



Central C-Line First Mile/Last Mile Connections Plan

Corridor Access Pilot Program

FINAL REPORT



March 2014

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EXECUTIVE SUMMARY

Project Purpose and Goals

In spring 2013, the BART Board of Directors approved expanding market-based parking pricing to stations in the East Bay. As part of this policy change, the Board is considering dedicating a portion of the revenues generated by the market-based parking pricing to station improvements, including station access projects. Previous BART policy looking to encourage an access mode shift has been considered in the BART Strategic Plan (2008) and in BART's TOD Policy (2005).

The Board directed staff to investigate ways that increased parking revenues could be used to improve non-auto access to and from stations in the East Bay. This project begins that investigation by studying first- and last-mile connections at five stations on the central C-Line: Orinda, Lafayette, Walnut Creek, Pleasant Hill/Contra Costa Centre, and Concord. This initial study is intended to be a pilot program that will be expanded to the rest of the stations and corridors throughout the system.

A set of strategies was developed for implementation in the near term (1-5 years), medium term (5-10 years), and long term (more than 10 years). This report presents the findings and recommendations of the study.

Policy Issues

BART staff is currently working to develop a framework for discussion of policy issues for Board consideration to guide whether and how the District will use new parking revenues to invest to clean and modernize stations, and to improve customer access. To assist in that process, Chapter 2 of this report presents key policy questions that the District should consider before embarking on funding new services or projects.

Access to the Central C-Line - Existing Conditions

BART has begun exploring the idea of using parking revenues to fund sustainable access improvements by taking a concentrated look at one part of the system: the C-Line from Orinda to Concord. BART anticipates updating station access plans for other stations and corridors following the completion of this C-Line study.

These five stations were selected for several reasons. First, they present a range of land use environments and customer access challenges, offering a variety of potential lessons for the rest of the system. In addition, they include nearly a quarter of the system's total parking supply, and existing users of the system will assume a significant new cost in terms of parking charges. Finally, because this corridor is served primarily by the relatively small feeder transit operator, Central Contra Costa Transit Authority (CCCTA), the corridor presents opportunities to study and test proposed changes to feeder transit access in partnership with a small agency before exploring similar opportunities with larger regional transit operators.

Summary of Challenges and Opportunities

Figure ES-1 summarizes key challenges for BART access in this corridor, identifies opportunities for addressing each challenge, and specifies sites in the corridor where the challenge could be addressed.

Figure ES-1 Summary of Challenges and Opportunities

Key Challenge	Opportunity
Infrequent local bus transit service. Resource constraints, as well as limited trip densities in some areas, prevent frequent transit service that would allow convenient connections to BART.	Additional frequency could be added to key existing services connecting to BART. If performance thresholds are met, BART resources could help to pay operating expenses on a temporary basis.
Auto-oriented arterial streets. Long distances between crossings, lack of sidewalks, wide streets, inhospitable intersections, and high vehicle speeds characterize many arterial streets to and around these stations, inhibiting pedestrian and bicycle access.	Streets can be retrofitted to make pedestrian and bicycle travel safer and more comfortable.
Poor street connectivity. Poor street connectivity is a barrier to both bike/ped access and to efficient transit service to most residential areas.	In some cases (particularly with large-scale redevelopment), new street connections could be added.
Difficult wayfinding. At several stations signage is limited and it can be difficult to figure out where to go.	In-station wayfinding is funded at all Contra Costa County BART stations, including the "lipstick" station identification signs. However, signage along the station edges and to/from the stations are not funded.
Traffic delaying transit. On some major arterial streets, traffic delays reduce transit efficiency.	Transit priority treatments may be appropriate to speed up high-priority routes.
Unfamiliarity with travel options. Some existing or potential BART riders may be unfamiliar with existing access alternatives.	Information campaigns, targeted marketing, or specially branded vehicles and services may help some potential riders embrace alternatives.
Inefficient use of existing parking supply. Most vehicles using existing parking carry just one BART rider.	Increased passengers per parked vehicle could allow more efficient use of existing parking resources.
Fare penalties. A \$1 fare subsidy is in place for riders transferring from BART-to-bus, but not from bus-to-BART.	Additional fare subsidies or pass programs could be explored.
Peak hour/peak direction capacity – BART has limited ability to absorb additional peak hour, peak direction ridership from central C-Line to Oak and SF. BART does have room for reverse-peak direction travel.	Better connections for reverse commuters, or encourage commuting from new markets (eBART to central Contra Costa County).
Low density development- Neighborhoods surrounding bus corridors in central Contra Costa County are generally low-density, which makes it difficult to support frequent bus services.	Transit may continue to have low mode share from some low-density areas. For those who do drive to the station, increasing passengers per parked vehicle could allow more efficient use of existing parking resources. Real-time parking availability data could improve customer experience.
Topography – Hilly nature of much of the landscape makes biking and walking difficult.	Walking and biking may continue to have low mode share from some hilly areas. For those who do drive to the station, increasing passengers per parked vehicle could allow more efficient use of existing parking resources. Real-time parking availability data could improve customer experience.

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Central C-Line Access Proposals

Working with area stakeholders, the project team identified a set of potential access investments that respond to the challenges and opportunities identified during the study. These project ideas fall into the categories outlined below.

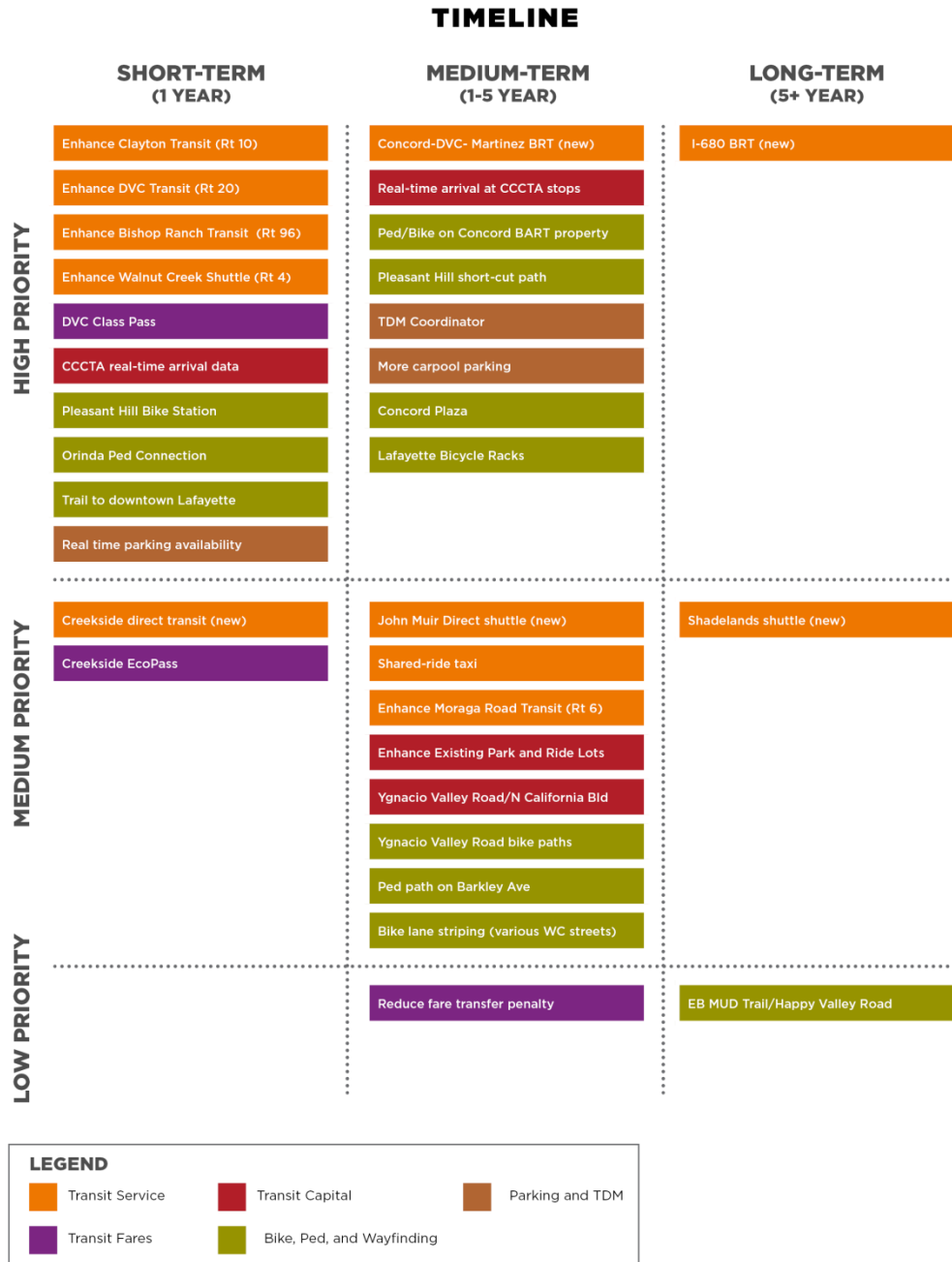
Based on the evaluation contained in Chapters 3 and 4, Figure ES-2 shows a recommended level of priority (high, medium, or low), and a recommended implementation timeframe (near-term, medium-term, or long term) for each proposed project. This section provides a brief overview and evaluation of each project, discussing both cost and potential benefits to BART, BART riders, and other stakeholders.

- 1. Feeder Transit.** More than 5,000 BART customers each day use buses to get to or from stations in central Contra Costa County. Most CCCTA routes begin or end at a BART station, so the stations also serve as de-facto transfer centers for many passengers with other origins and destinations. This section profiles investments that BART could make to compete for potential riders who have access to a car, and maximize convenience for all riders. Bus connections will be most competitive with other modes of access when they provide frequencies of every 15-minutes or better during peak period.
 - a. Transit Operations.** While CCCTA's route structure provides good connectivity to BART, resource constraints have limited CCCTA's ability to provide a high frequency of service. To improve this situation, BART could invest directly in improved bus service.
 - b. Transit Capital.** In addition to transit operating investments, BART could also consider investing resources in transit capital to support feeder bus service, such as new buses, upgraded wayfinding and/or real-time arrival information, enhanced intermodal centers (on BART property), transit signal priority, and upgraded bus stops (off BART property). Unlike the operations funding, these projects could be one-time investments. Some of these potential investments have significant planning work already completed, and in some cases the local city partners will consider providing matching contributions.
 - c. Fare Policy.** BART may also wish to promote bus access by subsidizing bus fares for passengers. Fare subsidies could either be widely available, or directed toward particular groups of users such as residents of a particular development or neighborhood, or commuters to a particular school or workplace. Currently, County Connection offers a range of fare media choices with overlapping markets, some of which may confuse potential riders, so added fare instruments must be considered carefully so not to add to the confusion. However, if appropriately applied, subsidies could improve customer experience and win many new bus-access passengers at relatively low cost to BART. This arrangement carries the disadvantage of requiring ongoing investments and establishing a potentially complicated precedent in BART's relationship with feeder transit agencies, when scaled for other corridors.
- 2. Pedestrian and Bicycle Access Investments.** Pedestrian access is at the top of BART's access hierarchy, and walk access can be accommodated at very low cost to BART,

particularly when stations are situated in moderate- or higher-density areas with strong street network connectivity. Bicycle access is nearly as efficient, requiring only the addition of secure parking at stations and well-designed on-street facilities. In central Contra Costa County, several categories of potential bicycle and pedestrian investments exist, both on and off BART property. These include: sidewalks and on-street bicycle facilities, off-street paths, intersection improvements, wayfinding/signage, and secure bicycle parking.

- 3. Vehicle Access and Ridesharing.** The focus of this study is on improving alternatives to single-occupant auto access to BART stations. However, a set of strategies for better managing vehicle access may provide a helpful complement to the proposed transit, bike, and pedestrian improvements.

Figure ES-2 Project Prioritization Matrix



Implementation

The project team recommends the following implementation steps:

- **Advance the policy framework.** Chapter 2 of this report outlines the key policy decisions that must be made before this plan can move forward, and presents the project team’s recommendations for how these questions could be handled. BART management should review and make a final determination on each key question.
- **Work to establish grant program.** If the recommendation for a proposed grant program is adopted, BART should begin working to establish policies, procedures, and staffing for the program. This work can begin while the pilot projects are being implemented and evaluated. The findings of the evaluation can then be used to refine the grant program criteria.
- **Determine funding level available for pilot projects.** BART should examine parking revenues and make a determination about the level of funding that can be committed to the pilot projects in 2014 and beyond. Based on this determination, the District can select an appropriate package of projects from the recommendations outlined below.
- **Advance recommended pilot projects in Central Contra Costa County.** Once the scale of the pilot has been determined, BART can apportion funding, assign a project manager, and begin collaborating with partners to implement the proposed pilot projects. Steps for the recommended short-term, high-priority projects are as follows (not in order of priority):
 - Project 1. Enhance service on high-priority local routes (Route 10, Route 20, and Route 4).
 - Project 2. Enhance service on high-priority express route (96x to Bishop Ranch)
 - Project 3. Work with partner agencies to establish a “class pass” (free fares) for DVC student
 - Project 4. Convert CCCTA real-time arrival data for 511 compatibility
 - Project 5. Improve pedestrian connections and wayfinding between Orinda Theatre Square and Orinda BART Station
 - Project 6. Improve trail between Lafayette Station and Downtown Lafayette
 - Project 6. Complete projects on BART property
 - Bike Station at Pleasant Hill (Pleasant Hill Station)
 - Redesign plaza at Concord BART for better pedestrian and bicycle connections (Concord Station)
 - Real time parking availability (Corridor-wide)
 - Lafayette bike racks

Funding for transit operations should be committed for a minimum of 3 years, as it takes time to develop ridership on new or modified services.

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Figure ES-3 presents rough preliminary cost estimates for the proposed short-term, high priority projects.

Figure ES-3 Preliminary Cost Estimate for Pilot Projects

Project	Station	Priority	Time Frame	Capital Cost	Annual Operating Cost	Annual operating cost (net of potential new BART fare revenue)
Enhance Clayton Transit (Rt 10)	Concord	High	Short	\$0	\$200,000	\$170,000
Enhance DVC Transit (Rt 20)	Concord	High	Short	\$0	\$200,000	\$85,000
Enhance Bishop Ranch Transit (Rt 96x)	Walnut Creek	High	Short	\$0	\$200,000	\$80,000
Enhance Walnut Creek Shuttle (Rt 4)	Walnut Creek	High	Short	\$500,000	\$250,000	\$40,000
DVC Class Pass	Concord	High	Short	\$0	\$80,000	(\$50,000)
CCCTA Real-Time Arrival Data	Corridor-wide	High	Short	\$80,000	\$0	Not estimated
Pleasant Hill Bike Station	Pleasant Hill	High	Short	\$500,000	\$150,000	Not estimated
Orinda Pedestrian Connection	Orinda	High	Short	\$500,000	\$0	Not estimated
Trail to downtown Lafayette	Lafayette	High	Short	\$100,000	\$0	Not estimated
Real time parking availability data	Corridor-wide	High	Short	\$150,000	\$0	Not estimated
Total				\$1,830,000	\$1,080,000	\$300,000

Source: Nelson\Nygaard, February 2014. Costs are preliminary, planning level estimates. Additional review of costs will be required.

1 PROJECT PURPOSE AND GOALS

In spring 2013, the BART Board of Directors approved expanding market-based parking pricing to stations in the East Bay. As part of this policy change, the Board is considering dedicating a portion of the revenues generated by the market-based parking on station improvements, including station access projects. This initial study is intended to be a pilot program that will be expanded to the rest of the stations and corridors throughout the system.

The Board has directed staff to investigate ways in which increased parking revenues could be used to improve non-single occupant auto access to and from stations in the East Bay. Previous BART policy looking to encourage an access mode shift has been considered in the BART Strategic Plan (2008) and in BART’s TOD Policy (2005).

This project begins that investigation by studying first- and last-mile connections at five stations on the central C-Line: Orinda, Lafayette, Walnut Creek, Pleasant Hill/Contra Costa Centre, and Concord. The study developed the following:

- Policy strategies that could be applied to use new parking revenue to improve sustainable customer access throughout the BART system
- Specific investment recommendations and implementation steps to use new parking revenue to improve sustainable customer access opportunities for BART stations in the Central C-Line

The project explored strategies to improve access opportunities across modes, focusing on non-auto access. The categories of strategies considered are listed in Figure 1-1.

A set of strategies will be developed for implementation in the near term (1-5 years), medium term (5-10 years), and long term (more than 10 years).

Figure 1-1 Strategies Considered

Transit Access investments
Existing Service changes
New Services
Capital investments
Fare Policy changes
Bike and Pedestrian access
Infrastructure investments adjacent to and on the station property
Infrastructure (in the wider station area)
Wayfinding improvements
Bicycle parking
Vehicle Access and Ridesharing
Parking management
Carpooling promotion
Other Transportation Demand Management programs

Project Goals

The selected access projects should aim not simply to maximize BART ridership, but to meet a range of goals. These goals are listed below in Figure 1-2, and are distilled from BART’s Strategic Plan.

Figure 1-2 Project Goals

BART Strategic Plan Goal or Implementation Strategy	Application for this project
Increase ridership	Increase BART ridership by improving sustainable access opportunities for new riders.
Improve customer experience	Improve customer experience for current and new riders.
Promote transit, pedestrian, bicycle, and carpool access to stations	Improve sustainable access opportunities both to and from the BART stations (first- and last- mile) by all modes.
Enhance the feeder transit network	Improve access by transit.
Optimize capacity and utilization	Promote reverse-commute and off-peak ridership.
Ensure cost-effectiveness	Attract new passengers and improve customer experience in a cost-effective way; strategies should be optimized for the lowest cost per new passenger.
Build partnerships	Promote stable and productive partnerships between BART and partner agencies (including the transit operator, cities, and county).
Set an example	Explore and test policy strategies that could be applied to solve similar challenges elsewhere in the BART system.

Purpose of this Report

This report presents the findings and recommendations of the study. It includes the following sections:

- *Chapter 1* Provides the project’s purpose and goals.
- *Chapter 2* Reviews the strategy and policy issues and key decisions related to using parking fees to fund access improvements in the BART system. It makes recommendations to BART staff for how these issues may be handled in the future.
- *Chapter 3* Explores access issues on the Central C-Line. It summarizes existing conditions, notes access challenges and opportunities.
- *Chapter 4*, Recommends strategies for using potential new parking revenues to address these challenges in the short term (1 year), medium term (1-5 years), and long term (5+ years).
- *Chapter 5* Presents a recommended implementation plan, including steps to move forward on the recommended system-wide policy changes, and steps to establish pilot programs to implement the recommended short-term strategies.

2 POLICY ISSUES

In the course of moving forward with this study, specific policy and strategy questions have been raised at multiple points regarding the use of the parking revenue funds, and BART's role in planning and implementing access projects that may not be on BART property, and that may be operated by other agencies. BART staff is currently working to develop a framework for discussion of the policy questions and to engage executive management and BART Board members on these policy questions. This chapter has been prepared to assist in that process. It considers each of the key policy questions that the District must resolve. Based on the lessons learned in this study, it recommends a policy approach for BART staff consideration in making recommendations to the BART Board.

Policy Question #1: Should a portion of new parking revenue be dedicated specifically to non-single occupant auto access investments?

Recommendation:

It is recommended that a portion of all new parking revenue be dedicated to access investments targeted to non-auto access projects. Such a funding stream would meet a clear need: BART currently has no revenue source dedicated specifically to access improvements. Access investment opportunities exist, both on- and off-BART property, that could help BART meet strategic plan objectives in a cost-effective way to move riders to more sustainable access modes. Using new parking fee revenue for this purpose could also help communicate to current drive-access customers that any higher parking fees they pay will be used to ensure that high-quality alternatives to driving exist.

Policy Question #2: Should BART consider non-single occupant auto access investments both on- and off- station properties?

Recommendations:

It is recommended that BART set aside a portion of this funding stream specifically for access investments on BART station properties, such as upgraded pedestrian and bicycle pathways, wayfinding, landscaping, and bus transfer facility improvements. These would be projects identified through BART's ongoing planning and customer access efforts, and would be implemented by BART staff and contractors.

It is further recommended that a portion of the funds be used to establish a competitive grant process to fund access investments off of BART property, such as transit capital (buses, bus stop amenities, and real-time arrival displays), pedestrian pathways, bicycle pathways, and wayfinding. Such projects could be proposed by partner agencies, such as cities and transit agencies. It is recommended that BART not pay the full cost of the proposed improvements funded through this program, but provide matching funds or funds to address a specific funding gap identified by the partner agency. Further work is required to set up a process for selecting projects, determining participation levels, and staffing needs.

Policy Question #3: Should the program consider providing funding for ongoing operating expenses related to access, including feeder transit operations, transit fare subsidies, operations and maintenance of pedestrian and bicycle facilities, and programs such as Transportation Demand Management activities, or should the program be primarily concerned with one-time capital projects?

Recommendation:

This is a key policy issue for the District to consider. For many years, through a process of regional agreements and allocation of various fund sources through MTC, some BART revenues have been reallocated to feeder transit operators throughout the region to support their general operations in a feeder role. However, the District has not previously provided funding directly from BART to its transit or city partners for specific improvements requested by the District, and doing so carries some risk. It is recommended that if BART enters into the practice of subsidizing specific feeder transit run by other agencies and requested by BART, that it do so very cautiously because of the potential to set an unmanageable precedent throughout the District. We recommend that BART consider subsidizing *only* time-limited pilots of transit operations subsidies (of no more than 3 years in duration). After that window, even successful pilot services would be required to compete for an additional round of funding from BART, or be self-supporting and be subsumed into the general operating budget of the partner agency. BART would need to create a program with clear guidelines for selecting projects, determining funding participation levels, establishing performance benchmarks, and dedicating staff to the task.

Similar considerations apply to investments in other (non-transit) operating costs, but the risk to BART is lower because non-transit operating costs are typically lower than the cost of funding transit operations.

Policy Question #4: How should BART select access projects for investment?

Recommendation:

This study has developed a short list of high-priority access projects on the central C-Line that could be initiated (and some potentially completed) in the next year. We recommend that these projects be implemented first, using 2014 parking revenues.

In the future, parking revenue should be viewed as a potential funding source for projects identified through other planning efforts. This could work as follows:

- A portion of the funds could be set aside for access projects on BART property identified by BART Planning and Customer Access division projects.
- The remaining funds could be distributed to partners such as cities and transit agencies through a competitive grant process.
- BART would need to set up a program with clear guidelines for selecting projects, determining participation levels, establishing performance benchmarks, and dedicating staff to the task.

Policy Question #5: On what specific basis should future investments be selected and prioritized?

Recommendation:

Projects competing for this funding opportunity could be prioritized based on a defined methodology that is consistent with BART's overall access planning goals and strategic plan. In scoring projects, key considerations may include:

- Estimated cost per new passenger, net of new BART fare revenue
- Estimated number of existing passengers benefited
- Quantitative and qualitative assessment of performance on other strategic plan goals as summarized in Figure 1-2.
- Financial commitment and unanimity of support from affected communities
- Implementation timeframe and feasibility
- Ongoing funding requirement
- Title 6 and ADA considerations
- Geographic equity

**Policy Question #6: How should funds be divided between stations and corridors?
Should there be a “return to source” commitment?**

Recommendation:

The selection process should focus on achieving a high return-on-investment in terms of BART's strategic plan goals, and could include some level of consideration for geographic equity.

Next Steps

In 2014, BART staff will initiate a discussion with senior management and the board about how these policy questions will be handled. Ultimately, the BART board will make a policy determination about how to proceed on the key questions.

3 ACCESS TO THE CENTRAL C-LINE – EXISTING CONDITIONS

BART has begun exploring the idea of using parking revenues to fund sustainable access improvements by taking a concentrated look at one part of the system: the C-Line from Orinda to Concord.

These five stations were selected for several reasons: they present a range of land use environments and customer access challenges, offering a variety of potential lessons for the rest of the system. In addition, they include nearly a quarter of the system's total parking supply, and existing users of the system will assume a significant new cost in terms of parking charges. Finally, because this corridor is served primarily by a smaller feeder transit operator (CCCTA), it presents some opportunities to study and test proposed changes to feeder transit access in partnership with a small agency before exploring similar opportunities with larger regional transit operators.

This chapter outlines existing conditions on the C-Line, summarizing important challenges and opportunities. The following chapter then proposes a set of access investment projects, categorizing them in two ways: whether they are high, medium, or low priority; and whether they could be implemented in the short, medium, or long term.

Relevant Plans

This project seeks to complement the efforts of a number of other recent and ongoing planning efforts that are also focused on improving stations and access to stations. It will integrate their recommendations and prioritize those that might be the most appropriate uses of any new revenues from parking charges. Some of the most relevant projects are described briefly below. Important details and proposals from each plan that apply to the five central C-Line stations are described in the station profiles in the next section.

For this study, the most relevant corridor-wide and system-wide plans include:

- BART Strategic Plan (2008)
- BART's TOD Policy (2005).
- The BART Station Modernization Project (Ongoing)
- BART Bicycle Plan (2012)
- CCCTA Short Range Transit Plan (FY2011-12)
- MTC Transit Sustainability Project (2012)
- CCCTA Countywide Bicycle and Pedestrian Plan (2009)
- BART Shuttle Demonstration Project Report (2008)
- Walnut Creek Access Plan (2013)

Land Use Pattern

This corridor includes a group of suburban downtown areas with a mix of uses, including moderate-density office and commercial development oriented around the freeway corridors, and low density residential Districts. Figure 3-1 illustrates the density of households and jobs in the corridor.

- *Households.* Residential density is concentrated along the I-680 and SR-242 corridors. Regional land use forecasts suggest that density along these corridors will increase in the coming decades, particularly around the Walnut Creek, Pleasant Hill, and Concord BART stations. The southern portion of the study area is not projected to experience significant increases in density, with most growth occurring along SR-4 in northeast Concord and along Clayton Road towards Clayton.¹
- *Employment.* Jobs in the study area are concentrated in pockets of the county, and are fairly well aligned with the BART station locations. The largest job centers are Downtown Walnut Creek, which includes Kaiser Permanente, Las Lomas High School, and the commercial Districts along South Broadway and South Main Street. There are also pockets of moderate-density employment in Concord and Pleasant Hill around the BART stations, and in Martinez around the Amtrak station. The most prominent area of projected jobs growth for 2040, outside of the BART station areas and the Martinez Amtrak area, is the Shadelands Business Park off Ygnacio Valley Road. Promoting access to these employment destinations is a particularly important opportunity, as doing so promotes reverse-peak ridership on the BART system.
- *Vehicle ownership.* Household vehicle ownership rates by Census tract are shown in Figure 3-2 below. Vehicle ownership across the study area is generally high, with only a small area around the Concord BART station with average rates of lower than one vehicle per household. Low ownership rates are concentrated along the I-680 corridor and in lower income areas, such as Martinez, around the Buchanan Field Airport, and along Clayton Road. As the average household size for the area is 2.6 persons per household, there are likely significant numbers of residents in the study area without access to a vehicle on a daily basis, even in tracts with averages of more than two vehicles per household.

¹ Household and Employment density in the area for 2010 and 2040 is based on the Metropolitan Transportation Commission (MTC) land use population and employment projections developed for the PlanBayArea Program through 2040. These projections are by traffic analysis zone (TAZ), and have been averaged by acre for the purpose of this analysis.

Figure 3-1 Residential and Employment Density

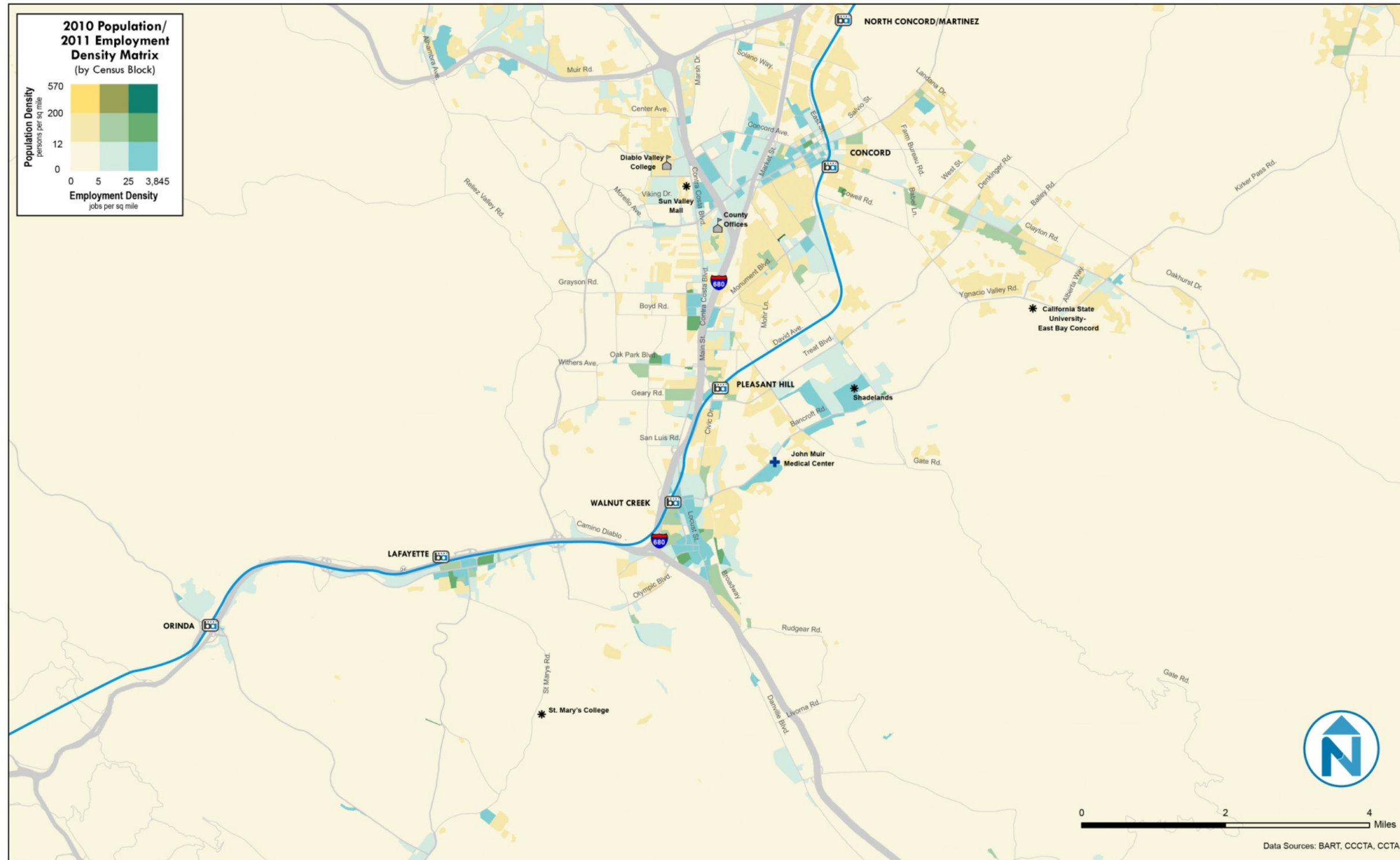
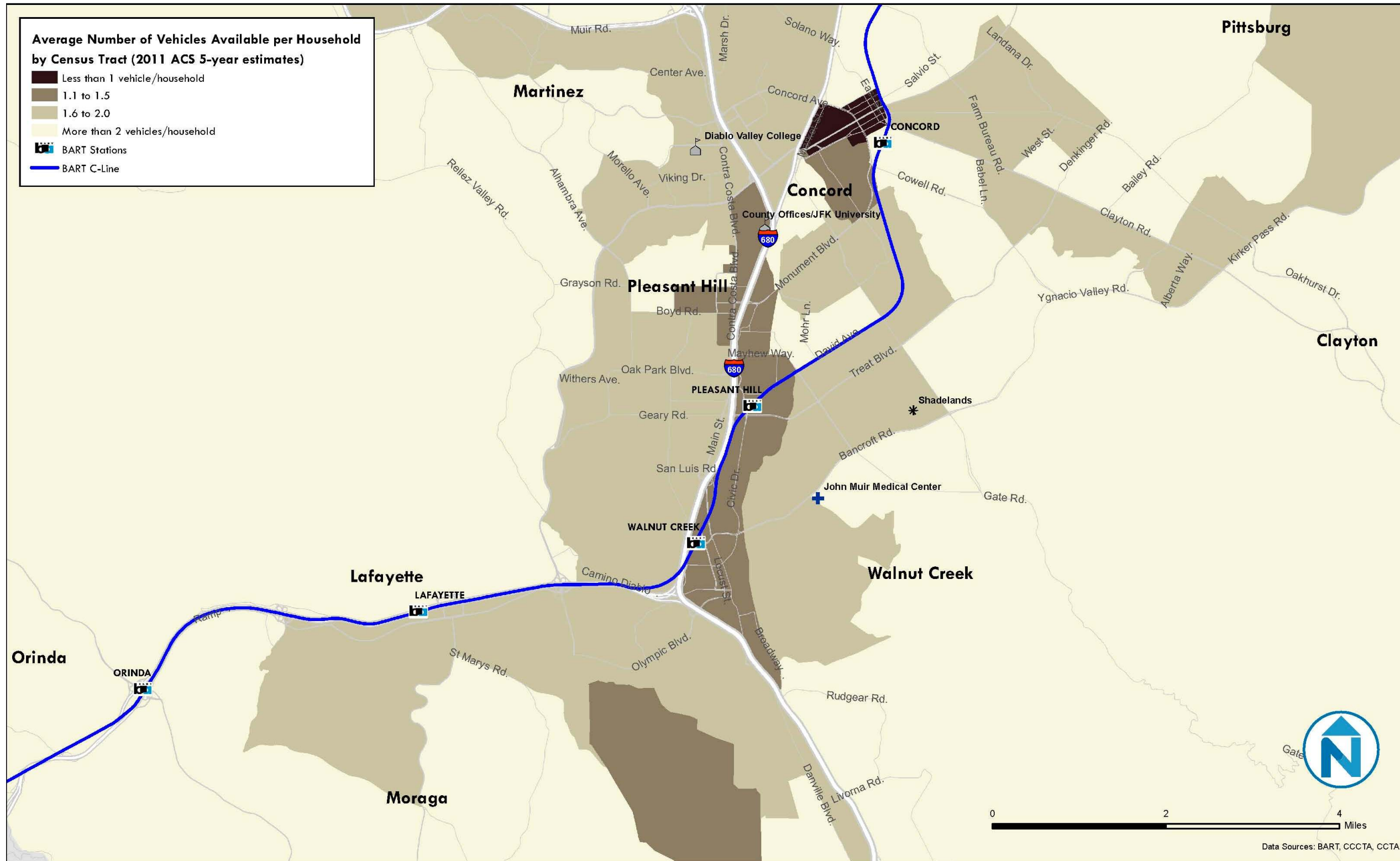


Figure 3-2 Vehicle Ownership



Transportation Networks

- **Freeways.** SR-24 provides vehicle access from the inner East Bay through Lafayette and Orinda. BART runs in the median of SR-24 for much of its length. In Walnut Creek, SR-24 terminates at I-680. The BART line parallels I-680 north of SR-24, connecting to Walnut Creek, Pleasant Hill, and Concord. South of SR-24, I-680 connects to Danville, San Ramon, Dublin, Pleasanton, and points south.
- **Local Street Network.** The street networks in this corridor are composed primarily of a small number of higher-volume arterial streets such as Oak Road, North Main Street, and Ygnacio Valley Road. The residential neighborhoods that surround these corridors have poor street connectivity. While successful in limiting vehicle cut-through traffic, this street pattern acts as a barrier to pedestrian and bicycle travel, limits access to transit, and makes it difficult to serve residential neighborhoods with efficient transit service.
- **BART.** BART's C-Line provides service from the San Francisco Peninsula, through downtown Oakland, into Contra Costa County. The BART line runs in the median of SR-24 to serve Orinda and Lafayette stations, swings north in parallel to I-680 to serve downtown Walnut Creek, Pleasant Hill/Contra Costa Centre, and then heads northeast into Concord. While Concord Station was once the end of the line, since 1996 the system has extended from downtown Concord to North Concord and Pittsburg/Bay Point. Beginning in 2017, the East Contra Costa Extension (eBART) will provide continuing service from Pittsburg/Bay Point Station to Antioch using DMU trains.
- **Bus Transit.** CCCTA provides the primary bus service in this area. Because feeder transit connectivity is a major focus of this study, CCCTA service is discussed in more detail below. Walnut Creek and Pleasant Hill stations are also served by regional connecting service operated by other transit agencies, including Fairfield-Suisun Transit (FAST), Solano County Transit (SolTrans), and Livermore-Amador Valley Transit Authority (LAVTA, branded as WHEELS).

BART Station Typologies

To inform access planning, BART has organized its stations into an Access Typology. This framework considers issues such as ridership, station footprint, surrounding street network, proximity to the highway, and parking capacity. Using these factors, stations are characterized as Auto Dependent, Auto Reliant, Balanced Multimodal, Urban with Parking, and Urban. Based on current conditions, Orinda, Lafayette, and Concord are classified as Auto Dependent, while Pleasant Hill and Walnut Creek are classified as Intermodal – Auto Reliant.

CCCTA Transit Services

Figure 3-4 illustrates frequency by route for CCCTA services in this corridor. Figure 3-5 shows combined bus frequency by segment during the AM peak period. The figures demonstrate that while there is bus service coverage to most parts of the corridor, most routes operate on headways of greater than 30 minutes, with many routes operating hourly or even less frequently. While these services provide a necessary lifeline for those without other transportation options, they do not offer an appealing alternative for people with the option of driving, and they do not offer an attractive option for those connecting to and from BART, which operates on 7-minute peak headways. A small number of routes operate more frequently:

- **Route 20 – Diablo Valley College** provides service from Concord Station to Diablo Valley College. It carries roughly 25 passengers per service hour and offers 10-20 minute frequency in the midday period and 30 minute frequency in AM and PM peak periods.
- **Route 10 – Clayton Road** operates from Concord to Clayton along the Clayton Road corridor. It also carries roughly 25 passengers per service hour and operates at 15-minute frequency in the PM peak period, with 30-minute frequencies during all other times. The service span for this route is one of the longest in the system, running from 5:00 a.m. to 11:00 p.m. on weekdays.
- **Route 4 – Free Ride Walnut Creek Trolley** provides free service between Walnut Creek BART Station and the city's downtown using a specially branded vehicle, operates at 15-minute headways all day during weekdays and 20-minutes on the weekend. It is the system's most productive route, with 26 passengers per hour, and is one of the only routes with frequent evening service. This route is partially subsidized by the City of Walnut Creek, and it is free to riders.
- **Route 96X** provides 20-minute peak service from Walnut Creek to the Bishop Ranch office park via I-680. Though operated by CCCTA, the service is paid for by Bishop Ranch and uses specially branded vehicles. It carries 14 passengers per service hour.
- **Route 21 – Danville Boulevard** provides all day service along Danville Boulevard from Walnut Creek BART to the San Ramon Transit Center at 30-minute frequencies. The route has a long span, from 5:30 a.m. to 11:20 p.m.
- **Route 93X** provides 30-minute peak-only service from Walnut Creek to Hillcrest park-and-ride lot in Antioch via Ygnacio Valley Road and Shadelands, operating in the reverse-commute direction (away from BART in the PM, towards BART in the AM). It carries 16 passengers per service hour. This service may become redundant once eBART is opened.

Ridership

On a typical weekday, CCCTA has approximately 11,000 boardings. Ridership within the area is concentrated at several key locations, including BART stations, major regional destinations (retail, medical centers, colleges) and along several distinct corridors, including Monument Boulevard, Willow Pass Road (just east of I-680) and Clayton Boulevard, all of which are in Concord. Additional pockets of ridership are found in the vicinity of Martinez and in the area around the Shadelands Business Park in Walnut Creek. However, the majority of ridership in the study area can be plotted roughly on an axis spanning between Clayton and Martinez and another spanning across Pleasant Hill BART and Concord BART. Figure 3-6 shows existing ridership by stop across the study area in 2012.

Recent Service Changes

In 2008, due to budget cuts, CCCTA was forced to implement significant service reductions. A 12% reduction in the agency’s operating budget in 2008 lead to a 26% cut in service hours. With reduced frequency, ridership has also declined by roughly 28%. Figure 3-3 provides details on this change. Figure 3-8 shows boardings by stop in 2008, demonstrating generally similar pattern of ridership to that seen in 2012, but with roughly 28% more boardings prior to service cuts.

Figure 3-3 CCCTA Service and Ridership Change Since 2008

	Fiscal Year 2007-2008	Fiscal Year 2011-2012	Change
Operating Cost	\$27,961,775	\$24,726,704	-11.6%
Revenue Hours	280,923	208,719	-25.7%
Total Passengers	4,410,438	3,170,879	-28.1%

Source: CCCTA

Figure 3-4 CCCTA Frequency by Route

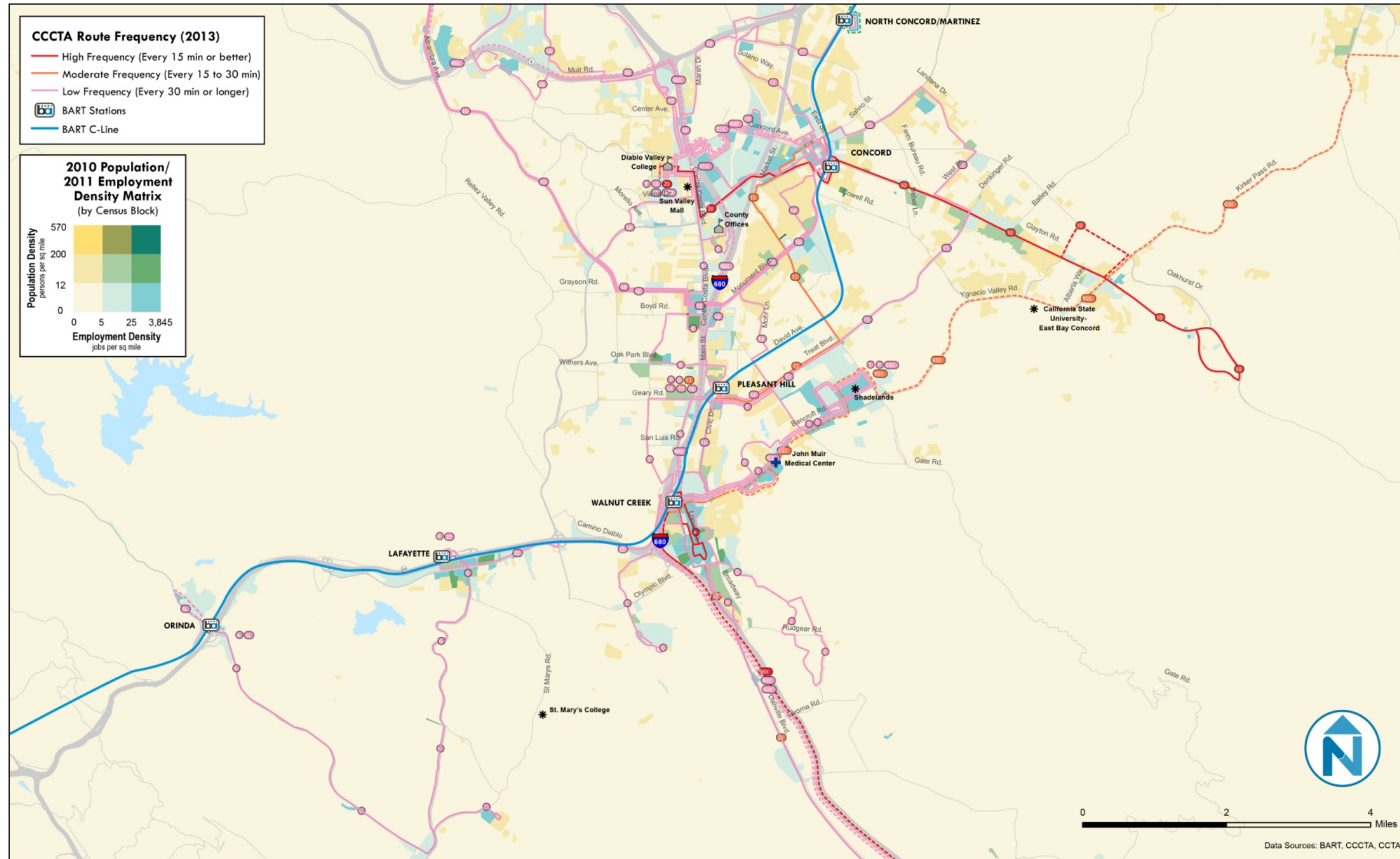
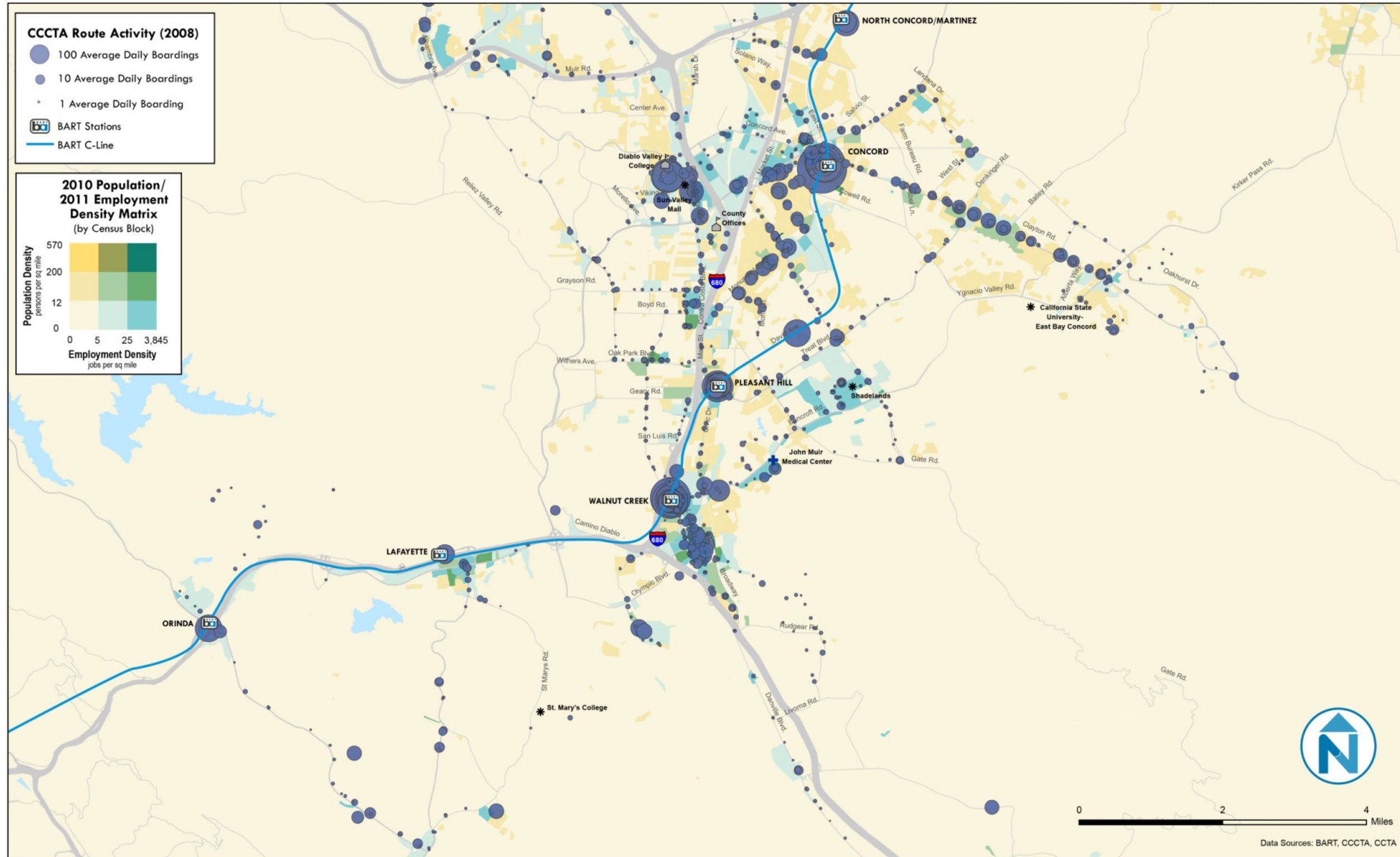


Figure 3-5 CCCTA Combined Frequency by Corridor Segment



Figure 3-6 CCCTA Boardings by Stop (2008)



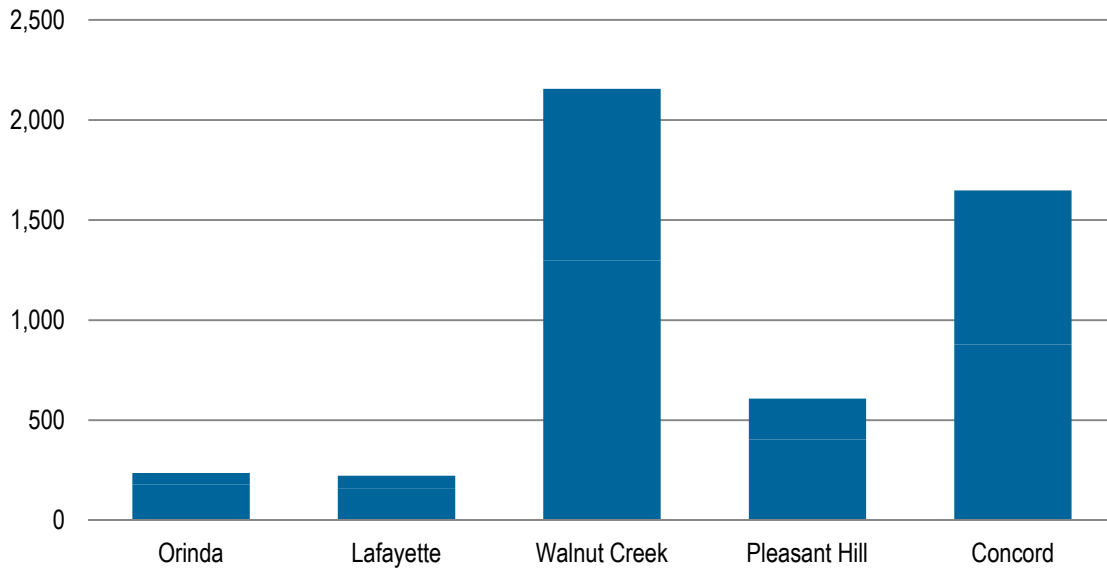
In 2012, CCCTA conducted an on-board and phone survey of their transit riders. Key findings of this survey are as follows:

- **Trip purpose.** Roughly 52% of trips are for work and 17% are for school trips, including college. A large number of trips are for other errands and shopping purposes (19%), with the remaining 11% for social/recreational purposes.
- **Transfers:** 38% of riders can complete their bus travel without a transfer, while 45% make one transfer, and 17% make two or more transfers.
- **Fare media:** Four out of ten (42%) CCCTA passengers use cash, while 24% use a pass specific to CCCTA (12-Ride Pass, Monthly Pass, Monthly Express Pass). Just 8% of passengers use the \$1 discount offered for transfers from BART. The level of cash payment is lower than most other bay area transit operators, which tend to rely more heavily on payment via Clipper.
- **Access to transit:** The vast majority (87%) of CCCTA riders walk to transit, while 5% drive alone, 4% are dropped off, 2% carpool, and 2% bicycle.
- **Service improvements:** When asked about desired improvements to CCCTA service, the majority requested more frequent service (41%), followed by later evening service (25%) and better on-time performance (13%).
- **Transit alternatives:** Based on the survey results, 17% of riders would not make their trip if transit were not available, 27% would get a ride, and 25% would walk. Only 9% would drive alone if transit were not available, indicating a high level of transit dependency among current CCCTA riders. As further evidence, 53% of surveyed riders responded that they do not have a driver's license.
- **Vehicles available:** Vehicles ownership is low among CCCTA riders: 31% of riders live in a zero-vehicle household, and an additional 33% have only one vehicle available for use in their household.
- **Frequency of use:** Most riders surveyed (93%) use the system at least once a week and 60% of riders use the CCCTA five or more days a week.

BART Transfers

BART stations are major origins and destinations as well as key transfer points and layover and recovery areas for all CCCTA routes. According to CCCTA passenger survey data collected in 2012, a BART connection is part of 37% of CCCTA passengers' trips, either transferring to or from BART. Based on results from the CCCTA Passenger Survey, Figure 3-7 shows estimates of daily BART-CCCTA transfers by station.

Figure 3-7 Daily BART – CCCTA Transfers by BART Station



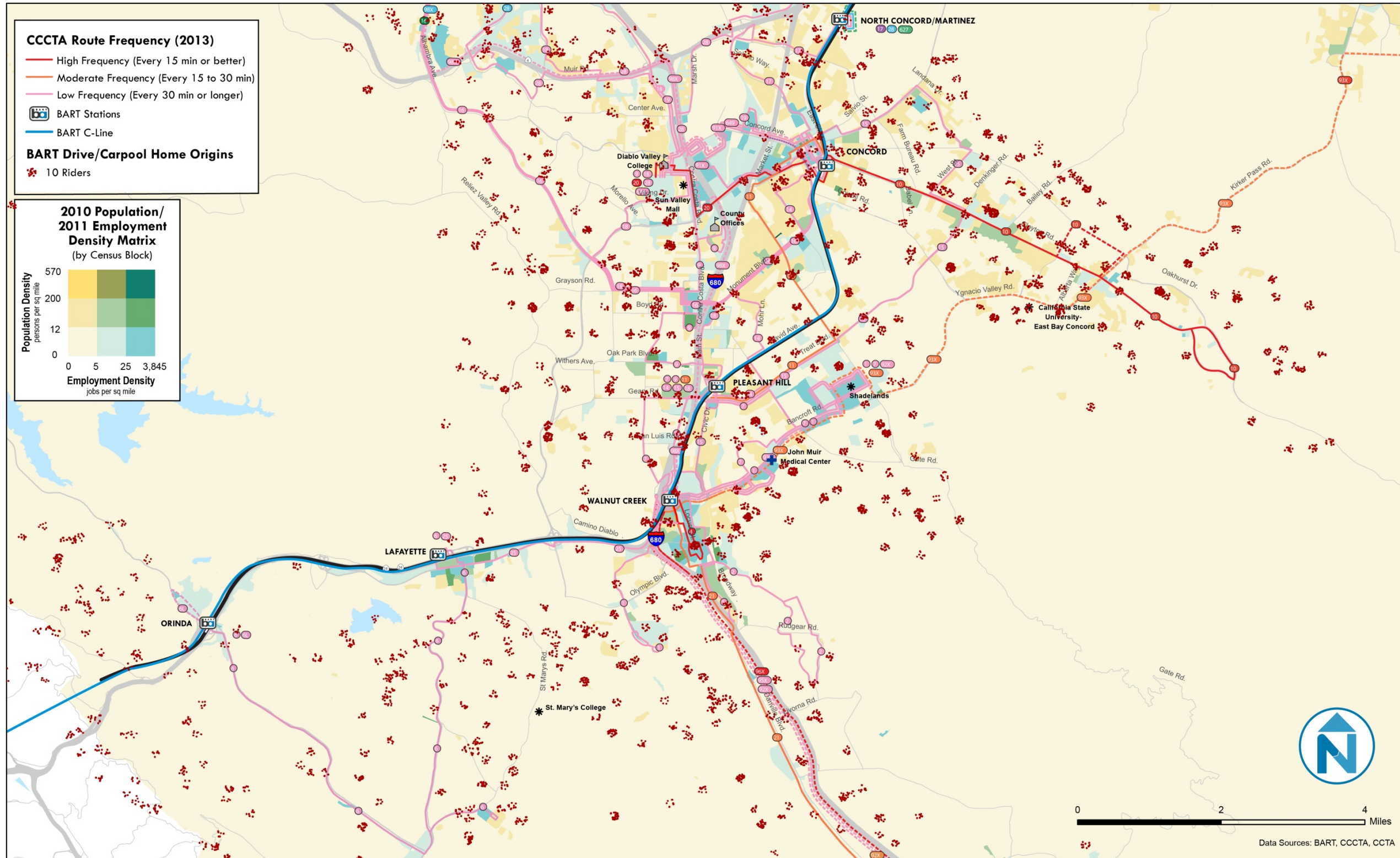
Source: CCCTA 2012 Passenger Survey

Bus Service Opportunities for Current Parkers

Figure 3-8 illustrates the home origins of BART riders who drive and park at stations in central Contra Costa County, overlaid on the CCCTA bus network. It shows that the majority of current parkers do not live within walking distance of a bus line. Further, while a significant number of parkers do live near a bus line, many of these lines are low-frequency routes. The greatest opportunities to attract current BART customers to transit access may be in areas where a large number of BART parkers live along a corridor that can be easily served by frequent transit. This condition exists, for example, along the Clayton road corridor in Concord.

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Figure 3-8 BART Drive/Carpool Access Home Origins and CCCTA Bus Route Network



Station Summaries

This section provides information on each of the five BART stations in this corridor. They include station-specific detail on recommendations from the plans described above, as well as information about current and forecasted ridership, modes of access, key opportunities, and challenges for each station. Figure 3-9 provides an overall summary of key data points for each station.

Figure 3-9 Central Contra Costa BART Station Summary

Station	Average Weekday Ridership	Bus Transfers	# Parking Spaces	Daily Parking Fee
Orinda	3,000	225	1,442	\$1.50
Lafayette	3,500	225	1,529	\$1.50
Walnut Creek	7,000	610	1,686	\$1.50
Pleasant Hill	6,500	2,160	2,603	\$1.50
Concord	6,000	1,650	2,345	\$1.50

Orinda Station

BART’s Orinda station, in the City of Orinda, is located in the SR-24 corridor just east of the Oakland Hills. Drawing riders from a relatively small catchment area, Orinda is one of the lower-ridership stations in the BART system. The station is surrounded by low-density housing to the north and south. There are offices and retail developments within walking distance of the station on Camino Pablo to the north, and the Orinda Theatre Square District is located just to the south on Moraga Way.

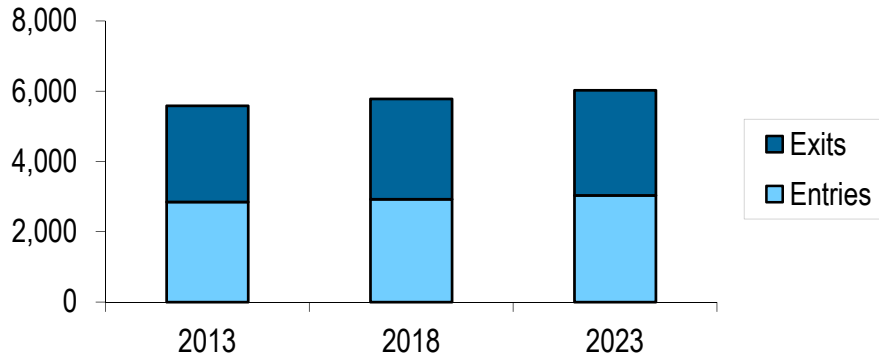
The City of Orinda has recently collaborated with BART to secure a grant for wayfinding improvements at the station and along Camino Pablo, including a project to improve lighting for the underpass between BART and downtown Orinda.

Recommendations for Orinda Station will take into account the needs of key stakeholders, including the City of Orinda; LINK Paratransit (CCCTA) and East Bay Paratransit (AC Transit and BART), which use the station as the transfer point for trips between Alameda and Contra Costa County; and Orinda Vision, which is a community group advocating for a livelier downtown.

Ridership

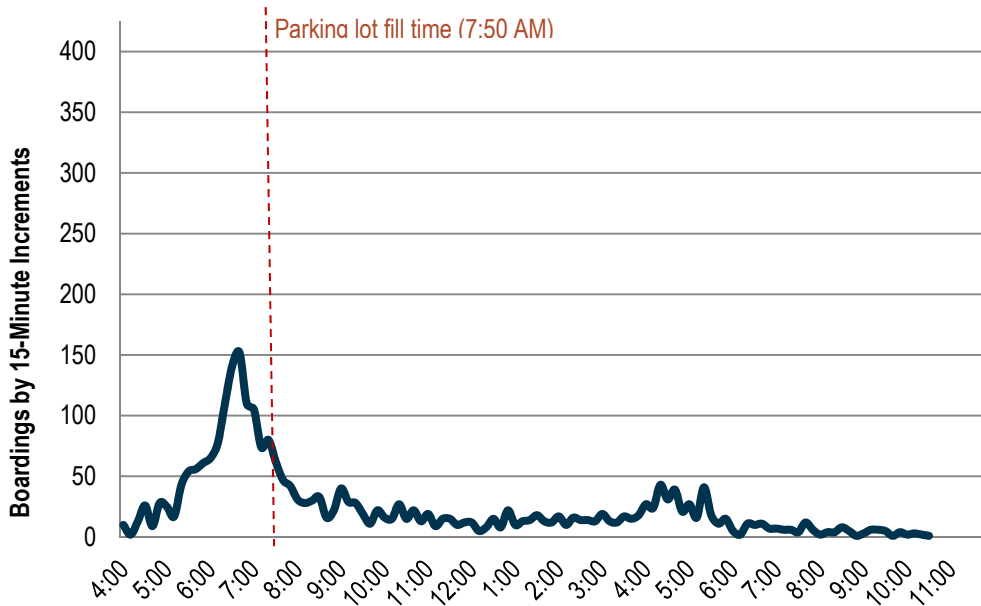
Orinda has just under 3,000 daily entries, making it one of the lowest-ridership stations in the BART system. Boardings are primarily home-based, with 80% of weekday riders originating from home. As illustrated in Figure 3-10, ridership growth at the station is projected to be moderate for the 10-year period. As illustrated in Figure 3-11, ridership at the station is highly peak-oriented, with almost no boardings outside of the AM peak period.

Figure 3-10 BART Ridership at Orinda for 2013, 2018, and 2023



Source: BART Ridership Model, 2013

Figure 3-11 Orinda Entries by Time²



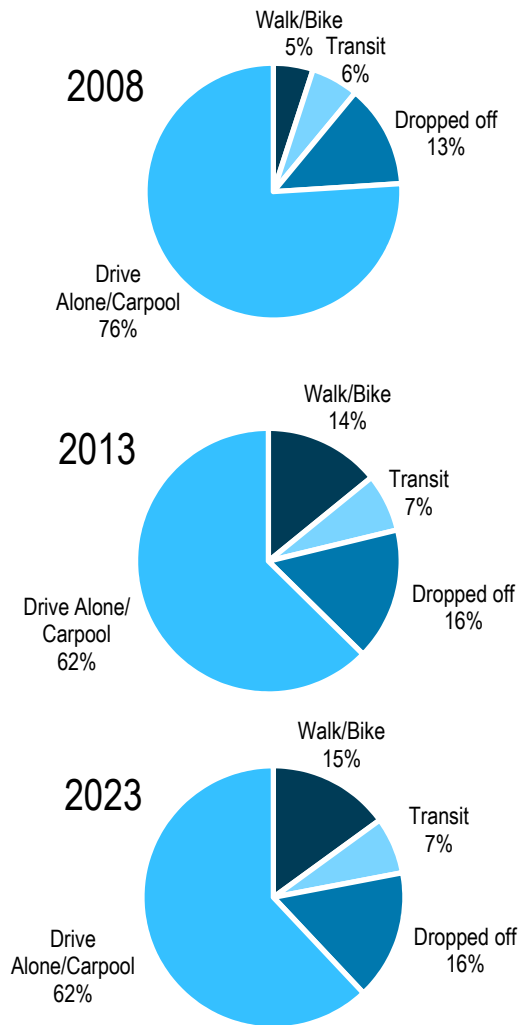
Source: BART Planning, 2013

² For each of the stations in this corridor, BART staff observations suggest that the period of peak ridership typically falls at roughly the same time as the parking lot fill time. In some cases, these peaks may be offset due the fact that fill time and peak ridership data were not collected on exactly the same day.

Station Access Mode and Location

Figure 3-12 shows current and forecast mode of access to Orinda Station and the results of the 2008 Station Profile survey. The station is primarily accessed by automobile, as either drive-alone or drop-off/carpool trips, although the rate of drive-alone access has decreased significantly in the past five years. Of those parking at the station, 82% lived in the Orinda, Moraga, or Lafayette. As of 2013, transit usage accounts for 7% of arriving passengers, while 14% walk or bike to the station. The mode split of arrivals to the station is not expected to shift between 2013 and 2023.

Figure 3-12 Orinda BART Station Mode of Access 2008, 2013, and 2023

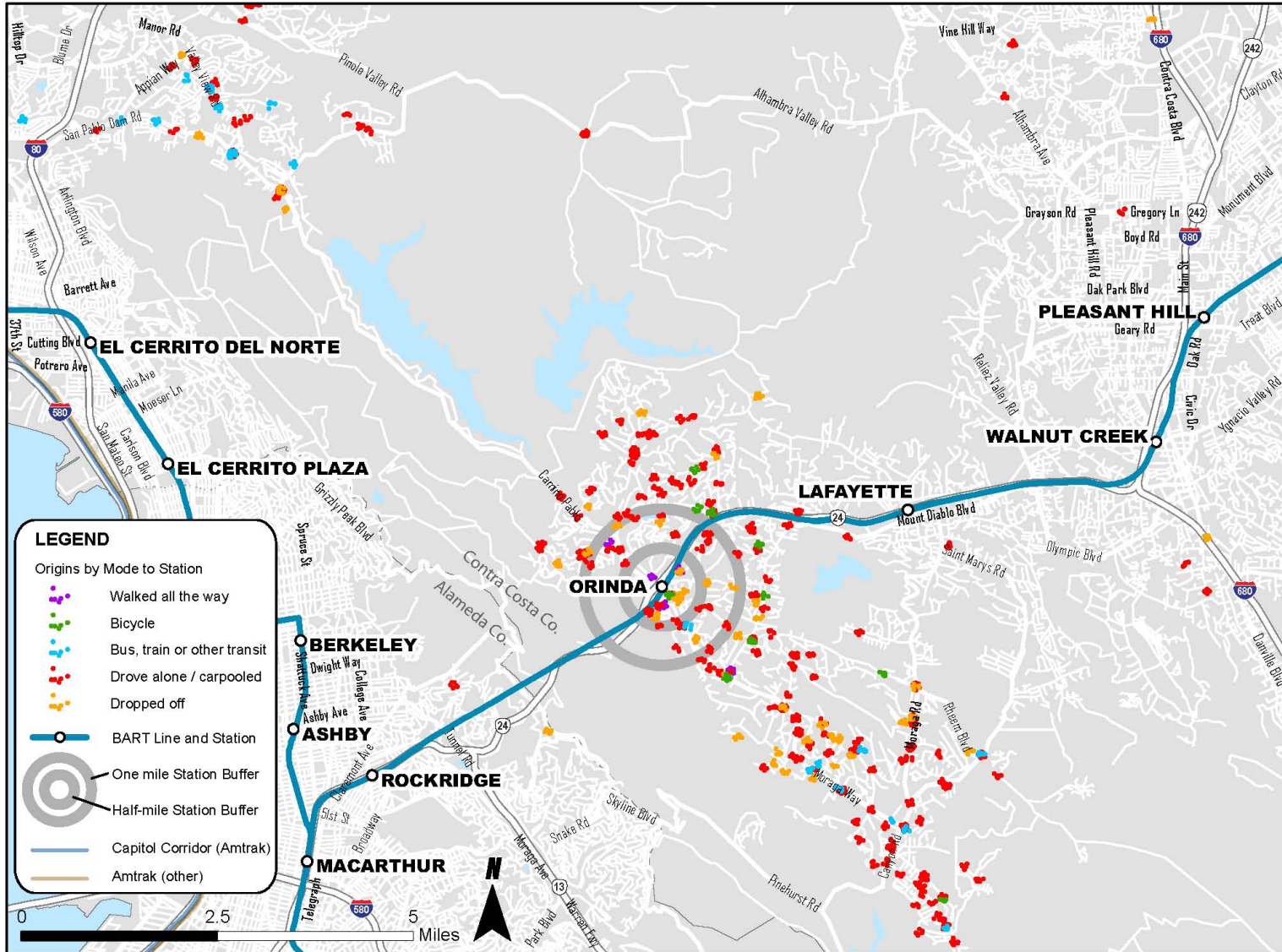


Source: 2008 data is from the BART Station profile survey. 2013 and 2023 data are forecasts from the BART ridership model.

Figure 3-13 shows the home origins of Orinda Station riders, relying on 2008 BART Station Profile Survey data. It shows that Orinda Station serves passengers located in the immediate vicinity of the station, as well as people living north and south of the stations near the San Pablo Dam Road/Camino Pablo/Moraga Way corridor. Transit riders travel to the station from Moraga and downtown Orinda.

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Figure 3-13 Orinda Station Home Locations of BART Riders by Mode



Data Sources: ESRI, 2008 BART Station Profile Study (weekday only; data are weighted from survey sample to represent average weekday ridership)

Transit Access

Orinda Station is served by one CCCTA fixed route, Route 6, which travels between the Orinda and Lafayette BART stations, with service to St. Mary’s College and downtown Moraga. Figure 3-14 provides additional information about Route 6. Figure 3-15 shows Orinda and Lafayette station areas and CCCTA routes by frequency. Orinda Station is also the inter-county paratransit transfer location for LINK and East Bay Paratransit.



One CCCTA Route serves Orinda Station.

Although Route 6 is low-performing, with 30-minute headways in the peak periods and only 385 average daily riders, the percentage of passengers arriving on transit at Orinda (7%) suggests that a number of Route 6 passengers are using the service to reach BART.

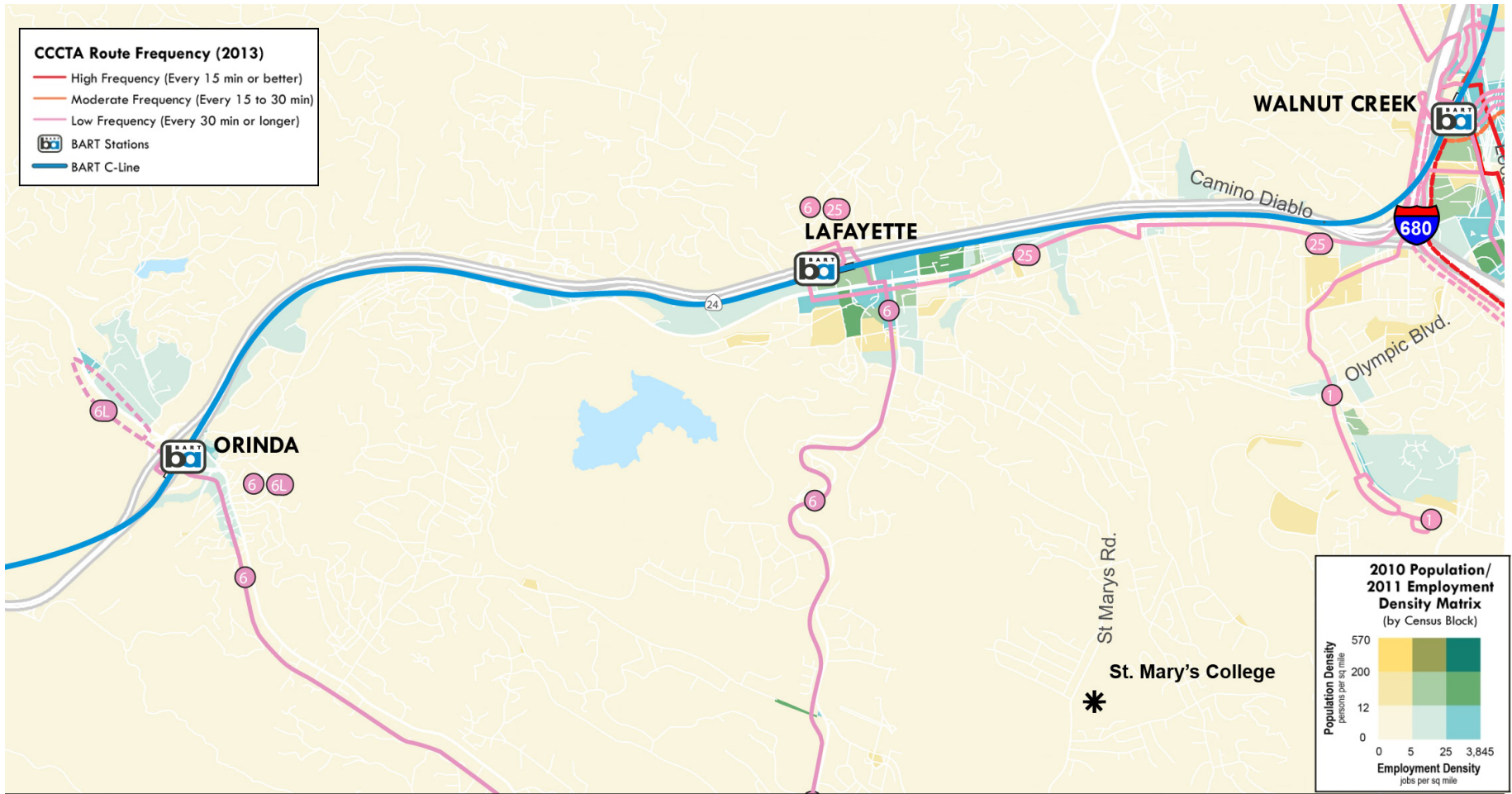
Figure 3-16 provides a comparison between 2013 and 2008 boardings, before the most recent CCCTA service cut. Boardings were slightly higher in 2008 than they are today.

Figure 3-14 Available Transit Service at Orinda BART Station³

Stations Served	Route	Serves	Frequency (Weekday Peak)	Weekday Off-peak Periods Boardings	Weekend Service Boardings	Average Daily Ridership	Boardings per Revenue Hour
Orinda, Lafayette	6	Orinda BART to Lafayette BART via Moraga Way, Saint Mary's, Moraga Rd	30	90	90-120	385	12.9

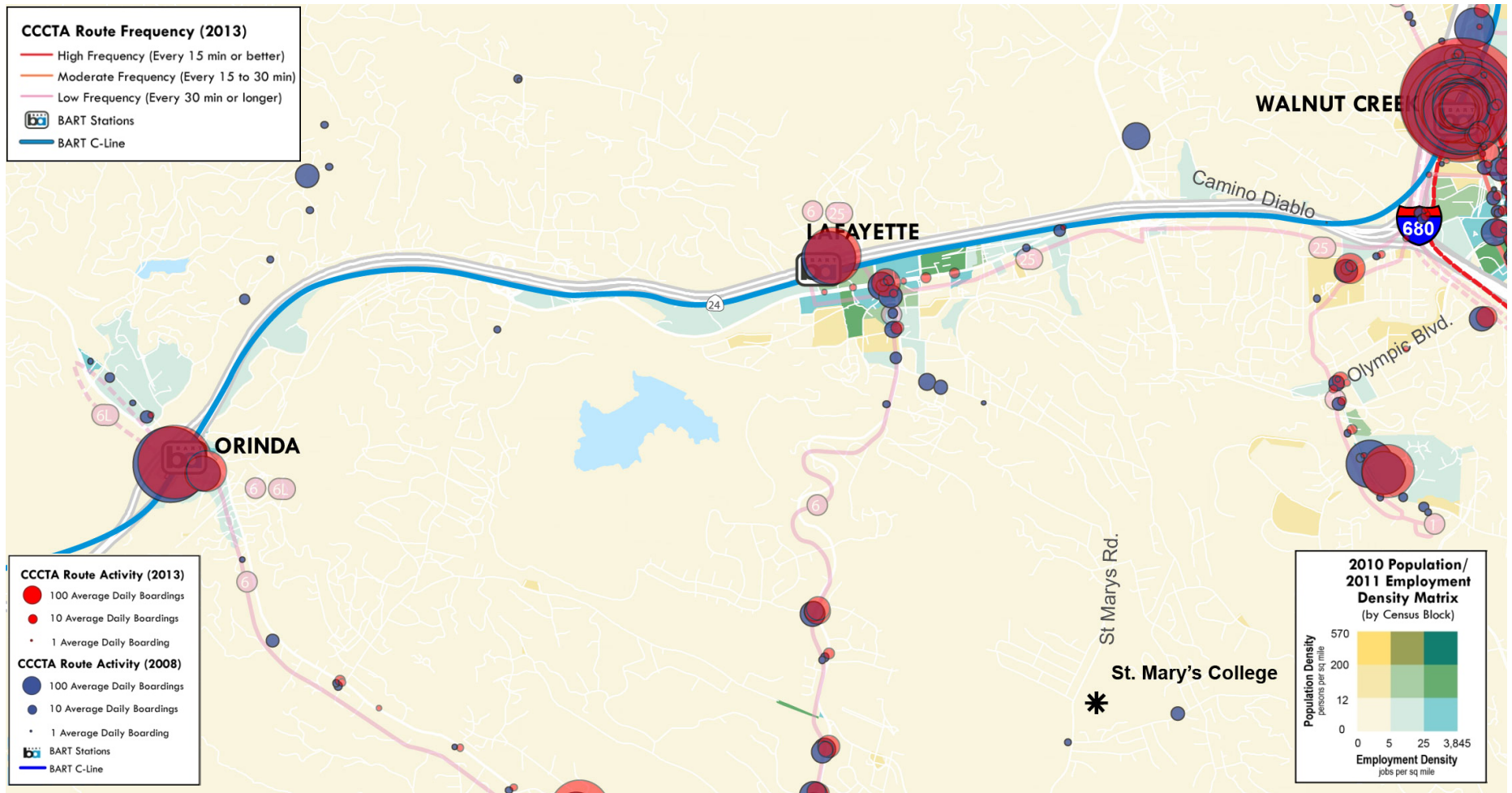
³ CCCTA FY2011-12 Short Range Transit Plan

Figure 3-15 Routes by Frequency for CCCTA Routes Serving Orinda and Lafayette Stations



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Figure 3-16 Boardings by Stop for CCCTA Routes Serving Orinda and Lafayette Stations (2013 and 2008)



Bicycle and Pedestrian Access

Orinda BART Station is located in an auto-oriented street network, primarily surrounded by surface parking lots, freeway ramps, and low density single family housing. Bicycle and pedestrian access to the station is challenging due to wide roads and the physical barrier of the SR-24 highway.

Currently, BART passengers who walk to and from the Downtown/Theatre Square area must travel along an underpass that is poorly lit and hidden from view. Very few signs are available in either location to indicate the proximity between the station and the downtown or the appropriate path to take. Further, the most direct pedestrian path is not wheelchair-accessible, and so the shortest accessible path is more circuitous and approximately 0.25 miles longer.

Wayfinding improvements and bicycle bridge/pathway improvements have been suggested by BART as early as the 2006 Access Priorities project. BART and the City of Orinda have recently received a grant for wayfinding improvements at the station and along Camino Pablo, including lighting for the underpass between BART and downtown Orinda.

Parking Access

There are 1,442 parking spaces located in a surface lot that is positioned in the median of SR-24. There are 1,062 daily fee spaces, priced at \$1.50 per day, and 380 spaces set aside for monthly permit users. In February 2013, the parking lot filled to capacity by 7:50 AM, 50 minutes sooner than it filled in 2008.⁴ There are 50 bike spaces, 24 of which are keyed lockers, while the remaining are racks outside the fare gates.⁵



Orinda's pedestrian-friendly Theatre Square District is within a short walk of the station.



The pedestrian path between the station and theatre is poorly lit and not well signed.

⁴ Based on data provided by Bob Franklin in 2013.

⁵ From the July 2012 BART Bicycle Plan: Modeling Access to Transit

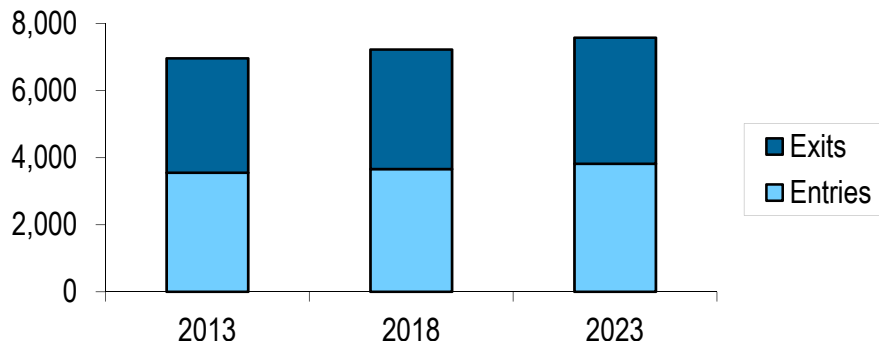
Lafayette

The Lafayette BART station is located along SR-24 in the City of Lafayette. The city’s commercial district is located southeast of the station along Mt. Diablo Boulevard, and the remainder of the station area is made up of lower-density single-family home neighborhoods. The City of Lafayette is a key stakeholder for any changes to the station, and any proposals that affect downtown should also consider the Lafayette Chamber of Commerce.

BART Ridership

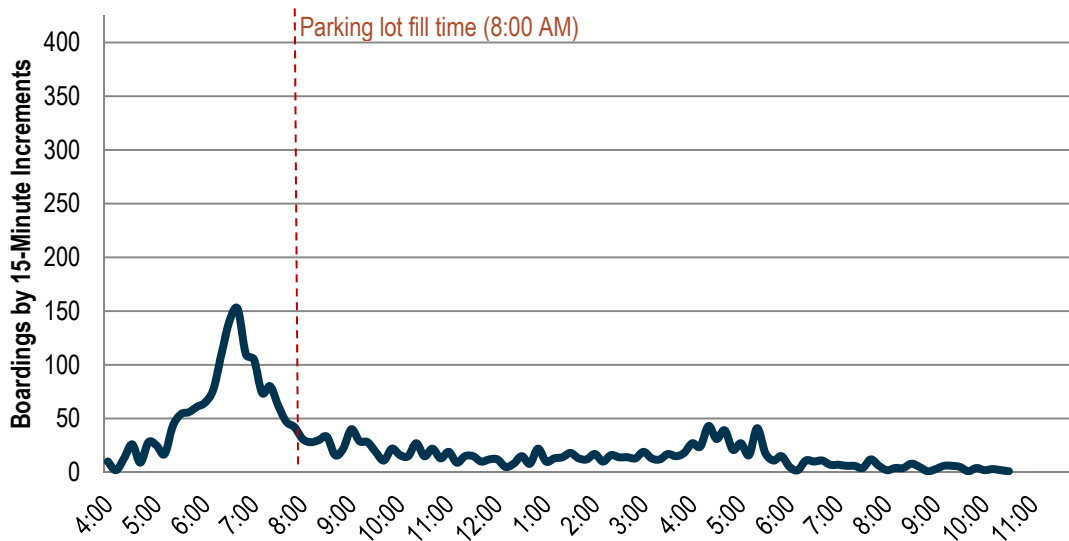
Lafayette BART Station has approximately 3,600 daily entries, making it a low ridership station. Ridership is primarily of home origin (81% of average weekday riders), and a large majority of passengers are travelling to work (81%). Projected 10-year ridership growth for Lafayette is 9%. As illustrated in Figure 3-18, station entries peak heavily around 7:30 a.m.

Figure 3-17 BART Ridership at Lafayette for 2013, 2018, and 2023



Source: BART Ridership Model, 2013

Figure 3-18 Lafayette Entries by Time

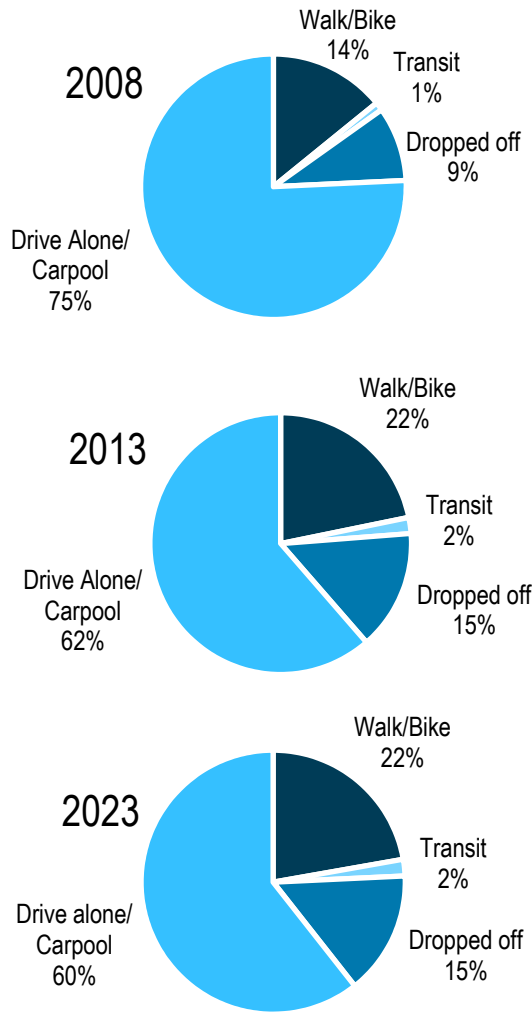


Source: BART Planning, 2013

Station Access Mode and Location

In 2013, just over 60% of passengers got to the Lafayette BART Station by car, and almost a quarter (22%) walked or biked to the station. In the five year period between 2008 and 2013, the rate of driving to Lafayette Station decreased by 13%, while 8% more passengers began walking and biking to the station.⁶ Transit ridership to this station is very low, with just 2% of all boardings arriving on the bus. Mode split projections for the 10-year period do not anticipate a change in access modes. As reporting in BART’s station profile survey data, approximately 47% of those who parked at Lafayette Station lived in Lafayette, Orinda, or Moraga.

Figure 3-19 Lafayette BART Station Mode of Access 2008, 2013, and 2023



Source: 2008 data is from the BART Station profile survey. 2013 and 2023 data are forecasts from the BART ridership model.

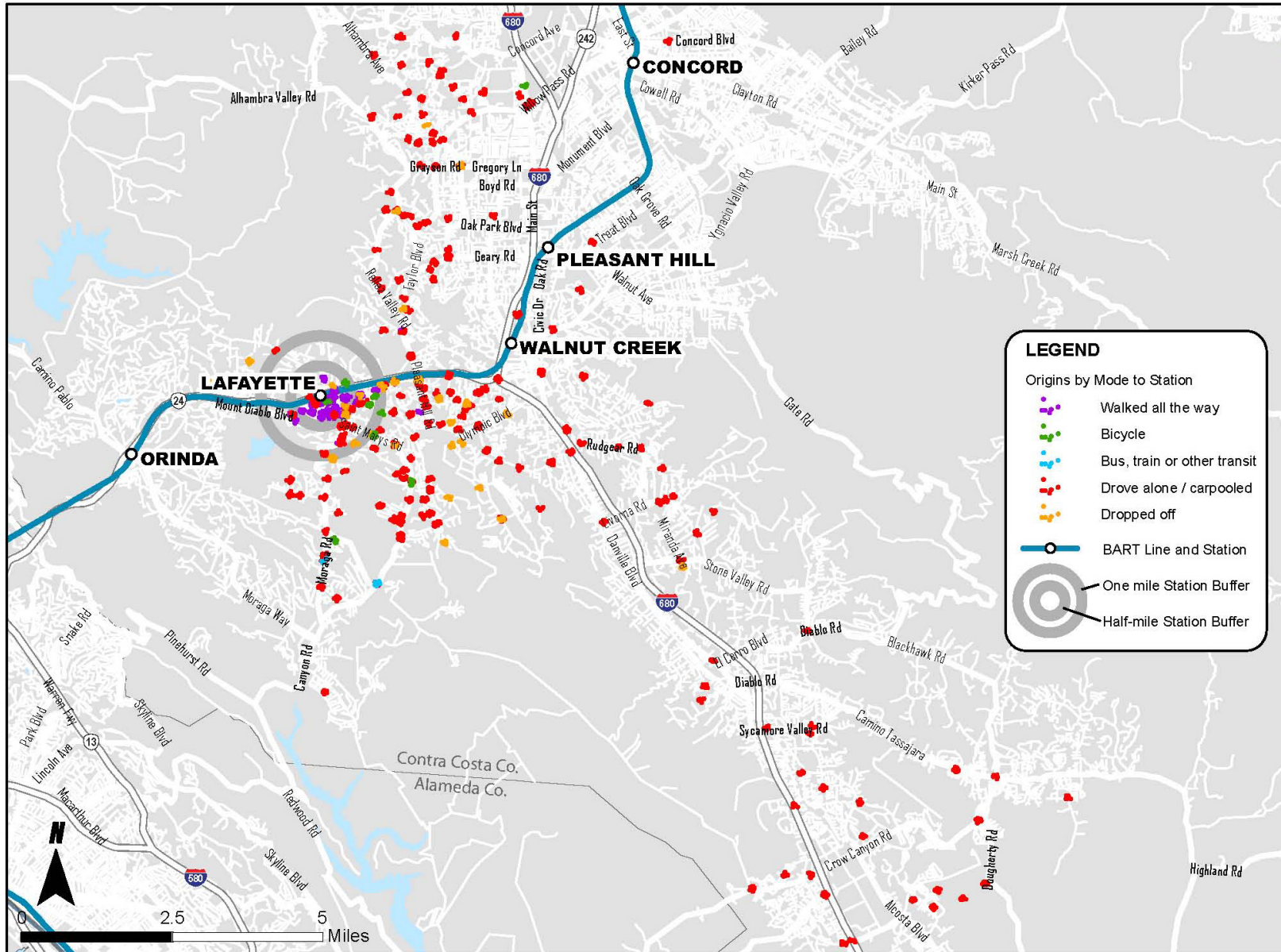
Figure 3-20 illustrates passenger origins and mode of access for Lafayette station. It shows a wide range of passenger origin locations, with driving passengers arriving from locations as far north

⁶ 2008 Mode of Access data is from the 2008 Station Profile Study

as Pleasant Hill and as south as Danville. Passengers walking to the station are primarily coming from Lafayette's downtown commercial district.

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Figure 3-20 Lafayette Station Home Locations of BART Riders by Mode



Data Sources: ESRI. 2008 BART Station Profile Study (weekday only; data are weighted from survey sample to represent average weekday ridership)

Transit Access

Two CCCTA routes serve Lafayette Station: Route 6, which travels between the Lafayette and Orinda BART stations via Moraga, as well as Route 25, which travels east to Walnut Creek. Route 25 serves very few riders—just four boardings per service hour. Finally, Route 250 offers evening and weekend service to St. Mary’s College, and is subsidized by St. Mary’s College. None of these services operate on frequent headways, and ridership is very low. Figure 3-21 provides additional information about the routes. Figure 3-6 shows the Lafayette and Orinda station areas and CCCTA routes by frequency.



Lafayette station has a very low rate of transit access.

Transit boardings near Lafayette station are focused along Mt. Diablo Boulevard and Moraga Road. Most boardings occur at the Route 25 stops closest to the BART station. Transit ridership on these routes has fallen since a 25% service cut in 2008, but the pattern of ridership by stop has stayed roughly the same.

Figure 3-21 Available Transit Service at Lafayette BART Station⁷

Stations Served	Route	Areas Served	Weekday Peak Period Headways	Weekday Off-peak Period Headways	Weekend Service Headways	Average Daily Ridership	Boardings per Revenue Hour
Orinda, Lafayette	6	Orinda BART to Lafayette BART via Moraga Way, Saint Mary's, Moraga Rd	30	90	90-120	385	12.9
Lafayette, Walnut Creek	25	Lafayette BART to Walnut Creek BART via Mt. Diablo and Olympic	60	60	--	48	4.1
Lafayette	250	Lafayette BART to Saint Mary's Collage via Moraga Rd	Thursday and Friday- 4 trips; Saturday- 6 trips- Sunday- 12 trips			13	1.9

⁷ Source: CCCTA FY2011-12 Short Range Transit Plan

Bicycle and Pedestrian Access

Lafayette BART Station has a relatively high walk and bicycle mode share: 22% of all boardings arrive by these modes.

Most people walking to the station begin in the downtown area just south of the station, making use of the underpass to cross into the median of SR-24. Wayfinding, lighting, and path improvements on and adjacent to the BART property are necessary to improve the quality of walk and bike access from this direction. A private parking lot is located immediately south of the station, and fences prevent potential BART customers from passing through this lot. A pathway running along the edge of this parking lot connects downtown and the station, but it is not well-signed or well-lit on either end. Underpass improvements and improved wayfinding from downtown have been a priority for several years, and they were identified in the 2006 BART Access Priorities document.

Bicyclists arrive at Lafayette Station from points east on Mt. Diablo Boulevard, which is a Class III facility with shared lane markings. The Contra Costa Countywide Bike Plan identified Mount Diablo Boulevard for a planned facility, along with El Nido Road, which connects Lafayette with Orinda Station. BART has secured funding for a project to install additional bicycle racks at the station in 2014.

BART's Bike Parking Capital Program includes a recommendation to re-grade an area within the paid area of the station to install additional bicycle racks, dependent on funding.



A tree-lined sidewalk runs along the Deer Hill Road on the north side of the station parking area.



A poorly-marked path provides access to downtown Lafayette.



Bicycle parking is located outside the station's paid area.

Parking Access

There are 1,529 car parking spaces at Lafayette, 1,149 with a daily fee of \$1.50 and 380 set aside for monthly permit users. As of February 2013, the parking lot filled to capacity by 8:00 AM, 20 minutes earlier than the lot filled in 2008.⁸ There are 94 bicycle parking spaces at the station; 64 racks outside the fare gates and 30 keyed locker spaces.⁹

Walnut Creek

The Walnut Creek BART Station is located in the City of Walnut Creek. There are numerous office and commercial developments to the north, east, and south of the station, including the downtown Walnut Creek shopping district one mile southeast of the station. Bordering residential development to the west is separated from the station by Interstate 680. Key stakeholders at and around the Walnut Creek BART Station include the City of Walnut Creek, John Muir Hospital, Kaiser Permanente Walnut Creek, Broadway Plaza Shopping Center, Shadelands Business Park, and Walnut Creek Transit Village Developer.

The Walnut Creek Transit Village, a mixed-use development project at the Walnut Creek BART Station, is currently in the final design phase. As described in the final EIR, the project includes 598 residential units in four four-story buildings with underground parking.¹⁰ Two planned buildings are located on the northern portion of the site, and two are located on the eastern portion of the site, with the BART station in between. There is also 22,000 gross square feet (gsf) of retail and commercial space planned, including 8,650 gsf of transit serving retail.

BART Ridership

As shown in Figure 3-22, ridership at the Walnut Creek BART Station is expected to increase by 24% in the next 10 year period. Ridership is fairly evenly balanced between home and non-home origin riders. In 2008, the BART Station Profile Survey found that 60% of weekday riders travelled from home. Non-home origins riders were primarily travelling from work (72%) and the majority walked to the station (47%), followed by transit (24%), and drop-off (17%) trips.

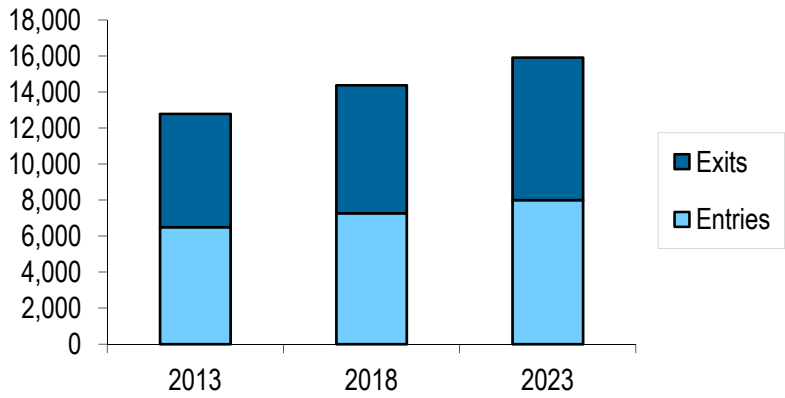
As can be seen in Figure 3-23, the AM entries for this station experience a sharp peak around 7 a.m. on weekdays. There are more consistent mid-day and reverse commute passengers at Walnut Creek than at other Central C-Line stations, as demonstrated by the relatively large group of entries in the PM peak period.

⁸ Based on data provided by Bob Franklin in 2013.

⁹ From the July 2012 BART Bicycle Plan: Modeling Access to Transit

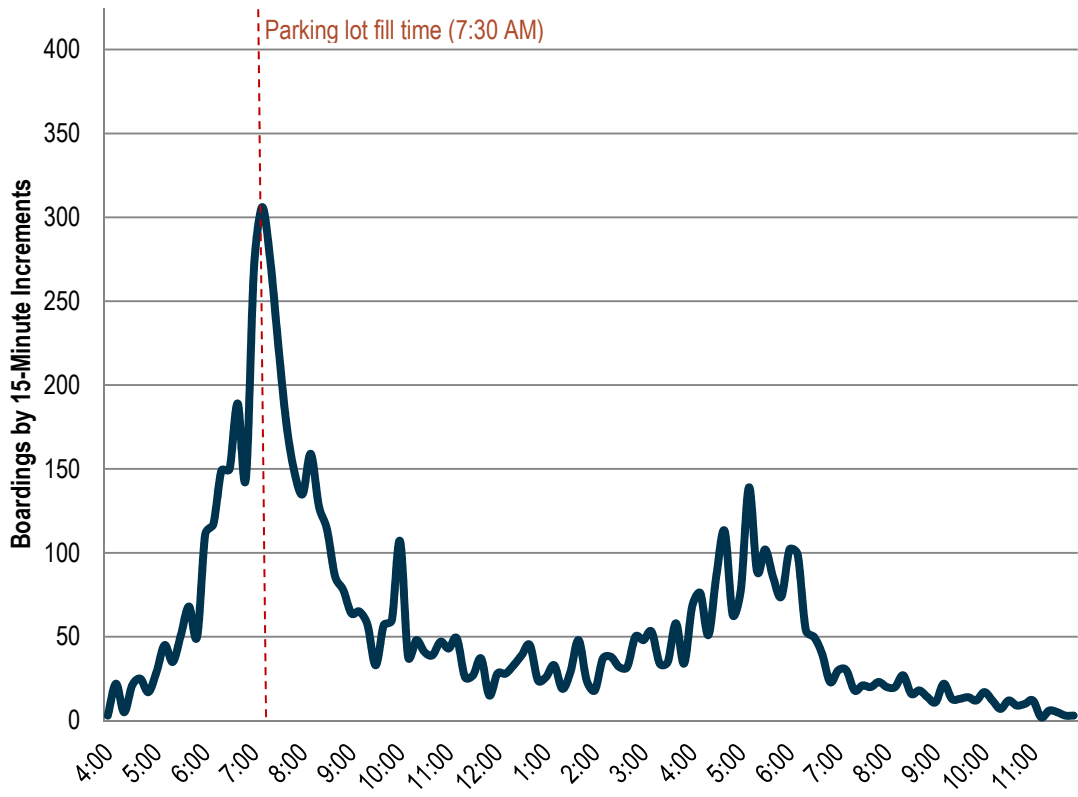
¹⁰ City of Walnut Creek. *Walnut Creek BART Transit Village Final EIR*. September 2012. <http://www.walnut-creek.org/civicax/filebank/blobdload.aspx?blobid=7211>

Figure 3-22 BART Ridership at Walnut Creek for 2013, 2018, and 2023



Source: BART Ridership Model, 2013

Figure 3-23 Walnut Creek Entries by Time

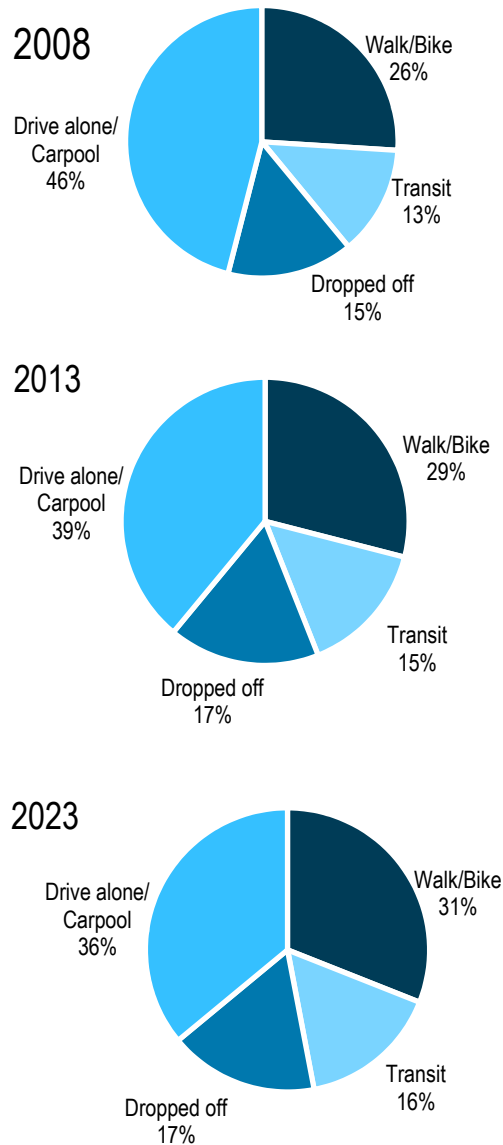


Source: BART Planning, 2013

Station Access Mode and Location

Walnut Creek BART has the lowest drive-alone rate for all central Contra Costa BART stations; a high percentage of BART riders walk or bike to access the station (29%) as of 2013. In the past five year period (2008-2013), the mode of access at Walnut Creek has shifted slightly away from drive-alone travel, while walking, biking, and transit usage have increased moderately.¹¹ The rate of driving is forecast to decrease slightly over the next 10 years (from 39% to 36%) as more transit-oriented development is constructed, with corresponding small increases in access by other modes.

Figure 3-24 Walnut Creek BART Station Mode of Access 2008, 2013, and 2023



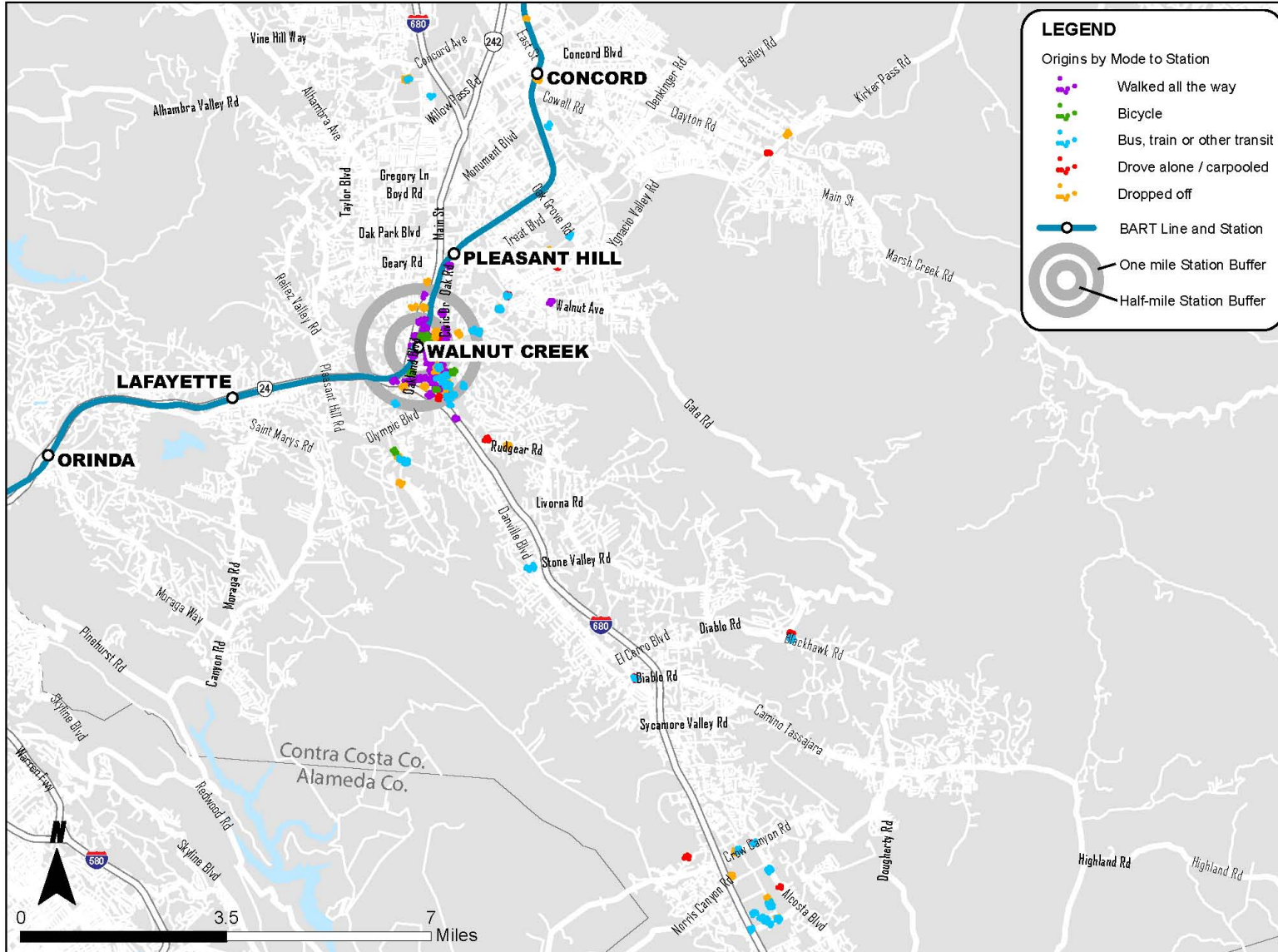
¹¹ 2008 Mode access rates are from the 2008 BART Station Profile Study for home and non-home riders combined.

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Source: 2008 data is from the BART Station profile survey. 2013 and 2023 data are forecasts from the BART ridership model.

Most BART riders who begin their trip at home reside south and east of the station. Due to its orientation on the C-line, the Walnut Creek station attracts riders who reside as far south as San Ramon. Most of these riders reside within a close distance of I-680 and could be good candidates for express bus service to BART; very few currently ride transit to the station. As can be seen in Figure 3-25, riders who bike and walk to the station do so primarily from the immediate station area or downtown. Non-home origins are concentrated almost entirely within a 1-mile radius of the station, with most passengers walking or riding transit. A large share of transit riders uses the free downtown Walnut Creek shuttle. While few passengers bike to the station today, as MTC's regional bike sharing program expands into the suburban East Bay, Walnut Creek BART and Downtown Walnut Creek offer potentially promising sites for increased bike access.

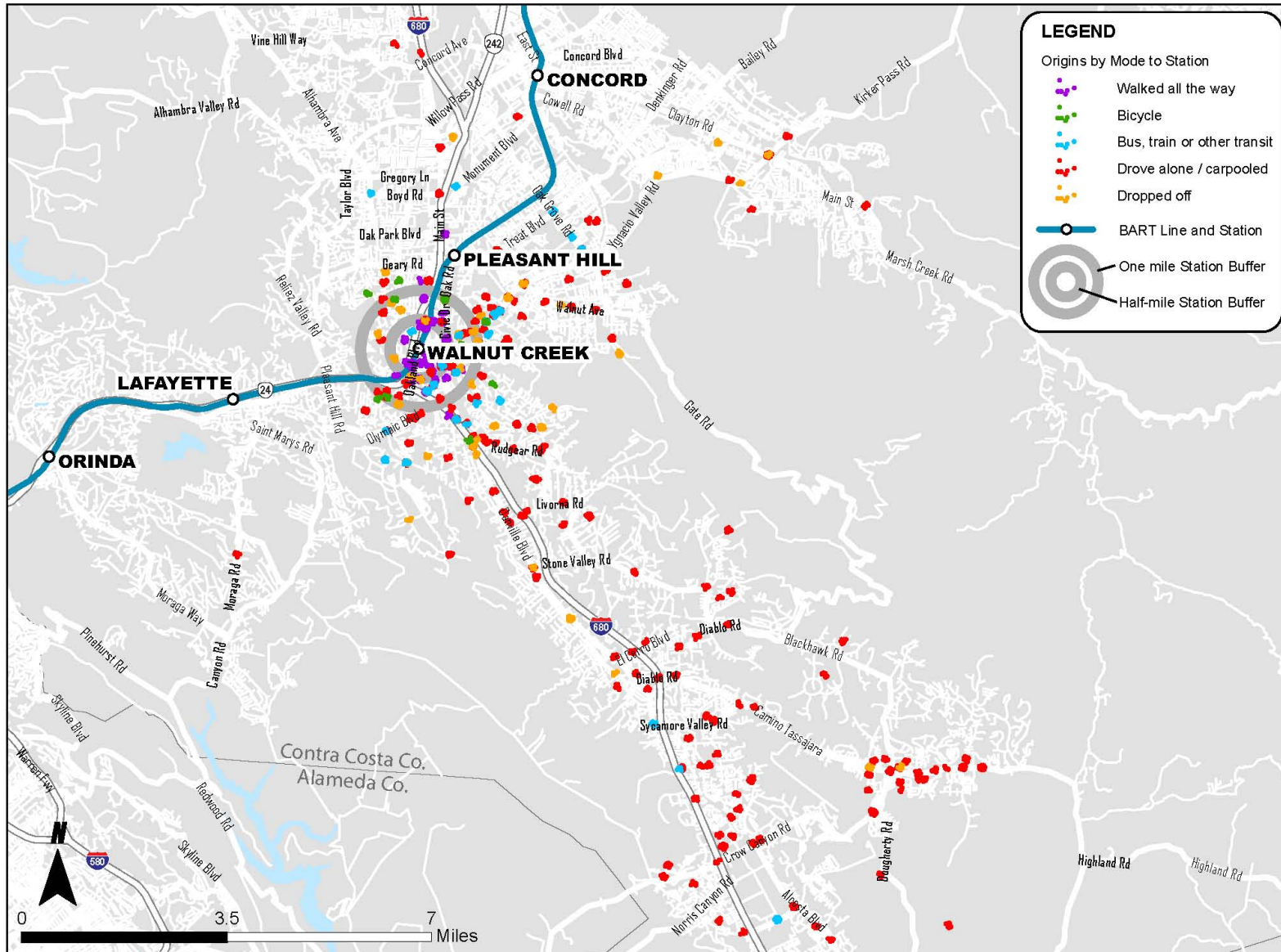
Figure 3-25 Walnut Creek Station Non-Home Locations of BART Riders by Mode



Data Sources: ESRI, 2008 BART Station Profile Study (weekday only; data are weighted from survey sample to represent average weekday ridership)

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Figure 3-26 Walnut Creek Station Home Locations of BART Riders by Mode



Data Sources: ESRI, 2008 BART Station Profile Study (weekday only; data are weighted from survey sample to represent average weekday ridership)

Transit Access

Walnut Creek BART is the primary bus transit hub in central Contra Costa County, with 16 CCCTA routes and 4 regional routes serving the station each day. Besides allowing for connectivity to the BART system, the station's intermodal facility serves as a transfer point for many passengers not using BART at all. Figure 3-27 provides more information on each of these routes.

Figure 3-28 provides a map of CCCTA transit services at Walnut Creek, emphasizing only the routes that provide better than 30-minute service in the peak weekday period. While transit service at Walnut Creek BART is extensive, most services operate at 30-60 minute headways. Evening and weekend service is only available through a few transit routes. Of the bus routes serving Walnut Creek, CCCTA Route 4, the free downtown shuttle to Broadway Plaza, is the most frequent and productive route. Route 4 has an average daily ridership of 928 passengers, and runs every 15 minutes throughout the weekday, from 7:00 a.m. to 9:30 p.m. CCCTA operates this route using a specially branded trolley-style rubber tire vehicle.

The 93x provides express service every 30 minutes during the peak to the Hillcrest Park and Ride Lot in Antioch, via Ygnacio Valley Road and Kirker Pass. The 93x and the other routes providing service on Ygnacio Valley Road have experienced performance problems as a result of traffic delays and congestion.

Transit Boardings around the station are shown in Figure 3-29, for 2008 and 2013. Boardings are concentrated in downtown Walnut Creek and east of the station on Ygnacio Valley Road between the station and John Muir Medical Center. The routes serving the station have experienced an overall decline in ridership since 2008, but with the general pattern of Boardings by stop staying roughly similar to the 2008 pattern.

Routes serving the station from the north (Routes 4, 5, 7, 9, and 98x) struggle with circuitous routing upon approaching the north end of the station, owing in part to the limited street network in this area.



Fourteen bus routes serve Walnut Creek station.



As part of the Walnut Creek Transit Village project, the bus intermodal center will be moved to the west side of the station.

Transit Village Intermodal Facility

As part of the Walnut Creek Village plan, the existing 11-bay CCCTA bus terminal will be relocated from the east to the west side of the station and expanded to provide 15 bays on the ground level of the new parking structure. Other planned circulation changes at the station will include a new connection across the site from North California Boulevard and Riviera Avenue via a new entry driveway. North California Boulevard will also be widened along the west side to accommodate a loading zone and new bus stop for the Walnut Creek trolley.

Due to the layout of the station, bus routing into the new facility may be confusing to passengers and inefficient for buses. While the Transit Access plan recommends adding a bus stop just outside the station area for Route 4, this option should be evaluated considering the efficiency of operations and clarity of service for embarking/disembarking passengers.

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Figure 3-27 Available Transit Service at Walnut Creek BART Station¹²

Agency	Stations Served	Route	Areas Served	Weekday Peak Periods Headways	Weekday Off-peak Periods Headways	Weekend Service Headways	Average Daily Ridership	Boardings per Revenue Hour
CCCTA	Walnut Creek	1	Rossmoor Shopping Center, Walnut Creek BART, Ygnacio Valley Rd., John Muir Medical Center, Shadelands	60	60	--	390	15.1
CCCTA	Walnut Creek	2	Walnut Creek BART, Kaiser Permanente, Trotter Way	60	90	--	63	7.1
CCCTA	Walnut Creek	4	Walnut Creek BART, Broadway Plaza	15	15	20	928	26.1
CCCTA	Walnut Creek	5	Walnut Creek BART, South Broadway, Kaiser Permanente Medical Center, Creekside Dr	45	90	--	75	8
CCCTA	Pleasant Hill, Walnut Creek	7	Walnut Creek BART, Mitchell Park 'n Ride, Shadelands, Bancroft Rd., Treat Blvd., Buena Vista Ave., Pleasant Hill BART	40	--	--	244	6.9
CCCTA	Pleasant Hill, Walnut Creek	9	DVC, Sun Valley Mall, JFK University, Crescent Plaza, Pleasant Hill BART, North Main, Walnut Creek BART	30	60	--	612	14.6
CCCTA	Concord, Walnut Creek, Pleasant Hill	15	Concord BART to Walnut Creek BART via Willow Pass, Concord High, Treat, Pleasant Hill BART, Civic	60	60	--	526	18.3
CCCTA	Walnut Creek	21	Walnut Creek BART, Alamo, Danville Blvd, Danville Park 'n Ride, San Ramon Transit Center	30	60	--	633	13.9
CCCTA	Lafayette, Walnut Creek	25	Lafayette BART to Walnut Creek BART via Mt. Diablo and Olympic	60	60	--	48	4.1
CCCTA	Walnut Creek	93x	Kirker Pass Express: Hillcrest Park 'N Ride, John Muir Medical Center, Walnut Creek BART	30-60	--	--	194	15.6
CCCTA	Walnut Creek	95x	Walnut Creek BART to San Ramon via I-680	30	--	--	155	15.3
CCCTA	Walnut Creek	96x	Walnut Creek BART to Bishop Ranch via I-680	20	--	--	457	14.7
CCCTA	Walnut Creek	98x	Martinez Amtrak to Walnut Creek BART via Rt-4, Contra Costa Blvd, I-680	30-60	--	--	353	12
CCCTA	Walnut Creek	301	Rossmoor Shopping Center, Walnut Creek BART, Ygnacio Valley Rd., John Muir Medical Center, Shadelands	--	--	90	75	8.9
CCCTA	Concord, Pleasant Hill, Walnut Creek	311	Concord BART to Walnut Creek BART via Willow Pass, Concord High, Treat, Pleasant Hill BART, Civic	--	--	80	181	12.2
CCCTA	Walnut Creek	321	Walnut Creek BART to San Ramon via California, S Main, Danville Blvd, Camino Ramon	--	--	60-120	219	12.7

¹² CCCTA FY2011-12 Short Range Transit Plan

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Agency	Stations Served	Route	Areas Served	Weekday Peak Periods Headways	Weekday Off-peak Periods Headways	Weekend Service Headways	Average Daily Ridership	Boardings per Revenue Hour
Fairfield-Suisun Transit (FAST)	Walnut Creek, Pleasant Hill	40	Walnut Creek BART, Pleasant Hill BART, Benicia, Fairfield Transportation Center, Vacaville Transportation Center	15-60	--	--	--	--
Vallejo Transit (SolTrans)	Walnut Creek, Pleasant Hill	78	Walnut Creek BART, Pleasant Hill BART (southbound only), Benicia, Vallejo Transit Center	20-80	90-120	120	--	--
LAVTA (WHEELS)	Walnut Creek, Pleasant Hill	70x	Dublin/Pleasanton BART, Walnut Creek BART, Pleasant Hill BART	30	--	--	--	--
LAVTA (WHEELS)	Walnut Creek, Pleasant Hill	70xv	Pleasant Hill BART, Walnut Creek BART, Stoneridge in Dublin/Pleasanton (two stops)	1 a.m. trip, 1 p.m. trip	--	--	--	--

Figure 3-28 Routes by Frequency for CCCTA Routes Serving Walnut Creek Station

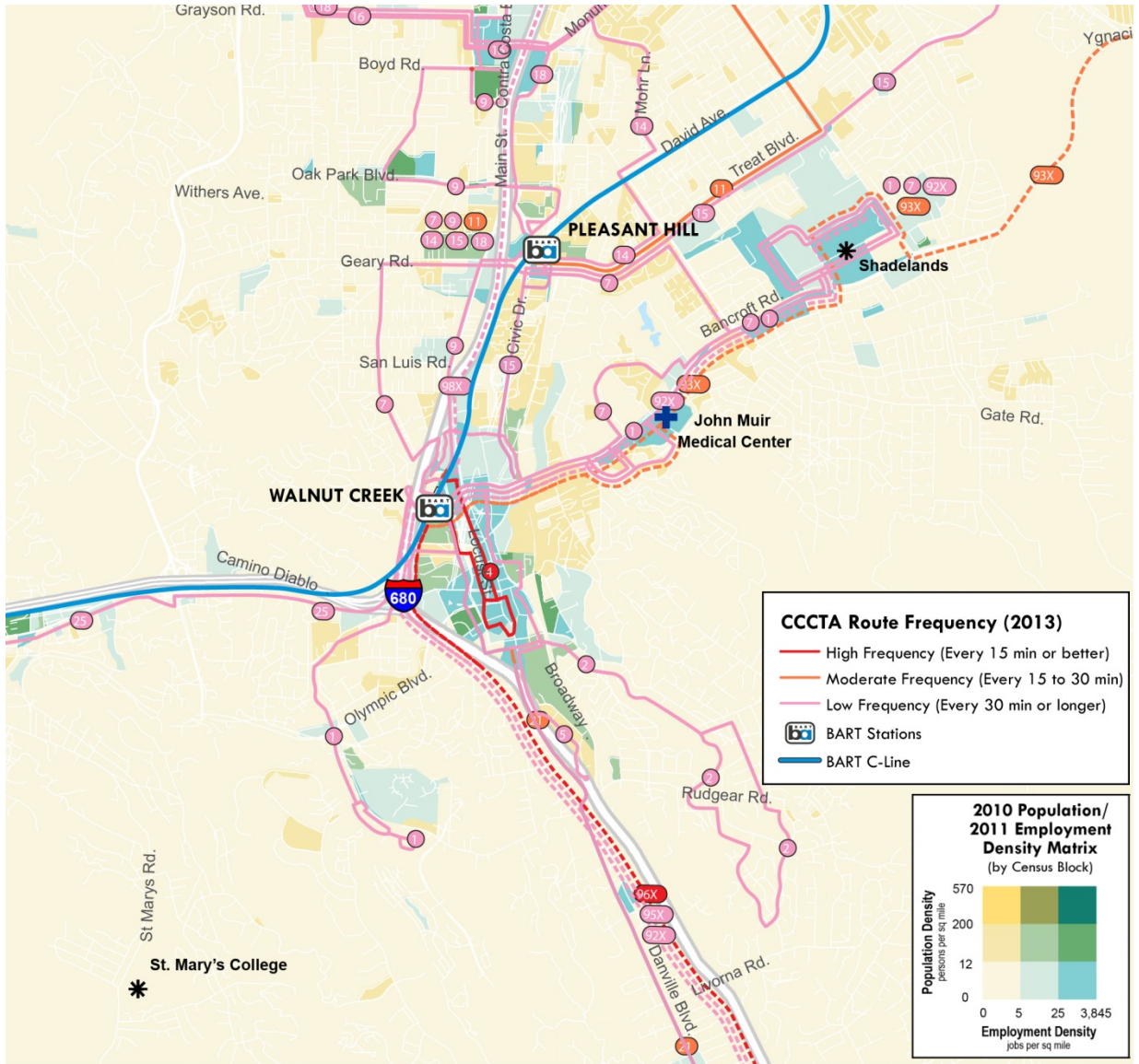


Figure 3-29 Boardings by Stop for CCCTA Routes Serving Walnut Creek Station (2013 and 2008)

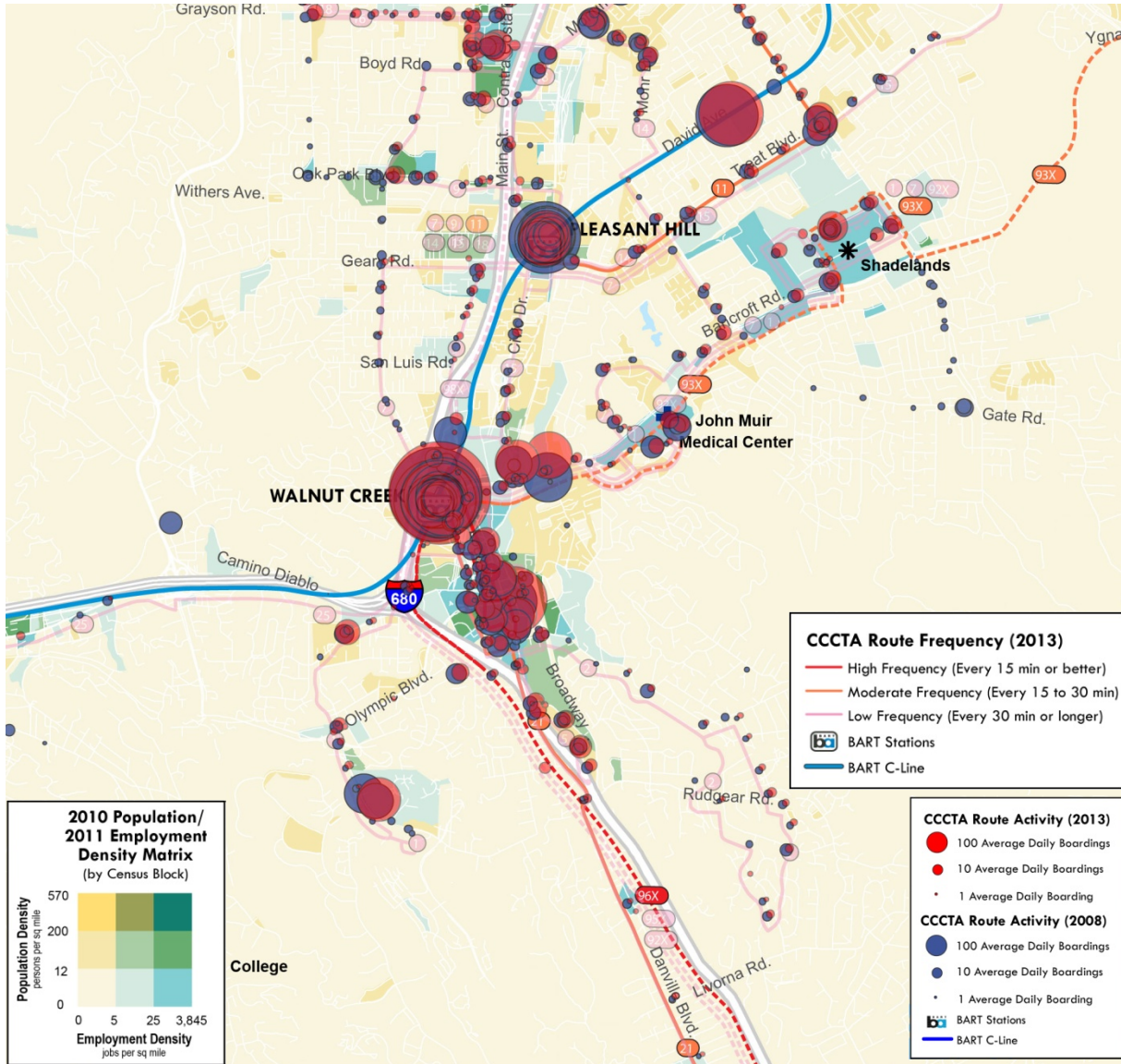
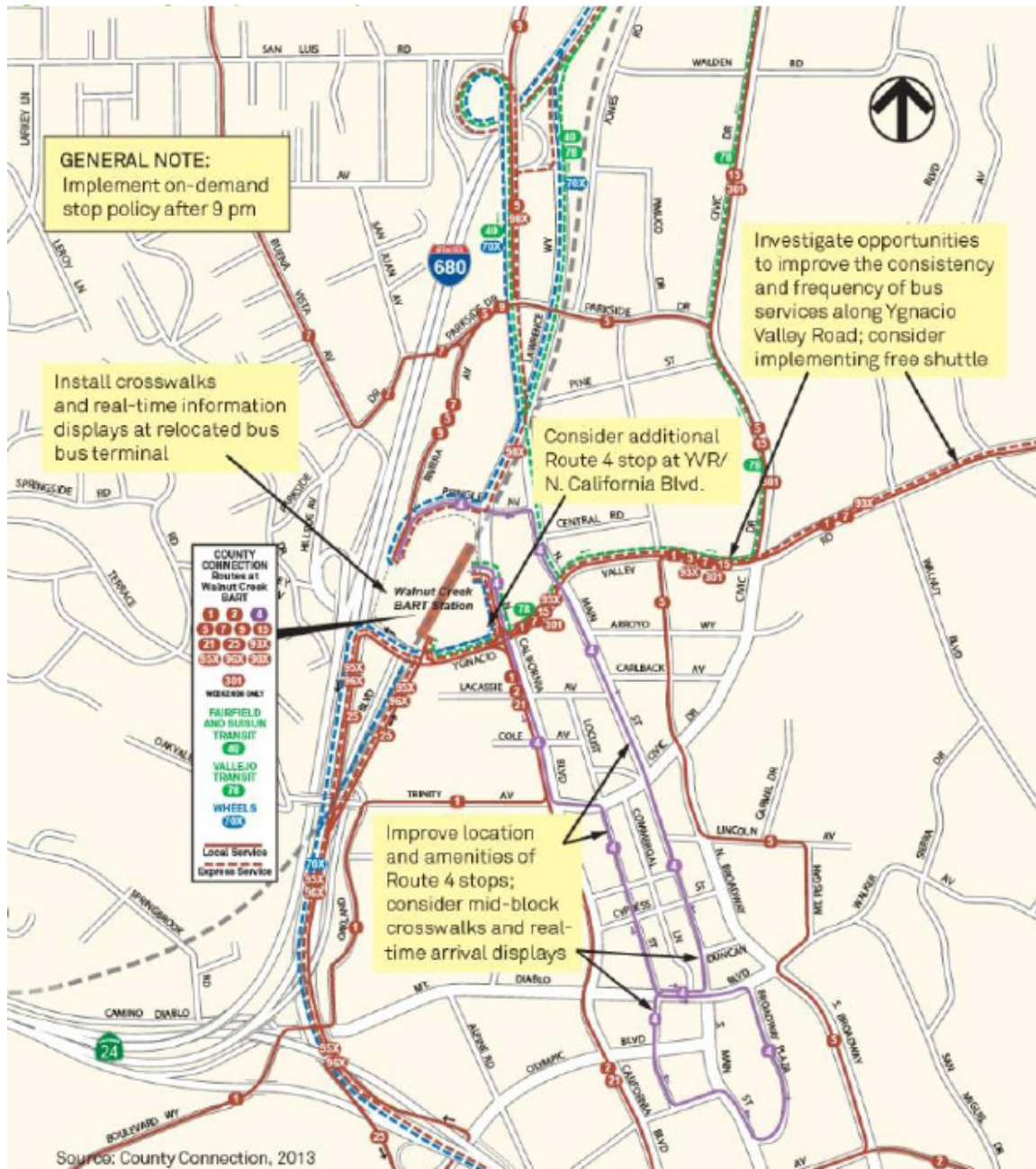


Figure 3-30 Summary of Proposed Bus Improvements from the Administrative Draft of the 2013 Walnut Creek Access Study



Source: BART Walnut Creek Station Access Plan Administrative Draft, 2013

Bicycle and Pedestrian Access

Currently, there is a limited bicycle network around Walnut Creek BART. Ygnacio Valley Road is designated Class III and permits right-direction sidewalk riding. There are bicycle lanes on California Boulevard south of the station, but they do not fully connect to downtown Walnut Creek. The regionally connected Iron Horse Multi-Use Path is located $\frac{3}{4}$ mile from the station, but there is no bicycle facility directly connecting the station to the path. There are no bicycle facilities that connect north or west of the station.

Pedestrian access to the station is hindered by surrounding roads, which are high-volume and wide with limited crossing opportunities. Pedestrian wait times at intersections adjacent to the station are significant, and there are several closed crosswalks in the area.

The 2011 Walnut Creek Bicycle Plan proposes improving the connection from the station southbound on California, as well as a signed bicycle route on Oakland Avenue southbound. There is a proposed bicycle route northbound from the station on Rivera Avenue and Parkside Drive. The plan also includes continued accommodations for bicyclists on the Ygnacio Valley Road sidewalks, with some proposed sidewalk widening, curb ramps, and other strategies.

The Transit Village project developer plans to build a bicycle pavilion after the current Earthquake Safety Project work is completed (expected to be mid- to late 2014).

The planned Walnut Creek Village plan includes the following pedestrian and bicycle projects:

- Two new pedestrian paseos will be constructed to provide access to the BART station from Pringle Avenue and North California Boulevard. A new signalized pedestrian crossing is planned for mid-block on North California Boulevard.
- A new access point will be constructed for bicyclists and autos on North California Boulevard to provide access to the existing northbound bicycle lane.
- A new bicycle pavilion will be constructed at the station for bicycle parking.

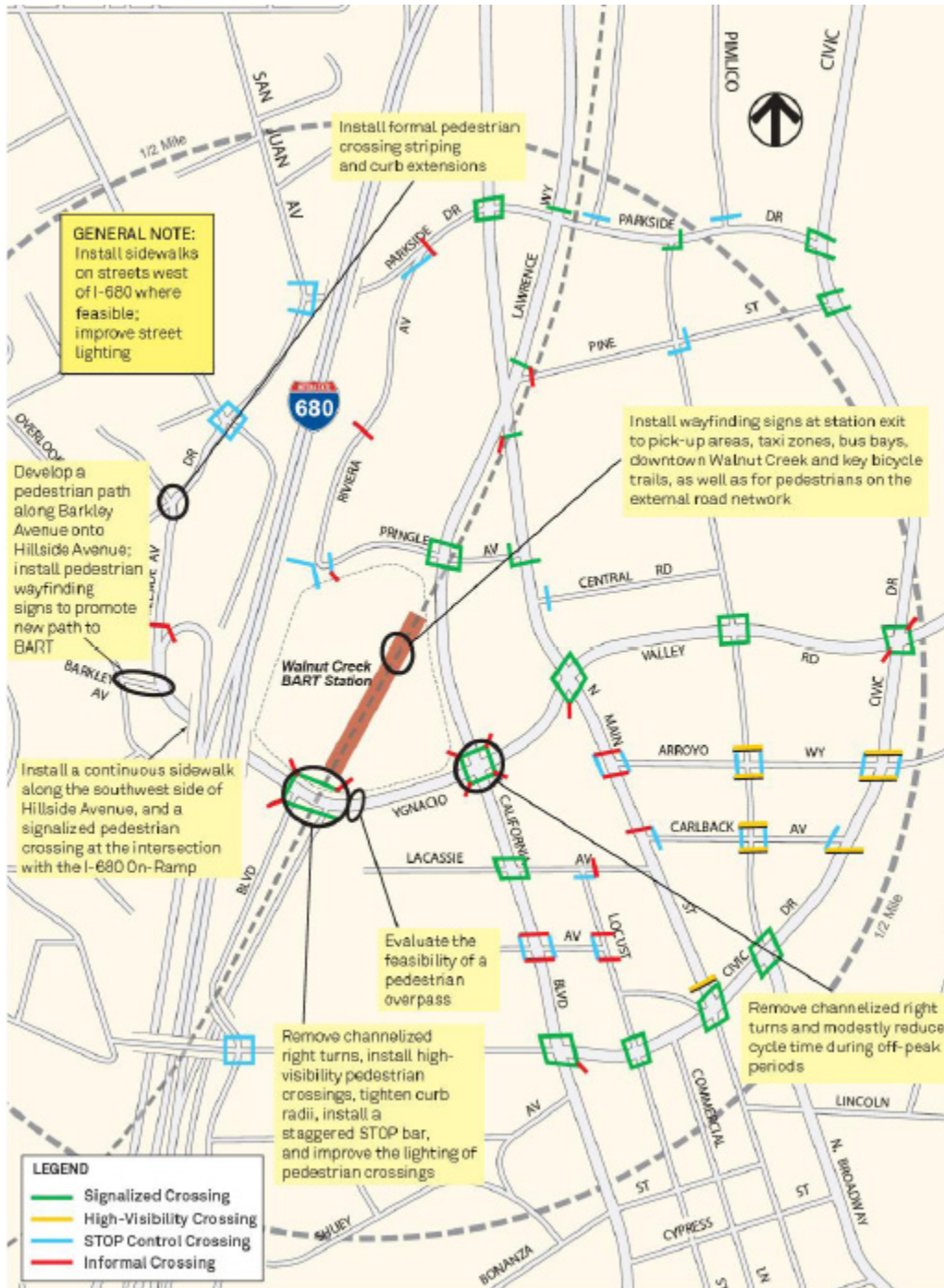
Other pedestrian and bicycle improvements in the station area are described in the Walnut Creek BART Station Access Study¹³ and shown in the map below. The 2006 BART Station Access Priorities list also included two pedestrian projects that are addressed in the Transit Village project: establishing a pedestrian path to offices on Pringle Avenue, and improving crossing safety at North California Boulevard and Ygnacio Valley Road. City staff have expressed a desire to evaluate the feasibility of a bicycle and pedestrian bridge over Ygnacio Valley Boulevard to the station, however BART staff have questioned the feasibility and constructability of such a project.



A pavilion provides a pedestrian landmark at the southeast corner of the station property.

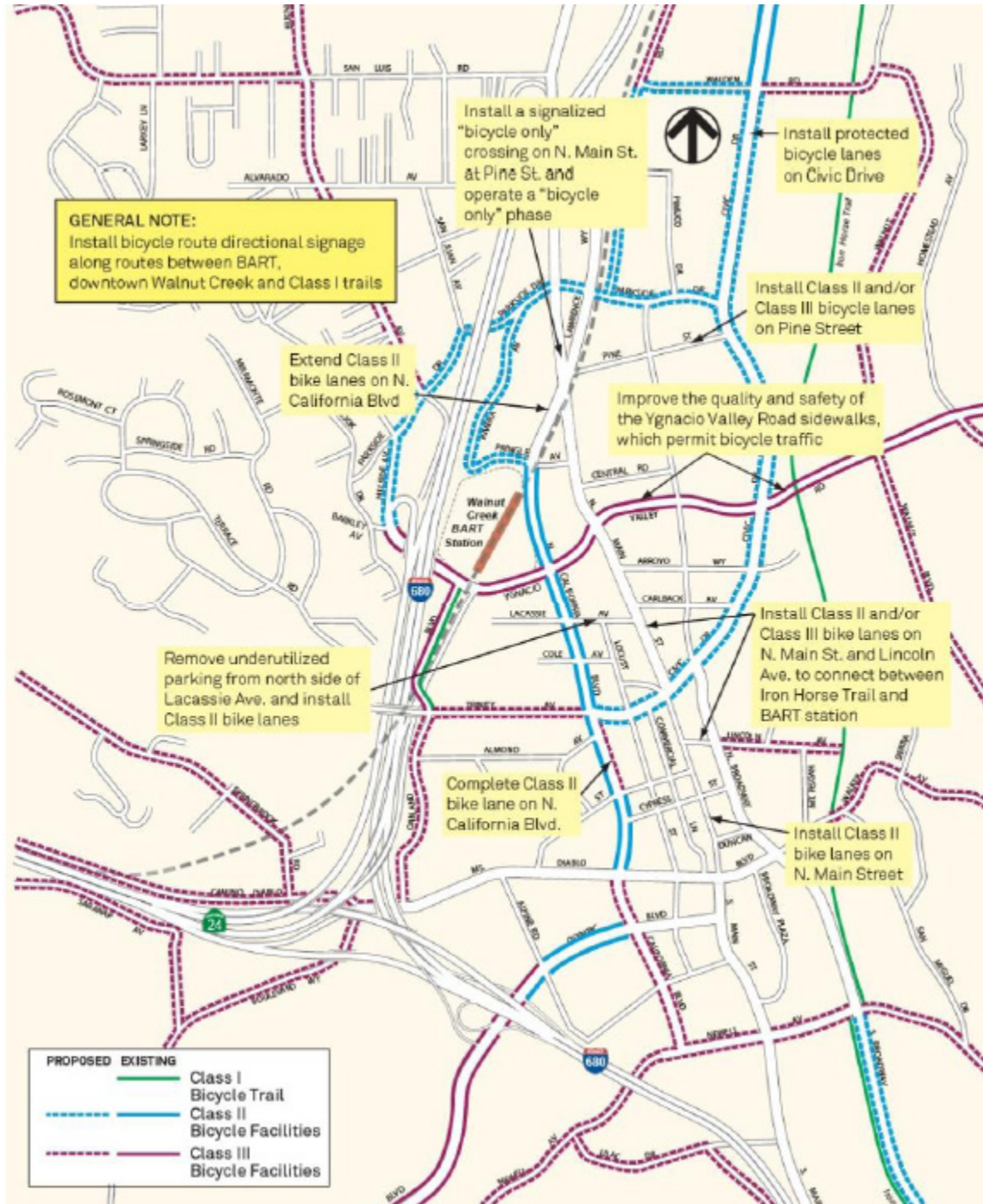
¹³ Administrative Draft

Figure 3-31 Summary of Proposed Pedestrian Improvements from the Administrative Draft of the 2013 Walnut Creek Access Study



Source: BART Walnut Creek Station Access Plan Administrative Draft, 2013

Figure 3-32 Summary of Proposed Bicycle Improvements from the Administrative Draft of the 2013 Walnut Creek Access Study



Source: BART Walnut Creek Station Access Plan Administrative Draft, 2013

Parking Access

There are 2,096 parking spaces at Walnut Creek: 1,686 with a daily fee of \$1.50, and 380 set aside for monthly permit users. As of 2008, the parking lot filled to capacity by 8:20 a.m., and as of February 2013, the lot filled to capacity at 7:30 a.m.¹⁴ There are 155 bike spaces, 91 racks outside of the fare gates and 64 keyed locker spaces.¹⁵

In the Walnut Creek Transit Village plan, the existing BART parking structure will be preserved and a new parking garage will be constructed on the western section of the station. Existing parking will be replaced at a 1:1 ratio, and 100 additional spaces will be added. Parking for residential and commercial uses will be provided underground and at grade.

The 2004 Walnut Creek Comprehensive Station Plan included several parking management strategies for Walnut Creek to potentially be implemented with the Limited Parking Revenue Enhancement funds, including:

- Increase midday parking
- Redesign carpool program
- Conduct Community Parking District Feasibility Study
- Increase carpool parking
- Support carsharing start-up operations
- Redesign passenger pickup/dropoff zone

¹⁴ Based on data provided by Bob Franklin in 2013.

¹⁵ From the July 2012 BART Bicycle Plan: Modeling Access to Transit

Pleasant Hill/Contra Costa Centre

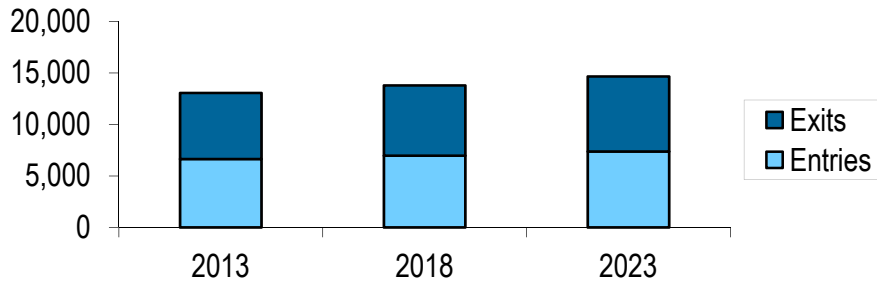
The Pleasant Hill/Contra Costa Centre BART Station is located in unincorporated Contra Costa County adjacent to the cities of Pleasant Hill and Walnut Creek. The station is located off Treat Boulevard and is bisected by Oak Road. There is multifamily housing located on site, and high concentrations of employment in the Contra Costa Centre office park complex.

Stakeholders for Pleasant Hill include Contra Costa Centre Transit Village; Contra Costa Transportation Authority; Avalon Bay Communities, Inc.; Millennium Partners; and the Central Contra Costa Transit Authority.

Ridership

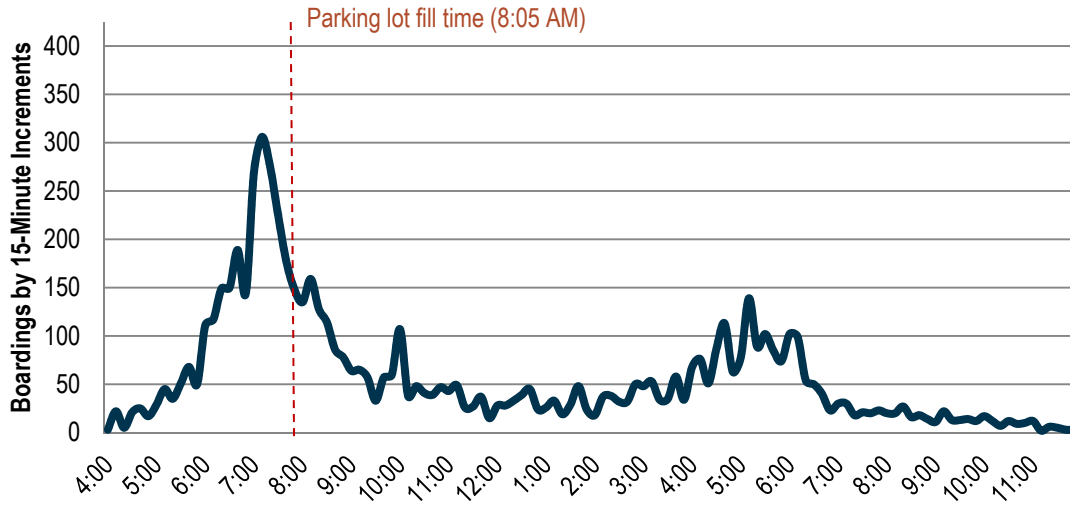
Pleasant Hill Station is highly home-origin based, with 83% of average weekday boardings coming to the station from home. Overall ridership is projected to grow by 12% over a 10-year period. Figure 3-33 below shows the entry and exit patterns by time for the station, which are highly concentrated around the peaks in a typical commute pattern. The station has minimal passenger activity in the off-peak periods and very narrow shoulders in the peak. Boardings in the AM period begin to drop off sharply around the same time the parking lot fills (8:05 a.m.).

Figure 3-33 BART Ridership at Pleasant Hill 2013, 2018, and 2023



Source: BART Ridership Model, 2013

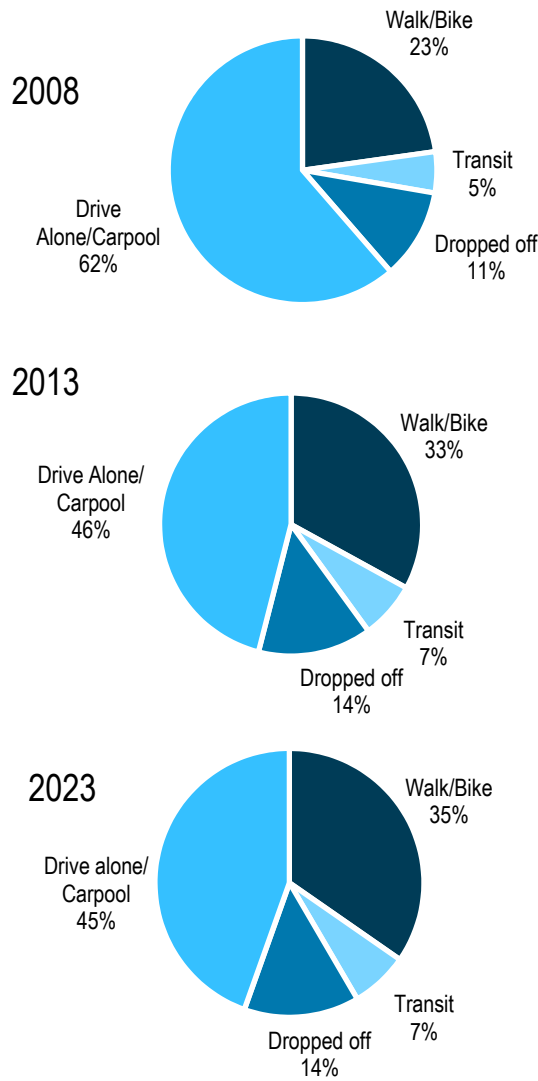
Figure 3-34 Pleasant Hill Entries by Time



Station Access Mode and Location

Figure 3-35 shows past, current, and forecasted mode of access to Pleasant Hill Station. While two-thirds of Pleasant Hill BART passengers drove alone or carpoolled to the station in 2008, that ratio has flipped in the past five years, where now two-thirds of passengers walk, bike, ride transit, or are dropped off at the station. As of 2013, fewer than half of the current passengers arrive by driving alone or carpooling, while one third walk or bicycle. At just 7%, the station has a relatively low transit mode share. The shift to the higher than average rate of walk and bike access may be a result of the TOD development directly adjacent to the station, while low transit access may reflect very limited frequent bus service options.

Figure 3-35 Pleasant Hill BART Station Mode of Access 2008, 2013, and 2023



Source: 2008 data is from the BART Station profile survey. 2013 and 2023 data are forecasts from the BART ridership model.

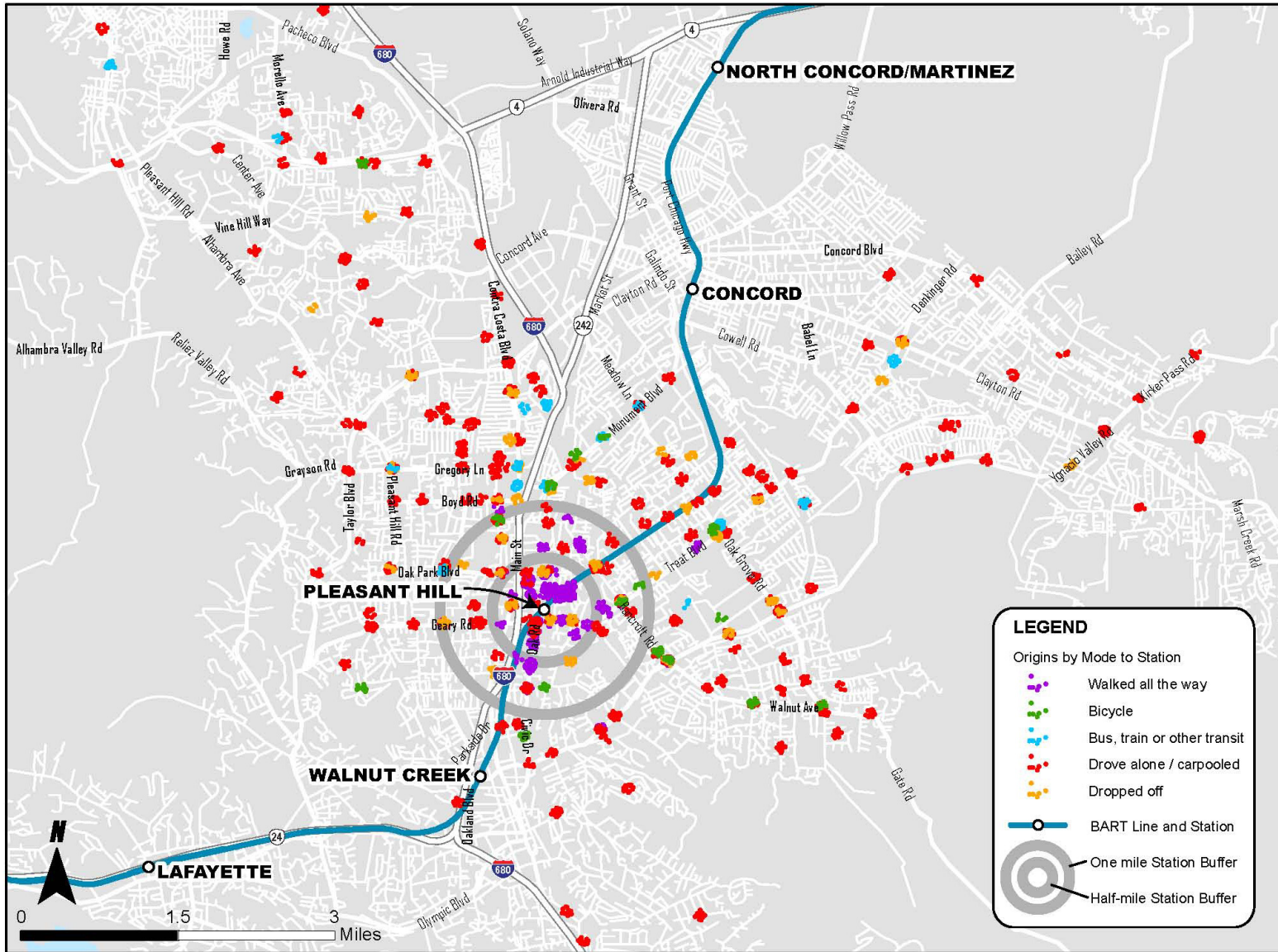
Figure 3-36 shows home origin locations and mode of access to the station, based on data from the 2008 BART Station Profile Survey. Pleasant Hill passengers arrive primarily from home origins to the east and north of the station. Due to the station's location on the C-line, a number of passengers are driving from Pleasant Hill and Martinez to this station. Passengers walking or biking generally begin trips from the homes located on the east side of the station.

Many transit users begin trips along the Contra Costa Boulevard corridor to the north and Monument Corridor to the northeast. There are also some transit access origins along Treat Boulevard.

Non-home origins at Pleasant Hill station are shown in Figure 3-37. These passengers are primarily walking to the station from locations within the half-mile buffer in all directions of the station. There are also a number of cyclists originating from locations around the Shadelands development.

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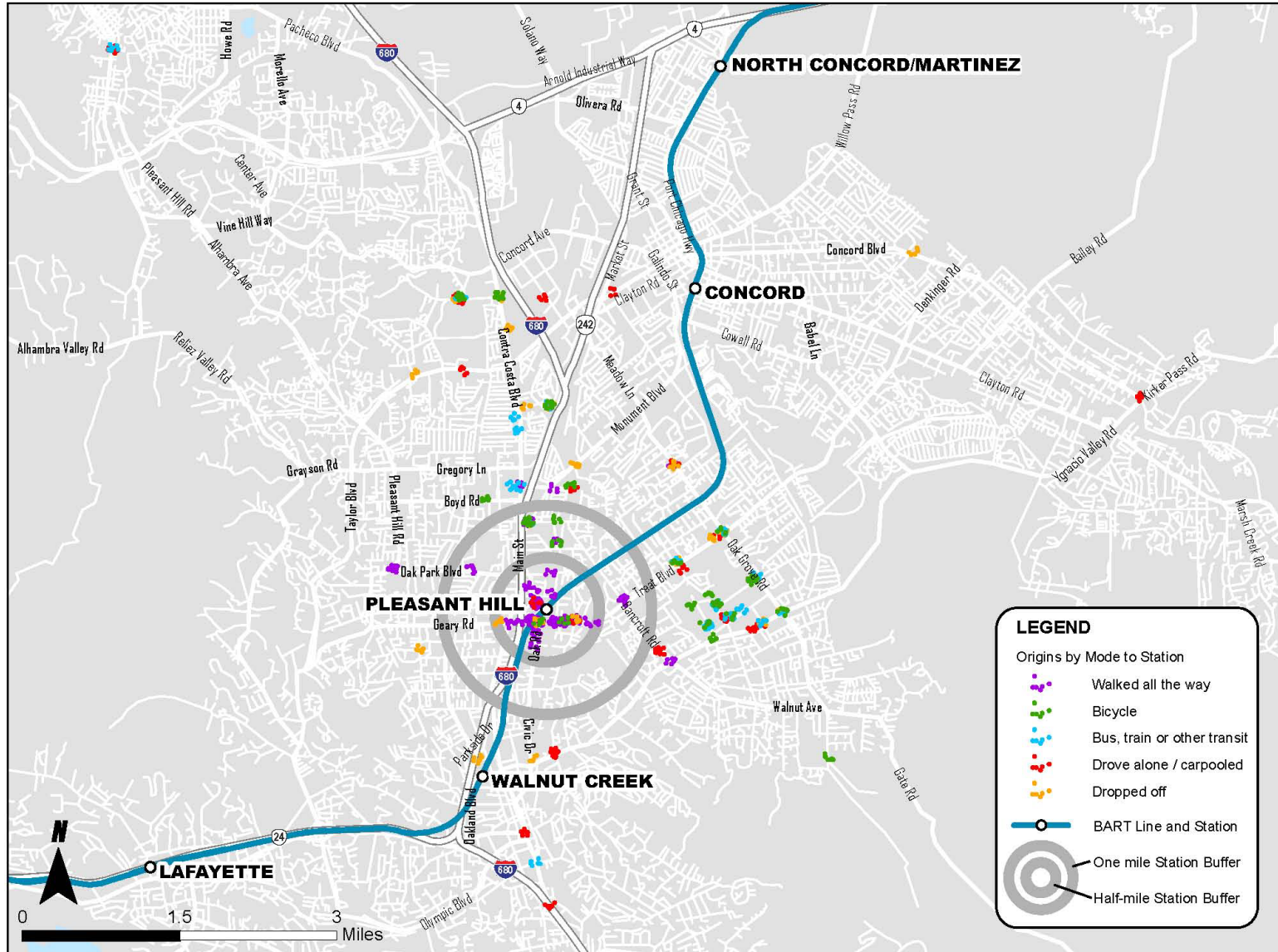
Figure 3-36 Pleasant Hill/Contra Costa Centre Station Home Locations of BART Riders by Mode



Data Sources: ESRI, 2008 BART Station Profile Study (weekday only; data are weighted from survey sample to represent average weekday ridership)

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Figure 3-37 Pleasant Hill/Contra Costa Centre Station Non-Home Locations of BART Riders by Mode



Data Sources: ESRI, 2008 BART Station Profile Study (weekday only; data are weighted from survey sample to represent average weekday ridership)

Transit Access

The Pleasant Hill/Contra Costa Centre BART Station is served by eight CCCTA routes and four regional routes operated by other providers, as shown in Figure 3-38. While the coverage of transit service is good at the station, the frequency of these services is very limited. As can be seen in Figure 3-39, the only connecting transit routes with better than 30 minute service travel north from the station to Concord. There are limited connections to the east along Treat Boulevard and to the north along Contra Costa Boulevard.

Transit usage around the station, as show in Figure 3-40, is heaviest along the Monument Boulevard Corridor—although the majority of those passengers are likely within the Concord Station catchment area—and along Treat Boulevard. Figure 3-40 also shows the boarding activity from the pre-2008 CCCTA system. It illustrates that while the pattern of ridership by stop is generally similar to 2008, there has been a decline in boardings at stops throughout this area.

According to CCCTA staff, there are issues related to inadequate bus queue and layover space at the Pleasant Hill Station. Currently, several regional services and private shuttles utilize the station, along with regular local service.

In addition, the all-glass bus shelters at the intermodal center experience considerable direct sunlight and high temperatures, and are not utilized by passengers during days with full sunlight.

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Figure 3-38 Available Transit Service at Pleasant Hill BART Station¹⁶

	Stations Served	Route	Areas Served	Weekday Peak Periods Headways	Weekday Off-peak Periods Headways	Weekend Service Headways	Average Daily Ridership	Boardings per Revenue Hour
CCCTA	Pleasant Hill, Walnut Creek	7	Walnut Creek BART, Mitchell Park 'n Ride, Shadelands, Bancroft Rd., Treat Blvd., Buena Vista Ave., Pleasant Hill BART	40	--	--	244	6.9
CCCTA	Pleasant Hill, Walnut Creek	9	DVC, Sun Valley Mall, JFK University, Crescent Plaza, Pleasant Hill BART, North Main, Walnut Creek BART	30	60	--	612	14.6
CCCTA	Concord, Walnut Creek, Pleasant Hill	15	Concord BART to Walnut Creek BART via Willow Pass, Concord High, Treat, Pleasant Hill BART, Civic	60	60	--	526	18.3
CCCTA	Concord, Pleasant Hill	11	Concord BART to Pleasant Hill BART via Oak Grove and Treat	45	90	--	310	17.3
CCCTA	Concord, Pleasant Hill	14	Concord BART to Pleasant Hill BART via Monument Corridor, Del Rio, Bancroft	40	40	--	673	16.9
CCCTA	Pleasant Hill	18	Amtrak, Morello Ave., DVC, Gregory Lane, Pleasant Hill BART	80	80	--	441	14.4
CCCTA	Concord, Pleasant Hill, Walnut Creek	311	Concord BART to Walnut Creek BART via Willow Pass, Concord High, Treat, Pleasant Hill BART, Civic	--	--	80	181	12.2
CCCTA	Pleasant Hill	316	Alhambra Rd to Pleasant Hill BART via Martinez Amtrak, Pacheco, Morello, DVC, Contra Costa	--	--	75-150	252	14.7
Fairfield-Suisun Transit (FAST)	Walnut Creek, Pleasant Hill	40	Walnut Creek BART, Pleasant Hill BART, Benicia, Fairfield Transportation Center, Vacaville Transportation Center	15-60	--	--	--	--
Vallejo Transit (SolTrans)	Walnut Creek, Pleasant Hill	78	Walnut Creek BART, Pleasant Hill BART (southbound only), Benicia, Vallejo Transit Center	20-80	90-120	120	--	--
LAVTA (WHEELS)	Walnut Creek, Pleasant Hill	70x	Dublin/Pleasanton BART, Walnut Creek BART, Pleasant Hill BART	30	--	--	--	--
LAVTA (WHEELS)	Walnut Creek, Pleasant Hill	70xv	Pleasant Hill BART, Walnut Creek BART, Stoneridge in Dublin/Pleasanton (two stops)	1 a.m. trip, 1 p.m. trip	--	--	--	--

¹⁶ CCCTA FY2011-12 Short Range Transit Plan

Figure 3-39 Routes by Frequency for CCCTA Routes Serving Pleasant Hill/Contra Costa Centre Station

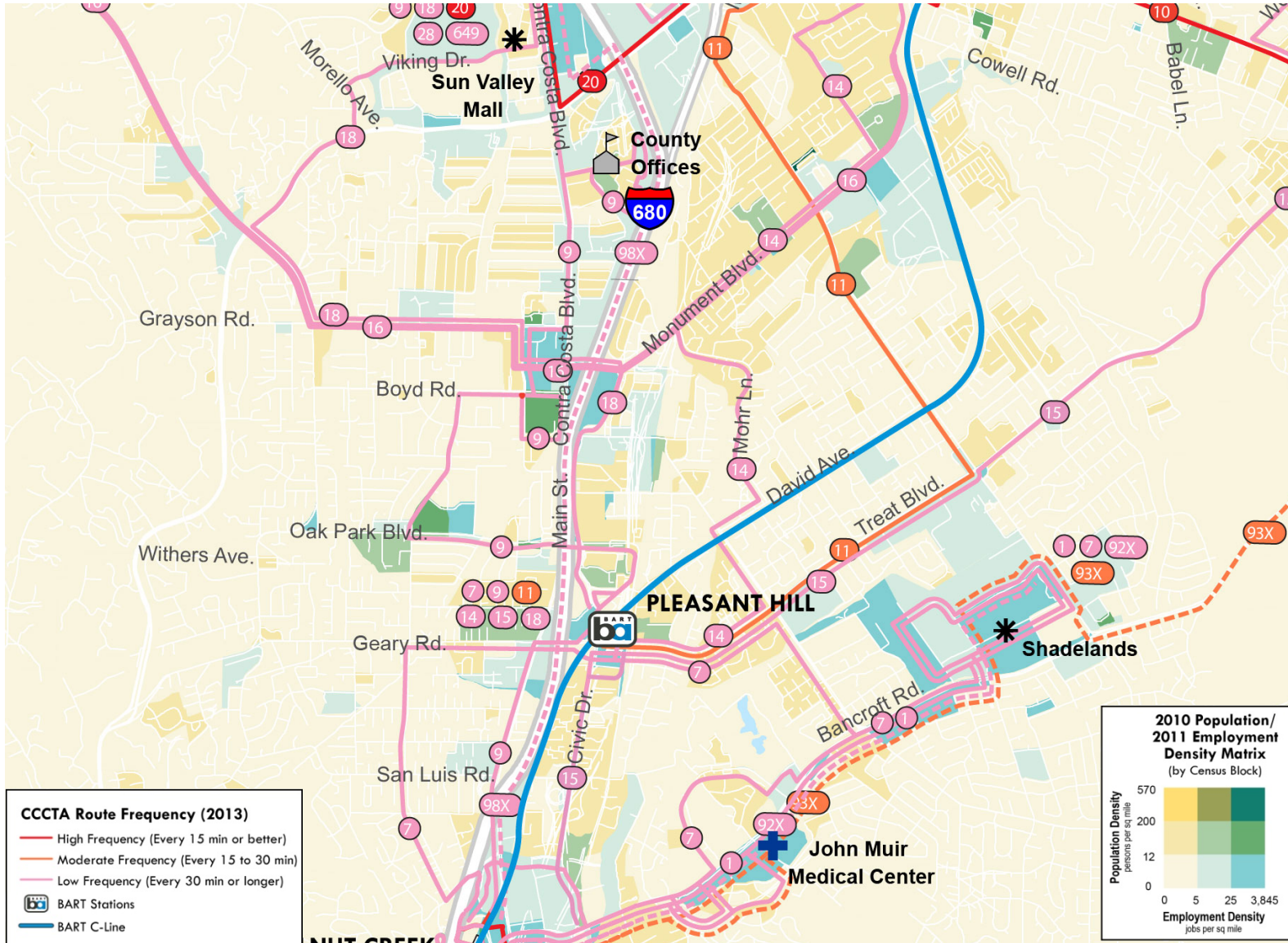
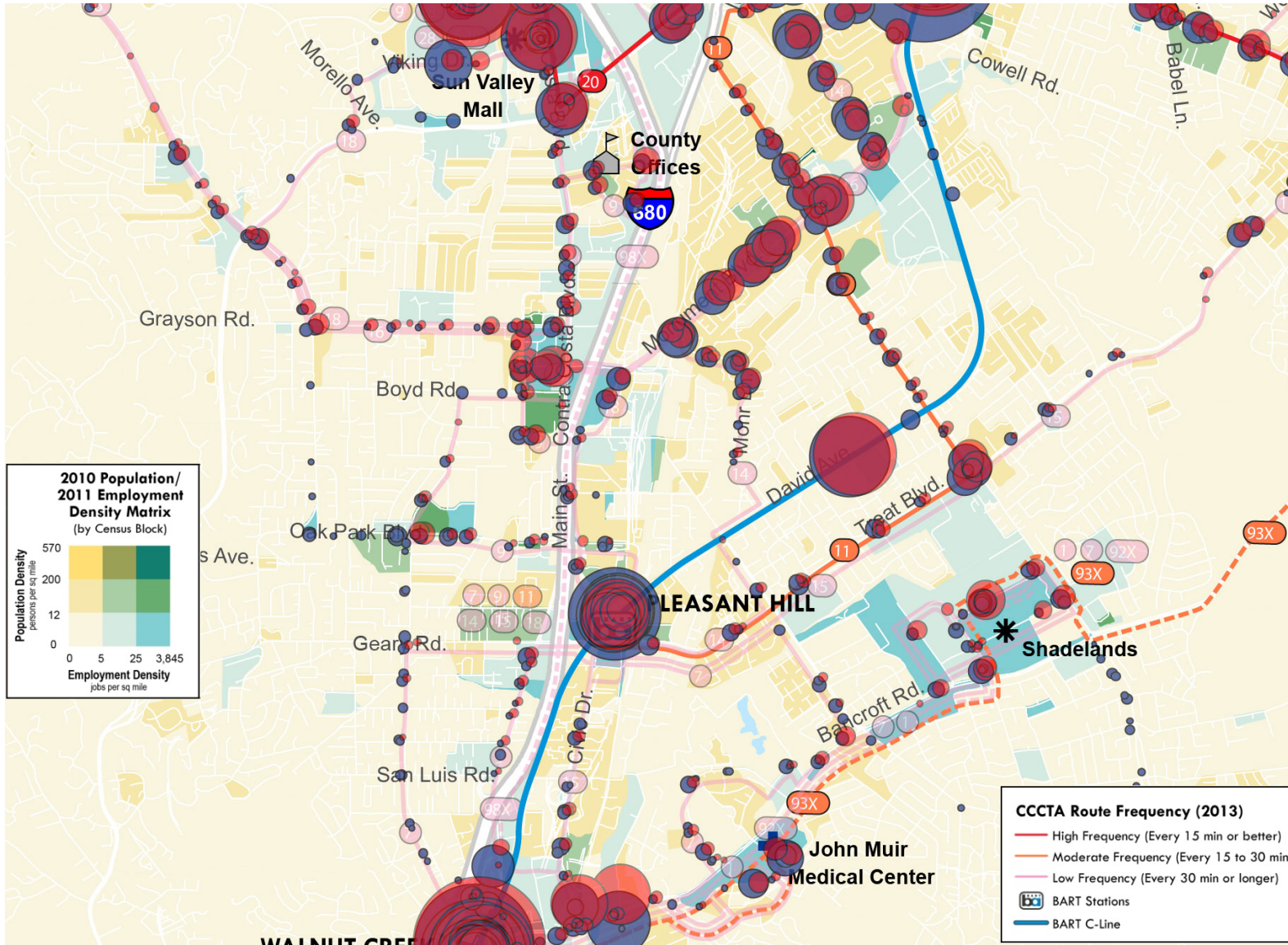


Figure 3-40 Boardings by Stop for CCCTA Routes Serving Pleasant Hill Station (2013 and 2008)



Bicycle and Pedestrian Access

As part of a station modernization effort, Pleasant Hill/Contra Costa Centre Station was one of the first stations where BART's new wayfinding signage was implemented. The station is well-oriented and accessible for pedestrians.

A number of pedestrian and bicycle projects were identified in the 2002 Pleasant Hill Comprehensive Station Plan, and have since been implemented. These include a bicycle and pedestrian bridge and path over Walnut Creek Channel, and redevelopment of Iron Horse Trail parking into a bicycle route and park.

There are bicycle facilities proposed for Contra Costa Boulevard and a segment of Treat Boulevard, to connect two existing bicycle facilities on either side of the station on Treat Boulevard. The Iron Horse Trail is also adjacent to the station on the east side of the site.



New wayfinding signage orients BART riders to nearby destinations.

Parking Access

There are 3,060 car parking spaces at Pleasant Hill: 457 for monthly permit users, and 2,603 for daily use with a \$1.50 fee as of 2013. As of 2008, the parking lot filled by 8:45 a.m. and in 2013 the lot filled by 8:05 a.m.¹⁷ There are 340 bicycle parking spaces at Pleasant Hill, 224 bicycle rack spaces outside of the fare gates, 24 electronic lockers, and 92 keyed lockers.¹⁸

BART is planning to temporarily install attendant-assisted parking on a currently vacant lot at the Pleasant Hill Transit Village to accommodate mid-day parking demand. If successful, this program may be used elsewhere in the BART system.

¹⁷ Based on data provided by Bob Franklin in 2013.

¹⁸ From the July 2012 BART Bicycle Plan: Modeling Access to Transit.

Concord

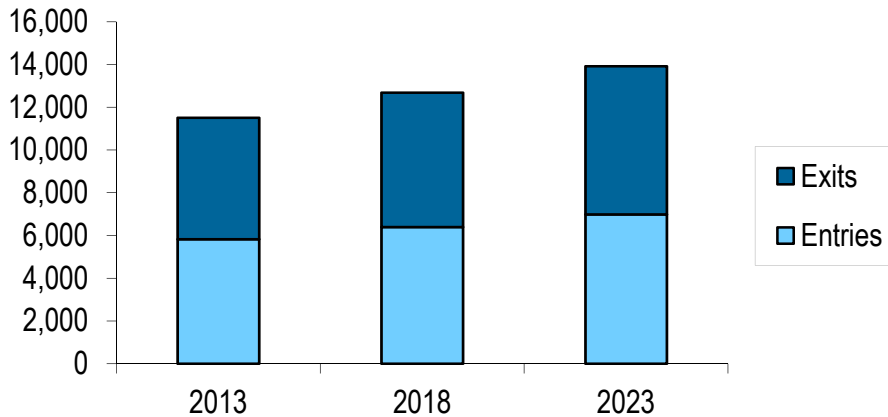
The Concord BART Station is located in the downtown area of the City of Concord, the largest city in Contra Costa County. Prior to the Pittsburg/Bay Point extension, which opened in 1996, Concord was the terminal station on the C-line. The station is surrounded by several large surface parking lots and a very large bus intermodal facility. The downtown area surrounding the station is mixed use, with a fair mix of employment and single-family and multifamily housing. Stakeholders for Concord station include the City of Concord and the Monument Community Partnership.

The City of Concord is currently conducting a Downtown Specific Plan (2013), which includes addressing access to and from the BART station, particularly for bicyclists and pedestrians. In addition, the city recently received a Last Mile to BART OneBayArea Grant (OBAG) to add bicycle lanes on Concord Boulevard, Oakland Avenue, and Mt. Diablo Street in the vicinity of the BART station. These facilities are expected to be constructed between 2013 and 2016.

Ridership

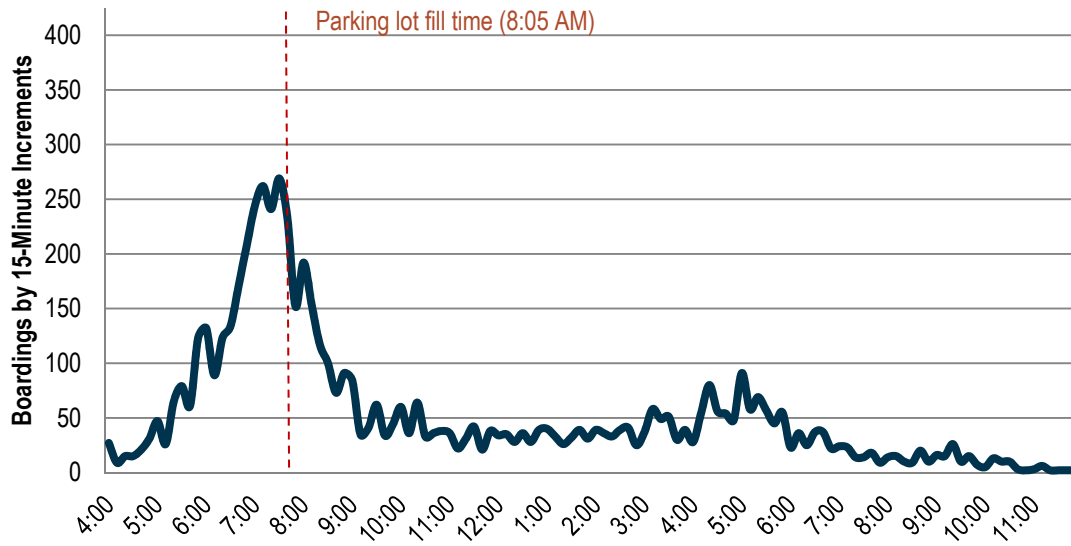
Concord Station today has roughly 6,000 daily boardings. It is used primarily for home origin trips (74%). The projected ridership growth for the next 10 years at Concord station is 21%, higher than other central C-line stations. As can be seen in Figure 3-42, entries at the station are generally very peak-oriented, although the peak periods are wider than at other stations in this corridor.

Figure 3-41 BART Ridership at Concord for 2013, 2018, and 2023



Source: BART Ridership Model, 2013

Figure 3-42 Concord Entries by Time of Day

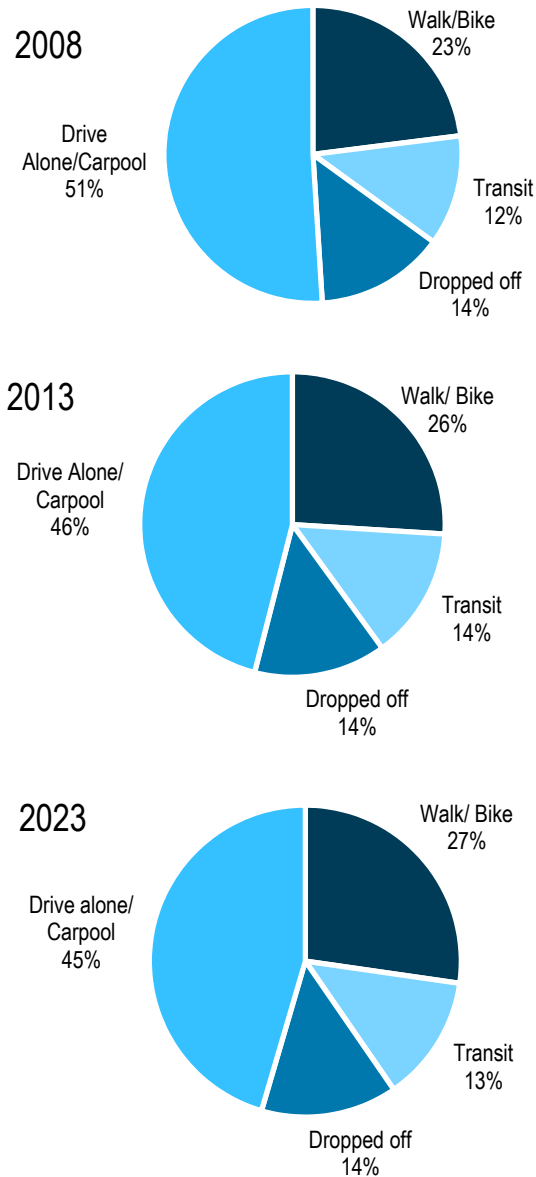


Source: BART Planning, 2013

Station Access Mode and Location

Figure 3-43 shows the past, current, and forecast mode of access to Concord Station. Of the five stations in this corridor, Concord has the lowest rates of auto access in 2013: fewer than half of passenger drive alone or carpool, while one-quarter of passengers walk and 14% ride a bus. While the past five year period (2008-2013) saw modest increases in transit, walk, and bike access to the station, the mode share of arrivals at the station is not forecast to change over the next 10 years.¹⁹

Figure 3-43 Concord BART Station Mode of Access 2008, 2013, and 2023

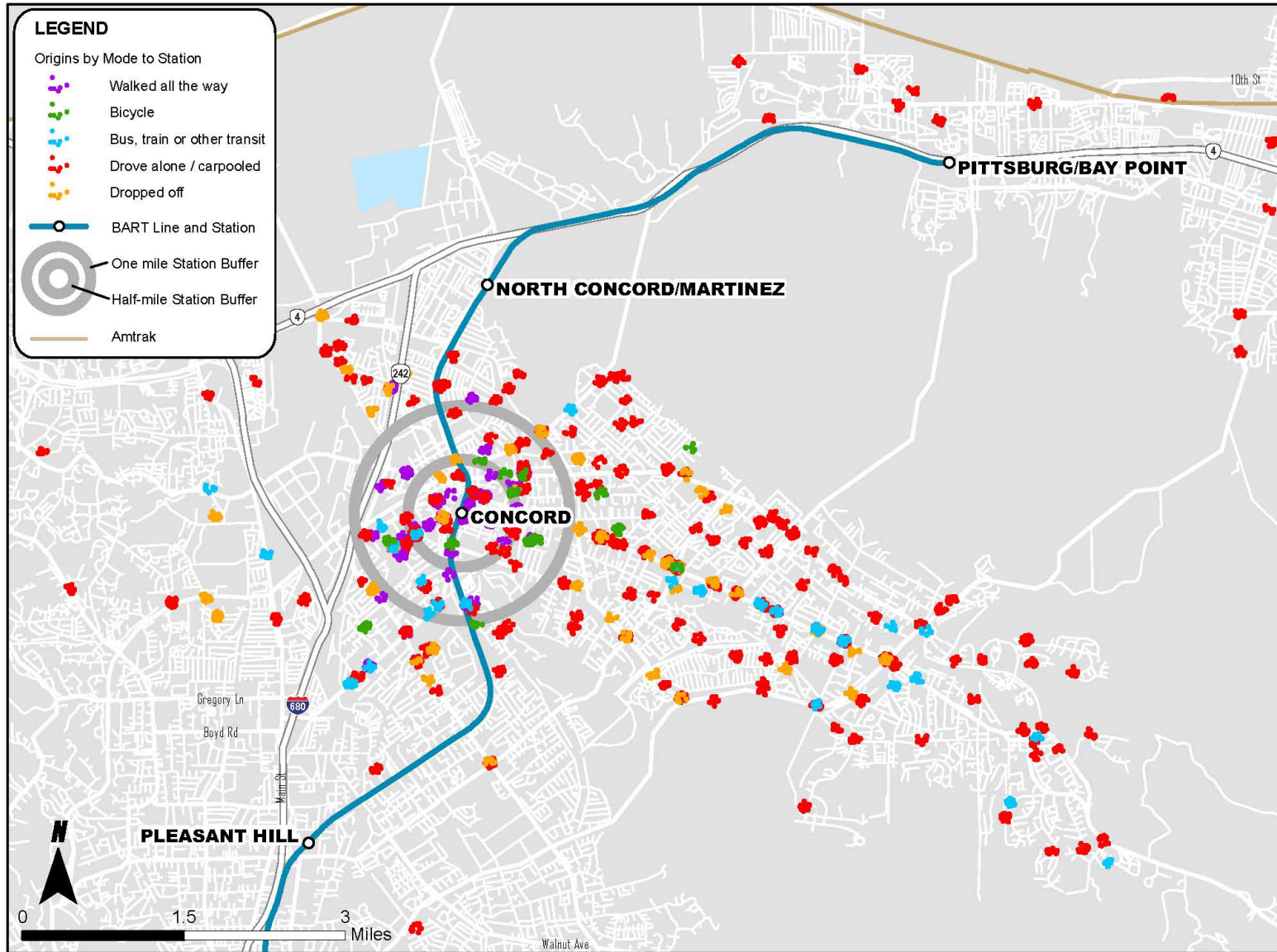


Source: 2008 data is from the BART Station profile survey. 2013 and 2023 data are forecasts from the BART ridership model.

¹⁹ 2008 Mode Share data from the 2008 BART Station Profile Study for home and non-home origins.

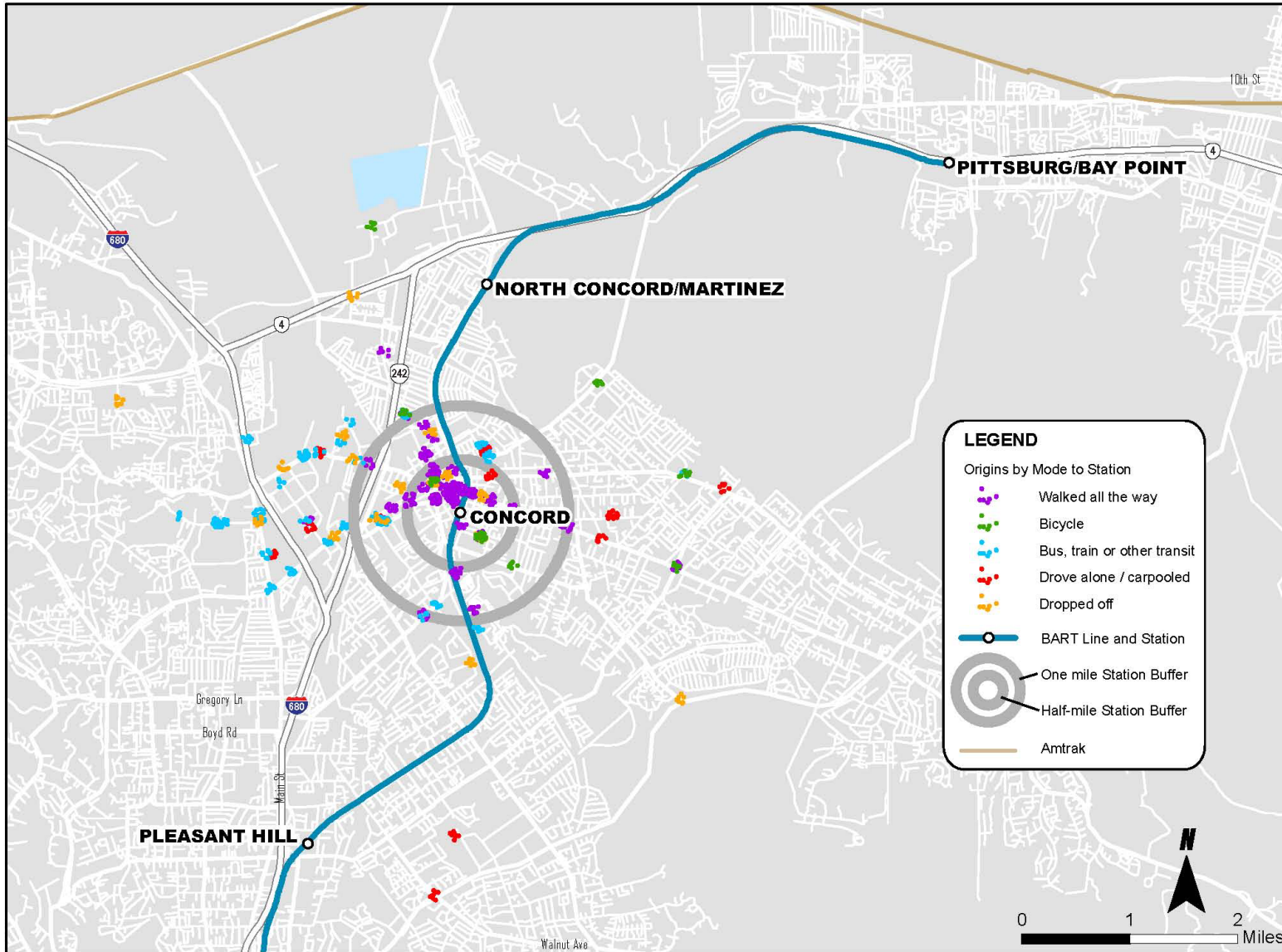
The maps below show home and non-home origins for passengers using Concord BART Station. As can be seen in Figure 3-44, home locations are clustered at points along the Clayton Road corridor, and within the one-mile station buffer. Many transit passengers are arriving from the Monument Corridor and along Clayton Road. Non-home origins are shown in Figure 3-45; these origin locations are highly concentrated within the one-mile station buffer, with transit riders coming from Diablo Valley College and west of the station on Concord Avenue.

Figure 3-44 Concord Station Home Locations of BART Riders by Mode



Data Sources: ESRI, 2008 BART Station Profile Study (weekday only; data are weighted from survey sample to represent average weekday ridership)

Figure 3-45 Concord Station Non-Home Locations of BART Riders by Mode



Data Sources: ESRI, 2008 BART Station Profile Study (weekday only; data are weighted from survey sample to represent average weekday ridership)

Transit Access

Concord Station is well-connected to locations in Concord, Martinez, and Clayton with CCCTA services. The station is served by 14 routes; there is more weekend service at Concord station than other central C-line stations. Figure 3-46 shows which transit routes provide frequent service (30 minute or better in the peak period).

Figure 3-47 shows 2008 and 2013 boardings for routes serving Concord station. It shows that there is consistent ridership along Clayton Road, the Monument Corridor, and at Diablo Valley College/Sun Valley Mall.



Concord Station's large intermodal center was scaled to meet its role as an end-of-line station. It has been served by fewer bus routes since the BART line was extended in 1996.

Route 20 provides service from Concord Station to Diablo Valley College, with 10-20 minute frequency in the midday period, and 30 minute frequency in the AM and PM peak periods and the off-peak period. It is one of just four routes in the system with frequencies under 30 minutes for some periods during the weekday. Another frequent service connecting to the Concord BART Station is Route 10, which operates from Concord along the Clayton Road corridor at 15 minutes in the PM peak, and 30 minutes in the AM peak and midday periods. Both of these services carry more than 25 passengers per service hour on weekdays, making them the most productive routes in the system after the Walnut Creek Free Ride Trolley. Route 11 provides service every 45 minutes between Pleasant Hill and Concord stations via Oak Grove Road. This service has relatively low ridership.

Routes 14 and 16 provide service in the Monument Boulevard corridor. Even combined, these routes have 40-minute frequency. However, productivity is reasonably strong, and there is boarding activity at stops all along the corridor.

The 2006 Monument Corridor Community Based Transportation Plan identified the need for a Monument Community Shuttle Bus. The shuttle launched in 2013 and now provides free service on-demand service targeting low-income, elderly and disabled passengers in the off-peak periods.

The 2006 BART Station Access Priorities identified several additional transit improvements for Concord station that have yet to be implemented at the station:

- Transit frequency improvements.
- Transit wayfinding improvements with a transit stop diagram at the mezzanine and street levels of the station

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Figure 3-46 Available Transit Service at Concord BART Station²⁰

Stations Served	Route	Serves	Weekday Peak Periods Headways	Weekday Off-peak Periods Headways	Weekend Service Headways	Average Daily Ridership	Boardings per Revenue Hour
Concord	10	Concord BART to Clayton via Clayton Rd	15 (PM peak) - 30	30-60	--	1,004	25.6
Concord, Pleasant Hill	11	Concord BART to Pleasant Hill BART via Oak Grove and Treat	45	90	--	310	17.3
Concord, Pleasant Hill	14	Concord BART to Pleasant Hill BART via Monument Corridor, Del Rio, Bancroft	40	40	--	673	16.9
Concord, Walnut Creek, Pleasant Hill	15	Concord BART to Walnut Creek BART via Willow Pass, Concord High, Treat, Pleasant Hill BART, Civic	60	60	--	526	18.3
Concord	16	Amtrak, Contra Costa Regional Medical Center, Alhambra Ave., Gregory Lane, Monument Blvd., Concord BART	40	40	--	727	13.5
Concord	19	Amtrak, Pacheco Blvd., Concord BART	120	120	--	144	10.4
Concord	20	Diablo Valley College to Concord BART via Contra Costa, Willow Pass, Clayton	30; (10-20 in midday)	30	--	1,160	25.6
Concord	91x	Concord BART, Airport Plaza, Galaxy Way, Chevron, Clayton Rd.	30	--	--	42	11.5
Concord	260	Concord BART to Cal State East Bay via Cowell, Ygnacio Valley	40	varies	--		
Concord	310	Concord BART, Clayton Rd, Kirkier Pass	--	--	40		
Concord, Pleasant Hill, Walnut Creek	311	Concord BART to Walnut Creek BART via Willow Pass, Concord High, Treat, Pleasant Hill BART, Civic	--	--	80	181	12.2
Concord	314	Diablo Valley College to Concord BART via Contra Costa, Willow Pass, Clayton	--	--	40-80	888	22.2
Concord	315	Concord BART, Willow Pass, Landana, Clayton	--	--	80	64	9.5
Concord	320	Diablo Valley College to Concord BART via Diamond, Willow Pass, Clayton	--	--	45	163	13.4

²⁰ CCCTA FY2011-12 Short Range Transit Plan

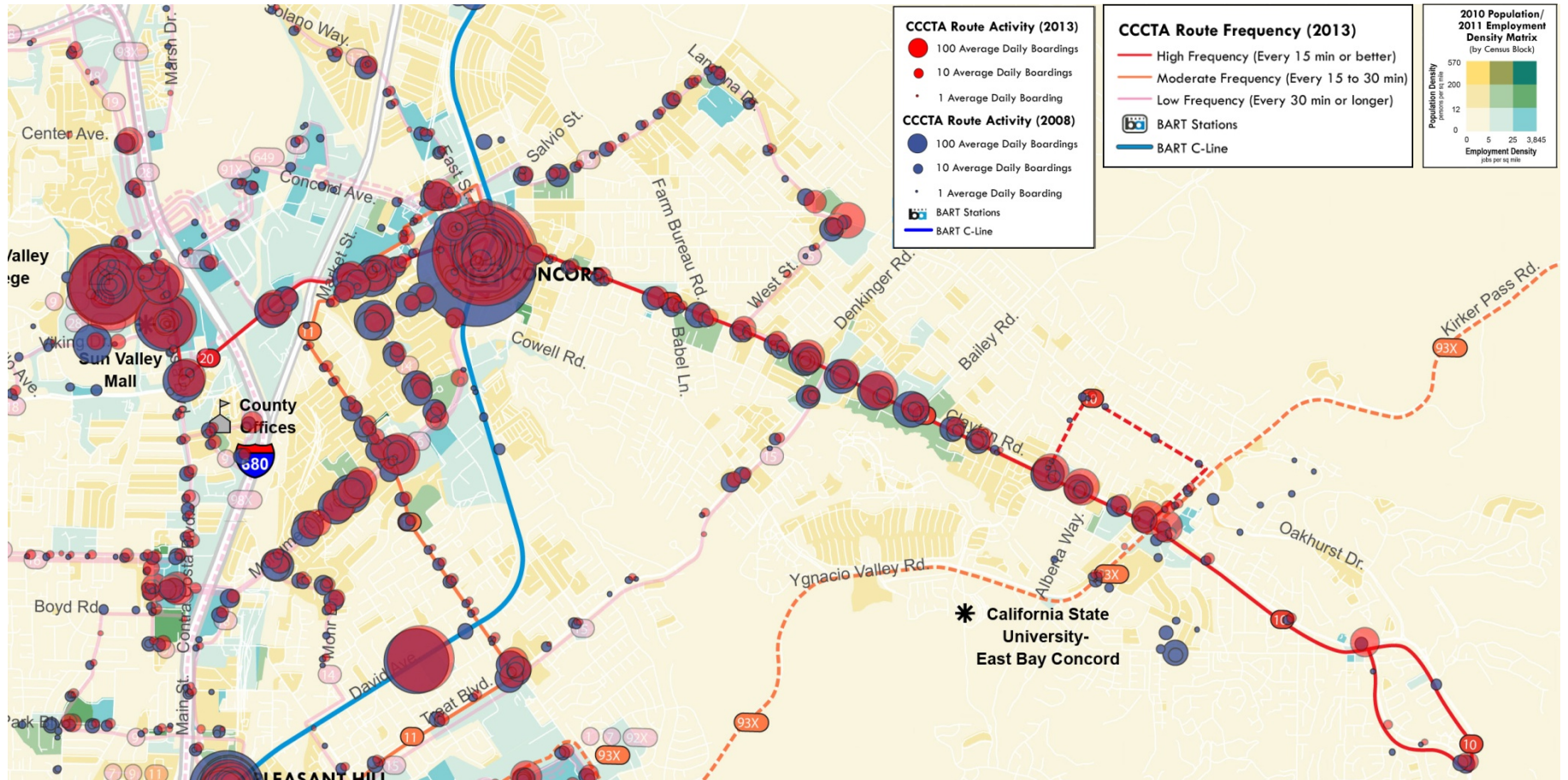
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Figure 3-47 Routes by Frequency for CCCTA Routes Serving Concord Station



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Figure 3-48 Boardings by Stop for CCCTA Routes Serving Walnut Creek Station (2013 and 2008)



Bicycle and Pedestrian Access

The station currently has a large pedestrian plaza and bicycle lockers/parking, but is not a vibrant, pedestrian-scale environment. There is wayfinding to and from the BART station provided by the City of Concord throughout the downtown area. A Downtown Specific Plan is currently in progress for Concord, and has identified issues and opportunities around the BART station for bicyclists and pedestrians, including:

- BART parking structure and lot create a barrier to visual and physical access to the Station from downtown
- There are numerous one-way streets in the station area that create challenges for accessibility
- Numerous wide streets with high traffic volumes make the area unfriendly to pedestrians
- Limited bike paths in the area
- Connection to Todos Santos Plaza is not well signed
- Bicycle facilities are limited in the area, with only a few Class III bicycle routes, two of which (Concord Avenue and Mount Diablo Boulevard) roughly connect the BART station with the Contra Costa Canal Trail
- Numerous streets in the vicinity of the station with no sidewalks

In 2014, BART will construct a self-serve bike station at Concord Station. The project is fully funded and will provide parking for up to 56 bicycles.

Other access improvements identified in the 2006 BART Station Access Priorities include:

- Direct access across Galindo Street south of Clayton Road
- Wayfinding improvements to/from downtown and the Monument Corridor
- Pedestrian crossings with median at Clayton Road, East Street, and Port Chicago Highway, and improved pedestrian crossings along Oakland Avenue
- Bicycle lanes on Galindo Street



Secure bicycle parking lockers are located outside the station paid area.



A fence along the edge of the long bus intermodal center limits pedestrian access from the west.



Long distances between crossings of Clayton Road limit pedestrian access from the north.

Parking Access

There are 2,345 car parking spaces at Concord: 19 for monthly permit users, and 2,318 daily use spaces that cost \$1.50 per day, as of June 4, 2013. As of 2008, the parking lot did not fill to capacity, but in February 2013 the parking lot fill time was 8:30 AM.²¹ There is a significant amount of free parking at Concord Station, both in surface lots and an on-site four-story parking garage. There are 147 bicycle parking spaces, 119 that are rack spaces outside of the fare gates, 16 electronic lockers, and 12 keyed lockers.²²

²¹ Based on data provided by BART Customer Access Dept (R Franklin) in 2013.

²² From the July 2012 BART Bicycle Plan: Modeling Access to Transit.

Summary of Challenges and Opportunities

Figure 3-49 summarizes key challenges for BART access in this corridor as discussed in earlier sections of this report; identifies opportunities for addressing the challenge; and specifies places in the corridor where the challenge could be addressed.

Figure 3-49 Summary of Challenges and Opportunities

Key Challenge	Opportunity
Infrequent local bus transit service. Resource constraints, as well as limited trip densities in some areas, prevent frequent transit service that would allow convenient connections to BART.	Additional frequency could be added to key existing services connecting to BART. If performance thresholds are met, BART resources could help to pay operating expenses on a temporary basis.
Auto-oriented arterial streets. Long distances between crossings, lack of sidewalks, wide streets, inhospitable intersections, and high vehicle speeds characterize many arterial streets to and around these stations, inhibiting pedestrian and bicycle access.	Streets can be retrofitted to make pedestrian and bicycle travel safer and more comfortable.
Poor street connectivity. Poor street connectivity is a barrier to both bike/ped access and to efficient transit service to most residential areas.	In some cases (particularly with large-scale redevelopment), new street connections could be added.
Difficult wayfinding. At several stations signage is limited and it can be difficult to figure out where to go.	In-station wayfinding is funded at all Contra Costa County BART stations, including the "lipstick" station identification signs. However, signage along the station edges and to/from the stations are not funded.
Traffic delaying transit. On some major arterial streets, traffic delays reduce transit efficiency.	Transit priority treatments may be appropriate to speed up high-priority routes.
Unfamiliarity with travel options. Some existing or potential BART riders may be unfamiliar with existing access alternatives.	Information campaigns, targeted marketing, or specially branded vehicles and services may help some potential riders embrace alternatives.
Inefficient use of existing parking supply. Most vehicles using existing parking carry just one BART rider.	Increased passengers per parked vehicle could allow more efficient use of existing parking resources.
Fare penalties. A \$1 fare subsidy is in place for riders transferring from BART-to-bus, but not from bus-to-BART.	Additional fare subsidies or pass programs could be explored.
Peak hour/peak direction capacity – BART has limited ability to absorb additional peak hour, peak direction ridership from central C-Line to Oak and SF. BART does have room for reverse-peak direction travel.	Better connections for reverse commuters, or encourage commuting from new markets (eBART to central Contra Costa County).
Low density development- Neighborhoods surrounding bus corridors in central Contra Costa County are generally low-density, which makes it difficult to support frequent bus services.	Transit may continue to have low mode share from some low-density areas. For those who do drive to the station, increasing passengers per parked vehicle could allow more efficient use of existing parking resources. Real-time parking availability data could improve customer experience.

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<p>Topography – Hilly nature of much of the landscape makes biking and walking difficult.</p>	<p>Walking and biking may continue to have low mode share from some hilly areas. For those who do drive to the station, increasing passengers per parked vehicle could allow more efficient use of existing parking resources. Real-time parking availability data could improve customer experience.</p>
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4 CENTRAL C-LINE ACCESS PROPOSALS

Working with area stakeholders, the project team identified a set of access investments that respond to the challenges and opportunities identified during the study. The team conducted an evaluation to prioritize the projects. Based on that evaluation, Figure 3-50 assigns to each proposal a level of priority (high, medium, or low), and an anticipated implementation timeframe (short-term, medium-term, or long term). The section that follows provides a brief overview and evaluation of each project, discussing both cost and potential benefits to BART, BART riders, and other stakeholders.

Background

Chapter 3 documents existing conditions for access to the five BART stations in this corridor. Findings from this existing conditions analysis shaped the proposals the follow in the rest of this chapter. For reference, Figure 4-1 provides a review of key data points for each station, including average weekday ridership, currently daily CCCTA bus transfers, current number of parking spaces, and daily parking fee. Figure 4-2 summarizes estimates of current mode of access to each station in the corridor.

Figure 4-1 Central C-Line Station Access Summary Information

Station	Average Weekday Ridership	Bus Transfers	# Parking Spaces	Daily Parking Fee
Orinda	3,000	225	1,442	\$1.50
Lafayette	3,500	225	1,529	\$1.50
Walnut Creek	7,000	610	1,686	\$1.50
Pleasant Hill	6,500	2,160	2,603	\$1.50
Concord	6,000	1,650	2,345	\$1.50

Source: BART Planning

Figure 4-2 Central C-Line Stations: Estimated 2013 Mode of Access

Station	Drive alone/Carpool	Dropped Off	Walk/Bike	Transit
Orinda	62%	16%	14%	7%
Lafayette	62%	15%	22%	2%
Walnut Creek	39%	17%	29%	15%
Pleasant Hill	46%	14%	33%	7%
Concord	46%	14%	26%	14%

Source: BART Ridership Model

Potential Revenue

Figure 4-3 identifies revenue that could be collected from a range of fees on parking spaces in the corridor. The figures in the table are not a proposal for parking fees, nor do they indicate how much of the potential revenue would be used to fund access improvements. Instead, they are meant to provide a sense of scale for use in considering a variety of potential uses of funds. Note that some or all new revenue generated by increased parking fees may be used to pay for station improvements or other costs unrelated to either stations or station access.

Figure 4-3 Potential Revenue

Total Parking Spaces in Corridor	10,215
Annual Revenue from \$1 Daily Fee Increase	\$2,604,825
Annual Revenue from \$2 Daily Fee Increase	\$5,209,650
Annual Revenue from \$3 Daily Fee Increase	\$7,814,475

Figure 4-4 Project Prioritization Matrix

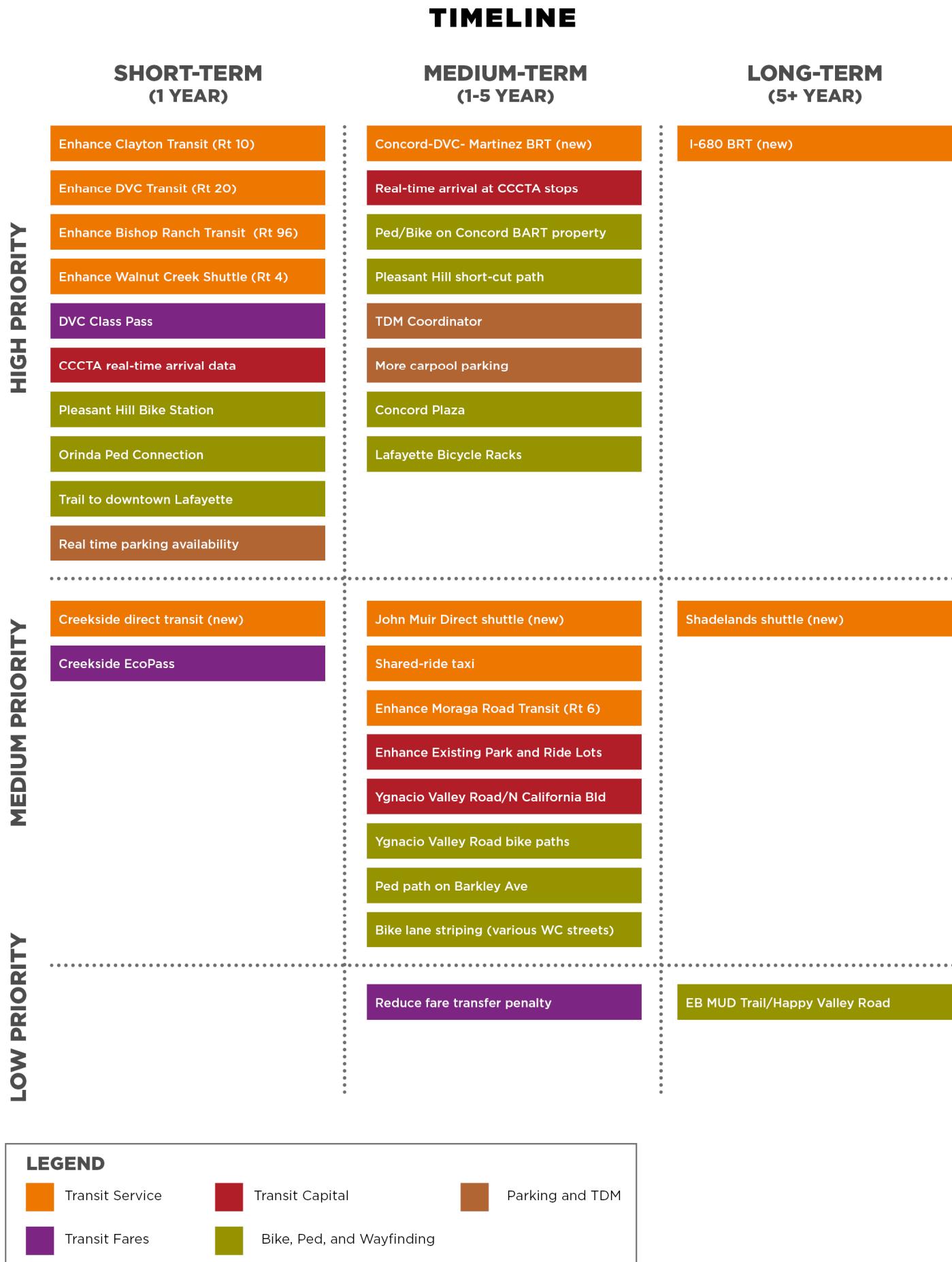


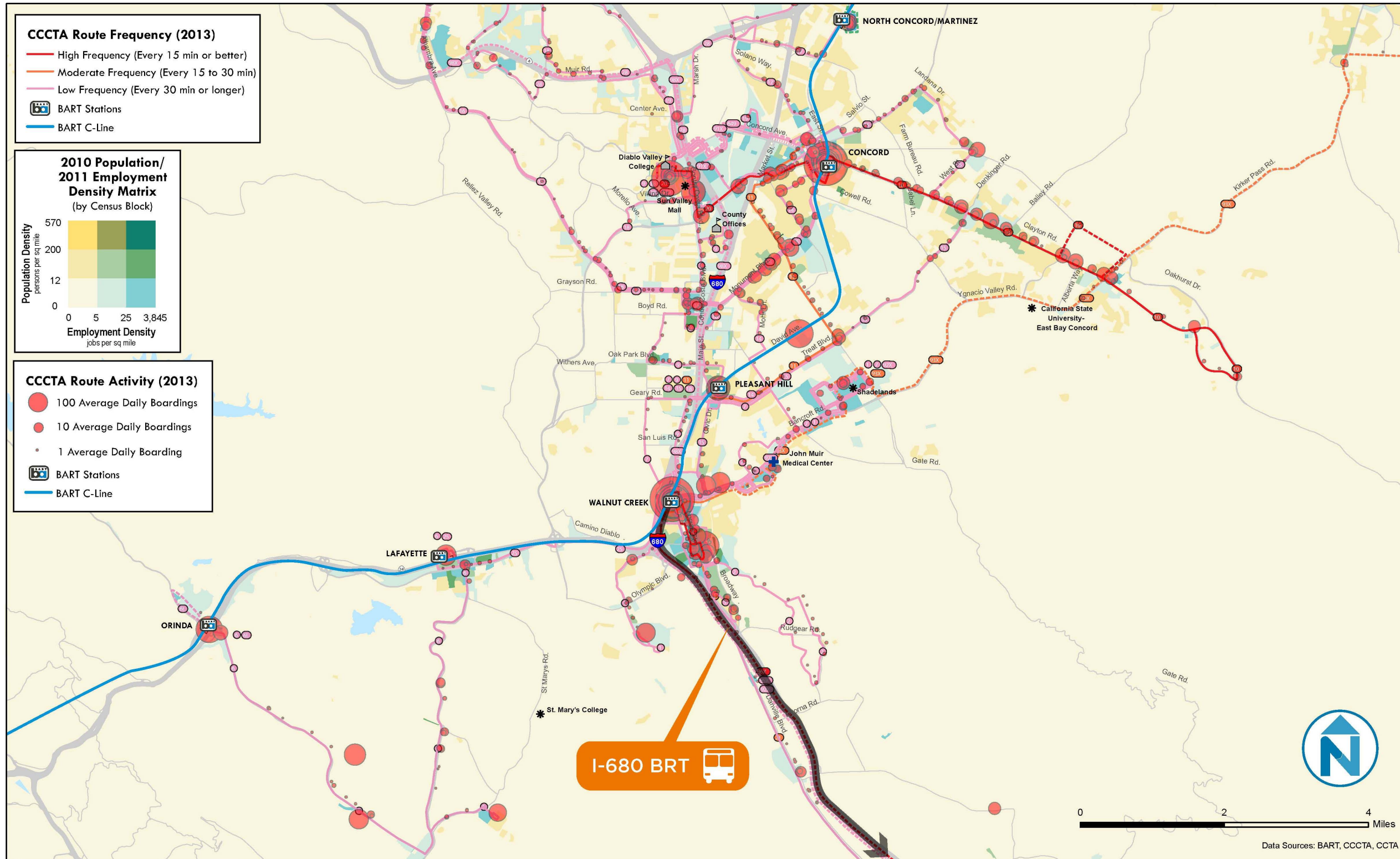
Figure 4-5 High Priority Projects (Short Term)



Figure 4-6 High Priority Projects (Medium Term)



Figure 4-7 High Priority Projects (Long Term)



Transit

More than 5,000 BART customers each day use buses to get to or from stations in central Contra Costa County. Most CCCTA routes begin or end at a BART station, so the stations also serve as de-facto transfer centers for many passengers with other origins and destinations. This section profiles investments that BART could make to compete for potential riders who have access to a car, and maximize convenience for all riders. Typically, ridership for commute-oriented service is strongest when service is frequent. The project team recommends minimum frequencies for BART feeder service of 15-minutes or better.²³

Transit Operations

While CCCTA's route structure provides good connectivity to BART, resource constraints have limited CCCTA's ability to provide a high frequency of service. To improve this situation, BART could invest directly in improved bus service. There are two potential approaches:

1. Beginning new service in an area with many potential BART riders but that is not currently well served by feeder bus service.
2. Upgrading frequencies on existing transit lines with the potential to carry more riders. There are two potential operating models:
 - a. Providing branded "overlay" service in existing transit corridors, using vehicles operated by or contracted out directly by BART; or
 - b. Providing funding to existing transit operators such as CCCTA to allow them to upgrade services to operate more frequently and attract more riders to the existing services.

The evaluation found the best ridership-increasing opportunities to be in improving frequencies on existing strongest-performing transit lines. By contrast, it found that adding service to areas not currently served by CCCTA would, in most cases, have a very low return on investment for BART. A large ongoing investment would be required to upgrade from no service to an acceptable level of feeder transit frequency, and the total demand for trips transit trips does not exist to justify such an investment.

Transit corridor evaluation

Through discussions with stakeholders, the project team identified twelve corridors in Central Contra Costa County to evaluate for new or enhanced transit service.

- Each corridor was then evaluated for suitability based on several factors, including employment and population density near the route, current ridership, ridership prior to 2008 service cuts, current bus-BART transfers, and the number of current BART riders whose homes or destinations are within ¼ mile of the route. The findings of this analysis are summarized in Figure 4-8.

²³ Both higher frequencies and lower fares have been found to increase bus ridership. Findings for the elasticity of demand for bus service with respect to headway ranges from -0.2 to -0.8. The elasticity of demand for bus services with respect to fare averages about -0.5. The likely impact of fare and service changes varies with specific local condition. For more discussion of these relationships, see Transit Cooperative Research Program (TCRP) report 95, Transit Scheduling and Frequency. http://onlinepubs.trb.org/onlinepubs/tcrp/tcrp_rpt_95c9.pdf

- Six corridors with multiple promising factors were carried forward to a more thorough evaluation. In this step the project team examined potential service plans, planning-level costs, and preliminary ridership estimates for each corridor. The findings are presented in figure 4-9. Methodology was as follows:
 - **Ridership: service enhancements.** For corridors with existing transit service, potential new ridership was estimated based on headway elasticity. In the transportation literature, studies have found elasticity of demand for bus service with respect to service headway to vary between $-.3$ and $-.8$.²⁴ For service increases during peak periods, we applied the high end of this range. For services increases during off-peak periods, we applied the low end of the range. For proposed services where buses currently operate at capacity, we assumed a headway elasticity of -1 , meaning we would expect new service to be fully utilized.
 - **Ridership: new services.** For corridors without existing transit service, we applied professional judgment, assigning passengers per service hour based on the performance of similar services operating in similar environments.
 - **Costs.** Costs were estimated using CCCTA's existing fully-loaded cost per revenue service hour (\$120).
 - **BART Transfers:** To estimate BART transfers, we assumed that new CCCTA riders would transfer to and from BART and the same rate as existing CCCTA riders. We applied the current rate of BART-bus transfers observed at each station during peak and off-peak periods. We assume BART would collect additional fare revenue for each new passenger, based on the average one-way fare for each station.

²⁴ TCRP Report 95. http://onlinepubs.trb.org/onlinepubs/tcrp/tcrp_rpt_95c9.pdf

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Figure 4-8 Transit Corridor Evaluation, Preliminary Evaluation

Corridor	BART Station	County Connection Route	Transit Existing Conditions								Potential New Riders	Land Use		Description
			Boardings per hour (all day)	Boardings per hour (AM peak)	Service Frequency on Corridor*	2008 County Connection Ridership	2013 County Connection Ridership	# of BART-Bus and Bus-BART Transfers	# of BART home-based transit riders (1/4 mile)	# of BART non-home based transit riders (1/4 mile)	# of BART home-based drivers (1/4 mile)	Jobs Density	Population Density	
Clayton Road from Concord BART to end of Clayton Road	Concord	10	25.6	32.7	2	928	835	528	157	0	652	Medium Low	Medium Low	Medium mixed-use and residential
Willow Pass Rd and Concord Blvd from Concord BART to Diablo Valley College/Sun Valley Mall	Concord	20	25.6	33.2	4	1500	1267	412	45	276	149	High	High	Diablo Valley College and Sun Valley Mall; high residential densities
Monument Boulevard between Pleasant Hill BART and Concord BART	Concord	16	13.5	23.3	2	626	534	25	79	13	172	Medium Low	Medium	Mixed use development and considerable transit dependency
	Pleasant Hill	14	16.9	33.6				43	31	6	106			
Contra Costa Blvd between Pleasant Hill BART and Martinez Park and Ride (including DVC)	Pleasant Hill	9	14.6	24.2	1.5	591	587	138	44	41	385	Medium	Medium Low	Includes Diablo Valley College and Pleasant Hill City Hall, some commercial along Contra Costa Blvd
		18	14.4	28				104						
		19	10.4	15.3				33						
Treat Blvd between Pleasant Hill BART and Shadelands	Pleasant Hill	7	6.9	10.3	2	294	252	85	23	88	372	Medium	Medium Low	Fastest connection between Shadelands and a BART station
		15	18.3	23.3				23						
Ygnacio Valley Road between Walnut Creek BART and Shadelands	Walnut Creek	1	15.1	14.8	4	330	305	184	84	67	329	High	Medium Low	Includes John Muir Medical Center and Shadelands, which has medical, employment, and cultural facilities
		7	6.9	10.3				82						
		92x	20.8	18.7				n/a						
		93x	15.6	10.9				74						
I-680 Corridor from Walnut Creek BART to Bishop Ranch	Walnut Creek	96x	14.7	23.3	3	604	887	160	8	230	512	High	Low	Express corridor to Bishop Ranch Business Park. 96x is funded by Bishop Ranch TMA
N Main Street from Walnut Creek BART to Creekside Drive	Walnut Creek	4	26.1	36	3	314	261	881	59	104	117	High	High	Includes the Downtown Walnut Creek shopping and jobs center. Some medium/high density housing.
		5	8	13.5				15						
		21	13.9	21.1				351						
Main Street from Geary Rd to Walnut Creek BART	Walnut Creek	9	14.6	24.2	2	117	40	n/a	8	0	52	Medium	Low	Moderate commercial and housing
Moraga Way from Moraga to Lafayette BART	Lafayette	6	12.9	21.7	2	338	347	138	6	19	228	Medium Low	Low	Single-family housing, some commercial along Mt. Diablo
Burton Valley to Lafayette BART	Lafayette	none	--	--	0	178	166	--	0	0	181	Low	Low	Single-family housing
Moraga Way from Moraga to Orinda BART	Orinda	6	12.9	21.7	2	158	139	236	41	18	339	Low	Low	Single-family housing

Figure 4-9 Transit Corridor Evaluation, Detailed Evaluation

Proposal	Proposed increase in daily service hours	Increase in County Connection Ridership	New Daily BART Boardings	New Annual BART Boardings	Total Annual Cost of service	Total Cost per new BART Boarding	Cost net of new fare revenue	Net cost per new BART boarding
10 - Clayton Road Frequency increase	7	138	93	23,800	\$200,000	\$8	\$170,000	7
20 - Willow Pass/DVC Frequency increase	6	137	80	20,400	\$200,000	\$9	\$85,000	\$4
10 + 20 - CountyConnect BRT service	14	302	191	48,600	\$400,000	\$8	\$250,000	\$ 5
96x - Bishop Ranch Frequency increase	6	160	133	34,000	\$200,000	\$5	\$80,000	\$2
4 - Walnut Creek Shuttle Frequency increase	8	314	189	48,100	\$250,000	\$5	\$40,000	\$ 1
5 - Creekside direct	0	92	69	17,600	\$0	\$ -	(\$75,000)	\$ (4)
Shadelands shuttle	23	175	132	33,600	\$650,000	\$ 19	\$500,000	\$14
John Muir Direct shuttle	20	200	150	38,300	\$600,000	\$ 16	\$450,000	\$ 12
6 - Moraga Road service increase	18	176	116	29,600	\$550,000	\$19	\$450,500	\$ 15

Proposed operating model

The project team finds that the most efficient means of transit operating investments would be to provide funding to the existing bus service operator, CCCTA. The key advantages of this strategy are simplicity and frequency: passengers would identify one frequent service connecting them to BART, rather than two infrequent services. Where needed or desired, BART funds could also be used to upgrade wayfinding and branding on CCCTA vehicles and stops.

As discussed in Chapter 2, investing in transit operations carries with it several important policy questions. Except for long-standing agreements with local bus operators for general feeder bus service, BART does not currently subsidize specific feeder transit services identified by BART. A policy that begins to do so may set a precedent that would have to be carefully managed. In addition, BART does not currently provide transit agencies with direction about how to serve BART stations; such guidance may be welcomed by certain agencies but not by others. Chapter 2 provides recommended steps for moving toward answers to these policy questions.

Potential near-term, high priority transit service investments that should be considered for pilot-tests are listed below. The order of the list is not meant to imply a priority rank for the proposed investments.

Enhance frequency on Clayton Road to Concord BART

CCCTA's Route 10 operates from Concord Station along the Clayton Road corridor. It carries roughly 25 passengers per service hour and operates at 15-minute frequency in the PM peak period, with 30-minute frequencies during all other times. Under this proposal, BART would provide an operating subsidy to allow CCCTA to upgrade frequency on this route. Putting two additional vehicles into service during the AM peak period would allow CCCTA to double AM frequency from every 30 minutes to every 15 minutes.

Data suggest that there is potential for Route 10 to carry more passengers to BART with a more frequent or higher-quality service. The Clayton road corridor has a reasonably high density of homes aligned along a corridor that can be easily served by transit. As a result, Route 10 is already one of the most productive routes in the system, and delivers a significant number of riders to BART. However, BART Station Profile Survey data show that more than 600 BART customers who live in the Clayton Road corridor drive to the BART station each day. A higher-quality Route 10 may attract some portion of these riders to the bus.

We estimate that doubling AM frequency could yield approximately 500 new riders on the Route 10 each day. Of these, roughly 350 would be new BART trips. At CCCTA's average cost per revenue service hour (\$120), adding an additional 7 hours of service per weekday would cost roughly \$200,000 per year. The cost to BART would be partially offset by an estimated \$105,000 in new fare revenue each year.

Enhance frequency: Willow Pass Rd from Concord BART to DVC

CCCTA's Route 20 operates from Concord Station along Willow Pass Road to Diablo Valley College (DVC). It carries roughly 25 passengers per service hour and operates at 30-minute frequency in the PM peak period, with 15-minute frequencies during all other times. We propose that BART provide an operating subsidy to allow CCCTA to upgrade frequency on the CCCTA Route 20. Putting two additional vehicles into service during the PM peak period would allow CCCTA to improve frequencies to every 15 minutes.

Route 20 is one of the most productive routes in the CCCTA system, and approximately 320 passengers board route 20 at DVC each day. A recent survey of DVC students, faculty, and staff found that, of those who use CCCTA to get to campus, roughly 40% also ride BART.²⁵ In addition, some runs of Route 20 approach capacity, so additional capacity could relieve crowding. In addition, if a DVC Class Pass were implemented as discussed later in this section, more capacity on this route may be required to meet the new demand.

We estimate that the proposed change would yield roughly 300 new riders on the Route 20 each day. Of these, roughly 100 would be new BART transfer trips. At CCCTA's average cost per revenue service hour (\$120), adding an additional seven hours of service per weekday would cost roughly \$200,000 per year. The cost to BART would be partially offset by an estimated \$90,000 in new fare revenue each year.

Express bus: Enhance frequencies on 96x between Walnut Creek BART and Bishop Ranch

CCCTA's Route 96x operates from Walnut Creek Station along I-680 to Bishop Ranch. This route is partially funded by Bishop Ranch, and is free of charge for passengers. Data suggest that there is potential for Route 96x to carry even more passengers to BART with a more frequent or higher-quality service. Bishop Ranch is a major area employer, and many runs of the existing 96x service are over capacity. Both Bishop Ranch and CCCTA recognize the need to increase frequency on this route, but have not yet identified sufficient funding for the needed service. CCCTA and Bishop Ranch are both likely to contribute towards the cost of added service, and additional runs on this route are very likely to fill to capacity. As a result, an investment in this route could provide a very strong return on investment for BART. This service also encourages the kind of reverse-peak direction ridership that makes more productive use of existing BART capacity.

It is proposed that BART contribute an operating subsidy to allow CCCTA to upgrade frequency on this route, putting two additional vehicles into service. We estimate that this change would yield roughly 160 new riders on the Route 96X each day. Of these, roughly 100 would be new BART transfer trips. At CCCTA's average cost per revenue service hour (\$120), adding an additional seven hours of service per weekday would cost roughly \$180,000 per year. The cost to BART would be partially offset by an estimated \$90,000 in new fare revenue each year.

Improve headways for Downtown Walnut Creek Shuttle (Walnut Creek)

CCCTA's Route 4 provides free circulator service in downtown Walnut Creek using a replica rubber-tire trolley vehicle. This route is partially funded by the City of Walnut Creek. Data suggest that there is potential for the Walnut Creek shuttle to carry even more passengers to BART with a more frequent or higher-quality service. Route 4 is the most productive route in the system, carrying 50 passengers per service hour during peak periods. Like the 96x, this service also encourages the kind of reverse-peak direction ridership that makes more productive use of existing BART capacity. Added vehicles would likely fill with many new riders, providing a strong return on investment for BART.

It is recommended that BART work with Walnut Creek to provide funding to put an additional vehicle into service during the AM peak period. We estimate that the proposed change would yield roughly 300 new riders on the Route 4 each day. Of these, roughly 200 could be new BART

²⁵ Diablo Valley College Transit Survey, 2010.

transfer trips. At CCCTA's average cost per revenue service hour (\$120), adding an additional 8 hours of service per weekday would cost roughly \$240,000 per year. The cost to BART would be partially offset by an estimated \$200,000 in new fare revenue each year. This additional service could be partially offset by increased parking fees in downtown Walnut Creek.

Other Potential Investments

While not recommended for pilot tests at this time, the follow transit operations investments were considered for investment and found to have substantial merit:

- **BRT on Clayton Road-Concord BART-DVC-Martinez Amtrak (Concord Station).** In the *Medium-term* time-frame (1-5 years), it is recommended that BART work with CCCTA to further develop an existing CCCTA proposal to integrate two of the system's highest-performing routes into a new branded, high-frequency BRT or BRT-like service serving Concord Station. This proposal, known as CountyConnect, as currently being considered by CCCTA, would include the corridors now served by routes 10 and 20, as well as a new segment connecting DVC to Martinez Amtrak Station. The service could include limited stops, enhanced stations, high frequency service, enhanced fare collection systems, and BRT branding at buses and stops. Such as service has the potential to attract additional 'choice' riders who might not otherwise consider bus access to BART.
- **Direct service from Creekside Drive to Walnut Creek BART (Walnut Creek Station)/** In the *Medium-term (1-5 year)* timeframe, BART may wish to work with CCCTA to further develop an existing proposal to realign service between the Creekside neighborhood and Walnut Creek BART Station. This neighborhood has reasonably high residential density and larger-than-average rate of zero-car households. It is currently served by CCCTA's Route 5, but that route follows a circuitous path of travel before it arrives at the station, and as a result it has very low ridership. A direct connection to the station could save time for passengers and attract more passengers to BART. This improved connection could potentially be accomplished by realigning existing services, and thus without added operating expense.
- **John Muir Direct Shuttle (Walnut Creek).** In the *Medium-term (1-5 year)* timeframe, BART may wish to work with CCCTA to implement a frequent and direct connection between the Walnut Creek BART Station and the John Muir hospital complex via Ygnacio Valley Road. While a relatively direct service is already offered in this corridor, an express service could capture a larger share of the travel market, yielding more BART trips. A potential drawback to this service is that buses operating on Ygnacio Valley often face significant delays due to traffic congestion.
- **Enhance connecting bus service between Orinda BART to Lafayette BART via Moraga Road using satellite parking.** In the *Medium-term (1-5 year)* timeframe, BART may wish to support efforts to provide added access capacity for the Orinda and Lafayette BART stations. Currently, the Lamorinda group of cities are considering an effort to use church parking lots along Moraga Road as satellite parking for the BART station lots, which fill to capacity before 8:30 a.m. on typical weekdays. The existing Route 6 already serves this corridor, with stops present at each parking lot under consideration. Adding satellite parking would require working with the churches to resolve any issues related to liability and maintenance for daytime commuter use of the lots. BART and CCCTA may wish to further contribute to this effort by enhancing frequency on the existing Route 6, so that it provides at least 20-minute frequency during

- AM and PM peak hours. Current frequency is 30 minutes in the peak, which does not lend itself to the Park & Ride travel market.
- **BART Shuttle from Pleasant Hill BART to Shadelands Business Park via Treat Boulevard (Pleasant Hill).** In the *long-term* (5+ year) timeframe, BART may wish to work with CCCTA to enhance connectivity between Pleasant Hill BART and Shadelands Business Park. Compared to the existing service connecting the business park to Walnut Creek, a dedicated BART shuttle to Pleasant Hill could reduce travel times. Presently, the fastest CCCTA trip from the Mitchell Park and Ride takes approximately 24 minutes (Route 7, one-way). A dedicated service could reduce the travel time to approximately 18-20 minutes. Travel time savings would be achieved by reducing the total number of stops and utilizing Treat Boulevard instead of Ygnacio Valley Road, which has more traffic congestion during peak period. Increasing the frequency of operations would also make the service more attractive to potential users. However, there are a number of uncertainties around this proposal. At present, the business park is not fully occupied, and has very poor internal street connectivity. Before Shadelands becomes a transit destination capable of supporting high-frequency connecting service, the conditions will have to improve. It is recommended that BART monitor the status of Shadelands as a transit destination, and consider working with CCCTA and business park owners to invest in this corridor in the future.
 - **Explore shared-ride taxi opportunities corridor-wide.** Many residential areas of central Contra Costa County cannot be served with cost-effective fixed route transit service, either because they are too low density or because they have street networks too discontinuous to allow for efficient bus operations. To provide added connectivity to stations for households in these areas, BART may wish to explore the possibility of shared-ride taxis. This service would provide subsidies to taxi drivers willing to provide rides to BART stations. Passengers would pay a low fixed fare, and drivers would carry up to three passengers in a designated service area on the way to and from a specific BART station. This idea, while it has potential merit for this area, must be studied in more detail.
 - **Bus Rapid Transit on I-680:** High-capacity transit service has been studied in the I-680 corridor previously. High-quality BRT on I-680 could connect the BART stations in this corridor, and provide fast, frequent transit to destinations such as Bishop Ranch. Such a service would provide significant benefits for BART riders, but will require major capital investment, and would require development on a timeframe that is outside the timeline of this study. BART should continue to work with other regional planning agencies to advance this concept. It could also potentially replace some of the current dedicated express bus services on I-680 with frequent, all-day BRT service, which could be more conducive to building strong transit ridership in the corridor.

Transit Capital

In addition to transit operating investments, BART should also consider investing resources in transit capital to support feeder bus service, such as new buses, upgraded wayfinding and/or real-time arrival information, enhanced intermodal centers (on BART property), and upgraded bus stops (off BART property). Unlike operations funding, these projects could be one-time investments. Some of these potential investments have significant planning work already done, and willing partners exist to provide matching contributions.

The following near-term, high priority transit capital investments that could be considered as part of a package of pilot projects:

Convert CCCTA real-time arrival data for 511 compatibility

Real time arrival displays can improve the riding experience for current transit access riders and help attract new ones; studies have shown that accurate real-time data significantly reduces perceived wait-time, reducing the “transfer penalty” that discourages some riders from choosing a transit trip. Currently, the real-time arrival systems installed on CCCTA’s buses is incompatible with the data systems operated by the Metropolitan Transportation Commission’s (MTC’s) 511 program. As a result, CCCTA’s bus arrival and departure information cannot be displayed on BART’s real-time monitors. It is recommended that BART provide approximately \$80,000 to complete the data conversion, facilitating real-time arrival displays at all central Contra Costa BART stations.

Other Transit Capital Strategies

While not recommended for investment as part of the proposed pilot program, the follow transit capital investments were considered for investment and found to have substantial merit:

- **Provide real-time arrival information at key CCCTA stops.** Once real-time arrival data is available and has been rolled out at BART stations, BART should consider working with CCCTA to provide the information at other high-volume stops in that system, such as at the Diablo Valley College Transit Center.
- **Enhance Existing Park-and-Ride Lots:** Several Park-and-Ride lots exist in this corridor: Danville, Shadelands, Bishop Ranch, Moraga Road, and Pacheco park-and-rides all have transit service to one of the study’s five BART stations. These lots could be more attractive to BART passengers if they were upgraded. For example, lighting, wayfinding, and real-time arrival information could be improved, and, where necessary, added security could be provided.
- **Transit Signal Priority.** Providing buses with signal priority may help to avoid traffic delay, improving speed and reliability of feeder transit services. While BART could contribute funds, this type of investment would have to be implemented by the cities themselves. While the project team discussed this option with city staff during stakeholder meetings, no city was interested in pursuing transit signal priority at this time

Fare Policy

BART may also wish to promote bus access by subsidizing bus fares for passengers. Fare subsidies could either be widely available, or directed toward particular groups of users such as residents of a particular development or neighborhood, or commuters to a particular school or workplace.

Currently, CCCTA offers a range of fare media choices with overlapping markets, some of which may confuse potential riders, so added fare instruments must be considered carefully so not to add to the confusion. However, if applied carefully, fare subsidies could improve customer experience and win many new bus-access passengers at relatively low cost to BART. This

arrangement does carry the disadvantage of requiring ongoing investments and establishing a potentially complicated precedent in BART's relationship with feeder transit agencies.

The following near-term, high priority transit fare investments should be considered part of a package of pilot projects:

Subsidize CCCTA class pass for Diablo Valley College (Concord Station and Corridor-wide)

Universal Transit Passes for specific groups can provide an incentive to ride transit. Such programs have been applied with great success at many universities, often leading to very large increases in student transit ridership. DVC is an important destination in the service area that is not directly served by BART. Driving is a common way to get to campus, and parking at DVC is frequently at capacity. A transit subsidy could help shift a significant number of DVC students away from driving and toward accessing the campus by transit. Roughly 40% of those using CCCTA to get to DVC transfer from BART. As a result, this policy would very likely lead to many additional riders. The Class Pass idea is already under consideration by DVC, CCCTA, and 511 Contra Costa. Because these organizations would likely be willing partners, BART could catalyze implementation with a relatively small investment.

Under this proposal, BART would contribute toward the cost of a "Class Pass" for DVC students in conjunction with DVC, CCCTA, and 511 Contra Costa.. We estimate that the proposed project could yield roughly 450 new riders to DVC each day. Of these, roughly 200 could be new BART trips. The cost of the foregone revenue to CCCTA due to the class pass is estimated at \$300,000/year. If we assume that BART's share of the project cost would be 25%, BART's annual investment would be \$80,000. However, revenues from fares paid by new BART riders would likely exceed BART's contribution. We estimate that the policy could yield as much as \$125,000 in new BART fares.

Other Transit Fare Strategies:

While not recommended for pilot tests at this time, the follow transit fare investments were considered and found to have merit:

- **Pilot "ecopass" for Creekside neighborhood in Walnut Creek.** To supplement the test of a universal transit pass to a destination like DVC, BART may wish to contribute toward a similar pass for a residential area. For example, if transit service were re-oriented to provide a direct connection between the Creekside neighborhood and Walnut Creek BART, ridership from this potentially strong transit market could be encouraged using a neighborhood-based transit pass. A pilot test of such a strategy should be considered in coordination with CCCTA if and when the transit network for this neighborhood is changed.
- **Decrease BART-CCCTA transfer penalty for passengers pay cash bus fares.** . Currently, a rider transferring from BART to County Connection may get a transfer ticket from a machine inside the fare gates that provides a \$1 discount on CCCTA. The project team assessed the potential to promote increased BART ridership by increasing this subsidy from \$1 to \$2, which covers the entire adult cash bus far for those transferring

from BART to CCCTA.²⁶ It was found that, while this strategy would likely encourage added BART ridership, it would not be as cost-effective at generating new ridership as the recommended pilot projects.

Pedestrian and Bicycle Access Investments

Pedestrian access is at the top of BART's access hierarchy, and walk access can be accommodated at very low cost to BART, particularly when stations are situated in moderate- or higher-density areas with strong street network connectivity. Bicycle access is nearly as efficient, requiring only the addition of secure parking at stations and well-designed on-street facilities.

- **On and adjacent to BART property.** While BART's station access plans typically consider access issues and opportunities in the ½ mile area station areas, the District's bicycle and pedestrian investments focus on upgrades on its own property (including pathways, lighting, landscaping, and secure bicycle parking). No dedicated funding stream exists to fund these important and cost-effective improvements. They are typically paid for either through the contributions of a developer (when improvements are made as part of a joint-development project), or by using competitive grant funds. In the future, BART may wish to use funding from parking revenues to pay for these projects.
- **Off of BART property.** Some of the biggest challenges for pedestrian and bicycle access involve the city streets leading to and from BART's stations. The District may wish to consider using parking fees to pay for these improvements. To identify and complete such projects, BART must partner with the cities and counties that manage the streets. Partner agencies should be charged with helping to identify the most needed projects, and should be willing to provide at least part of the funding to accomplish the project.

In central Contra Costa County, several categories of potential bicycle and pedestrian investments exist, both on and off BART property. These include sidewalks and on-street bicycle facilities, off-street paths, intersection improvements, wayfinding/signage, and secure bicycle parking.

The following near-term, high priority bicycle and pedestrian investments should be considered part of a package of pilot projects:

- **Improve pedestrian connection and wayfinding between downtown Orinda and Orinda Station (Orinda).** A dark, uninviting concrete pathway connects Orinda's Theatre Square underneath SR-24 to the Orinda BART Station. Improvements to this path could improve the experience for existing walk and bike access passengers, attract new BART riders, and encourage some current drive-access passengers to walk or bike for some trips. The City of Orinda, through a grant process led by BART, has received funding to add lighting and wayfinding signage to the underpass of SR-24. However, the condition of the stairs and walkway, and the circuitous route required for people in wheelchairs still need to be addressed. The City has developed preliminary cost estimates to upgrade a portion of the path that is accessible to people in wheelchairs and others with mobility

²⁶ Note that the fare media currently used in central Contra Costa County do not allow BART to offer a discount to those transferring from CCCTA to BART. However, should CCCTA adopt Clipper in the future, two-way discounts could be considered.

- **Redesign Plaza at Concord BART for better pedestrian connections (Concord).** The plaza between Concord BART station and downtown Concord fails to provide a sense of place for those approaching the station, and does a poor job of orienting those exiting the station toward downtown. As a complement to the recent completion of a specific plan for downtown Concord that prioritizes pedestrian- and transit-oriented development and strengthens the area's relationship to BART, it is appropriate to consider using BART resources to revitalize this plaza. While the majority of this estimated \$1.5 million investment would come from competitive grant sources, it is recommended that BART consider contributing funds from new parking revenues. Project should consider cycle tracks both on and off BART property.
- **Attended bike station (Pleasant Hill Station).** Pleasant Hill Station has strong connections to Contra Costa's regional trail network, and as a result has a higher than average rate of cycling access. Significant investment has already been made to improve bicycle wayfinding and secure parking at the station. In the short term, BART should consider using parking revenues to go to the next level of bicycle storage for Pleasant Hill - a staffed bike station.
- **Lafayette Station Bicycle Parking.** Lafayette Station currently has inadequate bicycle parking. Parking that is better-located and with better protection from the weather could promote cycling to the station and improve customer experience for current cyclists. The BART bicycle plan has prioritized new bicycle racks at Lafayette.
- **Lafayette Trail to Downtown:** Currently, the pedestrian path of travel to downtown Lafayette from the BART station is unclear and poorly lit. It is expected that the owner of the parcel between downtown and the BART station, currently proposed for redevelopment, will be required to enhance and landscape the northern BART path entryway on their property. If necessary, BART may wish to consider contributing funds to this project to ensure that it meets the needs of BART riders and is completed promptly.

Other Pedestrian and Bicycle Access Strategies

While not recommended for investment as part of the proposed pilot program, the following transit capital investments were considered for investment and found to have substantial merit:

- **Pleasant Hill BART short-cut path (Pleasant Hill Station).** Significant effort has already gone into planning a new path to provide a bike and pedestrian connection between the Pleasant Hill BART Station and Bancroft Road. Such a project would provide a major connectivity benefit for the neighborhoods to the west of Bancroft. This project, which is also identified in BART's Bicycle Capital report, would cost \$2.4 million, and require roughly \$30,000 per year in annual maintenance costs. While there is not currently sufficient consensus among stakeholders to implement this as part of this initial package of investments over the next year, BART should continue to advocate for this project, and potentially contribute toward its completion over the next 1-5 years.
- **Improve connections between BART and downtown Concord via Oak Street (Concord Station).** The City of Concord is currently developing a pedestrian master plan. BART should work with the City of Concord to identify and advance those projects that might provide the biggest benefit to BART riders. Among the projects the City is considering is an upgrade to Oak Street between the City's downtown and the BART station. The upgrades could include pedestrian-scale lighting, bicycle lanes and/or

- cycletracks, wayfinding, street trees, and/or intersection improvements such as enhanced crosswalk markings and pedestrian countdown signals at the intersection with Galindo Street. Such a project would benefit BART riders and provide a good complement to the proposed Concord Plaza upgrade.
- **Downtown Walnut Creek pedestrian and bicycle network upgrades (Walnut Creek Station):** BART is currently working with the City and the transit village developer to produce an access plan for the Walnut Creek BART Station, as a complement to the Transit Village EIR. This plan has identified a number of potential investments in the downtown street network that could improve pedestrian and bicycle access to the station. Once the plan is completed, BART should work with the City to prioritize and potentially contribute toward funding its highest-priority recommendations. Among those currently under consideration, the following projects would provide significant near term benefits for BART riders:
 - Reduce the off-peak signal cycle time at the intersection of Ygnacio Valley Road/North California Boulevard.
 - Improve the quality and safety of Class I bike paths on Ygnacio Valley Road sidewalks.
 - Develop a pedestrian path along Barkley Avenue to Hillside Avenue, including wayfinding signage.
 - Add bike lane striping and implement signal improvements on several streets in the station area, include Pringle, Parkside Drive, Hillside Drive, Civic Drive) .
 - **Improve the East Bay MUD trail crossing of Happy Valley Road (Lafayette Station):** A segment of the proposed East Bay MUD trail will directly connect to the Lafayette BART Station. Because of steep grade changes, it may be necessary to provide a bike and pedestrian bridge across Happy Valley Road. This project, estimated to cost \$1.2 million, could significantly improve access to the station for pedestrians and cyclists. However, since the connecting segments of the trail are not yet complete, this project is not recommended for near-term implementation. BART should monitor progress on East Bay MUD Trail implementation.

Vehicle Access and Ridesharing

The focus of this study is on improving alternatives to single-occupant auto access to BART stations in central Contra Costa County. However, a set of strategies for better managing vehicle access may provide a helpful complement to the proposed transit, bike, and pedestrian improvements. In Central Contra Costa County, one vehicle access strategy is recommended for near-term implementation:

Real time parking availability (Corridor-wide)

Parking lots and structures at all five BART stations in this corridor fill to capacity before 8:30 a.m. each weekday. BART is able to determine when parking is approaching capacity using BART's data from the addfare machines used for parking payment located inside the faregates. BART should use this data to make information about parking availability at each station available in real-time, either on BART's website, or via social media. Such a project, which could be implemented at modest expense, and would accomplish two things: first, it would improve

customer experience for all drive access riders. Second, real time parking availability information would allow drivers to determine before leaving home whether a parking lot was close to capacity, and they could consider choosing another mode of access.

Other vehicle access and ridesharing strategies

While not recommended for pilot tests at this time, the follow vehicle access and ridesharing investments were considered for investment and found to have merit:

- **Convert some general parking to carpool/HOV spaces:** Reserving additional spaces in existing parking lots for carpools could allow more BART riders to get to the station without the expense of adding new facilities. It is recommended that BART continue to study the potential for such a policy change. The biggest challenge for this strategy is the need to develop an efficient and effective approach to enforcement.
- **Create a staffed BART Transportation Demand Management Program.** In addition to the carpool strategy identified above, several other TDM strategies offer the potential to shift vehicle trips to other modes, freeing up capacity in parking lots for still more riders. Potential strategies include direct outreach and travel options training for residents of transit oriented development near BART, similar marketing to workers in large employment centers near BART, development of transit fare incentives, and others. BART should consider creating a staff position (housed either within BART or at a partner agency, such as 511 Contra Costa) to develop and implement such programs. New parking revenues could fund this effort.

5 IMPLEMENTATION PLAN

Following completion of the final version of this report, we recommend the following implementation steps:

1. Advance the policy framework

Chapter 2 of this report outlines the key policy decisions that must be made before this plan can move forward, and it presents the project team's recommendations for how these questions could be handled. BART management should review and make a final determination on each key question. BART Board guidance may be appropriate for several of the questions.

2. Work to establish a grant program

If the recommendation for a proposed grant program is adopted, BART should begin working to establish policies, procedures, and staffing for the program. This work can begin while the pilot projects are being implemented and evaluated. Based on this determination, the District can select an appropriate package of projects from the recommendations outlined below.

3. Determine funding level available for pilot projects

BART should examine parking revenues and make a determination on the level of funding that can be committed to the pilot projects in 2014 and for several years after, depending on the pilot project under consideration. Based on this determination, the District can select an appropriate package of projects from the recommendations outlined below. Funding for transit operations should be committed for a minimum of 3 years, as it takes time to develop ridership on new or modified services.

4. Negotiate agreement between BART and project partners

Once pilot projects are selected and funding levels determined, an agreement will need to be negotiated between BART and any project partners, such as CCCTA or any of the partner cities for project implementation and funding apportionment. If a grant program is established, a template agreement can be part of the application package.

5. Advance recommended pilot projects in central Contra Costa County

Once the scale of the pilot has been determined, BART can apportion funding, assign a project manager, and begin collaborating with partners to implement the proposed pilot projects. Steps for the recommended short-term, high-priority projects are as follows:

Project 1. Enhance service on high-priority local routes (Route 10, Route 20, and Route 4).

Action	Responsible Agency
Develop revised operating plans	CCCTA
Commit to operate service at agreed level for period of funding	CCCTA
Establish conditions for funding	BART
Establish performance criteria	BART
Commit to fund for 3-year term	BART
Design and implement protocol to evaluate performance of the pilot	BART and CCCTA
If pilot is successful, reapply for funding after 3-year term.	CCCTA

Project 2. Enhance service on high-priority express route (96x to Bishop Ranch)

Action	Responsible Agency
Develop revised operating plans	CCCTA and Sunset Development
Commit to operate service at agreed level for period of funding	CCCTA
Establish conditions for funding	BART
Establish performance criteria	BART
Commit to fund for 3-year term	BART and Sunset Development
Design and implement protocol to evaluate performance of the pilot	BART, CCCTA, and Sunset Development
If pilot is successful, reapply for funding after 3-year term.	CCCTA and Sunset Development

Project 3. Work with partner agencies to establish a “class pass” for DVC students

Action	Responsible Agency
Negotiate funding agreement	BART, CCCTA, DVC, and 511 Contra Costa
Establish program and issue passes	CCCTA, and 511 Contra Costa
Design and implement protocol to evaluate performance of the pilot	BART, CCCTA, 511 Contra Costa, and DVC
If pilot is successful, work with DVC on inclusion of Class Pass in student fees.	BART, CCCTA, 511 Contra Costa, and DVC

Project 4. Convert CCCTA real-time arrival data for 511 compatibility

Action	Responsible Agency
Negotiate funding agreement	BART, CCCTA
Complete data system work	CCCTA
Install real-time arrival displays at intermodal centers at 5 BART stations	BART

Project 5. Improve ped connection and wayfinding between Orinda Theatre Square and Orinda BART Station

Action	Responsible Agency
Design and cost pathway improvements	City of Orinda
Negotiate funding agreement	BART and City of Orinda
Implement Project	City of Orinda

Project 6. Improve pedestrian train to downtown Lafayette

Action	Responsible Agency
Design and cost pathway improvements	City of Lafayette, KB Homes
Negotiate funding agreement	BART and City of Lafayette
Implement Project	KB Homes

Project 6. Complete projects on BART property

The follow projects can be completed entirely on BART property and through the efforts of BART staff and/or BART contractors. BART should assign project managers and begin to implement these projects as soon as funding is available:

- Create a staffed bike station at Pleasant Hill (Pleasant Hill Station)
- Redesign Plaza at Concord BART for better pedestrian connections (Concord Station)
- Implement real time parking availability (Corridor-wide)
- Implement Lafayette Station bike racks (Lafayette Station)

Estimated Costs of Pilot Projects

Figure 5-1 provides estimated costs for each of the pilot projects recommended in this report.

Figure 5-1 Preliminary Cost Estimate for Pilot Projects

Project	Station	Priority	Time Frame	Capital Cost	Annual Operating Cost	Annual operating cost (net of potential new BART fare revenue)
Enhance Clayton Transit (Rt 10)	Concord	High	Short	\$0	\$200,000	\$170,000
Enhance DVC Transit (Rt 20)	Concord	High	Short	\$0	\$200,000	\$85,000
Enhance Bishop Ranch Transit (Rt 96x)	Walnut Creek	High	Short	\$0	\$200,000	\$80,000
Enhance Walnut Creek Shuttle (Rt 4)	Walnut Creek	High	Short	\$500,000	\$250,000	\$40,000
DVC Class Pass	Concord	High	Short	\$0	\$80,000	(\$50,000)
CCCTA Real-Time Arrival Data	Corridor-wide	High	Short	\$80,000	\$0	Not estimated
Pleasant Hill Bike Station	Pleasant Hill	High	Short	\$500,000	\$150,000	Not estimated
Orinda Pedestrian Connection	Orinda	High	Short	\$500,000	\$0	Not estimated
Trail to downtown Lafayette	Lafayette	High	Short	\$100,000	\$0	Not estimated
Real time parking availability data	Corridor-wide	High	Short	\$150,000	\$0	Not estimated
Total				\$1,830,000	\$1,080,000	\$300,000

Source: Nelson\Nygaard, February 2014. Costs are preliminary, planning level estimates. Additional review of costs will be required.

APPENDIX A

Project Detail

Central C-Line Access Study Project List (Transit)

	Project subtask	Station	Detail	Priority	Implementation timeframe	Who? (Primary Agency)	Capital Cost	Annual Operating Cost	Annual operating cost net of new BART fare revenue	Estimated new daily BART Boardings (Range)
Transit										
Transit Service										
1	Enhance service frequency: Clayton Road from Concord BART to the end of Clayton Road	Concord	Currently served by CCCTA Route 10. Could provide enhanced frequency and/or new branding, wi-fi, stop improvements, etc.	High	Short	CCCTA	\$0	\$200,000	\$170,000	90
2	Enhance service frequency: Willow Pass Rd and Concord Blvd from Concord BART to Diablo Valley College/Sun Valley Mall	Concord	Currently served by CCCTA Route 20. Could provide enhanced frequency and/or new branding, wi-fi, stop improvements, etc.	High	Short	CCCTA	\$0	\$200,000	\$100,000	80
3	BRT/BART Shuttle: Branded high frequency service: Clayton Road - Concord BART - DVC - Martinez Amtrak	Concord	Incorporates 1 and 2, and extends to Martinez Amtrak. Cost estimate assumes that proposed service replaces the existing 10 and 20.	High	Medium	CCCTA	\$650,000	\$400,000	\$250,000	190
4	BART Shuttle: Pleasant Hill BART to Shadelands business park via Treat	Pleasant Hill	Shadelands is already considering shuttle along with ped improvements - seed funding from BART may help. Shadelands is not yet fully occupied, future uncertain.	Medium	Long	CCCTA, BART, Shadelands Property Owner	\$570,000	\$634,000	\$480,000	130
5	Express bus: Enhance frequencies on 96x between Walnut Creek BART and Bishop Ranch	Walnut Creek	Existing service is near capacity, BR and CCCTA negotiating funding for additional runs.	High	Short	CCCTA/Sunset Development	\$0	\$200,000	\$80,000	130
6	BRT: I-680 BRT with direct access ramp	Walnut Creek	Long-term project also under consideration through the BART Metro Vision project.	High	Long	Undecided	<i>Not estimated</i>	<i>Not estimated</i>	<i>Not estimated</i>	<i>Not estimated</i>
7	Realign routes 5 and 2 to create Creekside Direct	Walnut Creek	CCCTA idea to modify existing Route 5 to provide direct BART access. Could be implemented on a cost-neutral basis.	Medium	Short	CCCTA	\$0	\$0	(\$75,000)	70
8	Enhance service frequency: Improve headways for Downtown Walnut Creek Shuttle (#4)	Walnut Creek	More frequency on existing service. Would need additional trolley vehicle (or would require using a different vehicle).	High	Short	CCCTA	\$500,000	\$250,000	\$50,000	190
9	Enhance connecting bus service with satellite parking: Orinda BART to Lafayette BART via Moraga (enhance frequency on existing route 6)	Orinda/Lafayette	Services are low-productivity today. Parking lot investments to be considered as part of "enhance remote park-and-ride lots."	Low	Long	CCCTA	\$100,000	\$550,000	\$450,000	120
10	John Muir Direct Shuttle	Walnut Creek	New shuttle service to John Muir Hospital	Medium	Medium	CCCTA, BART, or Property owner	\$0	\$600,000	\$450,000	150
11	Explore shared-ride taxi opportunities	Corridor-wide	Concept requires further development	Medium	Medium	Undecided	\$0	<i>Not estimated</i>	<i>Not estimated</i>	<i>Not estimated</i>

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	Project subtask	Station	Detail	Priority	Implementation timeframe	Who? (Primary Agency)	Capital Cost	Annual Operating Cost	Annual operating cost net of new BART fare revenue	Estimated new daily BART Boardings (Range)
Transit Fares										
12	Subsidize CCCTA class pass for DVC	Concord	Under consideration by CCCTA. Requires additional funds to make up funding gap. Assumes BART pays 15% of the cost of foregone CCCTA fare revenue.	High	Short	DVC/CCCTA	\$0	\$50,000	(\$80,000)	184
13	Pilot ecompass for Creekside neighborhood in Walnut Creek	Walnut Creek	In coordination with new direct BART service along creekside to Walnut Creek BART. (Already included in NN recommendations to CCCTA)The Creekside area of South Walnut Creek has approximately 2,523 people in 439 households, according to the 2010 US Census. Cost estimate assume %5/month per pass per person.	Mid	Medium	CCCTA	\$0	\$200,000	\$ 75,000	99
14	Increase BART transfer subsidy for cash fare from \$1 to \$2	Corridor-wide	Px transferring from BART receive a voucher worth \$2 off their cash fare in any CCCTA route.	Mid	Medium	CCCTA/BART	\$0	\$550,000	\$ 400,000	123
Transit Capital										
15	Convert CCCTA real-time arrival data to be compatible with 511	Corridor-wide	\$80k in funding required, project in planning already.	High	Short	CCCTA	\$80,000	\$0	Not estimated	Not estimated
16	Real-time arrival information at key CCCTA stops	TBD	20 stops @ \$7,000/stop (assumes data feed available and buses already outfitted)	High	Medium	CCCTA	\$140,000	\$0	Not estimated	Not estimated
17	Enhance existing remote park-and-ride lots	TBD	Danville PNR, Shadelands, Bishop Ranch, Moraga Road, Pacheco PNR (cost - per lot)	Medium	Medium	Undecided	\$1,250,000	\$25,000	Not estimated	Not estimated
Bicycle and Pedestrian										
Networks and Wayfinding										
18	Pleasant Hill BART short-cut path	Pleasant Hill	New pedestrian path to provide bike-ped connection from Bancroft to station, connection for neighborhoods to the west. (Also ID'd in BART Bike Capital report. \$2.4mm, \$30k/yr maintenance)	High	Medium	Contra Costa County Community Development	\$2,400,000	\$30,000	Not estimated	New riders not estimated. Provides improvement for 95 current walk/bike access riders.
19	Improve ped connection and wayfinding between downtown Orinda and Orinda Station	Orinda	Orinda has a proposed project with cost estimates, but requires additional funding. Project in development.	High	Short	City of Orinda	\$150,000 - \$500,000	\$0	Not estimated	New riders not estimated. Provides improvement for 146 current walk/bike access riders.
20	Improve East Bay MUD trail crossing of Happy Valley Road near Lafayette BART Station	Lafayette	Bike/ped overcrossing taking advantage of grade change, avoiding need for dramatic switcbacks and new retaining wall. \$1.2mm	Low	Long	City of Lafayette	\$1,200,000	\$0	Not estimated	New riders not estimated. Provides improvement for 104 current walk/bike access riders.
21	Improve connection between Concord BART and downtown Concord via Oak street	Concord	City of Concord priority. Ped plan ongoing.	High	Short	City of Concord	\$3,000,000	\$0	Not estimated	Approx 632 current walk/bike access riders pass through plaza area.
22	Redesign Plaza for Concord BART for better ped connections	Concord	Need \$500K (500k lifeline, \$500 measure J)	High	Short	BART	\$1,500,000	\$0	Not estimated	New riders not estimated. Provides improvement for 174 current walk/bike access riders.

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22	Redesign Plaza for Concord BART for better ped connections	Concord	Need \$500K (500k lifeline, \$500 measure J)	High	Short	BART	\$1,500,000	\$0	Not estimated	New riders not estimated. Provides improvement for 174 current walk/bike access riders.
23	Pedestrian/Bike connections within BART stations (prioritize Concord)	Concord	Cost range from SVRT access capacity study estimates for Rockridge and Fremont Stations	Medium	Short	BART	\$1,500,000 - \$3,500,000	\$0	Not estimated	New riders not estimated. Total current walk/bike access to Concord BART = 1508
24	Reduce the off-peak signal cycle time at the intersection of Ygnacio Valley Road/North California Boulevard	Walnut Creek	Requires coordination along YVR corridor. \$25,000 to retime 5 signals	Medium	Medium	City of Walnut Creek	\$25,000	\$0	Not estimated	New riders not estimated. Provides improvement for 889 current walk/bike access riders.
25	Improve the quality of safety of Class I bike paths on Ygnacio Valley Road Sidewalks	Walnut Creek	\$5k per ramp improvement, \$20K-\$30 K per curb radius reduction. Sadie: I would use an estimate of \$400k for all this work	Medium	Medium	City of Walnut Creek	\$400,000	\$0	Not estimated	
26	Improvements to the intersection of Ygnacio Valley Road/I-680 Off-ramp/BART Access/ Oakland Boulevard intersection	Walnut Creek	Tighten the off-ramp curb radius, and mark a staggered stop bar. \$360,000 including curb radii and signal modifications, lighting and striping.	Medium	Medium	City of Walnut Creek	\$360,000	\$0	Not estimated	New riders not estimated. Provides improvement for 215 current walk/bike access riders.
27	Develop pedestrian path along Barkley Avenue to Hillside Avenue, including wayfinding signage	Walnut Creek	Install continuous sidewalk along the southwest side of Hillside Avenue and a signalized pedestrian crossing of the I-680 on-ramp: remove the channelized right turn from eastbound Ygnacio Valley Road to Oakland Avenue. This project should be combined with the intersection improvement above	Medium	Medium	City of Walnut Creek	\$750,000	\$0	Not estimated	New riders not estimated. Provides improvement for 12 current walk/bike access riders.
28	Bike Lane striping and signal improvements around the station (including Pringle, Parkside drive, Hillside drive, Civic Drive)	Walnut Creek	\$100K for all (this is just assuming re-striping and signage improvements)	Medium	Medium	City of Walnut Creek	\$100,000	\$0	Not estimated	New riders not estimated.
29	Trail to Downtown Lafayette	Lafayette	\$100K for all (this is just assuming re-striping and signage improvements)	Medium	Medium	City of Lafayette/KB Homes	\$100,000	\$0	Not estimated	Not Estimated
Bicycle Parking										
30	Lafayette Bicycle Racks: Install regrade an area for new racks and install new racks	Lafayette	Included in Bike Capital report. Requires identification of some funding to regrade an area for new racks and install new racks, which could be a significant cost and require participation from Caltrans.	Low	Short	BART	\$80,000 - \$150,000	\$0	Not estimated	Not estimated
31	Pleasant Hill Bike Station	Pleasant Hill	Priority project for BART bike program. Costs are based on the cost of the Berkeley bike station, and could be significantly lower with participation from the Pleasant Hill developer.	High	Short	BART	\$500,000	\$150,000	Not estimated	Not estimated

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Parking and TDM						
32	Real time parking availability	TBD	BART IT project - Costs a placeholder value	High	Short	BART
33	Convert some general parking to carpool parking	TBD	Costs include placeholder value for enforcement	Medium	Short	BART
34	Create BART TDM Coordinator/Program		Costs include placeholder value annual cost of BART employee or 511 Contra Costa	Medium	Short	BART

\$150,000	\$0	Not estimated	Not estimated
\$0	\$75,000	Not estimated	Not estimated
\$0	\$150,000	Not estimated	Not estimated

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