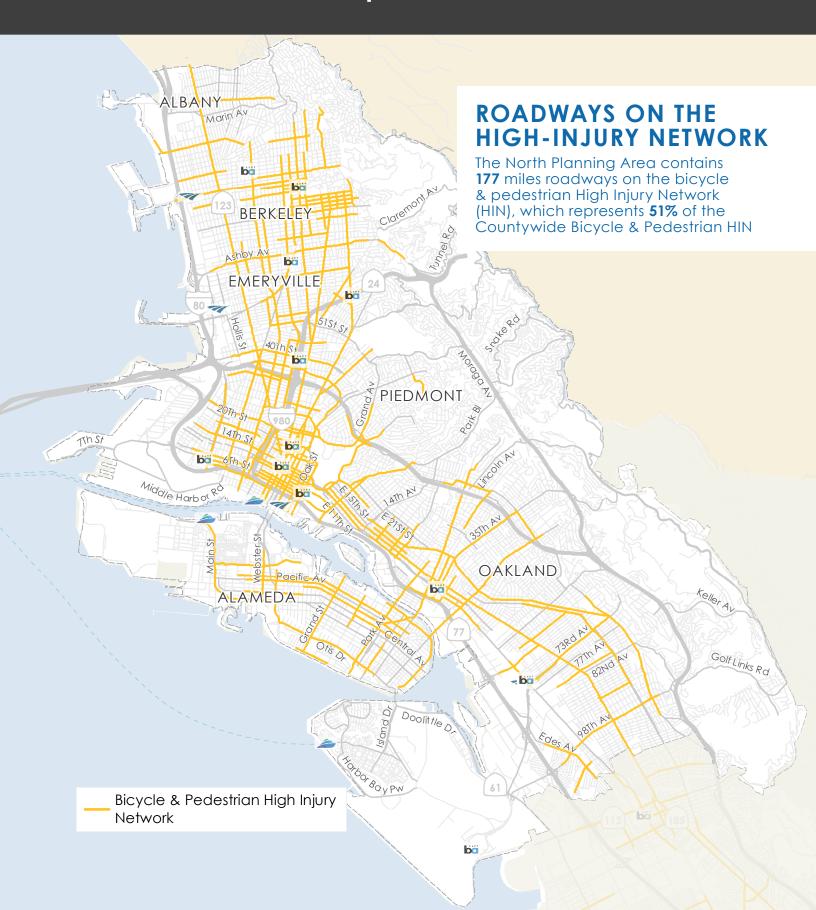
Other Data Sources

BART Station Profile Survey, 2015 U.S. Census, ACS 5-Year, 2014-2018



Active Transportation

NORTH PLANNING AREA













Dense residential and employment centers in the North Planning Area allow more people to live near where they work, shop, and play. This results in the highest share of residents in the county who walk or bike to work. The street network is well-connected, making it convenient to walk and bike to many destinations. The North Planning Area has the low-stress bike facility mileage in the county, which also contributes to the large number of biking trips. The North Planning Area accounts for more than half of the countywide High Injury Network, due in part to the high numbers of walking and biking trips and overall population density in the area.

EXISTING BICYCLE NETWORK CONNECTIVITY¹³

Very Good Connectivity

ON-STREET BIKEWAYS

202 miles

RESIDENTS WHO
WALK OR BIKE TO WORK





TYPICAL EXISTING WALKABILITY14

Very Walkable

DESIGNATED TRAILS



BART RIDERS WHO WALK OR BIKE TO BART



46%

6 109

NORTH PLANNING AREA ACTIVE TRANSPORTATION CHALLENGES AND NEEDS



Walking and Biking Safety

Over half of Alameda County's High-Injury Network mileage is in North County



Bicycle Network Gaps

There are gaps in all ages and abilities bicycle and pedestrian networks



At-Grade Rail Crossings

At-grade rail crossings pose safety concerns for bicyclists and pedestrians

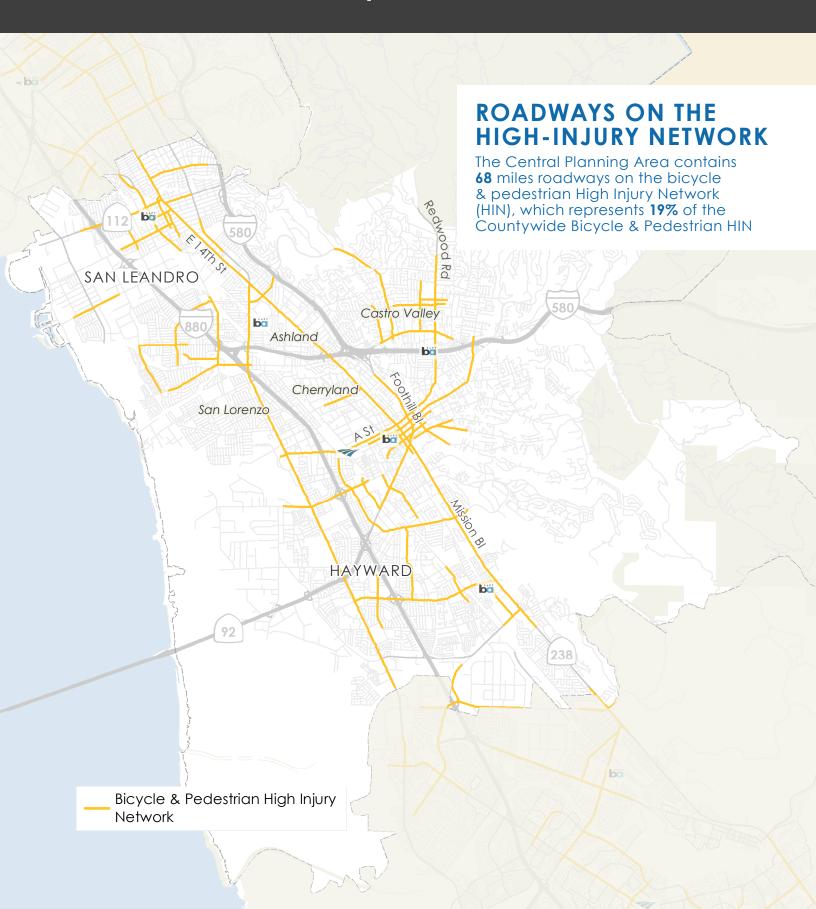


First/Last Mile Connections

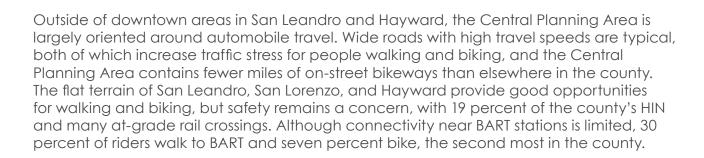
There are limited first/last-mile connections to rail stations and ferry terminals

Active Transportation

CENTRAL PLANNING AREA







EXISTING BICYCLE NETWORK CONNECTIVITY¹³

Fair Connectivity

TYPICAL EXISTING WALKABILITY¹⁴

Car Dependent

ON-STREET BIKEWAYS

129 miles

DESIGNATED TRAIIS

40 miles

RESIDENTS WHO WALK OR BIKE TO WORK



BART RIDERS WHO WALK OR BIKE TO BART



30%



CENTRAL PLANNING AREA ACTIVE TRANSPORTATION **CHALLENGES AND NEEDS**



Uncomfortable Environment

Wide streets with high traffic volumes and speeds make walking and biking uncomfortable



Access

Access to arterial destinations is hindered by a limited bicycle and pedestrian network



Infrastructure for All Ages and Abilities

There are narrow sidewalks and a limited all ages and abilities bike network

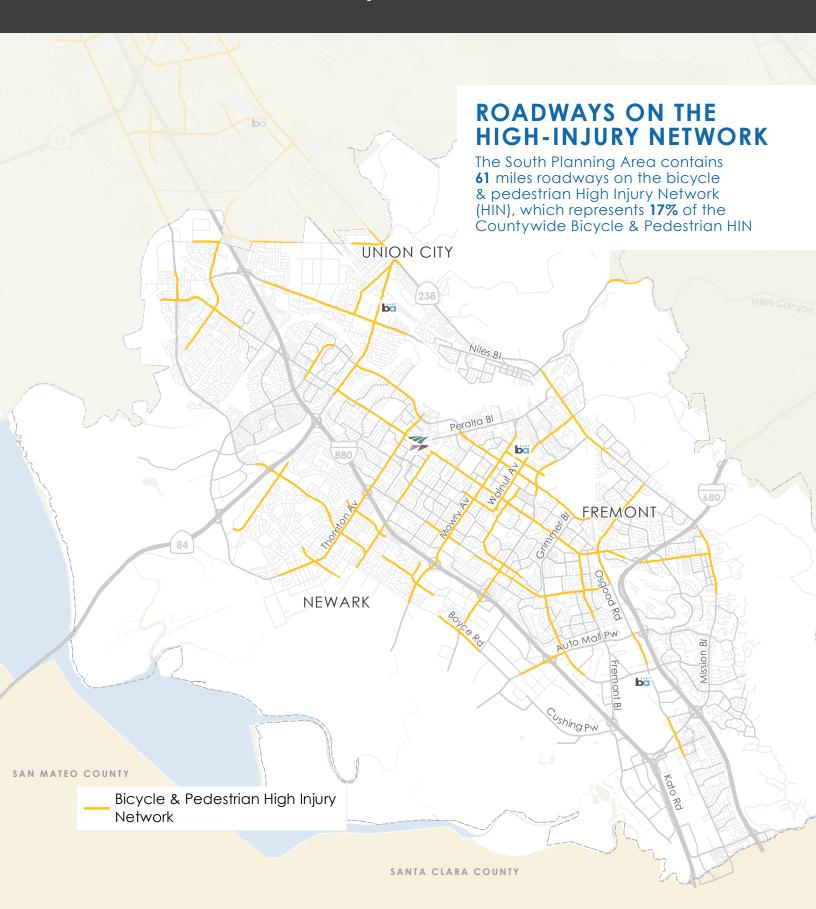


At-Grade Rail Crossings

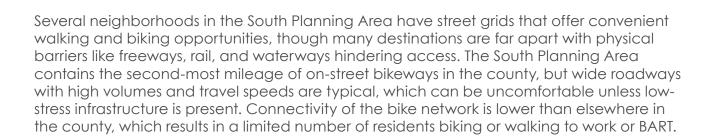
At-grade rail crossings pose safety challenges, particularly for students walking to school

Active Transportation

SOUTH PLANNING AREA







EXISTING BICYCLE NETWORK CONNECTIVITY¹³

Poor Connectivity

TYPICAL EXISTING WALKABILITY¹⁴

Car Dependent

ON-STREET BIKEWAYS

173 miles

DESIGNATED TRAIIS

36 miles

RESIDENTS WHO WALK OR BIKE TO WORK





BART RIDERS WHO WALK OR BIKE TO BART





SOUTH PLANNING AREA ACTIVE TRANSPORTATION **CHALLENGES AND NEEDS**



Uncomfortable Environment

Wide streets with high traffic volumes and speeds make walking and biking uncomfortable



Safe Routes to Schools

Schools and shopping centers are located near high-volume intersections and interchanges



At-Grade Rail Crossings

Interchanges and atgrade rail crossings pose concerns for bicyclists and pedestrians

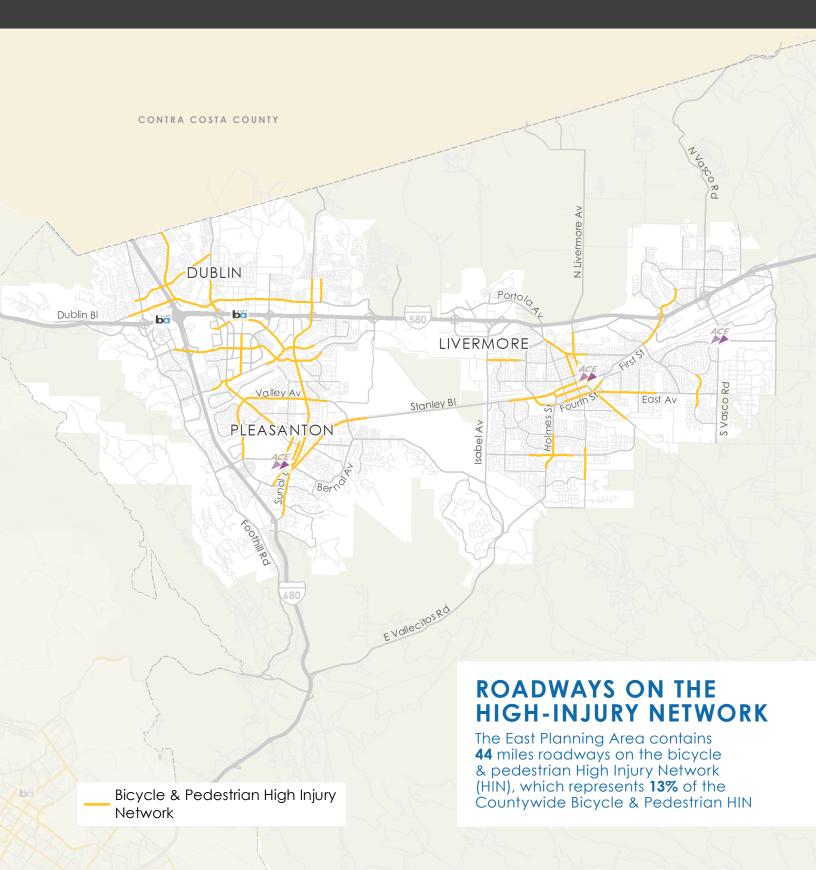


Physical Barriers

Physical barriers hinder a continuous pedestrian and protected bicycle network



EAST PLANNING AREA













The East Planning Area contains highly walkable corridors in downtown areas, as well as several recreational biking opportunities, but physical barriers like freeways, rail, and waterways pose challenges to overall walking and biking connectivity. Roadways with high traffic volumes and speeds make biking and walking uncomfortable in many places, and the East Planning Area has a relatively limited number of onstreet bikeways or off-street trails. The share of East Planning Area residents who walk or bike to work is limited, which can be attributed to long distances to access stations, greater availability of parking, and the barrier of the I-580 freeway.

EXISTING BICYCLE NETWORK CONNECTIVITY¹³

Fair Connectivity

TYPICAL EXISTING WALKABILITY¹⁴

Car Dependent

ON-STREET BIKEWAYS

134 miles

DESIGNATED TRAIIS



18 miles

RESIDENTS WHO WALK OR BIKE TO WORK



BART RIDERS WHO WALK OR BIKE TO BART





EAST PLANNING AREA ACTIVE TRANSPORTATION **CHALLENGES AND NEEDS**



Uncomfortable Environment

Wide streets with high traffic volumes and speeds make walking and biking uncomfortable



Physical **Barriers**

Physical barriers hinder a continuous pedestrian and protected bicycle network



First/Last Mile Connections

There are limited bicycle and pedestrian connections to bus stops and rail stations



Safety on Rural Roads

Bicyclists travel on rural roads, which pose unique safety and design challenges.











Transit

COUNTYWIDE CONSIDERATIONS

INCREASES ACCESS FOR VULNERABLE USERS

Public transit plays a vital role in providing economic and social benefits. A healthy transit system improves access and mobility for vulnerable populations and reduces household travel costs.

IMPROVES ENVIRONMENTAL OUTCOMES

Taking transit reduces the need for a private vehicle, thereby reducing greenhouse gas emissions, energy consumption, and parking demand.

MAXIMIZES SYSTEM EFFICIENCY

Despite Alameda County's strong transit market, only 14% of commuters take transit to work.
Facilitating mode shifts to transit alleviates congestion and improves the productivity of the transportation system.

CHALLENGES AND NEEDS



SPEED & RELIABILITY

Increasing countywide auto congestion results in increasingly slow and unreliable bus service.



CONNECTIONS TO TRANSIT

Some high-quality transit services lack safe and comfortable walking and biking connections.



INTERREGIONAL SERVICE

Service to Contra Costa and Santa Clara Counties and to the Peninsula is slow and infrequent despite high shares of regional trips.



FARE AFFORDABILITY

Different payment options and ticketing systems make the county's transit system difficult to use.



TRANSBAY CAPACITY

Existing transbay service operates at capacity during peak periods and demand is expected to increase, resulting in BART and bus overcrowding.



SERVICE INTEGRATION

There is little trip planning, information sharing, and schedule coordination between operators.



BUS OPERATIONS

Signal system upgrades throughout the county are needed to improve transit operations.



SERVICE FREQUENCY

While there are limited high-frequency transit routes, there are also significant coverage-frequency tradeoffs.



SUBURBAN LAND USE

Because most of the county is suburban, providing sufficient coverage through fixed-route transit service is challenging.















KEY TERMS

Coverage-Frequency Tradeoff: Transit operators must weigh the resources they invest providing high-frequency service to the highest-ridership corridors versus providing lower-frequency service to a larger geographical area.

Major Transit Stop: Designated by MTC as existing rail stations, ferry terminals served by bus or rail transit, or the intersection of two or more major bus routes with frequent service (every 15 minutes or less) during peak commute periods.

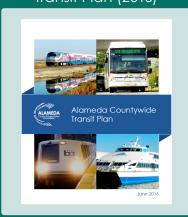
AC Transit Major Corridors: Corridors with high existing and potential bus transit ridership, identified by AC Transit as locations for additional investment.

Reliability: For riders to be able to rely on transit service, operators must consistently meet scheduled arrival times.

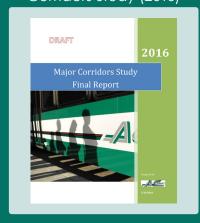
Transfer Coordination: At transfer locations, coordinated schedules between services reduce the wait time of transferring riders, reducing overall travel times.

PLANS AND DATA INFORMING NEEDS

Alameda Countywide Transit Plan (2016)



AC Transit Major Corridors Study (2016)



Other Data Sources

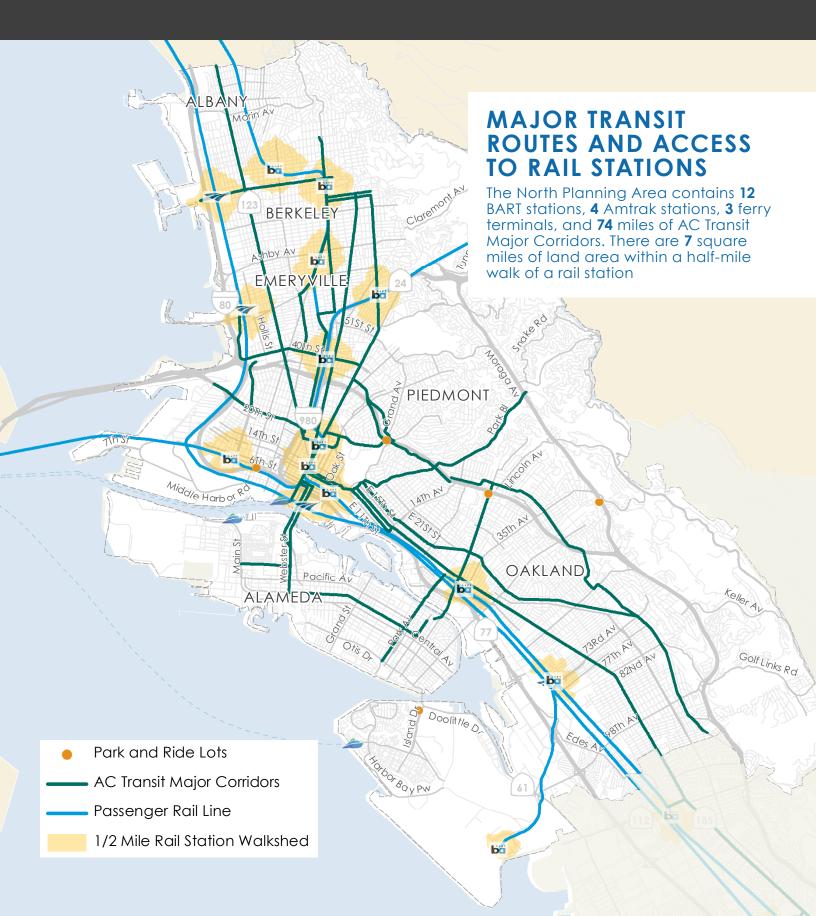
Local Transit Agency Interviews, 2020

BART Station Profile Survey, 2015

U.S. Census, ACS 5-Year, 2014-2018



Transit













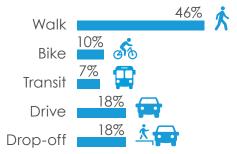


Due to its high population density and frequent and extensive transit service, the North Planning Area has the highest transit usage in the county. In addition to ferry and Capital Corridor service, the North Planning Areas contains nine of the 11 AC Transit Major Corridors, and its 12 BART stations collectively serve every line and destination in the system. The extensiveness of the transit network results in more residents living near highfrequency transit than elsewhere in the county, facilitating access without a car. During peak hours, BART trains regularly operate at or above capacity in the North Planning Area due to transbay travel demand, which is also served by AC Transit Transbay lines.

TRANSIT COMMUTE **MODE SHARE**



HOW RIDERS ACCESS BART



NUMBER OF MAJOR **TRANSIT STOPS**



NORTH PLANNING AREA TRANSIT CHALLENGES AND NEEDS



Transbay Capacity

Existing transbay service operates at capacity during peak periods, with demand expected to rise



Speed & Reliability

Congestion on local roads and freeways negatively impacts bus travel times and reliability



Bus **Operations**

Operational improvements for bus transit require signal system upgrades



Fare **Affordability**

Low-income riders struggle with fare affordability, particularly for transfers



Connections to Transit

First/last-mile access to commuter rail and ferry terminals is lacking





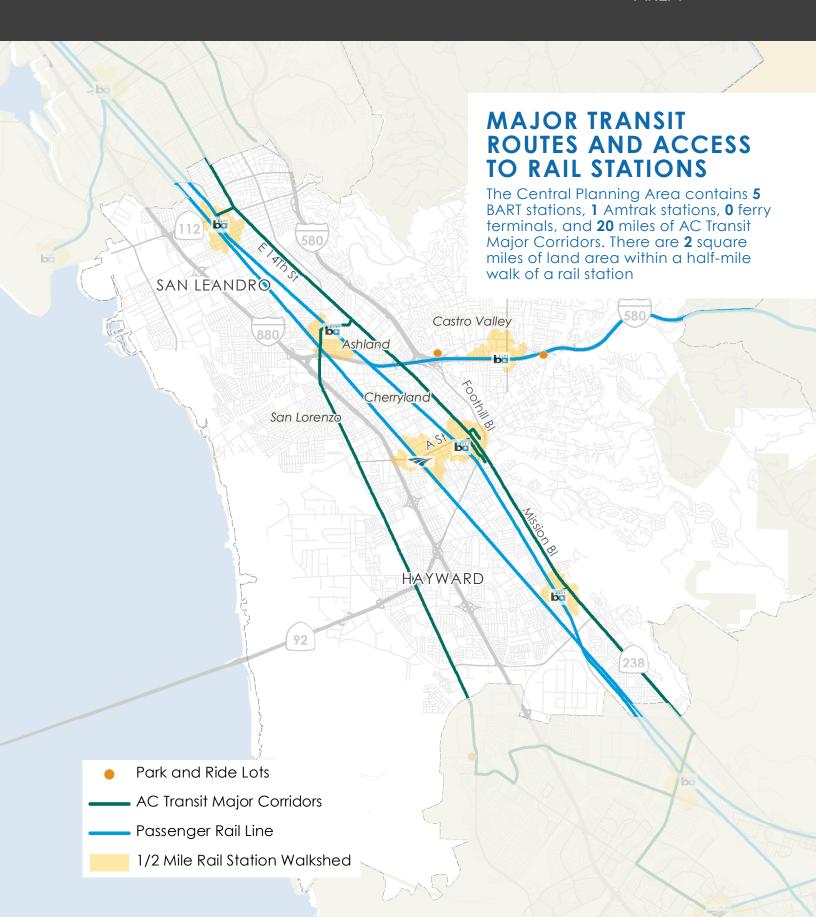






Transit

CENTRAL PLANNING AREA

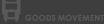














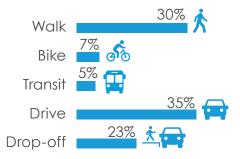


The Central Planning Area is served by five BART stations and three AC Transit Major Corridors, second-most in the county. The use of transit for commuting is similar to the other primarily suburban planning areas, but BART riders in the Central Planning Area are more likely to access the station by walking, biking, or bus. Existing transit service in the Central Planning Area is primarily oriented north-south, and the urban hubs of Downtown San Leandro and Downtown Hayward are served by AC Transit along East 14th Street, Mission Boulevard, and Hesperian Boulevard, as well as by BART. The Central Planning Area is also served by a Capital Corridor station in Hayward.

TRANSIT COMMUTE **MODE SHARE**



HOW RIDERS ACCESS BART



NUMBER OF MAJOR TRANSIT STOPS



CENTRAL PLANNING AREA TRANSIT CHALLENGES AND NEEDS



Suburban Land Use

Few corridors have enough density to support highfrequency transit



Service Frequency

High-frequency service coverage is limited, particularly for east-west travelers



Speed & Reliability

Peak hour congestion on major bus routes slows bus speeds and decreases reliability



Connections to Transit

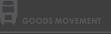
Comfortable pedestrian and bicycle access to transit stops and stations is lacking





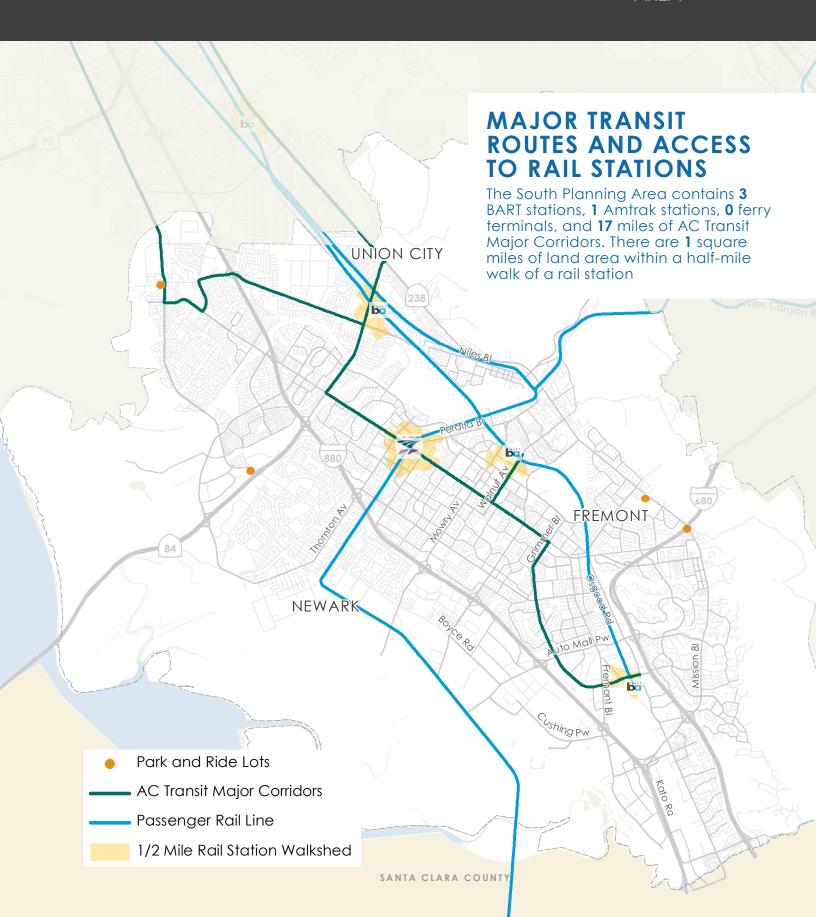






SOUTH PLANNING AREA

Transit

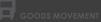












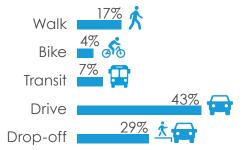


The South Planning area contains three BART station and two AC Transit Major Corridors, as well a commuter rail station at Centerville served by ACE and Capitol Corridor. Additionally, Union City Transit provides service primarily connecting Union Landing and the Union City BART Station. The South Planning Area contains fewer miles of AC Transit Major Corridors than elsewhere in the county, and bus transit service in the South Planning Area faces significant coverage-frequency trade-offs. All rail transit stations are located on the east side of the urban area, so a limited number of residents have proximity to high-frequency transit. The South Planning Area contains less area within one-half mile of a rail transit station than elsewhere in the county.

TRANSIT COMMUTE **MODE SHARE**



HOW RIDERS ACCESS BART



NUMBER OF MAJOR TRANSIT STOPS



SOUTH PLANNING AREA TRANSIT CHALLENGES AND NEEDS

Suburban Land Use

Moderate- to low-density land use in much of South County makes high transit ridership difficult



Service Frequency

High-frequency service is limited with significant coveragefrequency tradeoffs



Connections to Transit

Comfortable pedestrian and bicycle access to transit stops and stations is lacking

Interregional Service

Long travel times and transfers are required to access most job centers on the Peninsula and in the South Bay





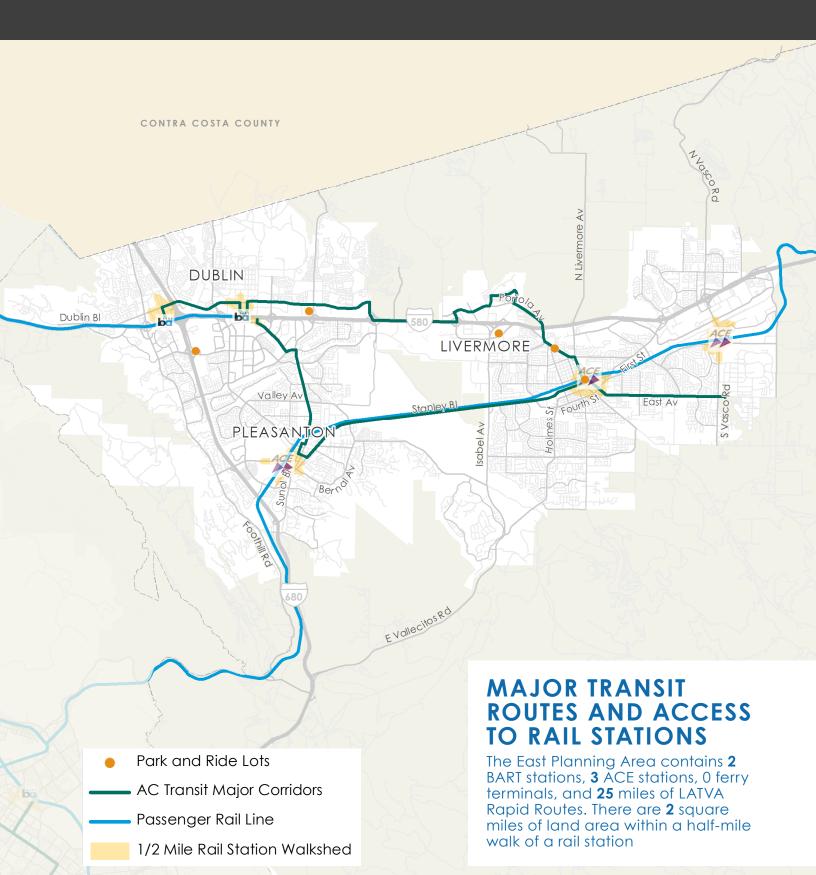






Transit

EAST PLANNING AREA















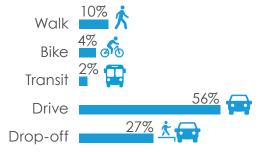
Generally lower density and more dispersed land uses and the location of both BART stations on the western edge of the planning area present unique access challenges to transit in the East Planning Area. Despite these challenges, the use of transit for commuting is similar to other planning areas. LAVTA provides bus service and has recently consolidated service to its two rapid routes. Most routes are oriented towards serving the BART stations and the Livermore Transit Center, though coordination between operators is limited. Most East Planning Area residents access BART stations by automobile, and LAVTA has partnered with ridehailing companies to facilitate the use of pooled vehicles to access stations. ACE also provides three stations in the East Planning Area.

TRANSIT COMMUTE MODE SHARE



9%

HOW RIDERS ACCESS BART



NUMBER OF MAJOR TRANSIT STOPS



EAST PLANNING AREA TRANSIT CHALLENGES AND NEEDS



Suburban Land Use

Moderate- to low-density land use in East County makes high transit ridership difficult



Service Frequency

Frequent service has limited coverage, and existing service is commuteoriented



Connections to Transit

First/lastmile access to transit stops and stations needs improvement



Service Integration

Schedules and transfer coordination is limited between different transit providers









Arterials

COUNTYWIDE CONSIDERATIONS

LINKS TO PRIORITY DEVELOPMENT AREAS

Arterials link the regional and local transportation networks to areas slated for concentrated, mixed use development.

SERVES EVERYONE

Alameda County's arterial network provides critical connectivity for bicyclists, pedestrians, transit riders, trucks, and cars.

INCREASING CONGESTION

Congestion on arterial roads continues to increase as a result of an improving regional economy and sustained job growth.

CHALLENGES AND NEEDS



FALLING TRAVEL SPEEDS

Morning and afternoon peak travel speeds on arterials decreased about 15 percent over the last four years.



LIMITED CONNECTIVITY

Limited connectivity of local street grids directs more traffic of all modes onto arterials.



SAFETY

Major arterials account for just 14% of road miles in Alameda County but account for 71% of the Automobile High Injury Network.



COMPETITION FOR SPACE

Transit vehicles, automobiles, bicycles, and trucks compete for roadway and curb space on arterials.



PLACEMAKING

Congestion on arterials negatively impacts the reliability of and travel time for bus service, as well as for cars and trucks.



MULTIMODAL RELIABILITY

Congestion on arterials reduces the reliability of bus transit service, as well as for cars and trucks.



ACCESS TO KEY DESTINATIONS

Many destinations are located on arterials with high traffic stress, but the active transportation network is disconnected.



UNCOMFORTABLE WALKING & BIKING ENVIRONMENT

Wide roadways and arterials with high volumes and vehicle speeds discourage walking and biking.



SPILLOVER CONGESTION

Congestion on freeways diverts trips onto adjacent arterials, which has been exacerbated by the proliferation of wayfinding smartphone apps.













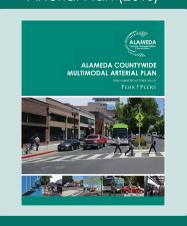
KEY TERMS

High Pedestrian Emphasis Zone: Areas identified in the Alameda Countywide Multimodal Arterial Plan as locations with high pedestrian volumes, near major activity centers, or where walking serves a critical transportation function. These areas are typically centered around major transit stops and commercial centers.

Priority Development Area (PDA): Areas identified and approved by local governments for future growth. These areas are typically accessible by transit and located near existing jobs and services and are approved by the Association of Bay Area Governments (ABAG).

PLANS AND DATA INFORMING NEEDS

Countywide Multimodal Arterial Plan (2016)



PDA Investment & Growth Strategy (2017)



Other Data Sources

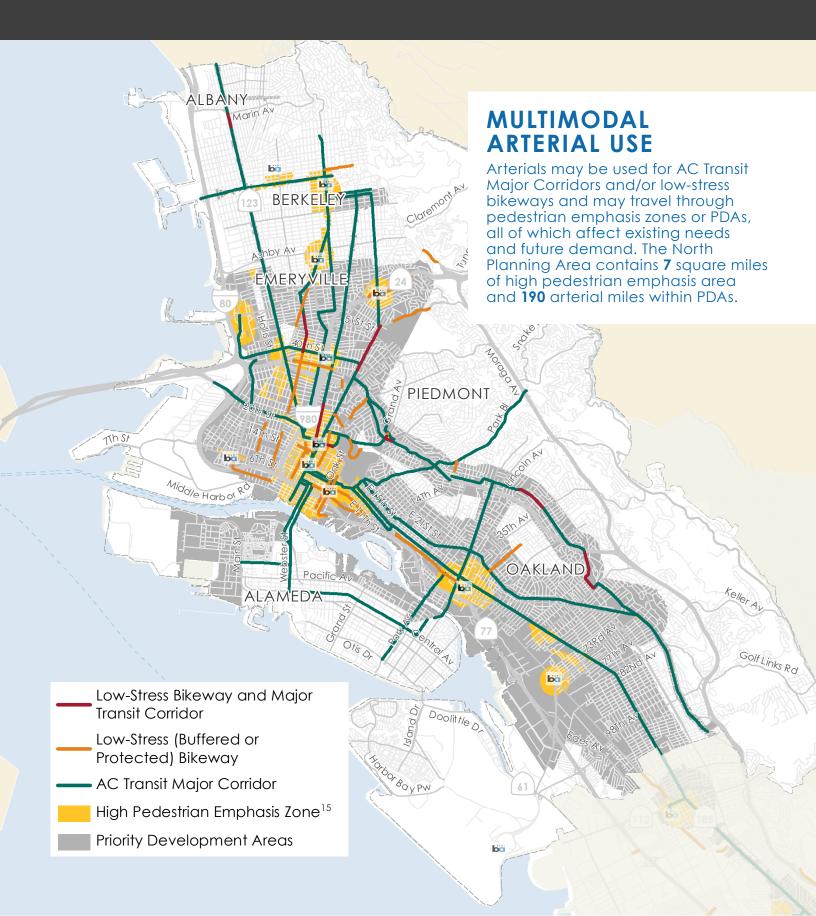
CTPP Place of Work, 2012-2016

Streetlight Origin-Destination Data, 2020



Arterials

NORTH PLANNING AREA













Arterials in the North Planning area are typically four lanes wide with lower speeds than found elsewhere in the county. The arterial network also has a strong grid pattern, providing more direct routing that is conducive to bus transit, walking, and biking, and the North Planning Area has the highest share of arterial miles on AC Transit Major Corridors and more high pedestrian emphasis areas than elsewhere in the county. These factors, along with dense land uses that are planned to get denser through extensive PDAs, result in more residents who both live and work in the planning area commuting by bus, bike, or on foot than anywhere else in the county. With some major arterials also serving as options for long-distance travel parallel to freeways, competition for roadway space in the North Planning Area is very high.

ARTERIALS SERVING MULTI-MODAL NEEDS



27% of arterial miles are on AC Transit Major Corridors



3% of arterial miles include an all ages and abilities bikeway

ANTICIPATED PORTION OF PLANNING AREA **GROWTH IN PDAs**



79% of jobs

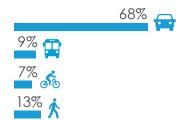


88% of housing units



87% of households

TRAVEL MODE OF **COMMUTERS WHO LIVE &** WORK IN NORTH COUNTY



NORTH PLANNING AREA ARTERIALS CHALLENGES AND NEEDS



Multimodal Reliability

Congestion resulting from dense land uses impact multimodal reliability



Competition for Space

Competition for curb and roadway space force tradeoffs between modes



Falling Travel Speeds

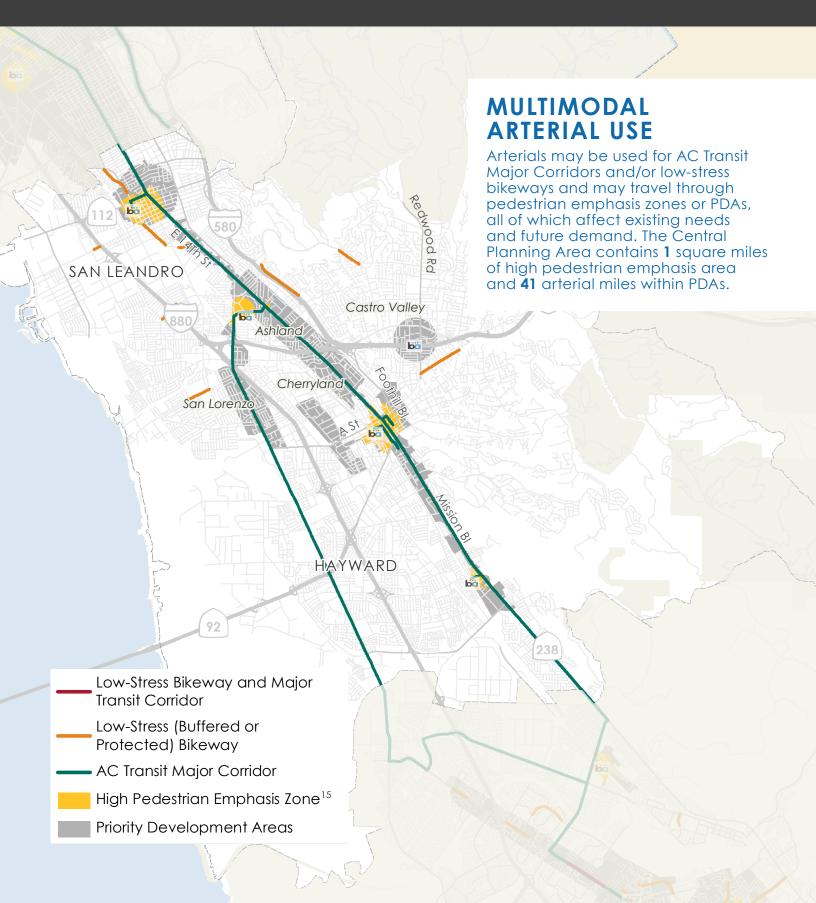
Heavy congestion during peak periods results in slow transit travel speeds



Safety

Crossing wide, auto-oriented arterials on foot or by bicycle can be difficult and feel unsafe

Arterials













Arterials in the Central Planning Area are typically four to six lanes wide with relatively high speeds. Unlike other suburban areas of Alameda County, however, many arterials in the Central Planning Area travel through downtown areas where roadways may be narrower. Additionally, many arterials in the Central Planning Area have local businesses fronting the street and may directly interface with customers, employees, and other business functions. Low-stress bikeways on arterials are limited. PDAs in the Central Planning Area are primarily concentrated along arterials, particularly the East 14th Street/Mission Boulevard corridor, with the potential to significantly change this corridor's look and feel.

ARTERIALS SERVING MULTI-MODAL NEEDS



13% of arterial miles are on AC Transit Major Corridors



1% of arterial miles include an all ages and abilities bikeway

ANTICIPATED PORTION OF PLANNING AREA **GROWTH IN PDAs**



36% of jobs



39% of housing units



34% of households

TRAVEL MODE OF **COMMUTERS WHO LIVE & WORK IN CENTRAL COUNTY**





CENTRAL PLANNING AREA ARTERIALS CHALLENGES AND NEEDS



Competition for Space

Local business frontages result in demand for multiple uses of curb space



Placemaking

Limited nighttime pedestrianscale lighting contribute to placemaking and personal security challenges



Multimodal Reliability

Increasing traffic, often from freeway spillover, results in reduced travel time reliability in downtown areas

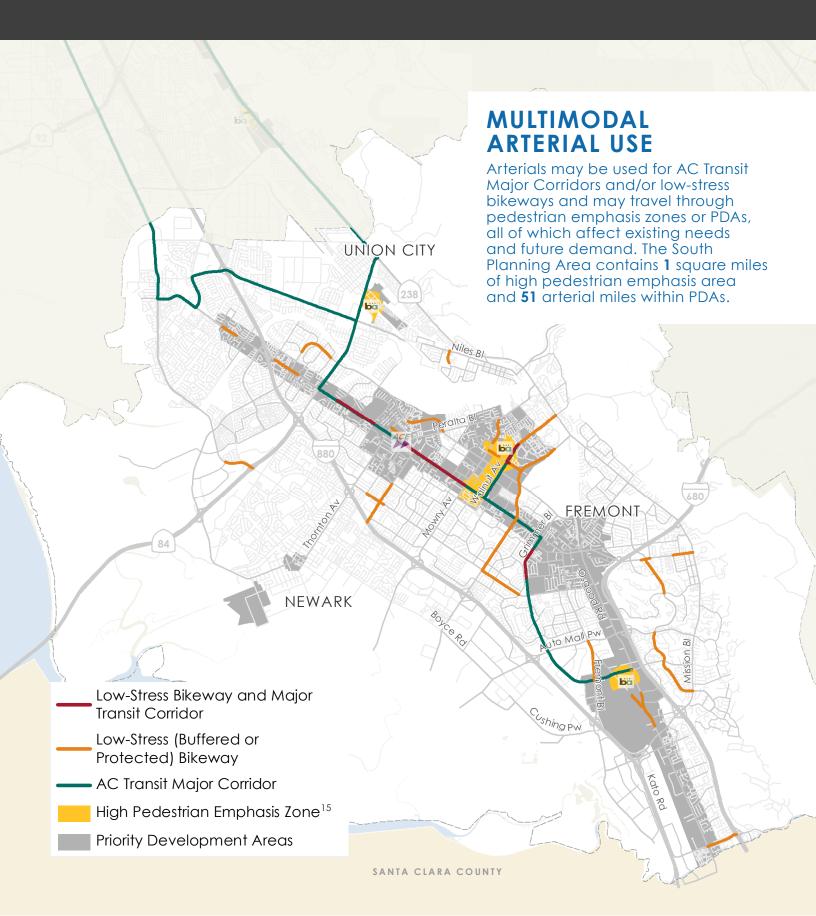


Access to Key **Destinations**

Gaps in the walking/biking network limit access to bus stops and BART

Arterials

SOUTH PLANNING AREA















Development patterns in the South Planning Area are primarily suburban, and arterials often contain six or more lanes with high posted speed limits. These features facilitate automobile travel on arterials, and most residents who both live and work in the South Planning Area travel by car. At the same time, the South Planning Area has a higher percentage of arterial miles that include an all ages and abilities bikeway than anywhere else the county. The importance of arterials to all modes in the South Planning Area is particularly heightened due to the limited connectivity and walkability of the local street network, which concentrates travel onto the arterial network. PDAs in the South Planning Area are connected by one long arterial corridor, which offers the potential for a consistent multimodal roadway.

ARTERIALS SERVING MULTI-MODAL NEEDS



9% of arterial miles are on AC Transit Major Corridors



5% of arterial miles include an all ages and abilities bikeway

ANTICIPATED PORTION OF PLANNING AREA **GROWTH IN PDAs**



66% of jobs



61% of housing units



61% of households

TRAVEL MODE OF **COMMUTERS WHO LIVE & WORK IN SOUTH COUNTY**





SOUTH PLANNING AREA ARTERIALS CHALLENGES AND NEEDS



Competition for Space

Limited connectivity of local streets increases use of arterials for all modes



Placemaking

Surface parking lot frontages contribute to placemakina challenges



Spillover Congestion

Heavy congestion is exacerbated by freeway spillovers



Uncomfortable Walking and Biking Environment

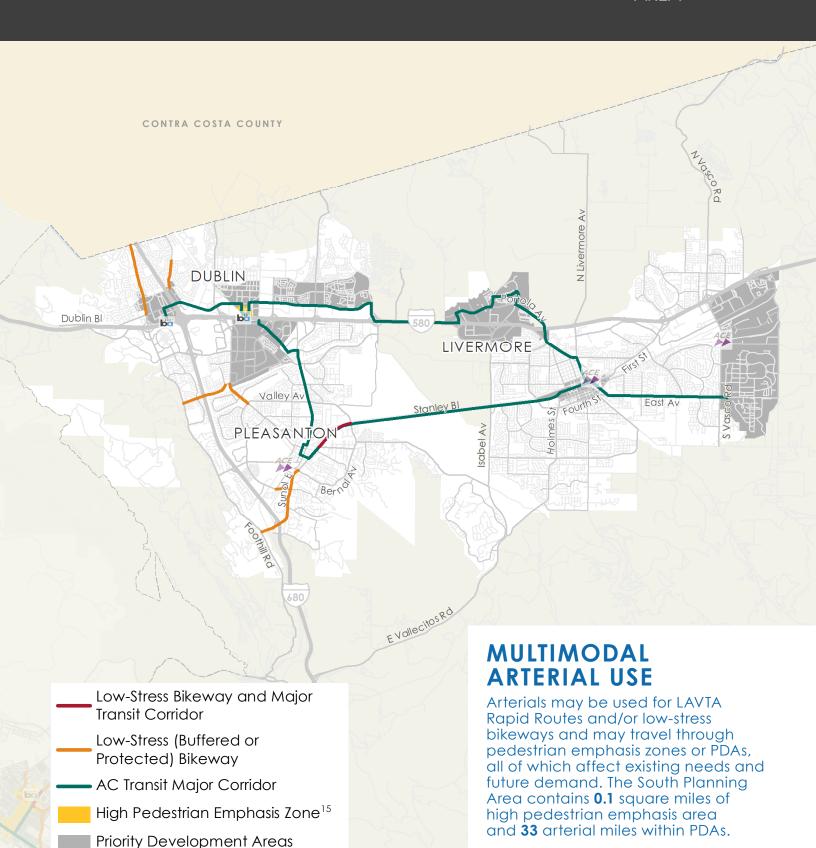
Wide roadways with high volumes and vehicle speeds discourage walking and biking



GOODS MOVEMENT

Arterials

EAST PLANNING AREA















The East Planning Area contains both developed suburban areas and rural environments, and the arterial network accordingly consists primarily of roads withsix or more lanes and high speeds, as well as two-lane rural routes. Automobiles are the predominant mode of transportation within the East Planning Area, although the arterial network contains a similar percentage of miles with a priority transit route or all ages and abilities bikeway as elsewhere in the county. Planned development in the East Planning Area is highly concentrated, as the relatively limited area designated for PDAs contains a high percentage of anticipated growth.

ARTERIALS SERVING MULTI-MODAL NEEDS



9% of arterial miles are on AC Transit Major Corridors



5% of arterial miles include an all ages and abilities bikeway

ANTICIPATED PORTION OF PLANNING AREA **GROWTH IN PDAs**



66% of jobs



61% of housing units



61% of households

TRAVEL MODE OF **COMMUTERS WHO LIVE & WORK IN EAST COUNTY**





EAST PLANNING AREA ARTERIALS CHALLENGES AND NEEDS



Access to Key **Destinations**

There is limited walking/biking access to bus stops and **BART** stations



Placemaking

Surface parking lot frontages contribute to placemaking challenges



Spillover Congestion

Freeway traffic spills onto arterials resulting in unreliable travel times



Uncomfortable Walking and Biking Environment

Wide roadways with high volumes and vehicle speeds discourage walking and biking difficult

Freeways

COUNTYWIDE CONSIDERATIONS

ALAMEDA COUNTY IS AT THE CENTER OF THE BAY AREA FREEWAY NETWORK

Freeways have the highest amount of vehicle carrying capacity and facilitate access throughout the Bay Area and surrounding regions.

CONGESTION IS **INCREASING**

Alameda County has 140 miles of freeways and hosts half of the top 10 most congested freeway corridors in the Bay Area.

NUMBER OF COLLISIONS ARE INCREASING

Total collisions have increased 31% from Great Recession lows, leading to greater numbers of injuries and deaths on freeways.

CHALLENGES AND NEEDS



Freeway collisions are particúarly likely to occur in the vicinity of congested interchanges, especially freeway-tofreeway interchanges.



PEAK HOUR TRAFFIC

About one-quarter of Alameda County's freeway network is congested during the evening peak. Queuing has increased on freeway interchanges, causing backups onto arterials.



GOOD MOVEMENT **OPERATIONS**

Congestion on freeways like the I-880 and I-80 impacts trucks heading to the Port of Oakland and impairs goods movement operations.



EMISSIONS

Due to the urbanized nature of most of Alameda County, the ability to build additional láne capacity on freeways is restricted.



SPILLOVER CONGESTION

Congestion on freeways often causes backups on connecting arterials, impacting the many types of road users' that circulate on these major streets.



EXPRESS NETWORK GAPS

The managed lanes network is discontinuous and incomplete. There are 140 freeway miles over ten interstates ánd state routes, but only 39 miles of express lanes are operational.



CUT-THROUGH TRIPS

Increasing congestion on freeways is resulting in more cut-through automobile trips and traffic on local roads.



LIMITED ALTERNATIVES

There are limited non-SOV options to access external job centers on the Peninsula and in the South Bay.



FALLING TRANSIT SPEEDS

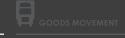
Substantial delays on key freeway corridors, such as the the Bay Bridge approach, impact Transbay and Express Buses.

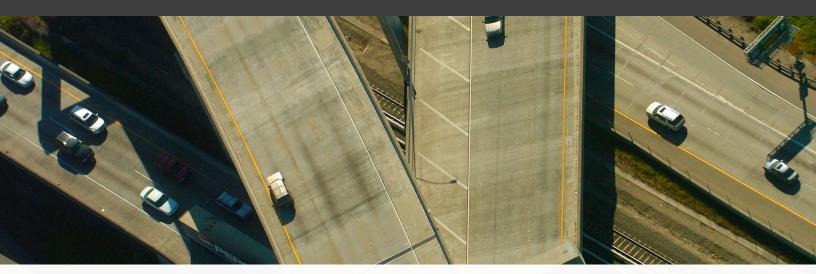












KEY TERMS

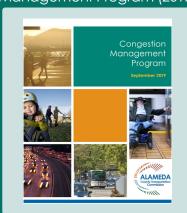
Spillover Congestion: A phenomenon where severe traffic congestion on freeways causes backups on local roadways as vehicle attempt to access on-ramps. This increases travel times on arterials and increases potential conflicts with bicyclists and pedestrians.

Express Lanes: Lanes on a freeway that are free to transit buses, carpoolers, vanpoolers, motorcycles, and eligible clean air vehicles but require solo drivers to pay tolls for use.

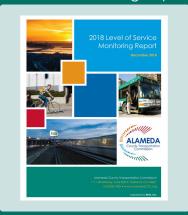
Level of Service (LOS): A representation of roadway congestion and delay. An LOS rating of E or F signifies major impacts to travel times, hindering drivers, transit riders, and goods movement users. LOS is no longer used to assess environment impacts, which now are based on Vehicles Miles Traveled (VMT).

PLANS AND DATA INFORMING NEEDS

Alameda County Congestion Management Program (2019)



Alameda County 2018 LOS Monitoring Report



Other Data Sources

U.S. Census, ACS 5-Year, 2014-2018

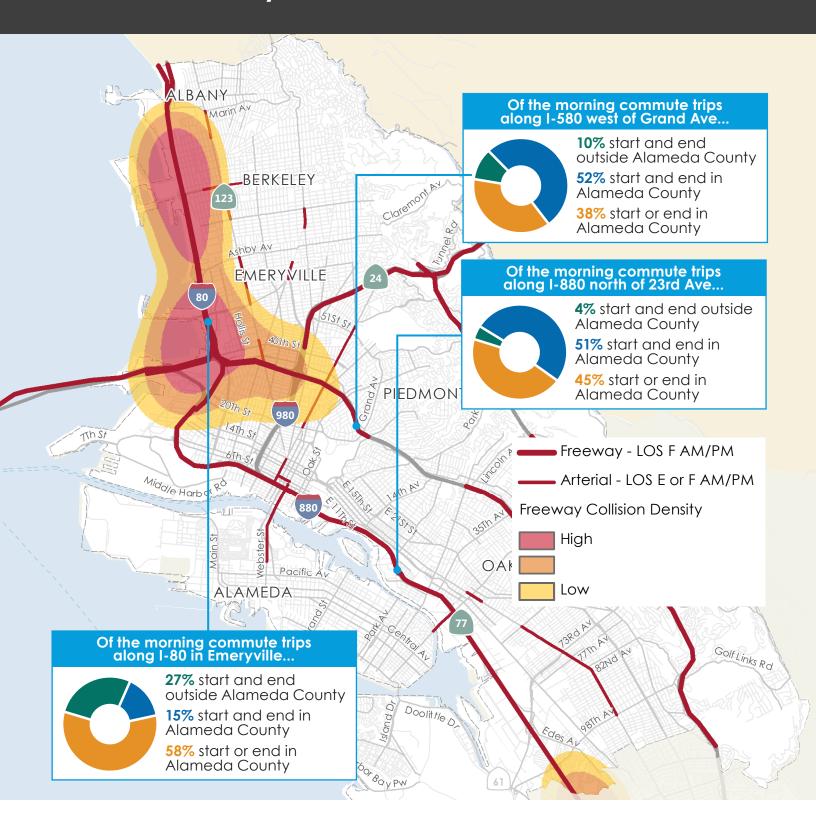
CTPP Place of Work, 2012-2016

Streetlight Origin-Destination Data, 2020



Freeways

NORTH PLANNING AREA



FREEWAY COLLISIONS AND TRAFFIC PATTERNS







Driving is less prevalent in the North Planning Area than elsewhere in the county, but congestion is still high because the area is a major gateway to San Francisco and contains the county's largest employment center, Downtown Oakland. I-80 serves as the primary Alameda County gateway to San Francisco and West Contra Costa County, while SR-24 serves as the primary gateway to other areas of Contra Costa County. I-80 in the North Planning Area is consistently included in MTC's top 10 most congested corridors in the Bay Area. Except for the I-80 corridor, freeways in the North Planning Area carry limited pass-through trips and mostly serve travel entirely within Alameda County. The I-80 corridor, by contrast, primarily serves travel from outside the county to job centers in San Francisco and Oakland.

NORTH PLANNING AREA (PA) EMPLOYMENT FLOWS



37% of workers arriving in the North PA are from Contra Costa County **45%** of workers leaving the North PA are headed to San Francisco **54%** of employed residents of the North PA work in the North PA

RESIDENT COMMUTE **MODE SHARE**

Drive Alone



48%

Carpool



10%

NORTH PLANNING AREA FREEWAYS CHALLENGES AND NEEDS



Emissions

Heavy congestion increases emissions in communities along freeway corridors



Goods Movement **Operations**

Congestion on I-880 and I-80 impacts trucks heading to the Port



Safety

Congestion and complex operations approaching the Bay Bridge result in high collision densities on I-80 and I-580



Spillover Congestion

Spillover traffic onto parallel arterials results in long and unreliable travel times



Falling Transit Speeds

Substantial delays on Bay Bridge approach impact Transbay Buses

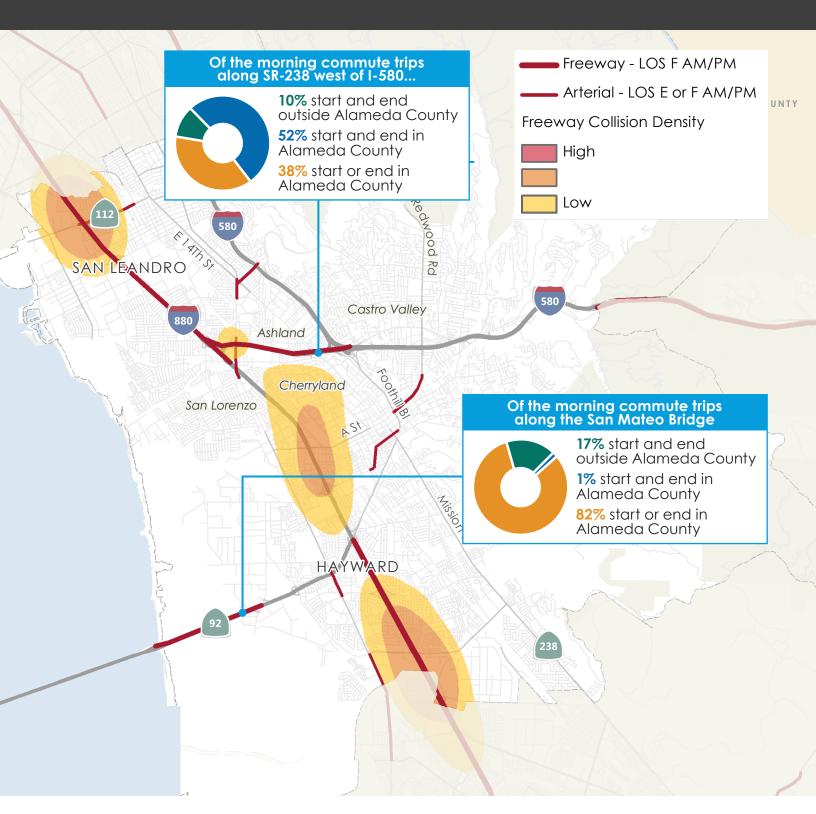






Freeways

CENTRAL PLANNING AREA



FREEWAY COLLISIONS AND TRAFFIC PATTERNS









The four freeways in the Central Planning Area connect other parts of the county to each other, as well as to job centers on the Peninsula. In addition to being used as pass-throughs, the freeways are also heavily used by Central Planning Area residents, who have the highest share working outside their planning area of anywhere in the county. SR-92 serves as the primary gateway to San Mateo County via the San Mateo Bridge, and 39 percent of trips during the morning commute originate in the Central Planning Area. I-238 and I-880 are the most congested freeway corridors in the Central Planning Area, and these freeways are primarily used for trips within Alameda County.

CENTRAL PLANNING AREA (PA) EMPLOYMENT FLOWS



21% of workers arriving in the Central PA are from Oakland
21% of workers leaving the Central PA are headed to Oakland
33% of employed residents of the Central PA work in the Central PA

RESIDENT COMMUTE MODE SHARE

Drive Alone



71%

Carpool



10%

CENTRAL PLANNING AREA FREEWAYS CHALLENGES AND NEEDS



Cut-Through Trips

Cut-through trips from drivers trying to avoid congestion on freeways are increasing on local roads during peak commuting hours



Emissions

High truck volumes on I-880, I-238, and the eastern portion of I-580 cause wearand-tear and pollution



Peak Hour Traffic

I-880 and I-238 experience heavy peak period congestion, particularly near their interchange



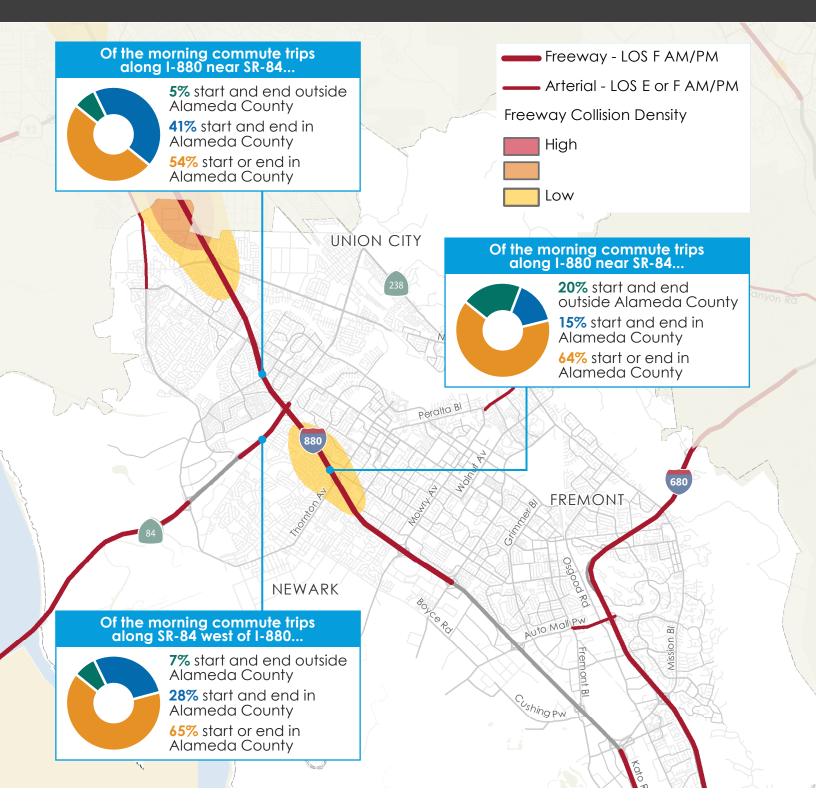
Safety

There are multiple hot spots with high collision densities along I-880



Freeways

SOUTH PLANNING AREA



FREEWAY COLLISIONS AND TRAFFIC PATTERNS









Freeways in the South Planning Area serve major employment centers in the South Bay, on the Peninsula, and within the planning area. SR-84 is a gateway to San Mateo County via the Dumbarton Bridge, while I-680 and I-880 are the primary gateways to Santa Clara County. The Dumbarton Bridge primarily serves trips involving Alameda County residents, and I-880 north of SR-84 mostly serves travel within the county. Although not currently designated as a freeway, SR-262 is a vital connection between I-880 and I-680, and congestion on SR-262 affects operations on those freeways as well. I-680 in the South Planning Area is consistently included in MTC's top 10 most congested corridors in the Bay Area.

SOUTH PLANNING AREA (PA) EMPLOYMENT FLOWS



33% of workers arriving in the South PA are from Santa Clara County **46%** of workers leaving the South PA are headed to Santa Clara County **34%** of employed residents of the South PA work in the Central PA

RESIDENT **COMMUTE MODE SHARE**

Drive Alone



72%

Carpool



10%

SOUTH PLANNING AREA FREEWAYS CHALLENGES AND NEEDS



Cut-Through Trips

Cut-through trips from drivers trying to avoid congestion on freeways are increasing on local roads during peak commuting hours



Limited **Alternatives**

There are limited commute alternative to jobs in the Peninsula and the South Bay, which increases demand on freeways



Peak Hour Traffic

I-680 experiences heavy peak period congestion related to travel to and from South Bay job centers, and congestion on I-880 is centered near the Dumbarton Bridge



Spillover Congestion

Heavy congestion on along SR 262 creates backups onto I-880 and I-680

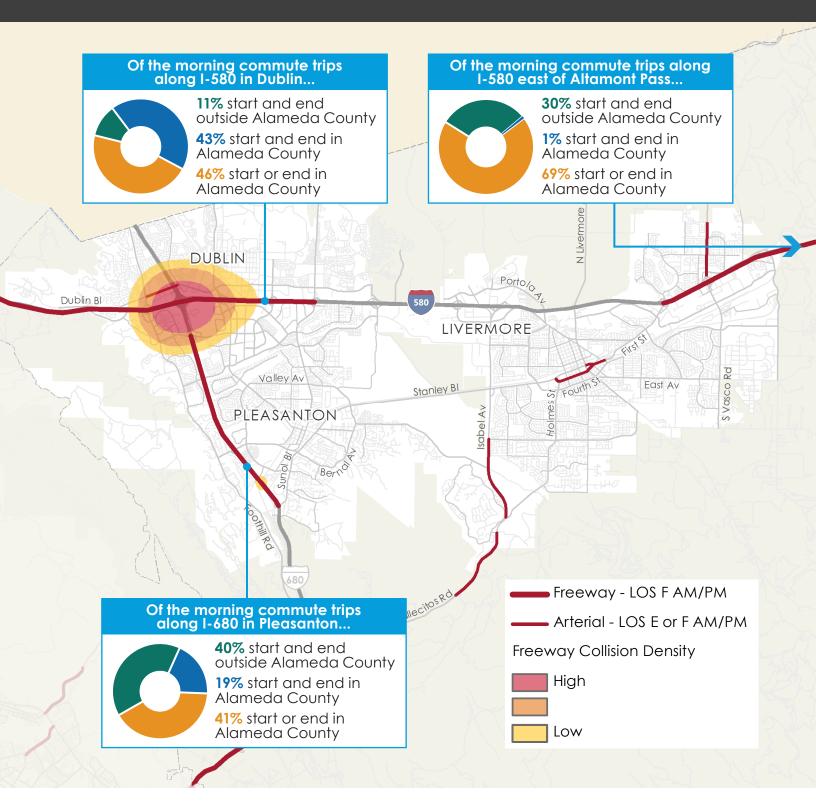
ARTERIALS



GOODS MOVEMENT

Freeways

EAST PLANNING AREA



FREEWAY COLLISIONS AND TRAFFIC PATTERNS











The East Planning Area is served by two freeway corridors: I-580 and I-680. I-580 serves as the primary Alameda County gateway to San Joaquin County, while I-680 serves as a gateway to Contra Costa County and southern Alameda County. The I-580 segment at the Altamont Pass and I-680 segment in Pleasanton serve a high proportion of traffic that passes through Alameda County entirely on its way to job centers in the South Bay and on the Peninsula. Commuters driving through the East Planning Area represent 30 percent and 40 percent of traffic at these locations, respectively, during the morning peak period. On I-580 east of Dublin, the pass-through traffic is similar to other freeways in the county, I-580 is heavy utilized by trucks traveling into and out of Alameda County.

EAST PLANNING AREA (PA) EMPLOYMENT FLOWS



28% of workers arriving in the South PA are from Santa Clara County **22%** of workers leaving the South PA are headed to Santa Clara County 45% of employed residents of the South PA work in the Central PA

RESIDENT **COMMUTE MODE SHARE**

Drive Alone



73%

Carpool



EAST PLANNING AREA FREEWAYS CHALLENGES AND NEEDS



Cut-Through Trips

Cut-through trips are increasing on local and rural roads during peak commuting hours



Limited **Alternatives**

There are limited commute alternatives to I-680 and eastern I-580



Network Gaps

The express lane network along East Planning Area freeways is disconnected



Peak Hour Traffic

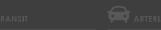
Traffic on I-580 eastbound is intensifying during the PM peak period



Safety

A substantial bottleneck at the I-580/I-680 interchange results in high collision density









Goods Movement

COUNTYWIDE CONSIDERATIONS

CRITICAL TO ECONOMIC VITALITY

About one-third of the County's jobs come from goods movement-dependent industries, and Transportation, Warehousing, and Utilities was the fastest-growing employment sector in the East Bay in 2018.

INCREASING REGIONAL DEMAND

Bay Area international trade volumes are expected to grow from 66 million tons in 2012 to 159 million tons by 2040. In 2018, the Port of Oakland handled \$50 billion of goods, which is expected to triple by 2040.

AFFECTS ALL MODES OF TRAVEL

Truck traffic moves about 81% of goods by tonnage in Alameda County, and rail is responsible of moving about 8%. These uses share roadway space and rail corridors with other travelers moving through the County.

CHALLENGES AND NEEDS



ROADWAY CONGESTION/ RELIABILITY

Congestion hinders goods movement operations and scheduling due to reduced travel time reliability.



TRUCK ROUTE PRESERVATION

The Port of Oakland and agricultural producers, particularly in East County, require truck routes to maintain access to and from consumers.



NEGATIVE IMPACT ON NEIGHBORHOODS

Use of local streets causes conflicts with other modes, while noise and pollution adversely impacts surrounding neighborhoods.



PORT TERMINAL DELAY

Large maritime vessels create surges of trucks at the port, which results in heavy delays.



CONSTRAINED RAIL CAPACITY

Limited ability to increase rail capacity constraints planned operational improvements in shared rail corridors.



AT-GRADE RAIL CROSSING SAFETY

Increased rail corridor operations may decrease safety and vehicle operations at atgrade rail crossings.



LAND USE CONFLICTS

Many PDAs in the county are adjacent to freight rail tracks, and some industrial areas are prime for redevelopment.



HIGH TRUCK DENSITY

High truck densities contribute to roadway wear and tear and environmental impacts.



EMISSIONS

Particulate matter and nitrogen oxides emitted from goods movement can create significant health risks of residents.





KEY TERMS

Average Annual Daily Traffic (AADT): The average number of vehicles on a roadway each day over the course of a year. AADT provides information on truck volumes.

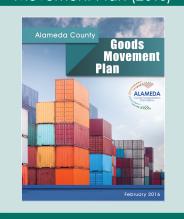
Rail Subdivisions: Rail subdivisions are sections of a rail network. There are seven rail subdivision in Alameda County: Martinez, Niles, Oakland, Coast, Warm Springs, Canyon, and Tracy.

Constrained Rail Capacity: Without improvements to operation efficiencies, a growing demand for goods with a fixed mileage of railroad tracks results in rail capacity constraints.

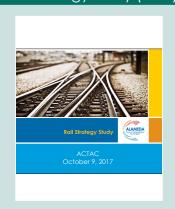
At-Grade Crossings: Intersections where a railroad crosses a roadway at the same level, as opposed to crossing over or under using an overpass or tunnel.

PLANS AND DATA INFORMING NEEDS

Alameda County Goods Movement Plan (2016)



Alameda County Rail Strategy Study (2017)



Other Data Sources







Goods Movement

NORTH PLANNING AREA



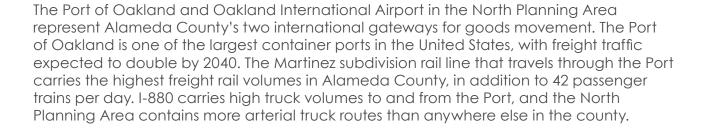














AREA OF INDUSTRIAL USES:

7 square miles



FREIGHT RAIL TRACKS:

21 miles



ARTERIAL TRUCK ROUTES:

35 miles

NORTH PLANNING AREA GOODS MOVEMENT CHALLENGES AND NEEDS



Constrained Rail Capacity

Rail capacity constraints limit the ease of goods movement operations



Land Use Conflicts

Industrial businesses and associated truck traffic in close proximity to neighborhoods poses challenges to air quality, roadway design, and development



Negative Impact on Neighborhoods

Emissions, safety, and parking challenges impact West Oakland and communities along freeway and rail corridors



Port Terminal Delay

Truck queueing, delay, and freeway access challenges hinder operations at the Port of Oakland



Roadway Congestion/ Reliability

High delays and variable travel times on I-80 and I-880

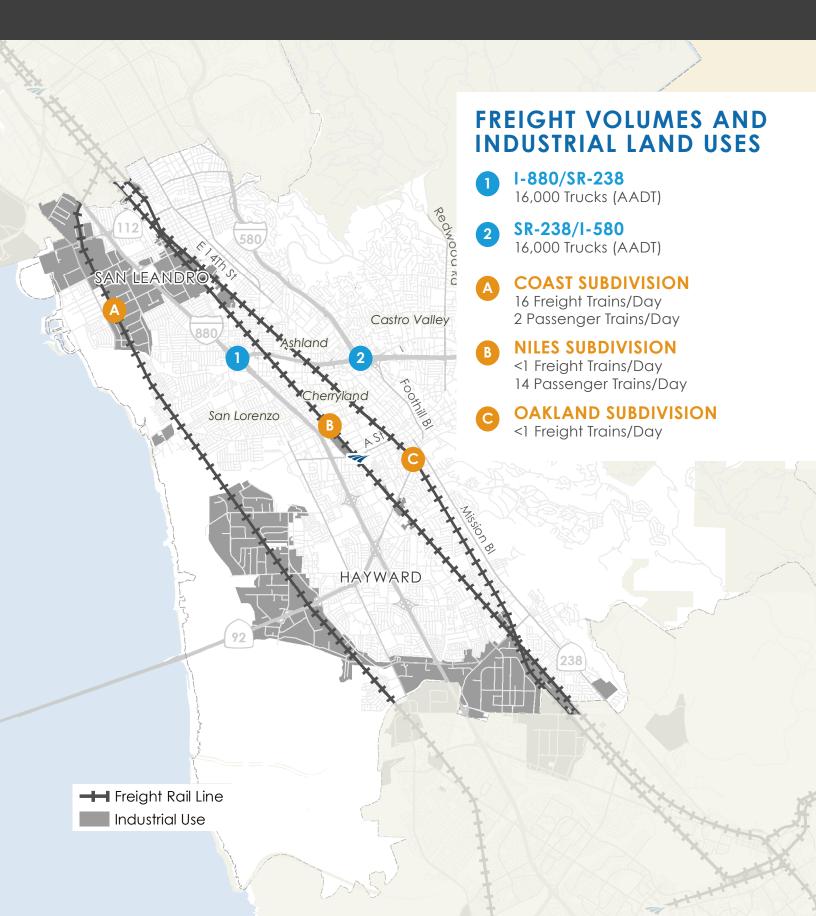




GOODS MOVEMENT

Goods Movement

CENTRAL PLANNING AREA













*

The Central Planning Area contains a large amount of industrial land, much of it related to ancillary services for the Port. This land is concentrated along the Coast subdivision rail line or near I-880, and those facilities accordingly carry high levels of freight rail and truck traffic. Arterials in the Central Planning Area are also heavily utilized for goods movement, with the second-most arterial truck route mileage in the county. Although the Central Planning Area also contains a high mileage of freight rail tracks, the Niles and Oakland subdivision rail lines are infrequently used for goods movement.



AREA OF INDUSTRIAL USES:

8 square miles



FREIGHT RAIL TRACKS:

34 miles



ARTERIAL TRUCK ROUTES:

29 miles

CENTRAL PLANNING AREA GOODS MOVEMENT CHALLENGES AND NEEDS



Constrained Rail Capacity

Rail capacity constraints limit goods movement operations



Roadway Conditions and Emissions

High truck volumes cause wearand-tear and exacerbate environmental concerns



Negative Impact on Neighborhoods

Truck parking, congestion, emissions, and safety challenges impact nearby communities



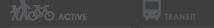
Roadway Congestion/ Reliability

Substantial delays increase trucking costs along I-880 and I-238 during peak periods



At-Grade Rail Crossing Safety

At-grade rail crossings pose safety concerns for pedestrians and bicyclists





Goods Movement

SOUTH PLANNING AREA













With several freight generators and industrial areas, the South Planning Area contains more land for industrial uses than anywhere else in the county. Goods movement in the South Planning Area heavily utilizes freight rail tracks, with the most overall mileage in the county and both the Coast and Niles subdivision rail lines carrying substantial freight traffic. The Niles Junction near Alameda Creek is a major rail intersection, where the Niles, Oakland, and Warm Springs subdivisions merge and diverge, resulting in capacity issues. I-880 is also heavily utilized by industrial users in the southern portion of the South Planning Area.



AREA OF INDUSTRIAL USES:

11 square miles



FREIGHT RAIL TRACKS:

42 miles



ARTERIAL TRUCK ROUTES:

16 miles

SOUTH PLANNING AREA GOODS MOVEMENT CHALLENGES AND NEEDS



Constrained Rail Capacity

Rail capacity constraints and alignment issues limit goods movement operations



Roadway Conditions and Emissions

High truck volumes cause wearand-tear and exacerbate environmental concerns



Negative Impact on Neighborhoods

Truck parking, congestion, and emissions impact nearby communities



Roadway Congestion/ Reliability

Substantial delays increase trucking costs along I-880 and I-680 during peak periods



At-Grade Rail Crossing Safety

At-grade rail crossings pose safety concerns for pedestrians and bicyclists



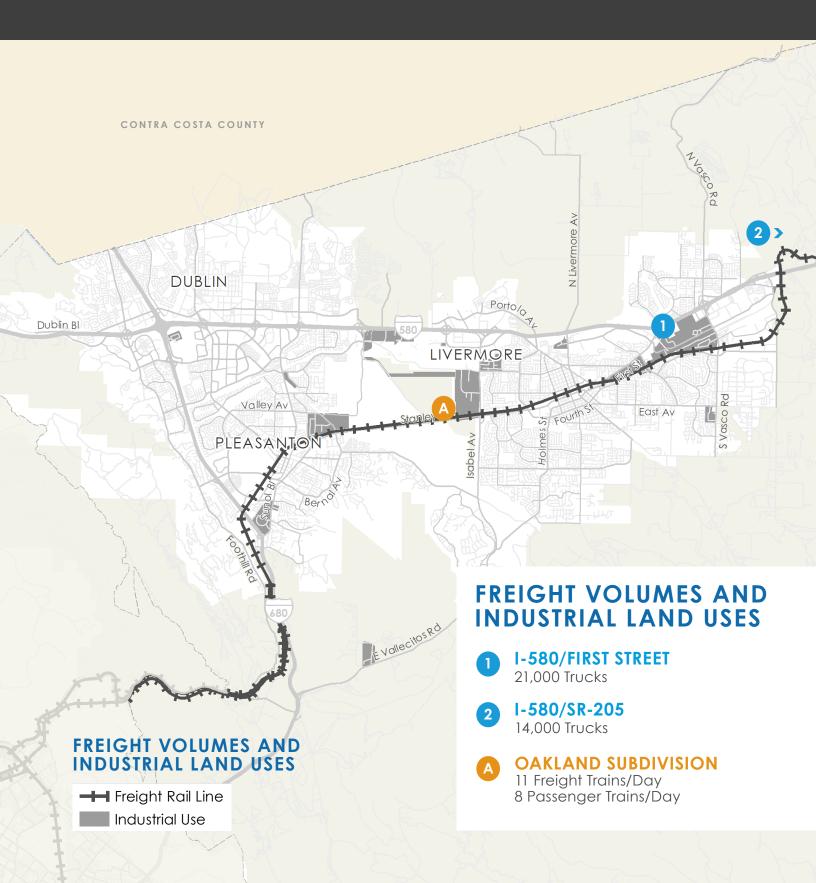






Goods Movement

EAST PLANNING AREA













The East Planning Area serves as a major through route for goods travelling between the Bay Area, Central Valley, and beyond, and I-580 in Livermore carries the highest truck volumes in the county. Moreover, unlike elsewhere in the county, goods movement generation in the East Planning Area primarily consists of wineries and smaller agricultural producers instead of industrial uses, which results in substantial truck traffic on rural roads. There are some industrial uses in the East Planning Area, which are mostly located near the Oakland subdivision rail line or I-580.



AREA OF INDUSTRIAL USES:

3 square miles



FREIGHT RAIL TRACKS:

30 miles



ARTERIAL TRUCK ROUTES:

23 miles

SOUTH PLANNING AREA GOODS MOVEMENT CHALLENGES AND NEEDS



High Truck Density

There is a very high density of trucks on I-580 at First Street in Livermore



Negative Impact on Neighborhoods

Congestion and safety challenges impact nearby communities



Roadway Congestion/ Reliability

Substantial delays afflict I-580 during peak periods



Truck Route Preservation

Truck routes to and from East Planning Area agricultural producers should be maintained

REFERENCES

- 1 East Bay Economic Outlook (2018)
- 2 Alameda County Transportation Commission (ACTC), Alameda County Goods Movement Plan (2016)
- 3 Alameda County Goods Movement Plan (2016)
- 4 U.S. Bureau of Labor Statistics
- 5 Source: Pitchbook; Analysis by Beacon Economics
- 6 U.S. Census, 2000 & 2014-2018 American Community Survey
- 7 PolicyLink Bay Area Equity Atlas, IPUMS USA
- 8 U.S. Economic Development Administration
- 9 U.S. Census Bureau, American Community Survey (2018)
- 10 U.S. Census Bureau, Building Permits Survey (2018)
- 11 U.S. Census Bureau, American Community Survey (2018)
- 12 Bay Area Core Capacity Transit Study (2017)
- 13 ACTC, Assessment of Mobility Needs of People with Disabilities and Seniors in Alameda County (2017)
- 14 Countywide Active Transportation Plan: Bicycle Network Analysis (BNA) Score (2019)
- Walk Score, walkscore.com (2019)