CHAPTER 8: BART CORE SYSTEM PARKING ANALYSIS

8.1 INTRODUCTION

This section assesses the effects of the BEP and SVRTP alternatives on parking needs at BART stations outside of Santa Clara County. These stations include the 43 existing stations in the 104-mile BART system and three other stations either currently planned as part of the Warm Springs Extension (one programmed; one optional) or under construction as additions to the Dublin/Pleasanton Line (West Dublin Station). These stations and their connecting rail lines are referred to as the BART "core system," as shown in Figure 8-1.

The core system represents the existing and planned BART system outside of Santa Clara County. The 46 existing and planned stations include:

South Alameda County

- San Leandro
- Bay Fair
- Hayward
- South Hayward
- Union City
- Fremont
- Irvington (optional)
- Warm Springs (planned)

East Alameda County

- Castro Valley
- West Dublin (under construction)
- Dublin/Pleasanton

Oakland/Central Alameda County

- Coliseum/Oakland Airport
- Fruitvale
- Lake Merritt
- West Oakland
- Oakland City Center/12th Street
- 19th Street/Broadway
- MacArthur
- Rockridge

North Alameda County/West Contra Costa County

- Ashby
- Berkeley

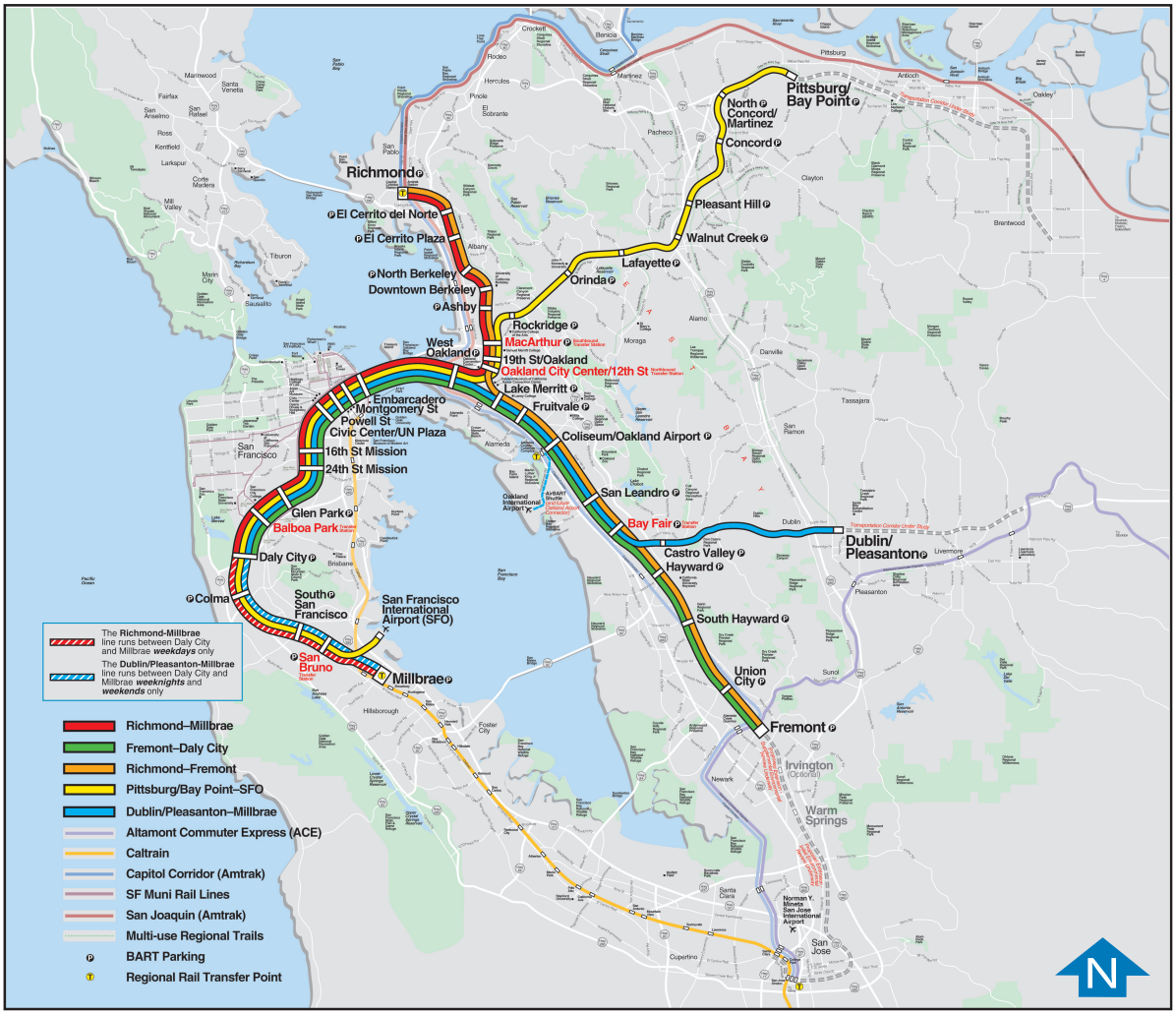
- North Berkeley
- El Cerrito Plaza
- El Cerrito Del Norte
- Richmond

East Contra Costa County

- Orinda
- Lafayette
- Walnut Creek
- Pleasant Hill
- Concord
- North Concord/Martinez
- Pittsburg/Bay Point

San Francisco and San Mateo Counties

- 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
- San Francisco Airport
- Millbrae



Source: BART and VTA, 2008.

Figure 8-1: BART Core System

The BEP and SVRTP alternatives would generate not only new boardings and alightings at stations along the extensions themselves but also, for individuals traveling from and to locations outside of Santa Clara County, new boardings and alightings at a number of stations in the core system. Individuals would be able to board at any core system station and travel to stations along the BEP and SVRTP alternatives and vice versa. Mode of access to and from core system stations could be by walk, bicycle, taxi, another transit mode, or, depending upon location, park-and-ride or kiss-and-ride. Outside of the central business districts served by BART and a few other locations (e.g., San Francisco Airport), park-and-ride and kiss-and-ride are important modes of station access. Park-and-ride requires the provision of parking spaces, either surface lots or in structures at or near stations.

To achieve the anticipated ridership for the BEP and SVRTP alternatives as described in this document, the additional parking demand would need to be accommodated. Parking expansion at the BART core system stations to meet this additional parking demand is therefore an integral part of the BEP and SVRTP alternatives. To avoid displacing other users or diverting riders from using the BART system to travel to and from Santa Clara County, VTA proposes to 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 preferred project alternative.

The environmental impacts associated with additional core system parking demand need to be addressed although the additional parking would be provided consistent with BART's access management and improvement program. Because the actual demand for individual core station parking associated with either the BEP or SVRTP alternative is difficult to determine accurately at this early phase of project development, and specific parking expansion investment decisions would be premature, further studies would be undertaken to determine individual station parking requirements and possible facility improvements. Targeted, station project-level environmental studies would be completed to identify and mitigate, if warranted, any impacts associated with parking expansion.

At this time, therefore, a programmatic approach has been used to address the environmental impacts from core system parking expansion. Subsequent project-specific documentation will be required to meet NEPA and CEQA requirements.

8.2 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 provided a step-by-step process for exploring parking issues and selecting parking management strategies. In addition, BART has completed a number of Station Access Plans outlining issues and recommendations for improving access by automobile and other modes. BART's 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 fare better under this policy if potential stations have quality pedestrian, bicycle, and transit accessibility.

There are three basic kinds of parking spaces in the BART system: (1) reserved spaces (monthly, daily, and long term); (2) fee spaces, and (3) free/unreserved parking spaces. These parking types offer BART patrons a number of options while also optimizing BART's parking inventory, and generating revenue to offset the cost of maintaining parking. Despite introduction of paid daily parking at many BART stations, parking demand and ridership continue to increase. This is due, in part, to the introduction of fees on a station by station basis, when demand thresholds are met.

8.3 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. Ongoing station area 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 proportion of drive-alone parking and encouraging carpool, transit, bicycle, and pedestrian access. Altogether, BART anticipates total system parking supply would expand by the year 2030, but no estimate is currently available.

8.3.1 PARKING DEMAND ATTRIBUTABLE TO THE BEP AND SVRTP ALTERNATIVES

The BEP and SVRTP alternatives represent an expansion of the system and would affect the parking demand/supply balance in the core. The BEP and SVRTP alternatives are projected to serve approximately 46,450 and 98,750 station boardings respectively on the average weekday in 2030. Many riders would be traveling between Santa Clara County stations. However, the BEP and SVRTP alternatives would also support approximately 15,700 and 20,100 boardings, respectively, at stations outside of Santa Clara County, for individuals traveling to Santa Clara 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. BEP and SVRTP alternative ridership would fall under the latter scenario.

The additional core system parking needed to accommodate the BEP and SVRTP alternatives was projected from travel model forecasts that compared park-and-ride demand in the core system under the No Build Alternative with demand assuming the construction of the BEP and SVRTP alternatives. Working with BART, VTA has identified possible locations and options for the parking expansion program, as shown in Table 8-1. Recognizing that a number of options exist for core system parking expansion, ranges are shown in the table for the number of parking spaces that ultimately could be developed at the groups of stations. The estimated 3,000 to 4,400 potential spaces exceed the anticipated demand of 617 and 937 spaces for the BEP and SVRTP alternatives, respectively, which also allows flexibility in the final selection of sites for future parking projects. However, over 50 percent of the demand for parking is in southern Alameda County.

Table 8-1 BEP and SVRTP Alternatives Parking Demand and Potential Expansion in the Core System

BART Station Groups	BEP Alternative Parking Demand	SVRTP Alternative Parking Demand	Potential Spaces for Expansion[g] Low	Potential Spaces for Expansion[g] High
South Alameda County[a]	339	500	1,300	1,900
East Alameda County[b]	32	130	600	7500
Oakland/Central Alameda County[c]	56	64	200	350
North Alameda County/West Contra Costa County[d]	40	44	300	450
Central and East Contra Costa County[e]	144	190	600	9500
San Francisco and San Mateo Counties[f]	6	9	0	0
Grand Total	**617**	**937**	**3,000**	**4,400**

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

[b] Castro Valley, West Dublin & Dublin/Pleasanton stations.

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

[d] Ashby, Berkeley, North Berkeley, El Cerrito Plaza, El Cerrito Del Norte & Richmond stations.

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

[f] 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.

[g] BART Core System Parking Analysis Technical Working Paper, Revised October 2004.

Source: BART, VTA, 2008

8.3.2 METHODOLOGY

The evaluation of core system parking expansion options focused on groups of stations for two reasons. First, autos used to access park-and-ride spaces are a flexible mode of transportation. Individuals may be able to park at one BART station as conveniently

as another - and often do. Second, 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.

Various design options would be developed and subjected to detailed subsequent environmental assessment before a specific improvement could proceed to construction at any core system station. In addition, future improvements at any one station could be affected by what is implemented at other stations.

8.4 IMPACT DISCUSSION

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 would need to be addressed on a station-by-station basis as part of subsequent project-level NEPA and CEQA documentation.

VTA, in cooperation with BART, would 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 BEP and SVRTP alternatives may 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 BEP and SVRTP alternatives to the No- Build Alternative. Parking expansion at BART stations would generate additional daily traffic and would likely involve improvements to existing or planned surface lots or structured parking. Increased traffic could affect roadway and intersection operations around 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.

8.4.1 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 617 to 937 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 an upper range of approximately 2,500 additional park-and-ride trips generated by the proposed project 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 is found to be insufficient to accommodate an increase in traffic.

8.4.2 AIR QUALITY

Regional air quality impacts of the BEP and SVRTP alternatives generally would be positive because of the overall reduction in vehicle miles traveled (VMT) and number of cold starts. The BEP and SVRTP alternatives would reduce the number of daily auto trips in the corridor by approximately 18,300 and 32,500 respectively. 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 (CO_2) 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 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 BEP and SVRTP alternatives 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 BEP and SVRTP alternatives are projected to have a beneficial effect on air quality in the air basin for these other pollutants. (See Section 4.3, Air Quality.)

8.4.3 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 insulating or sound attenuation) to reduce noise impacts for sensitive receptors.

8.4.4 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.

8.4.5 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.

8.4.6 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.

8.4.7 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.

8.4.8 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.

8.4.9 STORMWATER

Water pollution would result from the parking facilities if pollutants such as motor oil and grease, car exhaust, eroded soil, and other pollutants including 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.

8.4.10 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.

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