
CHAPTER 5.0: BART CORE SYSTEM PARKING ANALYSIS

5.1 INTRODUCTION

The “core system” represents those stations on the existing BART system outside of Santa Clara County. New riders of the BART Alternative may walk, bicycle, use another transit mode, or park and board at one of the BART core system stations and take the train from there to a station along the BART Alternative within Santa Clara County. The number of potential new riders of the BART Alternative would be somewhat limited by the ability of those riders to park and board at core system stations. To achieve the anticipated ridership for the BART Alternative as described in this document, the additional parking demand that would be generated by those new riders must be accommodated. The regional transportation model shows that providing parking for riders who may board at core system stations would require approximately 3,200 spaces in 2025. Parking expansion at the BART core system stations to meet this additional parking demand is an integral part of the BART Alternative. To avoid displacing other users or diverting riders from using the BART system to travel to and from Santa Clara County, VTA will financially support BART in the expansion of parking in the core system by the number of spaces necessary to meet the demand generated by the BART Alternative.

As an integral part of the BART Alternative, the environmental impacts associated with additional core system parking demand need to be addressed as part of the SVRTC project although the additional parking would be provided consistent with BART’s access management and improvement program. Therefore, a programmatic approach has been used to address the environmental impacts from a number of additional parking facility possibilities. Potential environmental impacts are qualitatively discussed below, recognizing that subsequent project-specific documentation will be required to meet NEPA and CEQA requirements.

5.2 BACKGROUND

This section assesses the effects of the BART Alternative on parking needs at BART stations that would be part of the No-Action and Baseline alternatives in 2025. These stations include existing stations and those currently planned as part of the Warm Springs Extension and as additions to existing extensions, such as the West Dublin Station on the Dublin/Pleasanton Line. These stations, and their connecting rail lines, are referred to as the BART core system, as shown in Figure 5.2-1.

BART’s most recent *Station Profile Study*, 1999, found that during the morning peak approximately 38 percent of system patrons drove alone to their origin station and 5 percent carpooled, translating to nearly 40,000 people out of a total of 92,600 patrons boarding before 10 a.m. Since the study was completed, weekday ridership has grown from about 265,000 to over 300,000.

5.2.1 BART STATION PARKING POLICY

In response to parking capacity constraints, the BART Board adopted the *Access Management and Improvement Policy Framework* in May 2000. The framework recognizes that parking is a component of a larger access issue involving multiple modes. Among other things, the framework includes a goal to “manage access programs and parking access in an efficient, productive, and environmentally sensitive and equitable manner” with the specific strategy of “offer(ing) riders new parking choices pursuant to their willingness to pay.” Subsequently, in October 2000, BART released its *Parking Management Toolkit: Strategies for Action in BART Station Areas*. This report provides a step-by-step process for exploring parking issues and selecting parking management strategies. In addition, BART has completed 14 Station Access Plans outlining issues and recommendations for improving access by automobile and other



Figure 5.2-1: BART Core System

modes. BART’s recently adopted *System Expansion Policy*, which is used to evaluate transit expansion proposals, also addresses the parking issue in the context of increasing alternatives to driving to stations. Proposed projects fair better under this policy if potential stations have quality pedestrian, bicycle, and transit accessibility.

Historically, parking at BART-owned lots has been free, with the exception of a nominal 25¢ charge at the Lake Merritt Station. BART is now starting to manage its parking resources differently to reflect Board policies and to raise additional revenues for system operations. Effective December 1, 2002, BART began offering a Monthly Reserved Parking Program. Up to 25 percent of the spaces at each station with parking facilities (up to 40 percent at San Mateo County stations) have been designated as "reserved parking." For \$63 per month, patrons receive a permit that entitles them to a space within the reserved parking area. After 10 a.m. on weekdays and all day weekends, anyone can park in an unoccupied monthly reserved space without a permit. The remaining non-reserved parking spaces are available on a first-come, first-served basis. They are free at stations outside San Mateo County and cost \$2.00 per day in San Mateo County, with the extension of BART to San Francisco International Airport (SFO). Some non-reserved spaces are designated as "midday parking," which is open after 10 a.m. on weekdays. Additionally, some spaces are set aside for carpools of two or more with a permit. Currently, parking programs have not been combined with monthly or annual fare packages.

With the opening of BART to SFO, there is a 24-hour time limit on parking in all BART lots. In addition, long-term parking is available for \$7 per day at the BART El Cerrito del Norte (160 spaces), Walnut Creek (160 spaces), and Bay Fair stations (180 spaces). These spaces are in a secured section of the station parking facility separate from the monthly reserved parking area.

5.2.2 BART ALTERNATIVE PARKING ISSUES

The BART Alternative would generate not only demand for parking at surface stations along the extension itself but also additional demand for parking at a number of stations in the core system. Individuals would be able to board (alight) at any core system station and travel to (from) stations along the BART Alternative. Ridership projections prepared for the BART Alternative indicate additional parking demand for approximately 3,200 spaces at BART core system parking lots. This demand for park-and-ride spaces would be in addition to the park-and-ride demand of individuals making trips totally within the core system.

Increasing core system park-and-ride supply could have environmental effects including traffic, noise, and air quality impacts, depending upon the number and concentrations of auto trips generated. Visual impacts could occur where parking areas and structures would need to be expanded. Some of these impacts can be assessed generally. Other impact issues, such as traffic, visual, and noise are site-specific and would need to be addressed on a station-by-station basis.

The impact assessment for parking demand along the core system presented herein was developed at a programmatic level. BART will perform a more detailed assessment of environmental impacts prior to the actual implementation of any park-and-ride facility expansion. Park-and-ride expansion to accommodate the demand generated by the BART Alternative would likely be undertaken as part of BART's other programs to increase supply to meet growing core system demand and to encourage redevelopment at certain station areas consistent with community objectives. In many instances, the details of these other programs are still being refined. Therefore, it is appropriate to perform detailed, station-specific assessments of impacts as part of BART's overall long-range program to expand parking when the site-specific requirements have been identified.

This core system parking demand impact and mitigation assessment compares the changes associated with the BART Alternative to the No-Action and Baseline alternatives, combined as the No-Action/Baseline condition. This is appropriate because the No-Action and Baseline core systems have essentially the same park-and-ride demand and facility requirements.

5.3 CORE SYSTEM PARKING DEMAND

The existing BART system includes approximately 47,000 parking spaces. BART will add parking at stations as system improvements are implemented. The proposed West Dublin Station, between the East Dublin/Pleasanton and Castro Valley stations, is projected to include 1,132 spaces in two parking garages. The project is planned to be completed by 2005. The BART Warm Springs Extension provides 2,040 spaces at the Warm Springs Station with the optional Irvington Station providing 940 spaces. These figures for the Warm Springs Extension are preliminary since the 5.4-mile extension is still in the early design stage. BART completed a supplemental environmental document for the project in June 2003. Construction on the Warm Springs extension is scheduled to begin in 2005 and continue through 2008.

Ongoing station area and transit-oriented development (TOD) planning programs, undertaken by BART and by local communities, are evaluating other opportunities for expanding parking. BART anticipates that these programs will focus on reducing the amount of parking and encouraging non-drive alone, transit, bicycle, and pedestrian access. Altogether, BART anticipates total system parking supply would expand by the year 2025, but no estimate is currently available.

5.3.1 PARKING DEMAND ATTRIBUTABLE TO THE BART ALTERNATIVE

The SVRTC BART Alternative represents a major expansion of the system and would affect the parking demand/supply balance in the core system. The BART Alternative is projected to serve approximately 83,585 riders on the average weekday in 2025. The majority will be traveling to and from Santa Clara County stations from stations within the core system, including an estimated 55,200 riders boarding or alighting on one end of their trip in Alameda County. Those riders wanting to park and ride at core system stations would face very limited parking availability. Either these BART riders would need to displace existing park-and-ride patrons or shift to other modes in order to access the BART core system, or they would be diverted from riding BART altogether. Extension ridership would fall under the latter scenario.

The additional core system parking needed to accommodate the BART Alternative was projected from travel model forecasts that compared park-and-ride demand in the core system under the No-Action/Baseline condition with demand assuming the construction of the BART Alternative. The anticipated demand is projected to be 3,235 spaces. Working with BART, VTA has identified possible locations and options for the parking expansion program, as shown in Table 5.3-1. Recognizing that a number of options exist for core system parking expansion, ranges are shown on the table for the number of parking spaces that ultimately could be developed at the stations. The estimated 4,400 potential spaces considered exceed the anticipated demand of 3,235 spaces, allowing flexibility in the final selection of sites for future parking projects.

Parking supply and demand at stations along the BART Alternative itself are not included in Table 5.3-1. Five of the eight proposed stations along the extension would have park-and-ride facilities. Approximately 9,000 spaces would be provided at these locations. These spaces would become part of the total BART system supply but do not have a direct bearing on parking impacts in the core system.

By 2025, core system park-and-ride demand is projected to increase by approximately 7,100 trips due to the BART Alternative, which translates to a demand for approximately 3,235 additional parking spaces. The second column of Table 5.3-1 indicates where the additional park-and-ride spaces would be needed. Not quite half would be needed at BART stations in southern Alameda County. Demand in this area would actually be higher except that fewer spaces would be needed at the Warm Springs Station once the extension to Santa Clara County opens for service. On the order of 600 spaces would become available at Warm Springs since it would no longer be a terminus station, however, these spaces would likely be used for park-and-ride trips diverted from other stations where parking remains constrained.

Table 5.3-1: BART Alternative Parking Demand and Potential Expansion in the Core System

BART Station Groups	BART Alternative Parking Demand	Potential Spaces for Expansion	
		Low	High
South Alameda County ^[1]	1,416	1,300	1,900
East Alameda County ^[2]	793	600	750
Oakland/Central Alameda County ^[3]	163	200	350
North Alameda County/West Contra Costa County ^[4]	271	300	450
Central and East Contra Costa County ^[5]	617	600	950
San Francisco and San Mateo Counties ^[6]	-25	0	0
Grand Total	3,235	3,000	4,400

Notes:

^[1] San Leandro, Bay Fair, Hayward, South Hayward, Union City, Fremont, Irvington (Optional) & Warm Springs stations

^[2] Castro Valley, West Dublin & Dublin/Pleasanton stations

^[3] Coliseum/Oakland Airport, Fruitvale, Lake Merritt, West Oakland, Oakland City Center/12th Street, 19th Street/Broadway, MacArthur & Rockridge stations

^[4] Ashby, Berkeley, North Berkeley, El Cerrito Plaza, El Cerrito Del Norte & Richmond stations

^[5] Orinda, Lafayette, Walnut Creek, Pleasant Hill, Concord, North Concord/Martinez & Pittsburg/Bay Point stations

^[6] Embarcadero, Montgomery Street, Powell Street, Civic Center, 16th Street Mission, 24th Street Mission, Glen Park, Balboa Park, Daly City, Colma, South San Francisco, San Bruno, Millbrae, and San Francisco International Airport stations

Source: *Travel Demand Forecasts Report, Hexagon Transportation Consultants, Inc., 2003.*

Eastern Alameda County followed by Contra Costa County would also be areas of high parking demand for individuals wanting to ride BART to and from Santa Clara County. Station parking demand is not anticipated to change substantially in San Mateo and San Francisco counties as a result of extending BART into Santa Clara County. San Francisco BART stations offer little parking and are not anticipated to include much additional parking, with the possible exception of the Glen Park Station.

Since the MOS scenarios would have less riders than the full-build BART Alternative, fewer additional parking spaces would be required to accommodate increased demand throughout the BART core system. For MOS-1E, additional parking spaces required at BART core system stations would be 3,090 or four percent less than for the full-build BART Alternative. This number would be reduced to 2,865 to reflect conditions under MOS-1E in 2015. The number of additional core system parking spaces would be 2,890 for MOS-1F in 2015, which is 11 percent less than the full-build BART Alternative

5.3.2 METHODOLOGY

The evaluation of core system parking expansion options focused first on those stations in Alameda and Contra Costa counties where the parking demand analysis identified substantial future shortfalls in available parking due to the BART Alternative (Table 5.3-1). An assessment was made of parking constraints and opportunities. Expansion options were also considered for other stations in the two counties at which forecast parking demand from the BART Alternative might be relatively small but parking opportunities were likely not to be constrained.

The latter options were assumed to offer viable opportunities to address projected shortfalls in parking at other stations for two reasons. First, autos used to access park-and-ride spaces are a flexible mode of transportation. Individuals can often park at one BART station as conveniently as another - and often do. Second, travel forecasts should rightly be viewed as order of magnitude estimates, or ranges. Depending upon actual growth in population and employment and the influence of other socioeconomic factors, individuals' actual future travel behavior could differ somewhat from predicted behavior. Travel could, for

this reason, shift among nearby stations. Thus, parking demand and supply can be functionally evaluated for groups of stations.

Existing and future station plans were reviewed and field visits made to identify the most cost-effective locations to expand parking. Assessments were made of engineering and environmental constraints likely to affect parking expansion opportunities. Finally, local area plans were reviewed to determine the consistency of BART station parking facility improvements with community planning objectives.

The result of this assessment was that 17 stations were identified as offering parking expansion opportunities. All are existing stations except for the optional BART Irvington Station, which is part of the planned Warm Springs Extension. The stations were then combined into geographically related station groups. Based on conceptual analysis of the potential for parking development at each station, a range of parking was estimated for each station group, as shown in Table 5.3-1. These ranges provide flexibility on determining the final location for parking spaces in the future. The higher ends of the ranges may be determined viable within some station groups, with the lower ends of the ranges viable in others. The total range (3,000 to 4,000, as shown in Table 5.3-1) demonstrates the ability to achieve the 3,235 spaces required.

The greatest parking expansion is proposed for southern Alameda County stations, from San Leandro to central Fremont. From 1,300 to 1,900 spaces would be constructed at the seven stations, including the BART Irvington Station.

Various design options will be developed and subjected to detailed environmental assessment before a specific improvement is proposed for construction. In addition, improvements at any one station could be affected by what is implemented at other stations.

5.4 IMPACTS

Parking expansion at BART stations would generate additional daily traffic and would likely involve improvements to existing or planned surface or structured parking lots. Increased traffic could affect roadway and intersection operations in the vicinity of stations and increase ambient noise and vehicle air emissions. Facilities construction could change the visual characteristics of an area. Parking expansion is also likely to occur in conjunction with local redevelopment projects. Other potential impacts associated with the expansion of parking facilities could include hazardous materials, property acquisitions, increased surface water runoff and stormwater pollution, and construction activities. Similar impacts would be associated with the MOS scenarios. A programmatic-level analysis of the potential impacts associated with parking expansion at existing BART stations is found in the *BART Core System Parking Analysis Technical Working Paper (San Francisco Bay Area Rapid Transit, 2003)*.

Traffic Volumes. In most instances, the extent of environmental effects would correspond directly with the volume of traffic generated for park-and-ride access to BART. The need for approximately 3,235 parking spaces represents just over twice that many vehicle trips (some spaces are anticipated to turn over during the course of a day and be used by more than one vehicle). Most park-and-ride trips would be made during peak commute hours which, at existing BART stations in non-central business districts, include the periods from 6:30 a.m. to 9:00 a.m. and from 4:30 p.m. to 7:30 p.m.

Because parking improvements would be implemented at a number of different stations, located often miles apart, the effects of approximately 6,500 additional park-and-ride trips would be widely distributed. Effects at any station would reflect only the number of park-and-ride trips made to access parking provided at that station and would, because of distance, be independent of the effects of trips made to access parking at other stations. The traffic related environmental effects of parking expansion in the core system would need to be quantified and, if necessary, mitigated in subsequent project-level

environmental documents. Mitigation typically could involve intersection and street improvements, as appropriate, where existing capacity would be insufficient to accommodate an increase in traffic.

Air Quality. Regional air quality impacts of the BART Alternative generally would be positive because of the overall reduction in vehicle miles traveled (VMT) and number of cold starts. The BART Alternative would reduce the number of peak period travel trips by approximately 25,000. The only potential for adverse air quality impacts is at the micro-scale from increased station area traffic. Depending upon traffic conditions (e.g., levels of roadway congestion), vehicles accessing expanded BART parking lots would generate increased emissions. The only NAAQS criteria pollutant of concern is CO. This pollutant is most detrimental at high concentrations, which are experienced at ground level and where traffic congestion is severe. Upon dissipating into the atmosphere, carbon dioxide (CO₂) does not pose a direct human health concern although it is indirectly associated with other concerns (e.g., global warming).

The Bay Area Air Basin is in attainment for CO according to standards established under the federal Clean Air Act. Unless a transportation project would have a demonstrably adverse effect on local traffic and thereby on CO concentrations, detailed assessment of CO impacts is not currently required. Given the relatively small traffic volume increases associated with the proposed parking expansion, CO emissions would not be anticipated to exceed state or federal standards at any of the 17 stations under consideration for parking expansion. In addition, standards for CO emissions become more stringent over time, resulting in the production of vehicles that provide fewer emissions. Therefore, adverse CO effects are less likely over time. This evaluation would need to be confirmed in subsequent project-level environmental documents, based on effects on local traffic.

Other NAAQS pollutants of concern, such as ozone precursors, would also be emitted by increased park-and-ride traffic. These pollutants are evaluated in terms of overall atmospheric concentrations in the air basin. Because the BART Alternative would divert a substantial number of higher-polluting (per person-mile) auto trips to transit, a net reduction in emissions of ozone and other NAAQS pollutants of concern is anticipated. Therefore, the BART Alternative is projected to have a beneficial effect on air quality in the air basin for these other pollutants. (See Section 4.3, *Air Quality*.)

Noise. Potential noise impacts from the projected small increases in traffic attributable to park-and-ride activity are expected to be limited in most cases, because roadway and BART train traffic contribute to a relatively noisy urban environment. Station parking traffic noise would be concentrated close to the stations, and the restricted, low travel speeds of vehicles proceeding to and from parking facilities would help reduce potential noise impacts. In cases where noise sensitive receptors such as residences may be affected, noise studies would need to be performed and, if necessary, mitigation measures adopted in subsequent project-level environmental documents. Mitigation typically would involve noise abatement measures (such as sound walls) to reduce noise impacts for sensitive receptors.

Visual. Depending on the location of proposed parking facilities, potential visual impacts may occur, particularly in the case of new parking structures. Visual impacts and visual compatibility with existing land uses would need to be evaluated and, if necessary, mitigated in subsequent project-level environmental documents. Mitigation typically would involve landscaping, architectural features, and other design treatments to integrate parking facilities into the environment and make them less obtrusive.

Hazardous Materials. Where parking facilities would be located in areas with a history of heavy industrial activity, hazardous materials contamination of soils and groundwater would be a concern. Before proceeding with construction, technical studies would need to be performed to determine whether hazardous materials are present. Mitigation typically would involve remediation measures as necessary to address any contamination problems, and measures to protect worker health and safety during construction.

Socioeconomic. Property acquisitions may be necessary depending on the location of parking facilities proposed for expansion. In addition, depending on the locations selected, traffic attributable to parking expansion could affect recreational facilities. Any displacements of residents and businesses and recreational facility impacts would need to be evaluated and, if necessary, mitigated in subsequent project-level environmental documents. Any displacements would be conducted in accordance with requirements of applicable state and federal acquisition and relocation laws.

Land Use. Project-level parking expansion impact assessments would need to consider compatibility with surrounding land uses and planning documents of local jurisdictions, as applicable. In many cases, expanded BART parking facilities would be consistent with existing uses and would enhance local planning and redevelopment efforts, which would be a beneficial effect. In some cases, BART parking facilities could provide opportunities for shared parking for proposed residential, commercial, and retail uses in redevelopment areas, which would also be a beneficial effect.

Hydrology. Parking facilities would involve construction of impervious surfaces, which would reduce the amount of stormwater infiltration and increase the volume of surface water runoff. It is not anticipated that the expanded parking facilities would substantially alter existing drainage systems because a majority would be constructed within existing developed or partially developed areas. Project-level evaluations would be conducted to determine the specific increase of impervious cover and resulting water runoff. In addition, best management practices required by regulatory agencies would be implemented to reduce runoff.

Stormwater. Water pollution would result from the parking facilities if pollutants such as motor oil and grease, car exhaust, eroded soil, and other wastes associated with litter are allowed to accumulate and are washed off by rainfall and carried through the storm drain system into the creeks or drainage channels. Surface runoff pollutants from the impervious parking areas would be analyzed and mitigated as necessary in project-level evaluations.

Construction. Temporary impacts would be associated with parking expansion construction activities. While parking sites would be selected to minimize impacts on buildings, some properties may be acquired with existing structures that would need to be demolished. Existing utilities would also likely have to be temporarily or permanently relocated. Site preparation would then begin, followed by construction of the facilities. The equipment used to build the parking facilities would be similar to that used for construction of industrial and office buildings. Haul routes and construction staging areas would need to be identified in project-level evaluations, along with mitigation measures to reduce traffic, noise, visual, and other potential impacts resulting from construction activities.