



FINAL REPORT



Caltrain Oakdale Station Ridership Study

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SAN FRANCISCO COUNTY TRANSPORTATION AUTHORITY



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Executive Summary



CALTRAIN IS A REGIONAL PASSENGER RAIL SYSTEM serving major job centers along the Peninsula between downtown San Francisco and San Jose. Before 2005, the system had four stations within San Francisco—Fourth and King, 22nd Street, Paul Avenue and Bayshore. The Paul Avenue station, which served the Bayview neighborhood, was poorly located, had very low levels of service and ridership, and closed in 2005. The concept of replacing it with a new station at Oakdale Avenue evolved from community interest in improving regional rail transit access in the Bayview as a means to increase employment access and support economic development. The 2002 Bayview Hunters Point Revitalization Concept Plan identified the Oakdale site as the best place for a new station given its location midway between the 22nd Street Station to the north and the Bayshore Station to the south, near the center of the Bayview neighborhood, and accessible from major planned development projects in the southeastern corner of the city, including the redevelopment of Hunters Point Shipyard and Candlestick Point. In 2005, the San Francisco County Transportation Authority (Transportation Authority) completed the Bayview-Oakdale Caltrain Station Study, which determined that locating a station at Oakdale Avenue is physically feasible and that the location is superior to alternative sites within the Bayview.

The goal of this study is to determine whether a station at Oakdale Avenue would generate sufficient demand to warrant an infill station at this location and what the appropriate level of Caltrain service to the station would be. In addition to quantifying potential ridership, the Study addresses questions of where riders would originate and how they would access the station. The Caltrain Oakdale Ridership Study is led by the Transportation Authority in partnership with Caltrain (Peninsula Corridor Joint Powers Board), and the San Francisco Municipal Transportation Agency (SFMTA).

The Bayview has a diverse mix of residents with one of the largest African-American communities in the city and a relatively low-income population. The area is characterized by a rich network of local streets, which provide good physical pedestrian and bicycle access, but personal security concerns in the neighborhood can serve as a deterrent to walking. The station site and surrounding area are served by a number of local San Fran-

Projected ridership at a potential Oakdale Avenue Caltrain Station is strong, with approximately 4,700 boardings and alightings per day.

cisco Municipal Railway (Muni) bus lines and a light rail line, although they are often slow and unreliable. The neighborhood's regional transit connections are weak compared to other areas of the city, reducing the number of easily accessible employment centers. Residents have higher than average rates of car ownership and commuting, likely due to a combination of personal security concerns and the need for improved transit access to jobs.

The study team used the Transportation Authority's SF-CHAMP travel demand model to evaluate the expected ridership of an Oakdale Station in the year 2030 when the planned Hunters Point Shipyard and other Bi-County developments and their associated transportation projects are expected to be complete. Caltrain is projected to provide greater service frequency by 2030, and several Caltrain service plans were modeled with and without an Oakdale Station in order to evaluate how different service levels at the San Francisco stations would likely affect overall ridership.

Projected ridership at a potential Oakdale Station is strong, with approximately 4,700 boardings and alightings per day, indicating that there is sufficient latent demand for a station in the area. The primary directional pattern would be riders boarding at Oakdale Station in the morning heading southbound to Peninsula employment centers and returning northbound to the station in the evening. Most riders would originate from the surrounding neighborhoods of Bayview, Hunters Point, and Silver Terrace.

Systemwide ridership at existing stations is expected to increase substantially by 2030, with about 60,000 daily passengers using San Francisco's stations. With careful balancing of service levels between stations, an Oakdale Station could have a positive impact on overall Caltrain system ridership, potentially adding about 2,000 net riders per day. An evaluation of possible service plans for an Oakdale Station determined that providing Local and Limited services, but not Baby Bullet, to the new station while keeping service levels at other stations constant would maximize corridor ridership by providing additional access to the Caltrain system without affecting the high-ridership Baby Bullet service to existing stations. This scenario would provide robust service to the Oakdale Station, with several trains per hour in each direction during commute periods.

Riders would reach the Oakdale Station from the surrounding neighborhoods and the rest of San Francisco via a variety of access modes. Walking and transit are projected to be the most common means of reaching the station, together accounting for almost 80 percent of trips, and an additional 10 percent of access trips would likely be by bicycle. Between 200 and 300 passengers, just 12 percent, are projected to arrive by auto, including those who drive and park, carpool, and are dropped off at the station. Additional trips could be shifted from automobile access to other modes if Transportation Demand Management (TDM) strategies are implemented. These include Muni passes included with residential units in new developments, bicycle sharing and access improvements, residential permit parking (RPP) on nearby streets, pricing of station parking, and shuttles.

Without accounting for a robust TDM package and parking pricing, there could be demand for approximately 150 to 200 parking spaces at an Oakdale station. With additional TDM measures and paid parking at the station combined with an RPP district, this demand could be further reduced. Parking demand could potentially be accommodated on non-residential street frontages near the station or a shared parking facility with other nearby land uses such as the Southeast Community Facility and City College of San Francisco, the San Francisco Public Utilities Commission's (SFPUC's) Southeast Plant, or other adjacent facilities.

Although the Ridership Study demonstrates that an Oakdale Station would have robust ridership, implementation of the project will entail additional planning, design and envi-

ronmental study by both the Transportation Authority and Caltrain. In undertaking these steps, several key remaining issues will need to be addressed, including Caltrain service planning and expansion policies; station access, parking, and demand management strategies; and project costs and funding. Planning work to address these issues, to include continuing community outreach, and initial design to prepare for environmental review could be complete by 2016. If community members and stakeholders continue to support moving forward with the station project, it would then enter the environmental review phase of development followed by final design and construction.

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A new Caltrain station is proposed for this site, just north of Oakdale Avenue in the Bayview neighborhood.



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Introduction and Study Purpose

CALTRAIN IS A REGIONAL PASSENGER RAIL SERVICE between San Francisco and Gilroy operated by the Peninsula Corridor Joint Powers Board and serving a series of major job centers along the Peninsula between downtown San Francisco and San Jose. Before 2005, there were four stations within San Francisco—4th and King, 22nd Street, Paul Avenue and Bayshore. The latter two stations were located in the southeastern corner of the city, in the Bayview and Visitacion Valley neighborhoods, respectively. In 2005, the Paul Avenue station was closed and the Bayshore station moved just south of San Francisco’s border with Brisbane. This study evaluates the ridership potential of a possible new station located at Oakdale Avenue in the city’s Bayview neighborhood.

1.1 Background and Context

The proposed Oakdale Station site is located on the Caltrain mainline, at Oakdale Avenue between Phelps and Quint Streets, as illustrated in Figure 5 (p. 16). The location is midway between the 22nd Street Station to the north and the Bayshore Station to the south and near the center of the Bayview neighborhood.

STATION PLANNING BACKGROUND

The concept of an Oakdale Caltrain Station has evolved from over two decades of community interest in improving regional rail transit access in Bayview Hunters Point as a means to increase employment access and support economic development. The idea was first introduced in a 1988 Caltrans study, which identified the Paul Avenue Station as the lowest ridership Caltrain station in the system. The station suffered from a poor location and physical condition and had very low levels of Caltrain service. The Caltrans study evaluated the feasibility of closing it and constructing a new station at one of several alternative locations, including Oakdale Avenue, but raised questions about engineering challenges and cost. The 2002 Bayview Hunters Point Revitalization Concept Plan, developed through a robust community process led by the Bayview-Hunters Point Project Area Committee and the San Francisco Redevelopment Agency, selected Oakdale as the preferred site for the development of an improved Caltrain station to replace the station at Paul Avenue.



In 2005, the San Francisco County Transportation Authority (Transportation Authority) completed the Bayview-Oakdale Caltrain Station Study to determine whether a new station in this location was feasible as a replacement to the Paul Street Station. The study found that constructing a new Caltrain station at Oakdale Avenue is physically feasible and that the location is superior to alternative sites within the Bayview neighborhood. The engineering study developed a conceptual station design and preliminary project cost estimate of approximately \$50 million. It also identified key improvements that would need to be made on the site and in the area to improve access to a potential station. The Oakdale location is ideal in terms of local transit access, as several bus routes and a light rail line converge nearby. Primary concerns of neighborhood residents at the time were access to jobs and business opportunities as well as public safety around a station. The Engineering Study also developed cost estimates for a station, which was projected to cost approximately \$50 million but would depend on the features to be incorporated. Plans for additional development and upgrades to facilities near to the site, including the SFPUC's Southeast Water Pollution Control Plant and the San Francisco Wholesale Produce Market, were identified as offering both opportunities and potential constraints to the site location.

RELATED PLANNING EFFORTS

The southeastern corner of San Francisco is planned for major new development over the next 30 years, including the approved redevelopment of Hunters Point Shipyard and Candlestick Point with over 10,000 housing units and more than 3.5 million square feet of commercial space, generating additional demand for local and regional travel. Additional development projects are planned in the cities of Brisbane and Daly City, just south of the San Mateo County line. Given the scale of development planned for the area, the Transportation Authority has recently completed the Bi-County Transportation Study, which developed a set of priority transportation projects and an associated funding framework to accommodate the projected growth in trips, as well as the Bayshore Intermodal Station Access Study, which developed options and recommendations for creating a major intermodal transfer point at the Caltrain Bayshore Station.

Major upgrades are planned for the Caltrain corridor in advance of and in conjunction with development of California High Speed Rail, which is planned to connect downtown San Francisco with Los Angeles via the Caltrain line along the Peninsula. A “blended system” is currently planned for the corridor, with High-Speed Rail and Caltrain services sharing usage of the existing two tracks along most of the Peninsula with strategically located passing tracks. To support the blended system, the state legislature allocated funds from the first phase of the High Speed Rail project toward transitioning the Caltrain system from diesel power to electric power. Electrification will allow Caltrain to run an additional train in each direction during peak periods. It will also allow trains to accelerate and decelerate more quickly, lowering overall travel time along the route and reducing the travel time impact of new infill stations like the proposed Oakdale station. The electrified system is currently expected to open in 2019, and pending identification of additional funding sources, the full High-Speed Rail system is planned for completion in 2029.

The Transportation Authority and Caltrain have also proposed extending Caltrain 1.3 miles to the new Transbay Terminal at First and Mission streets in downtown (called the Downtown Extension, or DTX), more closely connecting Peninsula riders with San Francisco’s core job center and the rest of the region’s transit system. In 2012, the regional Metropolitan Transportation Commission identified the \$2.5 billion project as its top priority for federal funding, lowering an important hurdle. Also potentially affecting the Caltrain corridor in San Francisco, the Planning Department is launching a two-year Railyard Alternatives and

I-280 Boulevard Feasibility Study, which will analyze potential changes to the Caltrain railyard at 4th and King that could allow for development of the site, replacement of I-280 with a surface boulevard, and refinements to the DTX design. Caltrain is also evaluating potential alterations to the 4th and King railyard.

In 2010, the Transportation Authority completed the Bayview Neighborhood Transportation Plan (BNTP). While it did not focus on regional access needs, the Plan did identify local neighborhood transportation issues and priorities that must be taken into consideration in Oakdale station planning, including community concerns regarding parking and personal security.

Planning is also occurring in the immediate area of the site to allow for a future Oakdale Station. Given the geometry of the site, the station would have platforms extending across Quint Street, which currently crosses under the tracks. Caltrain is planning to replace the Quint Street bridge, which is at the end of its useful life. Working with the Transportation Authority, Caltrain developed and vetted options to accommodate a future station while maintaining local street access across the tracks and through the area. In July 2013, the Transportation Authority Board selected a berm replacement option, which would facilitate a future station but close through access on Quint Street, as the preferred option to be coordinated with a new Quint-Jerrold Connector Road, a local street to be built by the City that will provide local access.

1.2. Study Purpose

Following the Engineering Study, which found that a station at Oakdale Avenue is physically feasible, this Caltrain Oakdale Station Ridership Study is the next step in the ongoing effort to evaluate and plan for development of a Caltrain station at Oakdale Avenue. The goal of this study is to determine whether a station at Oakdale Avenue would generate sufficient demand to warrant an infill station at this location. Ridership could vary depending on the levels of Caltrain and local transit service provided to Oakdale and other nearby stations. Therefore, the Study considered multiple transit service scenarios to evaluate the sensitivity of ridership at an Oakdale Station and to identify an appropriate range of service levels for a new station.

The Study used the Transportation Authority's SF-CHAMP travel demand model to project ridership across the scenarios and analyzed projected ridership to determine if a new station is justified at Oakdale Avenue and evaluate the effects of different service levels. In addition to quantifying potential ridership, the Study addresses questions of how riders would access the station and whether they would originate in nearby neighborhoods in southeastern San Francisco or elsewhere in the city. The Study concludes by identifying next steps in the process, including key questions that must be addressed in any follow-on studies, such as the environmental analysis.

The Caltrain Oakdale Ridership Study is led by the Transportation Authority in partnership with Caltrain (Peninsula Corridor Joint Powers Board), and the SFMTA. Additionally, consultant work for the study was performed by HNTB Corp. The Transportation Authority provided the travel demand model analysis for the study while the SFMTA and Caltrain provided input necessary to create model scenario inputs.

The purpose of this study is to determine whether a Caltrain station at Oakdale Avenue would generate sufficient ridership demand.

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Existing Conditions



THE BAYVIEW NEIGHBORHOOD that surrounds the potential Caltrain Oakdale Station has distinct characteristics that distinguish it from the rest of San Francisco, including one of the largest African-American communities in the city, a relatively low-income population, and a mix of residential and industrial land uses. This analysis of existing conditions focuses on conditions in the neighborhoods immediately surrounding the station within a half mile, which is generally about a 10-minute walk.¹

2.1. Demographics

The demographic profile of the station area, consisting of most of the Bayview, Hunters Point, and Silver Terrace neighborhoods, is markedly different from the city as a whole, based on 2011 U.S. Census American Community Survey data.² The population density of the station area is approximately 14,000 persons per square mile, significantly lower than the overall population density of the city, in part due to a significant concentration of non-residential land uses in the northern part of the station area. Figure 1 (next page) illustrates population density across the city.

The neighborhoods in the study area contain a diverse mix of residents. The area has a significantly smaller proportion of white residents than the city as a whole and is a traditional center of the city's African-American community. The neighborhoods have a large concentration of African-American residents representing about one-third of the population, compared to 6 percent citywide. The area also has a large population of Asian residents, comprising approximately one-third of the population, including communities of Chinese and Samoan immigrants. The area is home to a smaller but significant population of Latino residents. Figure 2 (next page) compares various groups in the study area with citywide averages.

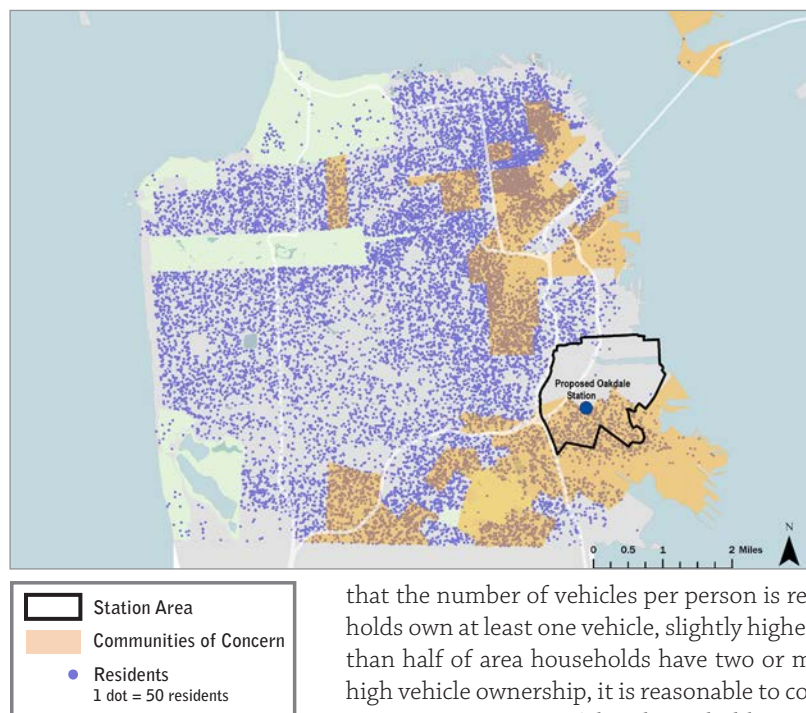
The study area has many families: household size averages 3.4 persons, significantly larger than in much of San Francisco, and children represent close to 20 percent of the population.

Residents have significantly lower incomes, on average, than in other areas of the city. Mean family income is \$63,000, less than two-thirds

¹ Based on an average human walking speed of 3.1 mph.

² For purposes of this analysis, the station area consists of the five Census tracts that fall largely within 0.5 miles of the Oakdale station site: tracts 230.1, 230.3, 231.02, 612, and 9809. Population density is weighted by the proportion of each tract within 0.5 miles of the site.

Figure 1. Population Density in the Study Area and San Francisco



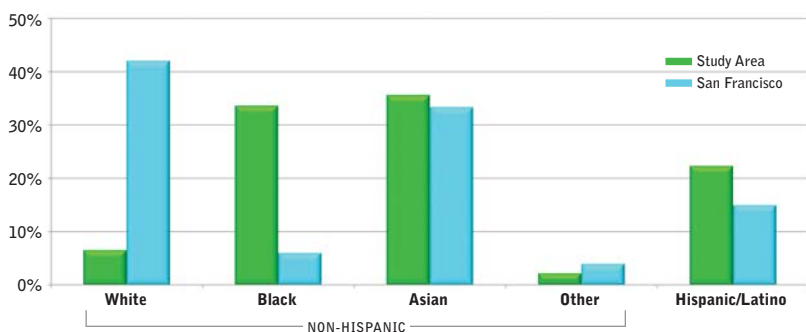
of the citywide figure. Eighteen percent of households are below the poverty line, compared to 12 percent citywide. As a result of the area's low incomes and high poverty rate, availability of and access to jobs is a major concern for community residents.

Due to the combination of low incomes and a high proportion of minority residents, all of the residential areas within the study area are included in the Bayview/Hunters Point/Bayshore Community of Concern (COC), as defined by the regional Metropolitan Transportation Commission. The COCs in San Francisco are shown in Figure 1.

Despite lower than average household incomes, households tend to own more vehicles than those in other areas of the city, although large average household sizes mean

that the number of vehicles per person is relatively small. Eighty-six percent of area households own at least one vehicle, slightly higher than the city average of 80 percent, while more than half of area households have two or more vehicles. Given the area's low incomes and high vehicle ownership, it is reasonable to conclude that households in the Study Area spend a greater percentage of their household incomes on maintaining vehicles than those in other

Figure 2. Race/Ethnicity in the Study Area and San Francisco



areas of the city. The vehicle ownership data indicate that, due to a variety of factors including limited regional transit access, low-income households in the area must own cars regardless of the financial burden imposed.

A significantly higher proportion of station-area residents drive alone to work than in the city as a whole (47 percent in the station area versus 38 percent citywide), though area residents also carpool to work at higher rates. Slightly lower proportions walk or take transit to work, versus the citywide average. In

concert with their high vehicle ownership and drive-to-work rates, residents in the station area generate some of the highest vehicle-miles travelled (VMT) totals in the city, as shown in Figure 3 (next page). These differences are not necessarily explained by the distances required for residents' journeys to work, as the percentage of station-area residents who travel across a county line for work is on par with the citywide average. Rather, personal security concerns and relatively poor access to rapid local transit and regional transit in much of the area likely explain the relatively high auto mode share.

2.2. Land Use and Employment

The area around the Caltrain Oakdale study site is primarily a mix of low-density housing and light industrial uses. Within a quarter-mile radius of the station site, residential districts to the south and east of the site are dominated by single-family homes with scattered multi-family housing. These residential uses transition into industrial uses to the north and west of the site. The industrial uses include warehousing, auto yards, shipping, and

a scrap metal processing facility. Because of these low-density uses, the area north of the station site has low job densities compared to other employment centers. Although the Oakdale station area includes industrial as well as residential uses, the job density in the site vicinity (11,300) is lower than for the city overall (16,300), illustrated in Figure 4.

Just over a quarter-mile southeast along Oakdale Avenue, Third Street serves as the commercial center of the Bayview neighborhood and includes a variety of retail, services, and community uses. The Oakdale station site was chosen, in part, because of its proximity to this center of the community.

The land uses immediately surrounding the station site include a SFPUC wastewater treatment plant just to the northeast; the San Francisco Wholesale Produce Market, which is expanding onto an adjacent parcel to the northwest; San Francisco Water Department facilities to the west; and the Southeast Community Facility, which includes a City College of San Francisco campus, to the southeast.

Due to the low job density in the neighborhood, the dispersed nature of Bay Area employment, and the fact that many low-skilled jobs are located in inner and outer suburbs of the metropolitan area, the lack of regional transit options is a significant issue for the neighborhood.

2.3. Transportation

The Study Area is characterized by a rich network of local streets, which provide good physical pedestrian and bicycle access, but personal security concerns in the neighborhood can serve as a deterrent to walking. The station site and surrounding area are served by a number of local San Francisco Municipal Railway (Muni) bus lines and a light rail line, although service can be slow and unreliable.

Access to the regional freeway network is relatively easy, but the neighborhood's regional transit connections are weak compared to other areas of the city. The study area is far from the nearest Bay Area Rapid Transit (BART) stations and cut off by the U.S. 101 and I-280 freeways. The Bayshore and 22nd Street Caltrain stations are both more than a mile away and lack direct Muni connections that do not require a significant walking transfer. SamTrans buses provide service from San Mateo County to and from stops along Bayshore Boulevard, which is over two-thirds of a mile west of the station site

Figure 3. Household VMT in 2012 by Transportation Analysis Zone

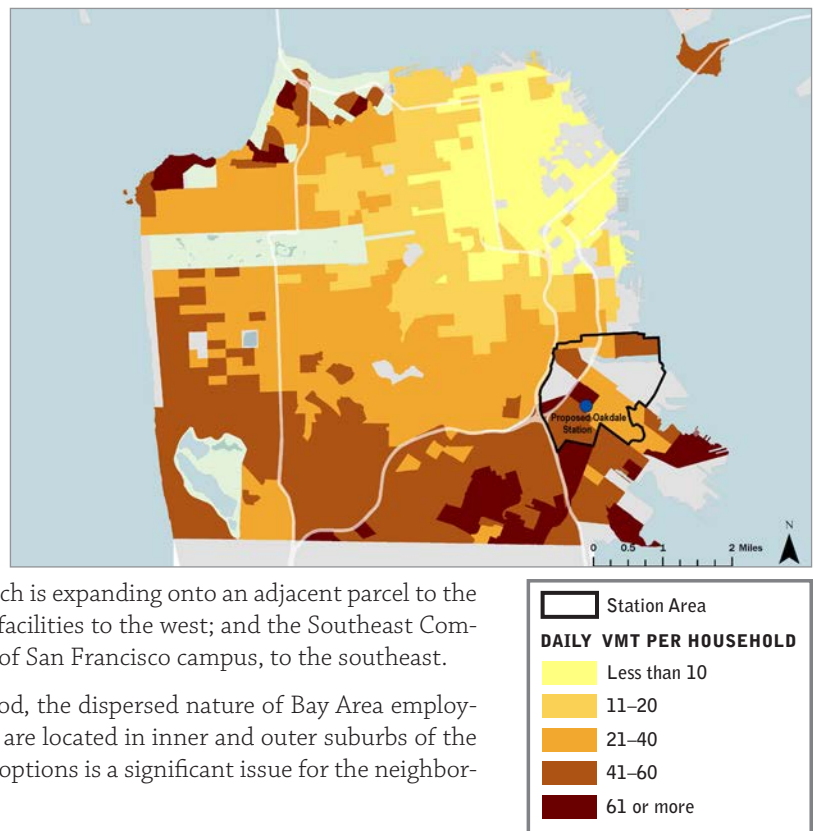


Figure 4. Job Density in the Study Area and San Francisco

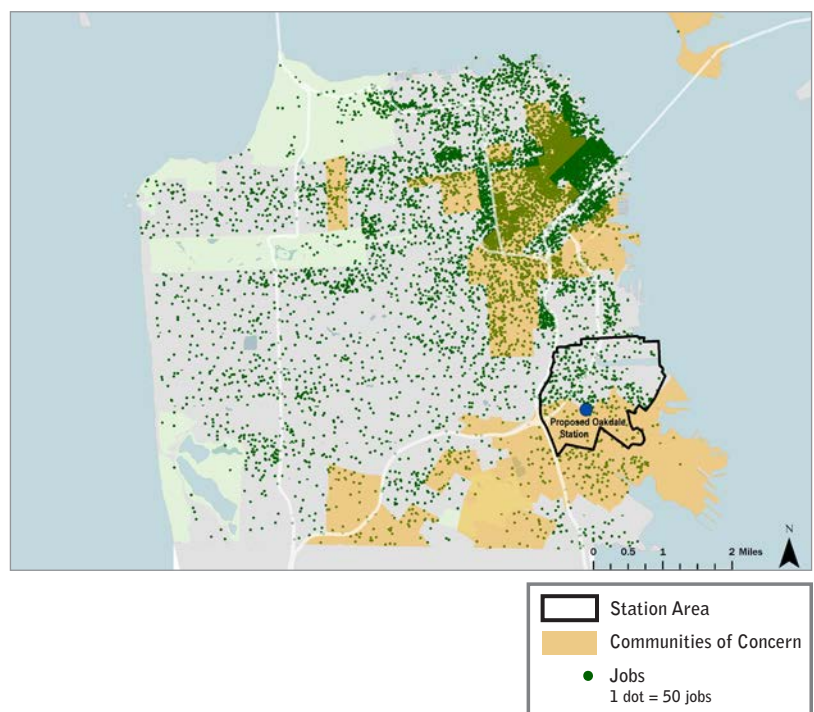


Figure 5. Current Bus Service to Oakdale Station Area

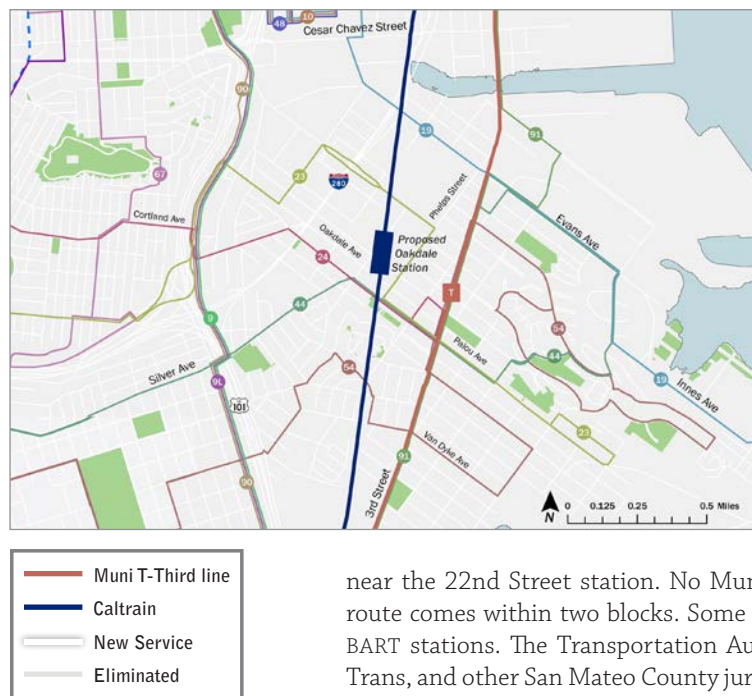


Figure 6. Proposed Bus Service with TEP to Oakdale Station Area



near the 22nd Street station. No Muni routes provide direct access to Bayshore, but one route comes within two blocks. Some of these routes provide service to both Caltrain and BART stations. The Transportation Authority is currently working with the SFMTA, SamTrans, and other San Mateo County jurisdictions to study a Geneva-Harney Bus Rapid Transit route that would improve access to Bayshore Station and the surrounding neighborhoods.

and separated from residential areas of the Bayview by industrial land uses and the 280 freeway. Other regional providers, including Golden Gate Transit and AC Transit, serve only the northern part of San Francisco. Poor regional transit access alongside high transit dependence poses a problem to neighborhood residents who seek employment around the greater Bay Area.

This section provides a summary of current transportation conditions by mode, including Caltrain services, ridership, and station access modes.

LOCAL TRANSIT SERVICE

Muni currently operates 83 routes, providing transit across San Francisco. Current average weekday ridership is approximately 690,000.³ Muni provides feeder bus service to Caltrain stations in San Francisco. A total of four routes provide service

The proposed Oakdale Station site is well served by local transit. Three Muni bus routes currently run on Palou and Jerrold Avenues (see Figure 5):

- 23 Monterey, which runs west through the city to Ocean Beach at Sloat
- 24 Divisadero, which runs through Bernal Heights and Noe Valley, then north to Pacific Heights
- 44 O'Shaughnessy, which runs northwest through the city and terminates in the Inner Richmond

In addition, the T-Third Light Rail, opened in 2007, serves an Oakdale Avenue stop just under one-third of a mile from the proposed station. The rail line provides access south through the Bayview to Visitacion Valley and north to Mission Bay and downtown San Francisco. Starting in 2019, this line will provide more direct access to downtown and Chinatown, via the Central Subway.

Several service changes are planned in the station area as part of the citywide Muni Transit Effectiveness Project (TEP) (see Figure 6). These changes would eliminate several circuitous portions of routes and provide more direct access to the station, primarily via Palou Avenue, as well as to Hunters Point.

³ SFMTA San Francisco Transportation Fact Sheet, November 2012.

CALTRAIN SERVICE

Caltrain provides passenger rail service from San Francisco south along the Peninsula to San Mateo and Santa Clara Counties. The service is owned and managed by the Peninsula Corridor Joint Powers Board (JPB), which consists of three members - the City and County of San Francisco, as represented by the SFMTA, the San Mateo County Transit District (SamTrans), and the Santa Clara Valley Transportation Authority (VTA). Caltrain operations are contracted to Transit America Services, Inc.

Caltrain currently operates 92 weekday trains, including 28 local trains, 42 Limited-stop trains, and 22 Baby Bullet trains. Hourly local trains run during off-peak and shoulder hours and stop at all or nearly all of the 26 stations between San Francisco's 4th and King Street Station and San Jose's Diridon Station. Select trains continue farther south to Gilroy. Limited service, running primarily during commute periods, skips up to half of the stops. Baby Bullet trains, introduced in 2004, provide express service in both directions during the morning and evening commute periods, travelling between San Francisco and San Jose in about one hour with stops at four to five intermediate stations.

The 22nd Street Station has frequent Baby Bullet service southbound in the morning and northbound in the evening to serve commuters accessing Peninsula jobs, and most Limited trains also stop at the station. However, only hourly Limited trains and no Baby Bullet trains serve the station traveling the opposite direction, northbound in the morning and southbound in the evening. Only three hourly Limited trains serve Bayshore Station in each direction during both the morning and evening commutes; the station does not have Baby Bullet service.

Northbound service in San Francisco runs from 4:30 a.m. to midnight on weekdays. Southbound service starts at 5 a.m., finishing at 1:30 a.m. Eighteen trains run in each direction Saturdays (from 7 a.m. to 1:30 a.m.) and 16 run on Sundays (from 8 a.m. to 11 p.m.). Two weekend Baby Bullet trains, which stop at seven intermediate stations, run in each direction on Saturdays and Sundays.

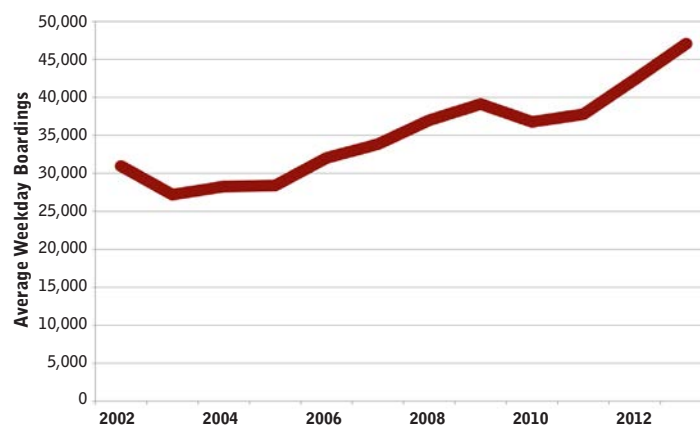
Systemwide Ridership

Caltrain conducts annual onboard passenger counts, typically in February of each year. Figure 7 presents Caltrain annual average weekday ridership (AWR) between 2002 and 2013. Ridership has increased significantly since 2002 with the exception of two economic downturns, increasing 73 percent since its low point in 2003 the year before Baby Bullet service was introduced to approximately 47,000 AWR in 2013. Ridership gains have been especially rapid in the last two years, with annual growth of 11 to 12 percent.

Ridership at 22nd Street and Bayshore Stations

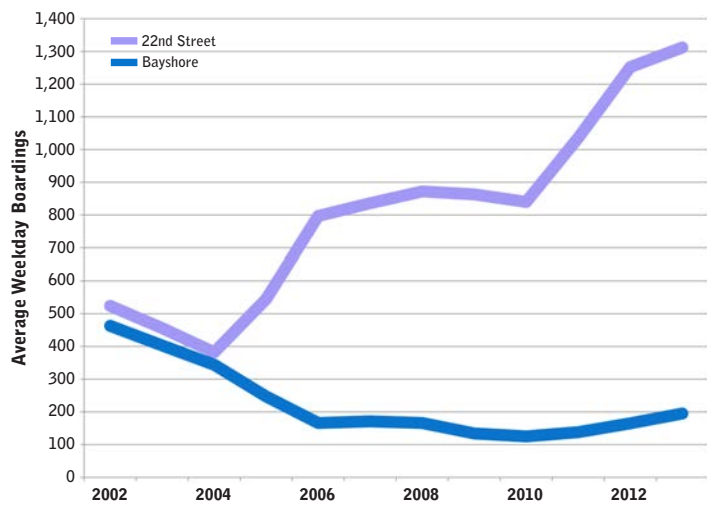
Figure 8 (next page) presents Caltrain average weekday ridership and service levels for existing Caltrain stations nearest to the study area (22nd Street and Bayshore) for the years 2002 through 2013. Boardings have increased over time at 22nd Street station, with a significant jump after introduction of Baby Bullet service in 2004 and a dramatic increase of over 50 percent since 2010. The station is currently the 11th-busiest in the Caltrain system. Meanwhile, Bayshore ridership steadily declined from 2002 to 2006, possibly as riders migrated to other stations with Baby Bullet and overall more frequent service. It has remained consistently

Figure 7. Caltrain Average Weekday Ridership, 2002–2013



SOURCE: Caltrain Annual Ridership Reports, 2002–2013.

Figure 8. Average Weekday Boardings at 22nd Street and Bayshore Stations, 2002 - 2013



SOURCE: Caltrain Ridership Reports, 2010 and 2012.

very low since, averaging between 100 and 200 AWR. Caltrain discontinued service to Paul Avenue Station, between 22nd and Bayshore, in 2005. Between 2002 and 2005, the station had very little service and never served more than 25 riders per weekday.

Passenger Origins

Additional ridership data are available from the Oakdale Station Intercept Survey that was conducted by the Transportation Authority in November 2004 at the 22nd Street, Bayshore, and Paul Avenue stations. The survey included 19 questions related to Caltrain trip origin, destination and purpose, mode of access and egress, usage of the potential Oakdale station, and demographic information of respondents. In total, 467 surveys were completed.

Among the respondents, 69 percent reported starting their trip at the 22nd Street Station; 24 percent

reported starting their trip at the Bayshore Station. The top origin-destination pairs among respondents were:

- 22nd Street—Palo Alto (17%)
- 22nd Street—Mountain View (16%)
- 22nd Street—San Jose Diridon (8%)

The Intercept Survey also included a question about home Zip code.⁴ Table 1 presents the top 10 reported home Zip codes, and the associated neighborhoods, while Figure 9 (next page) shows their distribution. Based on the survey, most passengers originated their trips in the eastern half of San Francisco south of downtown, with concentrations in such

⁴ The Intercept Survey also asked respondents for their origin zip codes. Since most trips originated from home, the home and trip origin zip codes were very similar.

Table 1: Most Common Zip Codes for 22nd Street and Bayshore Station Passengers

RANK	ZIP CODES	CITY	NEIGHBORHOOD	COUNT	PERCENT
1	94107	San Francisco	Potrero/Mission Bay/SoMa	97	24.1%
2	94110	San Francisco	Mission	76	18.9%
3	94114	San Francisco	Noe Valley/Castro	43	10.7%
4	94134	San Francisco	Visitacion Valley	28	7.0%
5	94124	San Francisco	Bayview/Hunters Point	24	6.0%
6	94131	San Francisco	Twin Peaks/Diamond Heights	21	5.2%
7	94112	San Francisco	Outer Mission	18	4.5%
8	94014	Daly City		10	2.5%
9	94117	San Francisco	Western Addition	10	2.5%
10	94122	San Francisco	Sunset	9	2.2%
Subtotal (Top 10)				336	84%
TOTAL				402	100%

SOURCE: Transportation Authority Oakdale Station Intercept Survey, November 2004

neighborhoods as Potrero Hill, Mission, Bernal Heights, Upper Market, and Diamond Heights/Noe Valley. Neighborhoods in southeastern San Francisco, including the Bayview, Visitacion Valley, Excelsior, and Outer Mission also provided substantial portion of ridership, despite the lower service levels at Bayshore Station, which most directly serves these areas.

Mode of Access

In 2006, Caltrain conducted a systemwide Origin and Destination Survey, which also identified modes of station access and egress. Mode share data to the 22nd Street and Bayshore stations during the AM peak period are illustrated in Figure 10 and Figure 11, respectively. Modes of access and egress are significantly different during the morning peak period because riders boarding at the station are typically at the home end of their trips, whereas alighting passengers are likely at the work (or other activity) end of their trips. Note that the vast majority of passengers using either station in the morning peak are boarding, rather than alighting.

More than half of 22nd Street Station passengers access the station by auto, including drive alone, carpool, and kiss-and-ride modes, while most passengers arriving to Bayshore Station get there by walking bicycling, or taking transit. Among auto access trips, riders boarding at 22nd Street are more likely to drive alone or carpool compared with those at Bayshore. A larger share of riders kiss and ride at Bayshore Station, possibly due to the nearby access to the U.S. 101 freeway. Walking is particularly prevalent among riders boarding at Bayshore station, with nearly 40 percent of boarding passengers arriving on foot, despite the station's location somewhat isolated from the surrounding communities. Proportionately fewer passengers at 22nd Street walk to the station, just over 20 percent, perhaps because the station's Baby Bullet service attracts many riders from farther away. On the other hand, slightly more riders bike to the 22nd Street Station as compared to Bayshore. Transit access accounts for a notably small share of access trips to both stations, neither of which is directly served by more than one transit line or any Muni Rapid Network services. Bayshore Station has higher transit access mode share than 22nd Street, despite distances of 1,000 feet or more to the nearest local transit stops.

More than three-quarters of passengers alighting at both stations walk or bike to their final destinations. Consistent with boarding mode share, more passengers

Figure 9. Distribution of Zip Codes for 22nd Street and Bayshore Station Passengers

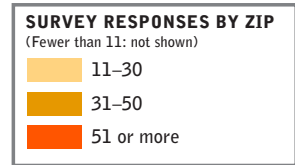
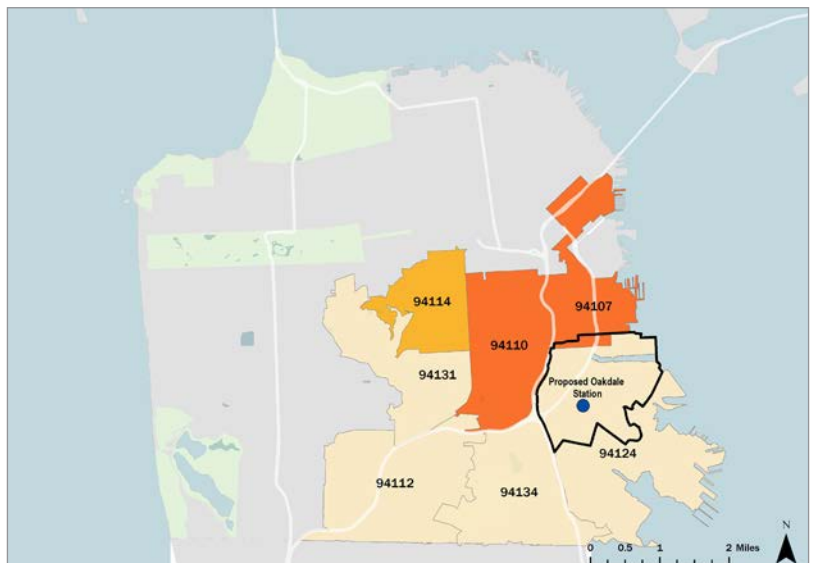


Figure 10. 22nd Street Station Mode of Access/Egress (AM Peak)

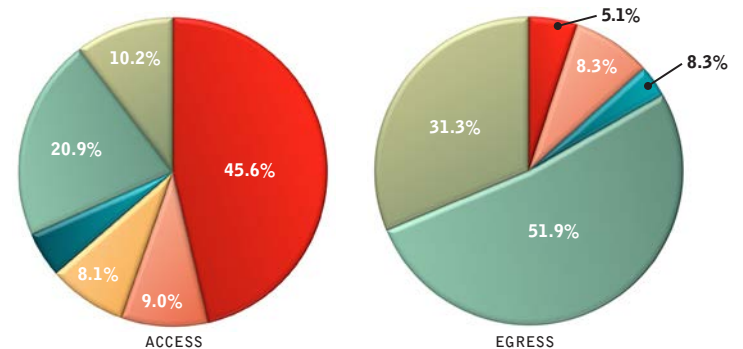
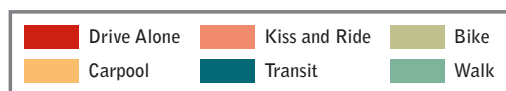
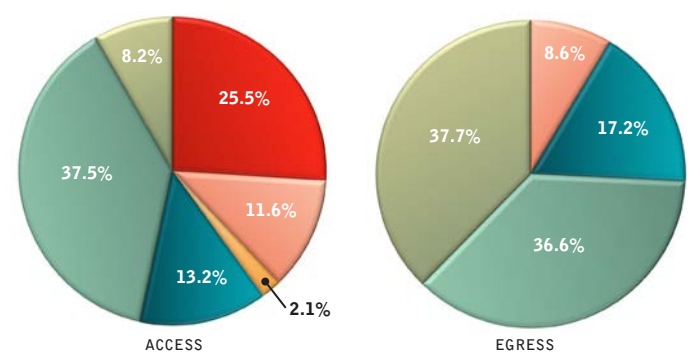


Figure 11. Bayshore Station Mode of Access/Egress (AM Peak)

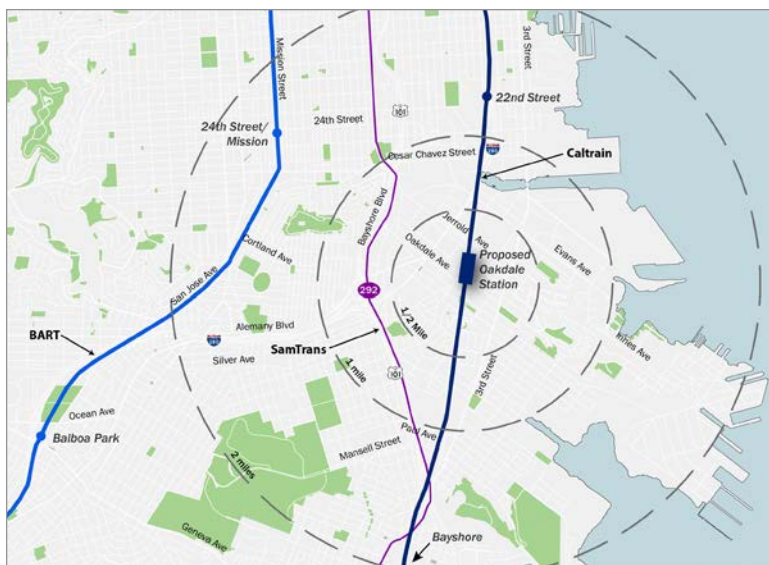


take transit when alighting at Bayshore than at 22nd Street. Bicycle egress mode shares are much higher than access shares, which may indicate that trains' on-board bicycle capacity constraints depress bicycle mode share at these stations by encouraging southbound bicyclists to board at 4th and King Station to ensure they get a bicycle space.

OTHER REGIONAL TRANSIT SERVICE

Figure 12 shows regional transit services closest to the proposed Oakdale Station site. The BART District provides frequent and rapid regional rail service between San Francisco, northern San Mateo County, and the East Bay, and has eight stations that serve San Francisco.

Figure 12. Regional Transit in Southeastern San Francisco



Average weekday ridership for BART is approximately 334,000.⁵ The nearest BART stations to the study area are the 24th Street Mission and Glen Park stations.

SamTrans Route 292 bus runs from San Francisco's Transbay Terminal to cities in San Mateo County, providing local service on the Peninsula with several Caltrain connection points. In San Francisco, it stops at the intersection of Bayshore Boulevard and Arleta Avenue near the Bayshore Caltrain Station before continuing north up Bayshore Boulevard and Potrero Avenue toward downtown. The late-night Route 397 follows a similar route. Reaching these routes from residential areas in the Bayview requires either a transfer from the T-Third or other local transit. In San Francisco, SamTrans buses only drop off passengers in the northbound direction and pick up passengers in the southbound direction.

SHUTTLE SERVICES

Community organizations in the Bayview operate vans associated with their programs, but none provide shuttle service to Caltrain or other regional transit stations. No known shuttles serve the 22nd Street Caltrain Station, but several free shuttles provide service to Bayshore Station. Shuttle services provided at the station include:

- Bayshore/Brisbane Commuter Caltrain Shuttle
- Brisbane/Crocker Park BART Shuttle
- Bayshore/Brisbane Senior Shuttle

VEHICULAR ACCESS

The proposed station area is readily accessible by auto. U.S. Highway 101, the Bayshore Freeway, has exits onto Bayshore Boulevard both three-quarters of a mile southwest of the site and about one mile west of the site. Primary access routes to and from the freeway are Oakdale Avenue and Silver Avenue. Interstate 280 passes closer to the site on a two-level viaduct, but does not have an exit near Oakdale Avenue. Third Avenue, a half-mile east of the station site, serves as the primary north-south arterial route along the eastern side of the city, providing access from the Bayview to downtown San Francisco and Mission Bay to the north as well as Bayshore Boulevard and Visitacion Valley to the south. Oakdale, Palou,

⁵ BART January and February 2013 Ridership Reports.

and Jerrold Avenues provide the primary northwest-to-southeast connections to the station site, with Palou providing a direct route to Hunter's Point. A grid of streets also provides local access throughout the area.

PEDESTRIAN ACCESS

The potential Oakdale Station is located within a short walk of the center of the Bayview-Hunters Point neighborhood on Third Street. Parts of the Bayview and Silver Terrace neighborhoods are within a half-mile of the site, generally considered approximately a 10 minute walk. However, because the site is west of most residential areas in the neighborhood, much of Hunters Point and the southern Bayview are over a mile away. Sidewalks are provided along almost all blocks in the area, particularly in residential neighborhoods, but the Bayview Neighborhood Transportation Plan (NTP) found that the disjointed nature of the street network, limited lighting, and the frequent rate at which cars blocking pedestrian rights-of-way in the neighborhood are all barriers to walking in the area.⁶ At the station site itself, large blocks east and west of the site limit the available pedestrian access routes. In addition, the BNTP found that personal safety issues are a major barrier as residents are often reluctant to use public transportation or walk, particularly at night, because of crime concerns.

BICYCLE ACCESS

The BNTP also identified bicycle accessibility as an area of need, albeit a lower priority for the community than improving walking infrastructure. The station area has four city-designated bicycle routes that converge near the proposed station site, providing direct access to Hunter's Point, Visitacion Valley, the Excelsior, and Downtown via Mission Bay. A bicycle lane on Oakdale Avenue provides access to the proposed station site, but few other routes in the immediate area have dedicated bicycle space or infrastructure. Topography in much of the Bayview is relatively flat, although hills reduce the ease of bicycling to and from some of the surrounding neighborhoods. The Plan noted that the area could be primed for increased biking with upgrades to the local bicycle network. However, as with walking, safety concerns also serve as a barrier to bicycling for residents.

⁶ SFCTA. Bayview Neighborhood Transportation Plan. June 2010. Page 25.

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3

Service Alternatives and Analysis Methodology

RIDERSHIP at a new Oakdale Station is, in part, dependent on the future land uses near the station, the level of Caltrain service at each of the San Francisco stations, and the amount of local transit service providing access to the station. The study team evaluated the performance of an Oakdale Station within the context of the planned Bi-County developments and associated transportation projects while considering several Caltrain service plans in order to identify a feasible scenario to serve as the Oakdale Station build scenario.

To generate future travel conditions projections, the Study utilized the San Francisco activity-based travel demand model, SF-CHAMP, with minor modifications developed for the Bi-County Transportation Study. The modifications incorporate a finer-grained analysis zone system and transportation network in San Mateo County in order to more accurately portray travel in the Bi-County area. Using this model, the Study developed findings on future travel conditions and potential transportation projects by comparing travel demand projections for modeled scenarios.

Given expectations of new development in the Bayview district of San Francisco and changes to the transportation network over the next 20 years, this analysis of future Caltrain ridership is based on the year 2030. The development of an Oakdale Caltrain Station, if it proceeds as envisioned, is expected to take several years to implement. The analysis year 2030 allows the assessment to fully account for the developments expected to impact the entire Caltrain corridor within San Francisco. By the year 2030, Mission Bay and the growth envisioned in the Eastern Neighborhoods Plan will impact the 4th and King and 22nd Street stations, while Bi-County planning efforts envision growth in the Bayview district, along the southeastern waterfront, and surrounding the Bayshore station.

3.1 Land Use Assumptions

The southeastern part of San Francisco is expected to host a substantial amount of growth by 2030, with the redevelopment of the Bayview-Hunters Point Shipyard, Candlestick Point, and Executive Park sites, among others. Additional growth is expected just south of the border in the San Mateo County cities of Brisbane and Daly City. The transportation demands generated by development in this Bi-County Area and the transportation improvements needed to accommodate it were evaluated

in the Transportation Authority’s recent Bi-County Transportation Study. This Ridership Study evaluates projected ridership of an Oakdale Station that would serve not only the current population of the station area and southeastern San Francisco, but also the new residents and employees of these developments. The Study compared existing conditions in 2012 to future 2030 scenarios with and without an Oakdale Station. The 2030 scenarios assume implementation of the land developments anticipated in the Bi-County Transportation Study. Association of Bay Area Governments (ABAG) land use projections were modified to reflect Bi-County growth with full build-out of all projected land-use projects in the area. The Study kept constant the total amount of countywide development projected by ABAG for San Francisco and San Mateo Counties, but re-distributed overall projected growth within each to accommodate Bi-County growth. The land use assumptions for the basic scenarios analyzed are shown in Table 2.

The station would serve both the area's current residents and employees and future occupants of planned nearby development.

Table 2: Land Use and Transportation Analysis Scenario Overview

SCENARIO	LAND USE ASSUMPTION	TRANSPORTATION NETWORK ASSUMPTION
2012 Base	Existing land uses	Existing transportation network
2030 Baseline	2030 land uses with Bi-County growth	2030 transportation network
2030 Oakdale Station Alternative	2030 land uses with Bi-County growth	2030 transportation network plus Bi-County projects, Oakdale Station, and additional Muni service on Palou to serve the station

3.2 Caltrain Service Scenarios

The study team developed a future year baseline scenario and an Oakdale Station scenario to evaluate the future ridership potential of a new station as well as its impact on ridership at the other San Francisco Caltrain stations in 2030. The study also conducted sensitivity tests with alternative service plans to identify the most promising build scenario. Electrification and other upgrades will allow the corridor to accommodate more frequent service and stops, but Caltrain has not yet determined how additional service will be allocated. For the scenarios in this analysis, overall service levels along the corridor were based on assumptions at the time modeling was conducted. Current plans for a blended system of commuter rail service with high speed rail include six Caltrain trains per hour during peak periods, and Caltrain will determine service levels at individual stations based on ridership, trip patterns, geographic equity, system-wide operational considerations, and other factors. The scenarios analyzed in this study are intended to determine whether an Oakdale Station would gen-

Table 3. Station Service Characteristics by Scenario

		2012 BASE	2030 BASELINE	2030 OAKDALE STATION
4th & King	Caltrain	Bullet	Bullet	Bullet
	Muni	Existing	Planned	Planned
22nd St.	Caltrain	Bullet	Bullet	Bullet
	Muni	Existing	Planned	Planned
Oakdale	Caltrain	—	—	Ltd / Local
	Muni	Existing	Planned	Enhanced
Bayshore	Caltrain	Ltd / Local	Ltd / Local	Ltd / Local
	Muni	Existing	Planned	Enhanced

NOTE: “Planned” Muni service includes TEP enhancements and service planned to serve Hunters Point Shipyard development. “Enhanced” service includes the Bi-County projects serving Bayshore Station and additional frequency on lines serving Oakdale Station.

Table 4. Caltrain Service Levels by Scenario (Southbound AM peak trains per hour)

	2012 BASE	2030 BASELINE	2030 OAKDALE STATION
4th & King	5	8	8
22nd St.	4	7	7
Oakdale	0	0	4
Bayshore	1	4	4

erate viable ridership comparable to existing stations and to determine how variations in service levels between stations might affect ridership.

Table 3 (previous page) and Table 4 display the service assumptions for each modeled scenario. The Baseline scenario assumes an increase from the current five southbound trains in the morning peak hour to eight trains per hour in each direction by 2030, including significant increases in the number of trains stopping at all three San Francisco stations. The Bayshore Station is assumed to be serviced by Limited as well as Local trains. The Oakdale Station scenario includes Limited and Local service to the new station, providing a total of four trains per hour in the peak periods, while service levels to the other San Francisco stations remain constant.

In developing the Oakdale Station scenario, the study team also tested the following service plan candidates:

- Baby bullet service to both 22nd Street and Oakdale Stations
- Baby bullet service to Oakdale Station and elimination of the 22nd Street Station

Caltrain service plans would be refined as part of further station planning work and in coordination with the planned electrification of the Caltrain line and future blended service with California High-Speed Rail.

3.3 Local Transit Service

The future scenarios assume changes to local transit service levels and routes serving the San Francisco Caltrain stations. Service assumptions for the 2030 Baseline scenario include changes planned as part of both the Transit Effectiveness Project (TEP) and the package of transportation improvements associated with the Candlestick Point and Hunters Point Shipyard development projects. The additional planned service is shown in Figure 6 and includes more direct service for the 23, 24, and 44 lines along Palou Avenue, one block from the proposed station, as well as line extensions to directly service the planned Hunters Point development. The Oakdale Station scenario includes enhanced transit service to serve the station, including frequency improvements to all three lines, as well as improved access to the Bayshore Station provided by the Bi-County package of projects. These service improvements are intended to provide enhanced local access to the Caltrain stations as well as to serve planned development.

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4

Ridership Findings

4.1 Oakdale Station Demand

Projected ridership at a potential Oakdale Avenue Caltrain Station is strong, with approximately 4,700 boardings and alightings per day, indicating that there is latent demand for a Caltrain station in the area. Projected ridership at the station would be comparable to projected ridership at San Francisco's 22nd Street station and more than twice current ridership at either 22nd or Bayshore Station. The primary directional pattern, similar to the current and projected pattern at 22nd Street and Bayshore Stations, would be riders boarding at Oakdale Station in the morning heading southbound to Peninsula employment centers and returning northbound to the station in the evening. Table 5 (next page) presents ridership by scenario for each station.

Based on these results, the study team expects the level of demand for an Oakdale Station to be capable of sustainably supporting the robust service levels assumed.

4.2 System-wide Service Allocation and Ridership

Total daily ridership at San Francisco Caltrain stations is expected to increase substantially by 2030 to about 60,000 daily boardings and alightings, assisted by both more frequent service and the planned concentration of growth along the rail corridor.

Although Oakdale Station will have robust ridership, with its introduction the number of passengers boarding and alighting at the other San Francisco Stations is expected to fall as some riders shift to the new station. Some of the decrease at the two stations to the north may also result from additional travel time on trains that make the new stop at Oakdale Station. However, the increase of 4,700 daily boardings and alightings at an Oakdale Station is expected to more than overcome the decrease at the other stations. The new station is expected to attract enough new riders with the proposed service plan to result in a net system ridership increase of approximately 2,000 daily boardings and alightings, or a 3.5 percent increase in trips to and from San Francisco.

This projected ridership increase with an Oakdale Station is highly dependent on the distribution of Caltrain service among the San Francisco stations, as determined by modeled sensitivity tests of alternative service plans. Adding Baby Bullet service to the Oakdale Station in addition to

Table 5. Projected Daily Ridership by Scenario

	2012 BASE	2030 BASELINE	2030 OAKDALE STATION
4th & King	19,382	46,300	45,500
22nd St.	2,461	5,800	5,100
Oakdale	—	—	4,700
Bayshore	333	7,400	6,300
All SF Stations	22,176	59,500	61,600

SOURCE: SF-CHAMP RPM9-3.3.2B

the service at 4th and King and 22nd Street stations would likely result in a net system ridership decrease. Model results indicate that the additional Baby Bullet stop and subsequent increase in travel times for passengers boarding at 22nd Street and 4th and King Stations may significantly decrease ridership at those stations. The additional boardings at Oakdale with Baby Bullet service would not be enough to overcome the losses at the other San Francisco stations.

About 4,700 daily boardings and alightings are expected at an Oakdale Station, generating a system-wide increase of approximately 2,000 riders.

Another service plan initially evaluated, eliminating some or all service at 22nd Street and replacing it with additional new service (including Baby Bullet) at Oakdale Avenue, is also expected to decrease systemwide ridership. In the scenario in which both stations have similar service, the 22nd Street Station would likely attract slightly higher ridership than Oakdale Station. As a result, any significant ridership lost at 22nd Street from reductions in service likely cannot be surmounted by gains at Oakdale from adding Baby Bullet service.

The Oakdale Station Alternative as proposed here, with Local and Limited services at the new station and no decrease in service elsewhere, is projected to increase overall ridership by providing additional accessibility to the Caltrain system without reducing the frequency or travel times of the high-ridership Baby Bullet service to other San Francisco stations.

4.3 Station Access

Riders would reach the Oakdale Station from the surrounding neighborhoods and the rest of San Francisco via a variety of access modes, including on foot or via bicycle, local transit, and auto. Among passengers arriving by auto, some would drive and park while others would get dropped off at the station (kiss-and-ride). One goal in station planning is to reduce the number of passengers arriving by auto. Encouraging riders to use other access modes would minimize impacts on traffic and community livability nearby and along primary access routes to the station. Managing demand for parking will also be important because parking capacity at and surrounding the station will be limited.

Figure 13 (next page) shows the proportion of trips likely to access the Oakdale Station by each mode. These estimates are based on model results for the walk, transit, and auto mode shares. The bicycle demand share was estimated using a combination of the modeled results and data from the existing 22nd Street and Bayshore Stations. Because many commuters use different stations and travel modes to access the Caltrain system (access trips) than to leave the system to reach a destination (egress trips), mode shares for access and egress trips differ. This analysis focuses on access trips because they best represent auto trips that are likely to include parking at the station.

The access mode share findings indicate that walking and transit are likely to be the most common means of reaching the station, together accounting for more than three-quarters

of trips. Auto trips are projected to represent just 12 percent of access trips. Walking mode share is projected to be strong, but could be lower if Bayview residents' current concerns about crime and personal security are not abated in the future. Although the expected growth in new residents and businesses in the neighborhood may generate more activity and reduce crime by the time an Oakdale Station opens, pedestrian safety and security measures, such as enhanced lighting along key access routes, could also be implemented with the station to further address these issues and encourage passengers to walk to the station. While projected to be strong, walking mode share could be lower if Bayview residents' current concerns about crime and personal security are not abated in the future. More direct and frequent Muni routes serving the station from a variety of neighborhoods, including from new developments at Hunters Point, are projected to result in significantly higher transit access rates than are currently observed at the Bayshore and 22nd Street Stations.

The ridership and mode share results indicate that between 200 and 300 riders may access the station by auto, including those who drive and park, carpool, and are dropped off at the station. This range likely overestimates the number of auto trips the station would attract with transportation demand measures and station parking pricing in place, both discussed below.

BICYCLE ACCESS SHARE

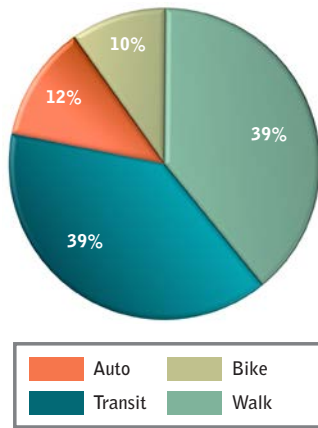
Since many Caltrain riders' origins and destinations are relatively far from a station and not well-served by transit, particularly in suburban employment centers on the Peninsula, a high proportion of Caltrain riders currently bike to stations even across long distances. While some bicyclists park their bikes at stations, Caltrain also allows riders to take bikes on the train, including during high-traffic commute hours, and has installed racks and accommodations on trains to attempt to meet bicycle access demands. However, bicyclists are often bumped from trains when bike capacity is full, limiting the currently achievable bicycle access mode share to the system.

Bay Area Bikeshare, a regional bikesharing pilot program managed by the Bay Area Air Quality Management District, has begun to help address this last-mile problem by providing bicycles in San Francisco and popular employment destinations in Redwood City, Palo Alto, Mountain View, and San Jose, allowing more Caltrain riders to access stations at both ends of a trip by bicycle without increasing on-board bicycle space. However, the size and geographic extent of the system are currently very limited and bikeshare stations are not presently planned for the Bayview.

The study team estimated bicycle access mode share based on both model results and existing rates of bicycle access to the 22nd Street and Bayshore stations from the intercept survey. According to the 2006 survey results, bike access shares to Bayshore and 22nd St stations were 8 and 10 percent, respectively (Figure 10 and Figure 11). The bicycle shares of trips leaving the stations (bike egress share) were at least twice as high at 19 percent and 23 percent, respectively, likely due in part to cyclists choosing to board instead at 4th and King to secure bicycle space on the train. Between the 2006 and 2013 Caltrain systemwide passenger counts, the number of bicycle boardings as a share of total ridership increased by 37 percent to an average of 10 percent, indicating that 22nd Street and Bayshore bicycle access shares could now be higher as well and may continue to grow in the future.

Bicycling conditions in the Oakdale Station area are somewhat more favorable than those at Bayshore Station, given the relatively flat topography of immediate area and better local street network connectivity with direct access to more residential areas, and are likely to be similar to 22nd Street Station. Based on these factors, a bicycle access share of 10 percent

Figure 13: Mode of Access to Oakdale Station



SOURCE: SF-CHAMP RPM9-3.3.2b, with adjustment for bicycle mode share

Passengers using the station could be encouraged to arrive by non-auto modes through a combination of Muni passes, bicycle improvements, shuttles, and parking management strategies.

represents a conservative but reasonable expectation for an Oakdale Station. This access share is assumed to pull roughly proportionately from the three other modeled modes, yielding the overall mode share estimates in Figure 13.¹

TRANSPORTATION DEMAND MANAGEMENT

While most riders are already expected to reach the station by walking, bicycling, or taking transit, additional trips could be shifted from automobile access to other modes if TDM strategies are implemented. These include the following:

- BUNDLED MUNI PASSES.** Many of the land use developments in the station area, including the Hunters Point Shipyard project, plan to include monthly Muni passes for all units in their residential TDM packages, but the SF-CHAMP model runs did not account for this incentive. With the transportation improvements planned in association with these developments, such as more frequent transit service, transit protection on Palou Avenue, and bus rapid transit on Harney Way and Geneva Avenue, we can expect 5 to 10 percent of the estimated auto access trips may instead switch to transit options.
- BICYCLE SHARING AND ACCESS IMPROVEMENTS.** The limited bicycle capacity on trains has a demonstrably negative effect on bicycle mode share at 22nd Street and Bayshore Stations, since riders must travel out of their way to board at the 4th and King Station rather than where they choose to disembark, and some riders are “bumped” from trains because bicycle capacity is full. If bicycle sharing were expanded beyond the planned pilot to include additional locations on the Peninsula as well as in southeastern San Francisco, it would likely attract additional bicycle access trips to the system and an Oakdale Station. If a bikeshare system were comprehensive enough, bicycle access share might rise to 15 to 20 percent, closer to the existing egress share at 22nd Street and Bayshore stations, decreasing auto access share proportionately by 5 to 10 percent of the estimate. Improvements to bicycle routes and provision of secure bike parking at the station could also encourage bicycle access.
- RESIDENTIAL PERMIT PARKING (RPP).** At other stations, available free parking on surrounding streets often encourages drivers to park within neighborhoods to avoid parking fees. Establishing RPP regulations can encourage riders to shift to non-auto access modes, help to reduce the likelihood of “hide-and-ride” parking in the neighborhood, and protect parking spaces for the benefit of residents. Investigation of a possible RPP program in the Bayview, including strategies to minimize its impact on low-income residents, was recommended in the BNTP.
- PARKING PRICING.** It is assumed that station parking facilities would be priced, and some non-residential on-street parking surrounding the station could potentially be metered as well. Parking pricing, which the modeled ridership and mode share results do not include, would incentivize use of alternative modes and carpooling to reach the station. Pricing at the station could be combined with an RPP program on nearby residential streets to ensure that pricing does not result in hide-and-ride issues in the surrounding neighborhoods. Prices could be set to achieve a target parking occupancy rate or number of parked vehicles.

¹ Based on intercept survey data, most bicyclists accessing 22nd Street or Bayshore originate in areas between one-half and two miles of the station. However, redistributing only trips by other modes that originate within this area yields overall mode share results that are nearly identical to those reported using the method of redistributing all trips proportionately.

- **SHUTTLES.** Many of the land use developments in the station area plan to offer shuttles to various locations throughout the development area, including BART and Caltrain stations, which could further reduce the number of auto trips accessing the station.

PARKING DEMAND AND PLANNING

A portion of the station's riders is projected to arrive by auto, and many of these passengers would need to park near the station. The Bayview Hunters Point Neighborhood Transportation Plan identified parking as a significant issue for residents in the neighborhood, and occupancy of on-street parking in residential areas is high. Station planning must balance the demand for commuter parking with the needs to minimize the impacts of park-and-ride vehicles on the station area and incentivize the use of alternate modes to reach the station. Constructing a large new parking facility, particularly if it is dedicated solely for station park-and-ride use, would also be costly and contrary to the City's Transit First policy. The Bayshore Intermodal Station Access Study, completed in 2012, considered these trade-offs in its evaluation of future parking demand at that station, and this study takes a similar approach to estimate demand and consider potential solutions.

Projections of station access mode share provide a partial basis for estimating park-and-ride demand, but not all passengers arriving by auto would park near the station. The modeled auto access estimate includes riders who would be dropped off at the station (kiss-and-ride), in addition to those who park and ride. Based on observed survey data at the 22nd Street and Bayshore Stations and considering the site's proximity to major thoroughfares, we can expect that 15 to 30 percent of the auto access trips may be kiss-and-ride trips rather than park-and-ride, and therefore would not need to utilize station area parking supply. In addition, between 5 and 10 percent of passengers arriving by auto are likely to carpool to the station, similar to current rates at 22nd Street and Bayshore, further reducing demand for parking.



On-street parking is a significant issue for Bayview residents.

Without accounting for a robust TDM package and parking pricing, but including the above assumptions of kiss-and-ride rates, carpooling mode shares, and the effect of bundled transit passes, there could be demand for approximately 150 to 200 parking spaces at an Oakdale Station. With additional TDM measures and paid parking at the station combined with an RPP district, this demand could be further reduced.

The Bayshore Station study similarly evaluated future parking demand at that station and also examined drive-alone mode shares at other similar stations in the corridor. The study found that at stations fitting the Neighborhood/Local Circular typology, which is similar to the characteristics of the proposed Oakdale Station, existing single-occupant auto mode shares ranged from 6 to 25 percent. Caltrain's 2010 Comprehensive Access Program Policy Statement seeks to reduce current auto mode shares and instead prioritize walk, bike, and transit access modes in order to increase ridership without adding significant new station parking supplies. Based on both projected demand and policy considerations, the Bayshore study recommended a parking supply of between 150 and 300 spaces, similar to the demand projected here for an Oakdale Station.

A portion of the expected Oakdale Station parking demand could potentially be accommodated on non-residential street frontages near the station, particularly where curb space is currently underutilized. Future station planning and environmental review should include a

study of daytime parking occupancy on surrounding streets to determine whether and how much station parking could be accommodated on-street and how much demand remains that could potentially be accommodated in off-street facilities.

Station parking facilities to serve demand that cannot be accommodated on-street could be either in the form of a dedicated commuter parking facility or a shared parking facility with other nearby land uses such as the Southeast Community Facility and City College of San Francisco, the SFPUC’s Southeast Plant, or other adjacent facilities. If possible, a shared parking arrangement would be preferable to a dedicated facility because it allows more efficient parking utilization with fewer parking spaces, reducing the footprint and cost of parking garages or lots while still offering park-and-ride opportunities. The shared parking model functions best when neighboring sites have complementary periods of high and low parking demand and so are able to share a single parking resource instead of building independent facilities.

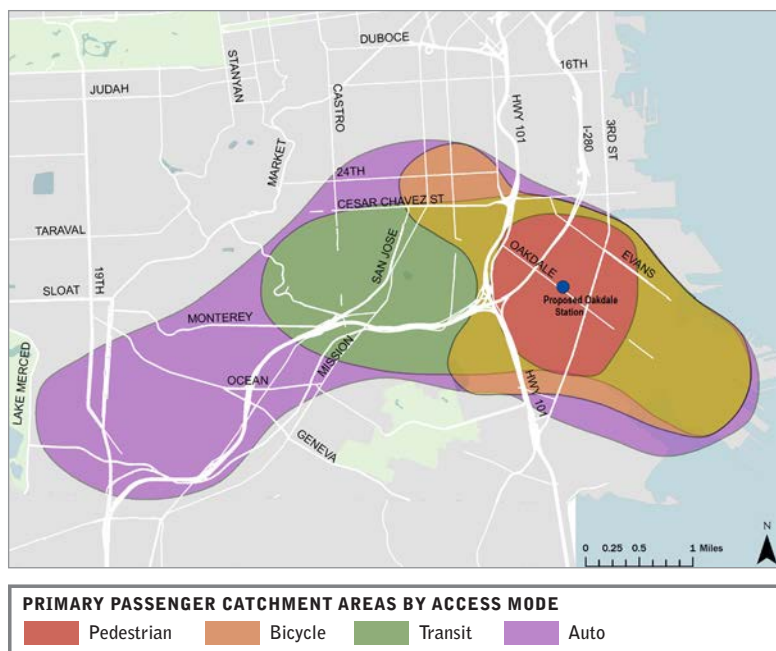
If additional parking demand is expected to remain after all TDM, on-street accommodation, and shared parking facility options are fully explored, construction of a small dedicated parking facility could be explored on vacant or underutilized land adjacent to the station, or on land that becomes available due to development or reconstruction on nearby properties, such as the SFPUC site.

Future station planning and environmental review would include further study of parking demand and ways to reduce it, investigation of on-street and shared parking options, and development of policy to determine the amount of off-street parking, if any, to be provided.

4.4 Station Catchment and Rider Origins

The concept of a catchment area is used identify the market for a station, or the geographical zone containing the potential users of a station. The potential catchment area for an Oakdale Station covers much of San Francisco, providing residents with a competitive reverse commute option to employment centers on the Peninsula and in the South Bay, but is focused in the southeastern quadrant of the city and the Bayview in particular.

Figure 14. Expected Oakdale Station catchment areas by passenger access mode



The extent of the catchment area for an Oakdale Station includes the overlapping catchment areas for riders arriving by foot, bicycle, transit, and auto, as shown in Figure 14. These catchment areas were estimated based on modeled trip origins for pedestrians and drivers, transfer volumes for transit riders, mode share results, and survey data from the existing 22nd Street and Bayshore Stations.

The pedestrian catchment, representing nearly 40 percent of expected passengers accessing the station, would be most concentrated in the neighborhoods immediately surrounding the station within approximately one-half mile, including parts of the Bayview and Silver Terrace, although some pedestrians would likely walk farther. Most bicyclists are expected to originate between approximately one-half mile and two miles of the station, largely in the flatter

portions of the Bayview and Hunters Point, and potentially also from parts of Silver Terrace, Portola, and the Mission.

The transit catchment would be aligned primarily with Muni's 23, 24, and 44 lines, which are the principal transit routes that would serve the station after planned TEP realignments. Riders using these lines, who comprise approximately 40 percent of expected Oakdale passengers, would primarily come from the Bayview and Hunters Point, including the planned developments at Hunters Point Shipyard, as well as neighborhoods west of the station including Bernal Heights, Portola, the northern Excelsior, and Glen Park. Few riders are expected to originate from other neighborhoods along the T-Third line because Caltrain riders to the north and south have easier access to other stations.

The catchment area for the relatively small proportion of passengers arriving by auto would be spread across the southeastern and southwestern quadrants of the city and would overlap somewhat with the auto catchment areas for the 22nd Street and Bayshore stations. Those driving to a station could more easily use any of the three stations. Model results indicate that an Oakdale Station would be most attractive to drivers originating in the Bayview, Hunters Point, Silver Terrace, and Bernal Heights, with some drivers coming from other neighborhoods located to the west and southwest, such as northern Portola, Glen Park, and Balboa Park.

Overall, the surrounding neighborhoods of Bayview, Hunters Point, and Silver Terrace would represent the station's primary ridership base, with nearly all pedestrians as well as many transit riders, bicyclists, and drivers originating there. While the 22nd Street and Bayshore stations currently capture some passengers from these neighborhoods, the ridership results demonstrate that the Bayview and surrounding neighborhoods have significant untapped ridership potential. The ridership base in these neighborhoods would be augmented by riders coming via multiple modes from a corridor extending westward from the station area toward Glen Park.

Some community members have expressed concern that a large proportion of usage of a new Caltrain station at Oakdale Avenue would be from outside the Bayview neighborhood, and therefore might cause traffic and parking impacts near the station that could outweigh benefits the neighborhood gains from the station. However, as shown in Figure 13 (p. 29), significantly more riders are expected to access the station by walking than driving. These walk access trips would originate in the Bayview and directly adjacent neighborhoods. Origins of auto trips to the station are more widely distributed across the city, but still 18 to 25 percent are expected to originate from within the Bayview. These findings indicate that, while there would be some auto trips from other areas of the city that may impact the station area, there would be many more residents in the Bayview utilizing the station and directly benefiting from having it located in the neighborhood.

The surrounding communities of Bayview, Hunters Point, and Silver Terrace would represent the station's primary ridership base, augmented by additional riders from neighborhoods to the west.

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Conclusions and Next Steps

5.1 Study Conclusions

The results of this Ridership Study demonstrate that a future Caltrain station at Oakdale Avenue would have strong ridership, with approximately 4,700 trips expected per day. The projected ridership would support a robust service plan with a mix of Local and Limited service and several trains per hour during peak commute periods. With careful balancing of service between stations to avoid negatively impacting Baby Bullet travel times to the 4th and King and 22nd Street stations, an Oakdale Station could also have a positive impact on overall Caltrain system ridership, potentially adding about 2,000 net riders per day.

The Study also finds that passengers would access the station primarily by walking and taking transit, together comprising nearly 80 percent of access trips, with the remainder split between bicycling and driving or getting dropped off by car. Minimizing the number of auto trips to the station would be beneficial to reduce impacts on the surrounding neighborhood, reduce traffic congestion citywide, and limit the demand for parking at the station. The low projected share of access by auto is due, in part, to significant improvements in the service frequencies of transit routes serving the station, and could be reinforced and strengthened with additional TDM measures and careful regulation and pricing of parking near the station.

An Oakdale Station is expected to offer significant benefits to the Bayview and Hunters Point communities, which are traditionally underserved and have high unemployment relative to the rest of the city, by providing improved access to regional job centers in San Mateo and Santa Clara Counties. The results of the Study indicate that the Bayview, Hunters Point, and Silver Terrace neighborhoods surrounding the station would provide much of the station's ridership, while the relatively low proportion of passengers accessing the station by car would limit the potential negative impacts of passengers driving to the station. However, whether the expected benefits of a station outweigh the potential impacts remains a question that will be resolved as part of an ongoing community-based planning process.

5.2 Next Steps

Although the Ridership Study demonstrates that an Oakdale Station would have robust ridership, the primary focus of the Transportation Authority's efforts in the near term will be on the Quint Street Bridge Replacement and Quint-Jerrold Connector Road projects, which are planned to accommodate a future station. Once these projects are further in the design process, additional planning and outreach will be needed to determine whether to move forward with implementation of an Oakdale Station. Several key remaining issues need to be addressed, including Caltrain service planning and expansion policies; station access, parking, and demand management strategies; and project costs and funding. Addressing these issues and preparing the station concept for implementation would entail a planning and conceptual design phase as well as an environmental review phase, to be followed by final design and construction.

PLANNING AND CONCEPTUAL DESIGN

Many of the key issues that remain unresolved at this point would be addressed with further planning work, both at the local level in San Francisco and at the Caltrain systemwide level. These studies are expected to be conducted and completed between 2014 and 2016, and include the following:

- **CALTRAIN SERVICE PLANNING.** This Ridership Study identifies a potential plan to provide service to the three existing San Francisco Caltrain stations and a new Oakdale Station, and also finds that system-wide ridership is highly sensitive to how service is allocated between stations. Given the tradeoff between service to different stations and overall system performance, as well as future corridor-wide Caltrain service changes that will occur with electrification and the planned integration of high-speed rail in the corridor, development of more refined service plans is needed to determine how to serve the San Francisco stations and optimize operation of the system as a whole. Caltrain is also developing consistent policies for development of new infill stations along the corridor.
- **STATION ACCESS AND PARKING PLANNING.** A station access and parking plan would be the next step, and would examine how to accommodate riders reaching the station by different transportation modes and how to encourage access to the station by modes other than the automobile. This effort could be led by the Transportation Authority or the SFMTA, and would entail interagency coordination to confirm local transit service plans for routes providing access to the station, plan for pedestrian access, and establish TDM, pricing, and parking supply policies. Pedestrian access routes and improvements to shorten walking distances to reach both station platforms must be evaluated, particularly with the planned replacement of the Quint Street Bridge with a berm and construction of the new Quint-Jerrold Connector Road. Needed parking policy development includes evaluation of a possible residential permit parking district, a parking occupancy survey on nonresidential streets to determine if some station parking could be accommodated on-street, work with potential partners to explore implementation of a shared parking facility, identification of specific sites for possible parking facilities, and pricing strategy development.
- **STATION CONCEPTUAL DESIGN.** Initial design work is needed prior to environmental review to determine the physical area that would be affected and more detailed alignments for the tracks, platforms, access areas, and other related station improvements. These designs would be based on the basic concept identified in the completed station feasibility study, but incorporate elements identified through future planning work, including the station access study. This phase would advance design to approximately the ten percent level, which is sufficient for environmental review, and also include an updated project cost estimate.

- **FUNDING PLAN DEVELOPMENT.** A funding plan for the new station is still to be identified. While the Prop K sales tax for transportation includes a small portion of the needed capital funding, most of the station cost would need to be funded by either outside or new sources of revenue. Operating and maintenance costs associated with a new station also need to be quantified and funding sources identified. Funding plan development would continue in parallel with both planning and environmental work.
- **COMMUNITY INVOLVEMENT.** There has been substantial community support for a Caltrain station at Oakdale Avenue during previous study phases, and community members were closely involved with identification of the site and the initial stages of station planning. During recent outreach regarding the related Quint Street Bridge and Connector Road projects, residents expressed differing opinions on the proposed station. Community outreach is integral to determining whether to prioritize station development and would continue throughout the planning, environmental, and design phases to resolve issues, refine the station concept, and incorporate feedback from area residents and stakeholders.

Planning for an Oakdale Station must also be coordinated with efforts that address other portions of the Caltrain corridor in San Francisco, including studies of the 4th and King station and railyard, the Downtown Extension, removal of the I-280 viaduct, and changes to Bayshore Station, in order to ensure that the proposed station is integrated into a larger vision for the corridor as a whole.

ENVIRONMENTAL REVIEW

If after additional planning is complete, community members and stakeholders support moving forward with the station project, it would enter the environmental review phase of development. Environmental analysis of the proposed station would entail identification of all potential impacts it would have on the environment and surrounding community and any mitigating measures that could be put in place to reduce those impacts. The review would include a full traffic analysis to determine if the projected increase in travel to and from the station would significantly impact the surrounding street network, as well as analyses of any impacts to air quality, noise levels, or historic resources. This phase of work would also include further community outreach and refinement of the project cost estimate and funding plan. Environmental review would take approximately two to three years.

FINAL DESIGN AND CONSTRUCTION

Depending upon funding availability, final design of the station could begin once environmental review is complete and is expected to take approximately two years. Construction could begin thereafter and once electrification of the Caltrain line is also complete.

Community outreach is integral to determining whether to prioritize an Oakdale Station. Resident and stakeholder input would be incorporated throughout project planning and design.