## D. TRANSPORTATION

P P P

The City of Berkeley is well served by a mature roadway and freeway network, transit and rail services, and sidewalks, paths and bike lanes for pedestrian and bicycle travel. The following discussion describes the existing traffic, parking, transit, pedestrian, bicycle, and freight/passenger rail conditions in the City. In addition, a description of the City=s transportation demand management programs and activities is included.

### 1. Setting

a. Roadway Network. The City of Berkeley has four street classifications: major streets, collector streets, scenic routes, and local streets. In addition to the City=s classifications, several State-maintained facilities traverse the City. The following sections describe the freeways and major arterial streets serving travel to and through Berkeley.

(1) Interstate 80. Interstate 80 (I-80) connects the San Francisco Bay Area with the Sacramento region and continues east across the United States. Within Berkeley, I-80 is oriented in a north-south direction. I-80 and the nearby I-80/I-580 interchange operate near capacity during peak commute hours.

(2) University Avenue. University Avenue is a four-lane east-west major street. University Avenue provides one of the City=s three connections to I-80 to the west (along with Gilman Street and Ashby Avenue). The roadway is divided and has left turn pockets at major intersections. Left turns from University Avenue onto cross-streets generally are not served by a separate left turn signal phase. University Avenue extends from the west edge of the U.C. Berkeley campus to I-80.

(3) Ashby Avenue (State Route 13). Ashby Avenue is an east-west roadway, and also a State Highway, which connects I-80 to State Route 24 (SR 24). Ashby Avenue has four lanes west of San Pablo Avenue, and two lanes in most places east of San Pablo. During the peak commute hours, on-street parking restrictions on the north side of the street in the morning and the south side in the evening provide an additional travel lane for commuters.

(4) Gilman Street. Gilman Street is a major east-west street that connects I-80 with San Pablo Avenue, and continues into North Berkeley. Most of the intersections along Gilman are unsignalized. The Southern Pacific railroad track crosses Gilman Street at Third Street, where flashing lights and safety gates on both sides of the at-grade railroad crossing are provided.

(5) San Pablo Avenue (State Route 123). San Pablo Avenue is a major north-south street that connects the Richmond/Pinole area north of Berkeley with Oakland/Emeryville to the south. San Pablo Avenue is a state highway, and is a four-lane road with left-turn pockets at major intersections.

(6) Sacramento Street. Sacramento Street is a major north-south roadway connecting the southern City limits with Hopkins Street in North Berkeley. Sacramento Street is primarily two lanes south of Parker, and four lanes north of Parker.

(7) Martin Luther King, Jr. Way. Martin Luther King, Jr. Way is a major north-south roadway which runs from Adeline Street in Southern Berkeley to Hopkins Street and The Alameda in northern Berkeley. Martin Luther King, Jr. Way provides four travel lanes south of University Avenue, and two lanes north of University Avenue.

(8) Shattuck Avenue. Shattuck Avenue is a major north-south roadway which connects Oakland with North Berkeley. Shattuck has four travel lanes along most of its length in Berkeley, with a two-lane section between Alcatraz and Adeline Streets. Shattuck Avenue=s proximity to the on and off-ramps for SR 24 in Oakland make it a major southern entryway into Berkeley. In the downtown area, Shattuck Avenue is the most heavily used north-south roadway.

(9) Telegraph Avenue. Telegraph Avenue is a major north-south roadway connecting Oakland to the University campus in central Berkeley. Telegraph Avenue is a four-lane roadway south of Dwight Way, and a two-lane northbound (one-way) roadway between Dwight Way and the University campus. Telegraph Avenue=s connection to SR 24 westbound ramps and proximity to SR 24 eastbound ramps at 51st Street in Oakland make it a major entryway to Berkeley. The City has recently begun closing a several-block section near campus to automobile traffic on week-ends to foster pedestrian activity.

(10) College Avenue. College Avenue is a major north-south roadway connecting Oakland with Bancroft Way and the University campus. College Avenue is a two-lane roadway within Berkeley.

(11) Belrose B Derby B Warring Corridor. This series of streets in south Berkeley is used by many to enter the University southside area and surrounding neighborhoods. Its connection to Tunnel Road facilitates travel to and from SR 24.

b. Existing Traffic Conditions. This section describes the existing traffic conditions on City streets, and includes a discussion of traffic growth over the last five years.

(1) Intersection Volumes and Recent Growth. In 1994, peak hour traffic counts were taken at a total of 53 intersections, in preparation for the *General Plan* update. Because of the time elapsed since the original data collection, the 1994 counts have been supplemented with more recent counts from 1997 B 1999, wherever available. Figure IV.D-1 shows the original count locations showing where updated data for these intersections is available. The intersection control type, lane configuration and peak hour volume counts for the full set of 1994 data and the reduced set of more recent data are included in Appendix C.

Because the *Draft General Plan* is primarily a policy level revision rather than a major land use revision, the level of analysis for the 2000 *Draft General Plan* EIR is a roadway or Alink-based@ approach, rather than a detailed intersection operations approach. However, the intersection data are useful as a general gauge of recent traffic growth in Berkeley. As shown in Figure IV.D-2, traffic volumes have grown at some locations and decreased at others. The overall conclusions to be drawn from Figure IV.D-2 are that: 1) traffic has not increased significantly at most locations in the last five years; and 2) congestion may be limiting the peak hour volume growth which would otherwise occur. Locations which have seen substantial growth include Gilman/I-80 Westbound Ramps, Dwight/Sixth/Seventh, and Dwight/Piedmont. Corridors where congestion is limiting peak hour volume growth include lower University Avenue, Telegraph Avenue, Shattuck Avenue, and Ashby Avenue.

Figure IV.D-3 shows the intersection service levels calculated for the more recent (1997 B 1999) counts. These few intersections do not represent a comprehensive look at the entire City, but provide an overview of prevailing traffic conditions in different areas of the City. The areas most affected by congestion, as indicated by level of service (LOS)[1] values of D, E or F, are intersections near regional gateways to the City, where commute and local traffic compete for traffic capacity: Gilman Street, University Avenue and Ashby Avenue near I-80; Shattuck Avenue and College Avenue at Ashby Avenue; and Tunnel Road at Claremont Avenue. Most of

[1] Level of service (LOS) refers to a letter designation that indicates the vehicle capacity of an intersection, where LOS F represents complete intersection saturation.

Figure IV.D-1 Original Count Locations 8x11

Figure IV.D-2 Intersection Volumes 8x11

Figure IV.D-3 Intersection LOS 8x11

the other more centrally located intersections continue to operate at LOS C or better during the PM commute peak hour.

(2) <u>Roadway Segment Volumes</u>. Analysis of the potential transportation impacts of *General Plan* revisions often focuses on the volumes of traffic on local roadways in addition to intersection LOS. Briefly described below are two sets of roadway segments for which setting information is presented (and impacts later forecast). The first is the citywide network of all streets linking the intersections enumerated in Figure IV.D-2. The second is the network of freeways, state routes and major arterials included in the Alameda County Congestion Management Program (CMP).

*(a) Citywide Network.* Table AC-1 in Appendix C presents the most recent peak hour count data on a link basis, using all available peak hour count data from 1997-1999. Table AC-1 also lists the directional peak hour capacity of the streets, consistent with the Alameda County Congestion Management Agency=s (CMA) Travel Demand Model. The model=s capacity assumptions were checked against other sources, including: 1) the Highway Capacity Manual methodology for roadway capacity calculation; and 2) the evident capacities based on existing traffic counts at fully-loaded locations (i.e., locations where the maximum traffic volume is being served as evidenced by the traffic congestion). The conclusion of these checks was that the CMA model=s capacity assumptions are generally correct for the major streets in Berkeley, although individual streets may be able to accommodate slightly more or less traffic during the peak hours than the capacities indicate.

Since the PM peak hour volumes above were assembled, the City has conducted daily counts on a major streets throughout the City. The daily volumes on some of the streets, along with historical counts for comparison, are presented in Table IV.D-1. A comparison of the 1987 and 2000 counts shows that, as with the intersection comparisons, traffic has grown on some streets, and dropped on others. Overall, the 2000 daily volumes are about 20 percent higher than 1977 volumes, and 2 percent lower than 1987 volumes.

*(b) Designated CMP System.* The Alameda County CMA monitors conditions on the ADesignated Congestion Management Program (CMP) System,@ which in Berkeley includes the freeways, state routes, and several major arterials. The CMA monitors conditions on this system, and requires reporting of impacts for major projects or *General Plan* Amendments on both the CMP System and the Metropolitan Transportation System (MTS), a network of freeways and arterials which includes the CMP System as well as additional important routes.

**Table IV.D-1**
**24-HOUR TRAFFIC VOLUME COMPARISON**

| Street Segment | 1977 24-Hour Volume | 1987 24-Hour Volume | 2000 24-Hour Volume | Percent Change 1977-2000 | Percent Change 1987-2000 |
|---|---|---|---|---|---|
| Adeline (South of Ashby) | 15,000 | 15,000 | 18,100 | +21% | +21% |
| Ashby (Shattuck to Telegraph | 22,500 | 30,500 | 24,700 | +10% | -19% |
| Bancroft (Piedmont to College) | 6,000 | 6,700 | 5,100 | -15% | -24% |
| College (Ashby to Derby) | 15,200 | 14,200 | 13,000 | -14% | -8% |
| College (Derby to Dwight) | 12,200 | 13,400 | 11,600 | -5% | -13% |
| Dwight (San Pablo to Sacramento) | 8,500 | 13,300 | 15,800 | 86% | 19% |
| Gilman (6th to San Pablo) | 13,300 | 17,400 | 17,500 | +32% | +1% |
| Gilman (San Pablo to Santa Fe) | 9,000 | 11,000 | 10,300 | +14% | -6% |
| I-80 (University to Ashby) | 178,000 | 241,000 | 232,000 | +30% | -4% |
| I-80 (University to Gilman) | 166,000 | 222,000 | 227,000 | +37% | +2% |
| MLK Jr. Way (Cedar to Rose) | 14,500 | 15,700 | 14,700 | +1% | -6% |
| MLK Jr. Way (Dwight to Allston) | 21,000 | 21,000 | 17,700 | -16% | -16% |
| MLK Jr. Way (Ward to Ashby) | 16,900 | 20,500 | 23,000 | 36% | +12% |
| Oxford (Hearst to Cedar) | 12,000 | 15,000 | 14,200 | +18% | -5% |
| Sacramento (Ashby to Alcatraz) | 16,000 | 18,300 | 21,600 | +35% | +18% |
| San Pablo (Ashby to Dwight) | 23,400 | 24,000 | 29,500 | +26% | +23% |
| San Pablo (Dwight to University) | 23,400 | 21,300 | 24,900 | +6% | +17% |
| San Pablo (University to Cedar) | 26,500 | 25,000 | 27,000 | +2% | +8% |
| Shattuck (Dwight to Adeline) | 30,000 | 33,500 | 36,400 | +12% | +9% |
| Shattuck (South of Ward) | 20,000 | 19,000 | 22,300 | +12% | +17% |
| Telegraph (Ashby to Oakland City Line) | 23,000 | 24,600 | 28,200 | +25% | -23% |
| Telegraph (Ashby to Derby) | 26,600 | 26,000 | 19,900 | -23% | +15% |
| University (San Pablo to Sacramento) | 33,000 | 43,500 | 27,900 | +31% | -36% |
| University (Sacramento to California) | 29,000 | 36,200 | 32,400 | +25% | +12% |

Source: City of Berkeley, 2000.

Table IV.D-2 lists the segments of the CMP System in Berkeley and the associated LOS standards and year 2000 monitoring results. The MTS segments in Berkeley are also listed in Table IV.D-2.

For most CMP System segments in Berkeley, the LOS standard is E (v/c = 0.90); for four specific segments, the standard is LOS F because that was the operating condition when the first CMP monitoring took place in 1991. The LOS F standard segments are:

- I-80 westbound between University Avenue and the Emeryville city limits;
- I-80 westbound from the Emeryville city limits to the Albany city limits;
- Ashby Avenue (SR 13) westbound from Telegraph to Martin Luther King, Jr. Way;
- Ashby Avenue (SR 13) eastbound from College to Domingo.

As shown in Table IV.D-2, the 2000 annual monitoring report showed three LOS deficiencies in Berkeley, where the measured LOS fell below the standard. The segments are State Route 123 (San Pablo Avenue) northbound between Allston Way and University Avenue, Shattuck Avenue northbound between Allston Way and University Avenue, and Adeline Street southbound between Martin Luther King Jr. Way North and Martin Luther King Jr. Way South.

(3) Commute Patterns. Table IV.D-3 presents commute patterns of Berkeley residents and UC students, faculty, and staff. Table IV.D-4 presents commute patterns of Berkeley residents and workers. Berkeley residents who work in Berkeley have the lowest drive alone mode share. Of all workers in Downtown and Southside areas, 41 percent live in Berkeley, 22 percent live in Oakland, and 12 percent live in the adjacent cities of Albany, Emeryville, or El Cerrito. Of all workers in Downtown and Southside areas, 46 percent drive alone to work, 18 percent walk, 14 percent take transit, 11 percent carpool, 7 percent bike, and 4 percent motorcycle or use other modes.

c0 Parking. Parking is often perceived to be in short supply in many parts of the City, particularly in Downtown Berkeley, West Berkeley retail areas, neighborhood shopping areas, Telegraph Avenue, and in many residential neighborhoods. The current Zoning Ordinance requires residential construction to build a minimum of one parking space per unit. However, in recent years Berkeley has required less off-street parking for residential uses than would be needed to fully accommodate unconstrained single occupancy vehicle behavior. Commercial construction is required to provide 1.5 to two spaces per 1,000 square feet of development, an amount of parking which would allow fewer than 50 percent of employees to drive alone to work to a typical office building. The cost of a monthly parking pass in a

**Table IV.D-2**
**EXISTING CMP AND MTS ROUTES AND LEVELS OF SERVICE - BY SEGMENT**

| CMP System Routes | From | To | LOS Standard[a] | Standard Violated? | Year 2000 LOS F Locations (PM) |
|---|---|---|---|---|---|
| I-80 | Albany City Limits | Emeryville City Limits | E/F[c] | No | Both directions between University Ave. and Emeryville City limits |
| SR 13 (Ashby) | I-80 | Tunnel Road | E/F[d] | No | Eastbound between College Ave. and Domingo Ave. |
| SR 13 (Tunnel) | Ashby | Oakland City Limit | E | No | |
| SR 123 (San Pablo) | Contra Costa County Line | Emeryville City Limit | E | Yes | Northbound from Allston Way to University Ave. [e] |
| University | I-80 | Shattuck | E | No | Westbound between SR 123 and 6th Street |
| Shattuck | University | Derby | E | Yes | Northbound from Allston Way to University Ave. |
| Adeline | Derby | Martin Luther King, Jr. | E | Yes | Southbound between Martin Luther King Jr. Way (north) to Martin Luther King Jr. Way (south) |
| Martin Luther King, Jr. | Adeline | Oakland City Limit | E | No | |

| **MTS Routes** | **From** | **To** |
|---|---|---|
| Solano | Albany City Limits | Sutter |
| Sutter | Solano | Henry |
| Henry | Sutter | Shattuck Place |
| Shattuck Place | Henry | Shattuck |
| Shattuck | Shattuck Place | University |
| The Alameda | Solano | Martin Luther King, Jr. |
| Martin Luther King, Jr. | The Alameda | Adeline |
| Gilman | I-80 | Hopkins |
| Hopkins | Gilman | Sacramento |
| Sacramento | Hopkins | SR 123 |
| Sixth | University | Dwight |
| Seventh | Dwight | SR 13 |
| Dwight | Sixth | Telegraph |
| Telegraph | Bancroft | Oakland City Limits |
| Bancroft | Telegraph | Shattuck |

[a] Source: 1999 Alameda County Congestion Management Program
[b] Source: 2000 Level of Service Monitoring on the Alameda County CMP Network
[c] Standard is F for both directions in Berkeley, except for westbound east of University.

[d] Standard is F for the following segments: westbound between Telegraph and Martin Luther King, Jr., and eastbound between College and Domingo.
[e] Highlighted links exceeded the LOS standard.
Source: 1999 Alameda County Congestion Management Program, and 2000 Monitoring Report, Alameda County CMA..

**Table IV.D-3**
**COMMUTE PATTERNS OF BERKELEY RESIDENTS AND UC STUDENTS, FACULTY AND STAFF**

| Commute Mode | Berkeley Employed Residents [a] (Approx. 56,000) (1990) | Alameda County [b] (1990) | UC Berkeley Students (Approx. 29,797) (1994) | UC Berkeley Faculty (Approx. 1,759) (1994) | UC Berkeley Staff (Approx. 7,698) (1994) |
|---|---|---|---|---|---|
| Walk | 17% | 4% | 52% | 13% | 14% |
| Bike | 6% | 1% | 17% [c] | 10% [c] | 9% [c] |
| Public Transit | 15% | 10% | 15% | 12% | 19% |
| Automobile | 55% | 80% | 16% | 65% | 58% |

[a] Includes large numbers of UC students and staff and 6 percent work at home.
[b] Includes 4 percent work at home.
[c] Includes motorcycles.

Source: 1990 Census; Campus Parking Study, UC Berkeley, 1998

**Table IV.D-4**
**COMMUTE PATTERNS OF BERKELEY RESIDENTS AND WORKERS (1990)**

| | Drive Alone | Walk, Bike, BART, Bus, Carpool |
|---|---|---|
| Live and Work in Berkeley | 36% | 64% |
| Live in Berkeley, Work outside Berkeley | 59% | 41% |
| Live outside Berkeley, work in Berkeley | 65% | 35% |
| Live and Work outside Berkeley (Bay Area-wide) | 71% | 29% |

Source: 1990 Census

garage ranges from $45 to $115 depending on location. Furthermore, spaces are not always available. Daily parking rates range from $5 to $12.

The City has implemented a number of programs in the past 15 years, many focused on the Downtown, to implement the goals of convenient parking for Berkeley residents at their homes, adequate parking for short-term visitors to commercial areas, and restricted parking for commuters. These programs are described below.

- The City=s Resident Permit Parking (RPP) program established zones surrounding Downtown, the University, Alta Bates Hospital and the North Berkeley and Ashby BART Stations. Residents buy permits to park on the street; non-resident parking is limited to two hours. The RPP Program has generally been successful in improving parking availability for residents, although some residents are unhappy at having to pay for the right to park on the street. Some neighborhoods have complained that a two-hour restriction is not short enough to discourage students or shoppers from parking in the neighborhood. Some residents of other neighborhoods, especially those very near the University, would like the hours of RPP restrictions (now 9 AM to 7 PM) to be extended to prevent those people taking night classes from parking in the neighborhood. Recently there have been increasing complaints in the neighborhood about the enforcement of the RPP program. Concerns about inadequate enforcement of the program have been voiced consistently in the neighborhoods surrounding the University and Downtown.
- Parking meters (more than 3,700) have been installed in virtually every commercial district to discourage all-day use of on-street parking by commuters and to provide a source of revenue.
- Parking rates in City lots and garages have been increased for all-day parking, and reserved spaces designated at low rates for shoppers who stay two hours or less in City garages.
- Free parking has been eliminated or restricted for many central Berkeley employees, including many University and City of Berkeley employees.

Outside central Berkeley, parking restrictions have not been systematically instituted. In West Berkeley, for instance, most employers still provide free parking if space is available, few parking meters have been installed, and RPP zones have not been established. However, the recent rapid growth of retail and office uses in West Berkeley has placed demands on parking facilities that were originally created to serve relatively low-intensity industrial uses. The City continues to study the complex relationship between parking supply and demand, and its effects on mode choice by commuters, local employees and students, particularly in the most critical areas of Downtown, west Berkeley, and the Southside. Balancing the need for adequate parking with the desire to minimize traffic congestion and impacts to the pedestrian and bicycle environments continues to be a public policy question of great public interest in Berkeley.

d0 Transit and Paratransit Services. The City of Berkeley does not run its own principal scheduled public transportation system. Bus service is primarily provided by AC Transit and rapid rail transit is provided by Bay Area Rapid Transit (BART). The transit system in Berkeley includes three BART stations; 17 bus lines; a stop for trains traveling between Sacramento, San Jose and beyond; and an assortment of other kinds of publicly and privately funded transit services; including employer shuttles, taxis, van service for the elderly, vans for the disabled, and school buses. Berkeley has one of the three lowest rates of vehicle ownership in the Bay Area **B** behind San Francisco, but virtually tied with Oakland. Each major transit provider is described below.

(1) AC Transit. Berkeley=s bus service is provided by AC Transit. Since 1977, the transit district has reorganized its routes to put transit service within walking distance ( **3** mile) of nearly every resident, commuter, and student in the City. All of the 17 local AC Transit bus lines in Berkeley connect with a BART station, and are equipped with wheelchair lifts. AC Transit has adopted a $45 fare program which encourages monthly passes. Tickets and passes for both buses and BART are sold in some supermarkets and the Berkeley Transit Rides and Parking (TRiP) office, the City-sponsored commute store, which is located a half block from the Downtown Berkeley BART station (described in more detail below under 1.f., Transportation Demand Management).

Starting in 1999, a class pass gives all U.C. Berkeley students unlimited rides on AC Transit for $18 per semester. The fee is paid with registration, so the pass is automatically available to all students. Over 21,000 students have acquired class passes.

In the year 2000, the passage of Alameda County Measure B continued and it increased transportation funding for the County, including anticipated increases in AC Transit funding. The Alameda County Transportation Authority is currently preparing an expenditure plan which is expected to include funding for increased service on many of Berkeley=s routes.

Table IV.D-5 summarizes the average passenger load during the AM and PM peak hours for each of the AC Transit bus lines. Lines 40, 43 and 51 which run through Berkeley, are ranked by AC Transit among the top five busiest bus routes in the system, and have the highest number of weekday boardings.

(2) BART (Bay Area Rapid Transit). Berkeley=s three BART stations are located at Center Street and Shattuck Avenue (Downtown Berkeley), Adeline Street and

Ashby Avenue (Ashby), and Sacramento Street and Delaware Street (North Berkeley).[2] Table IV.D-6 presents 1995 average load factors[3] for BART routes during the peak hours.[4] The 1995 data was the last available load factor data

[2] Note that Atrips@ are only one way B the 35,000 trips represent at least 17,500 people using BART in Berkeley daily.

[3] ALoad factor@ represents a ratio of passengers to seating capacity for each BART train. A load factor of 1.01 would indicate that maximum seating capacity has been reached.

[4] About 34,000 individual trips go through the turnstiles of Berkeley=s three BART stations each day.

## Table IV.D-5
## AC TRANSIT BUS LINES
## AVERAGE PASSENGER LOAD DURING AM AND PM PEAK HOURS[a]

| Bus Line | | Average Number of Passengers/[b] Load Factor During AM Peak[c] | Average Number of Passengers/ Load Factor During PM Peak[d,e] |
|---|---|---|---|
| 6 | Eastbound | 3 / 0.11 | 6 / 0.19 |
| | Westbound | 8 / 0.25 | 5 / 0.16 |
| 7 | Northbound | 9 / 0.31 | 14 / 0.47 |
| | Southbound | 10 / 0.33 | 12 / 0.40 |
| 8 | Northbound | 2 / 0.13 | 6 / 0.46 |
| | Southbound | 4 / 0.30 | 2 / 0.13 |
| 9 | Eastbound | 8 / 0.66 | 4 / 0.30 |
| | Westbound | 3 / 0.24 | 6 / 0.50 |
| 15 | Eastbound | 11 / 0.24 | 9 / 0.19 |
| | Westbound | 14 / 0.29 | 7 / 0.15 |
| 17 | Eastbound | 15 / 0.50 | 3 / 0.10 |
| | Westbound | 2 / 0.08 | 2 / 0.10 |
| 40 | Northbound | 20 / 0.49 | 11 / 0.27 |
| | Southbound | 8 / 0.20 | 11 / 0.27 |
| 43 | Northbound | 14 / 0.36 | 13 / 0.34 |
| | Southbound | 12 / 0.29 | 13 / 0.32 |
| 51 | Southbound | 14 / 0.35 | 10 / 0.26 |
| | Northbound | 15 / 0.37 | 14 / 0.36 |
| 52 | Northbound | 1 / 0.01 | 10 / 0.85 |
| | Southbound | 5 / 0.42 | 2 / 0.17 |
| 52L | Northbound | 1 / 0.03 | 7 / 0.17 |
| | Southbound | 13 / 0.33 | 3 / 0.06 |
| 64 | Eastbound | 6 / 0.14 | 15 / 0.35 |
| | Westbound | 12 / 0.28 | 6 / 0.13 |
| 65 | Eastbound | 4 / 0.14 | 8 / 0.26 |
| | Westbound | 5 / 0.17 | 4 / 0.14 |
| 67 | Northbound | 2 / 0.19 | 1 / 0.11 |
| | Southbound | 1 / 0.08 | 3 / 0.24 |
| 72 | Northbound | 16 / 0.40 | 18 / 0.45 |
| | Southbound | 4 / 0.11 | 22 / 0.54 |
| 73 | Northbound | NA / NA | 15 / 0.37 |
| | Southbound | | 13 / 0.32 |
| | | 16 / 0.41 | |
| 88 | Northbound | 11 / 0.26 | 5 / 0.12 |
| | Southbound | 8 / 0.19 | 9 / 0.21 |

[a] Data collected from a system-wide study conducted between fall 1997 and spring 1998.
[b] Data reflects the average number of on-board passengers for the entire segment of each bus line.
[c] AM Peak Hours between 7:00 AM and 9:00 AM.

[d] PM Peak Hours between 4:00 PM and 6:00 PM.

[e] ALoad factor@ represents a ratio of passengers to seating capacity for each bus. A load factor of 1.01 would indicate that maximum seating capacity has been reached.

Source: AC Transit Research and Planning Department, 1999.

**Table IV.D-6**
**BAY AREA RAPID TRANSIT ROUTES**
**AVERAGE PASSENGER LOAD DURING AM AND PM PEAK HOURS[a]**

| BART Route | AM Peak Load Factor[b] | PM Peak Load Factor |
|---|---|---|
| Concord to Daly City | 1.20 | 1.29 |
| Richmond to Daly City | 1.14 | 1.22 |
| Fremont to Richmond | N/A | 0.48 |

[a] Data collected from April to June 1995 during the peak hour.
[b] Load factors based on representative weekday data for ridership and train operations (for all peak period trains at their maximum load points).

Source: Fehr & Peers, 2000.

collected by BART. The data indicate that the Richmond/Daly City line was operating at load factors greater than 1.0 during the AM and PM peak periods. BART staff indicated that load factors can typically reach 1.3 or higher before practical operating capacity is reached, since load factors are calculated using available seating and BART trains can accommodate standing passengers during peak hours.

November 2000 ridership data indicates slightly higher ridership of BART than in 1995: about 22,500 entries/exits at the Downtown station, 7,700 at the North Berkeley station, and 8,800 at the Ashby station. In Downtown Berkeley, BART=s heaviest use is by commuters and UC students. Inbound peak hour commute trips represent more than half the daily traffic at this station.

Access to the stations is BART=s principal problem. Potential increased ridership from the North Berkeley and Ashby Stations is limited by low housing densities within walking distance of the stations and an unwillingness on the part of the City and the neighborhoods to encourage commuters to drive to BART stations. The City has opposed major expansions of BART parking lots and has also installed residential permit parking along some streets close to the Ashby and North Berkeley stations.

(3) Shuttle Services. BART and AC Transit are supplemented by several privately operated shuttle services, including the University=s campus shuttle and various employee shuttles including ones to and from Lawrence Berkeley Laboratory, Alta Bates and Herrick Hospitals, and Bayer and other West Berkeley employers. Some shuttles run from BART stations and others run from peripheral parking lots. The University=s shuttle system is the most extensive and carries nearly half a million passengers a year. The UC Shuttle is available to the public for a cost of $0.25.

(4) Paratransit. The City of Berkeley runs its own Aparatransit@ or Aalongside transit@ system. This system consists of two parts: 1) a program of substantial fare subsidies for the disabled and frail elderly who use privately-operated disabled access vans and taxis; and 2) senior vans. The disabled and frail elderly program subsidizes 1,500 clients annually, many of whom would not otherwise be able to travel. The City=s three senior vans are in operation from 8:00 AM to 5:00 PM everyday. These vans take seniors on request to and from the City=s three senior centers, to the doctor, and to the grocery store.

e0 Pedestrian and Bicycle Circulation.

(1) Pedestrian Circulation. The density of development, the proximity of many residential neighborhoods to commercial corridors, the presence of sidewalks on most streets, the City=s grid street network and relatively closely-spaced traffic controlled intersections all facilitate pedestrian circulation in the City. Some streets (Shattuck Avenue in the Downtown, Telegraph Avenue near the University) have widened sidewalks, landscaping and/or other pedestrian amenities which encourage walking trips. Other areas of the City, such as some parts of West Berkeley and the hills have no sidewalks and/or a lack of pedestrian amenities, which, in combination with lower densities in these areas makes walking a less attractive travel mode.

City-wide, walking is an important travel mode in Berkeley. In addition to shopping, school, recreational and entertainment walking trips, walking accounts for 17 percent of the commute trips of Berkeley=s employed residents. Figure IV.D-4 shows the total peak hour pedestrian crossing volume at many Berkeley intersections (from counts conducted in 1994). The City has recognized that improvements to the pedestrian circulation system are needed, particularly in the areas of safety, disabled access, and hill area pathway improvements.

(2) Bicycle Circulation. Berkeley has a high rate of bicycling compared to Alameda County as a whole, with about 5 percent of Berkeley=s employed residents regularly commuting to work by bicycle, compared to 1 percent for all of Alameda County. Figure IV.D-5 shows the total peak hour bicycle volume at many Berkeley intersections, from counts conducted in 1994.

Certain aspects of the City=s layout, such as the grid street network and the neighborhood automobile traffic diversion system, enhance bicycle mobility. Other aspects detract from bicycling safety and convenience, such as high traffic volumes and speeds on major arterials, topography, the physical condition of some roadways, one-way streets, and the lack of safe access to the waterfront.

Figure IV.D-4 Pedestrian Volumes 1994 8x11

Figure IV.D-5 Bicycle Volumes 1994 8x11

The *Berkeley Bicycle Plan,* which details recommended improvements to the bicycle circulation system and strategies to promote bicycling and provide a safe bicycling environment, was adopted in April 2000. The Plan includes an updated network of Class I, II, and III bikeways, as well as Abike boulevards@ which are intended to provide enhanced on-street bicycling service, and Class 2.5 routes, which are intended to improve lowest-level Abike route@ classification, using strategic street improvements where feasible. The City Council has directed that the Plan be incorporated into the Circulation Element of the *Draft General Plan*, although the associated work program will be a separate document from the *Draft General Plan*. The *Draft Bicycle Master Plan* is further described below in Section 2, Impacts and Mitigation Measures.

(3) Pedestrian and Bicycle Safety. In March 2000, the City of Berkeley Bicycle and Pedestrian Safety Task Force prepared an extensive evaluation and made recommendations to improve dangerous intersections. The majority of reported pedestrian accidents take place within a one-quarter mile radius of a school. In the Downtown area, a disproportionate number of pedestrian collisions involve victims in the 18-24 age group. On Ashby Avenue, a disproportionate number of pedestrian collisions involve victims in the 5-9 age group, and a disproportionate number of bicycle accidents include victims in the 18-24 age group. Table IV-D.7 presents the intersections with the highest pedestrian and bicycle accidents.

f0 Transportation Demand Management. Transportation Demand Management (TDM) programs attempt to reduce the demand for transportation facilities, especially roads and highways. Transportation demand management consists of two kinds of strategies: incentives to encourage people to use travel modes other than the automobile (by making a transit use, bicycling, and walking, cheap, easy, and fast); and disincentives to discourage people from using the auto (by making automobile travel relatively expensive, difficult, and time-consuming).

Over the past 15 years, Berkeley has implemented a number of programs and policies which when taken as a whole, serve as the City=s TDM program. Many aspects of this *de facto* TDM program are inherent in the City=s policies concerning specific aspects of transportation. For example, the implementation of the policy against street widening acts as a disincentive to driving, and Berkeley=s design review policies and street tree planting programs are incentives for walking.

The City and the University jointly fund Berkeley TRiP, a storefront operation selling transit tickets and passes, and providing transit, carpooling and biking information to the Downtown and University communities. In 1998-99, Berkeley TRiP handled over 164,000 transactions, an 85 percent increase over nine years. Berkeley community members accounted for 88 percent of all transactions, and UC

**Table IV.D-7**
**INTERSECTIONS WITH HIGHEST PEDESTRIAN AND BICYCLE COMBINED COLLISIONS (1994-1998)**

| Intersection | Combined Pedestrian and Bicycle Collisions |
|---|---|
| Shattuck/University | 29 |
| Durant/Telegraph | 15 |
| Ashby/Sacramento; Oxford/University; and Gilman/San Pablo (tied). | 13 each |
| Allston/Shattuck; Ashby/MLK; San Pablo/University; and Bancroft/Bowditch (tied). | 12 each |
| Ashby/San Pablo; Bancroft/Dana; College/Russell; Hearst/Oxford; Milvia/University; and MLK/University (tied). | 11 each |

Source: City of Berkeley, 2000.

students/Staff and City of Berkeley employees accounted for 12 percent of transactions.

The City also supported the development of a ATransportation Management Association@ (TMA) in West Berkeley. (A TMA is a voluntary organization of employers and businesses working together to solve transportation problems.) The Berkeley Gateway TMA administers a commute-hour shuttle service from Ashby BART to West Berkeley employers.

g. Rail Operations. The Union Pacific railroad mainline runs through West Berkeley with approximately 26 Amtrak passenger trains and 23 local and through freight trains running daily. Although Berkeley has no train station, there is a platform where Amtrak stops, at the intersection of Second Street and University Avenue. Train movements have a minimal effect on traffic in the West Berkeley area, except at Gilman Street and Hearst Avenue, where peak hour trains close the at-grade railroad crossing and occasionally cause significant delays for cross-traffic. Rail passenger service from West Berkeley connects to the Capitol Route that runs from San Jose through Oakland, Sacramento and then Reno. There are also rail connections through Berkeley to San Francisco and the San Joaquin Valley.

h. Regulatory Setting.

(1 Caltrans. The California Department of Transportation (Caltrans) is responsible for the maintenance and operation of state routes and highways. In Berkeley, Caltrans= facilities include State Route 13 (Ashby Avenue/Tunnel Road), State Route 123 (San Pablo Avenue), and I-80. Caltrans maintains a volume monitoring

program and reviews local agencies= planning documents (such as this EIR) to assist in their forecasting of future volumes and congestion points.

(2 Alameda County Congestion Management Agency. As part of Propositions 108 and 111, approved by the voters in 1990, urban counties must designate a Congestion Management Agency (CMA) to develop and maintain a County CMP and to monitor its progress. The legislation establishing this program requires that the CMAs perform the following functions:

- $ Review the performance of the transportation system by designating both a network of transportation facilities to be monitored for congestion (the CMP Designated Network) and a set of service standards and performance measures for all modes of travel, for that network.
- $ Promote the use of alternative modes through TDM measures.
- $ Analyze the impacts of local land use decisions on the regional transportation system, including an estimate of costs associated with impact mitigation.
- $ Prepare a seven-year investment strategy, the Capital Improvement Program (CIP), to support CMP goals, and link project eligibility for regional and state funding to this CIP.
- $ Use a computerized travel demand model and a uniform database for estimating future transportation needs and impacts.[5]

The Alameda County CMA has designated a countywide CMP network of regionally-significant roadway facilities that will be monitored for congestion levels and adherence to service standards. In addition, the federal Intermodal Surface Transportation Efficiency Act (ISTEA) of 1991 required the designation of a Metropolitan Transportation System (MTS) including both highways and transit facilities. The CMP network is a subset of the MTS. As required by the CMA, this EIR addresses potential impacts on the CMP network, as well as impacts on the larger MTS network.

Under the oversight of the CMA, potential impacts on these facilities must be assessed using the Countywide Transportation Demand Model for future years 2005 and 2020. Transit service must be assessed based on CMP service standards of 15-30 minute bus headways and 3.75-15 minute BART headways. The potential effectiveness of TDM measures must be considered in conjunction with proposed roadway and transit improvements. Finally, a financial program for all roadway and transit improvements proposed as mitigation measures must be developed to assure consistency with the CMA=s CIP.

---

[5] Alameda County Congestion Management Agency, 1999. *Alameda County Congestion Management Program.*

i. Draft General Plan Policies. The *Draft General Plan* contains policies related to transportation in the Transportation Element, as well as in the Land Use and Housing elements. The Transportation Element policies are not repeated here in order to make this document more streamlined, but for easy reference, a complete listing of the policies can be found in Appendix B. In addition to the policies of the Transportation Element, *Draft General Plan* policies related to Transportation include:

$ *Policy LU-9.* Prevent large non-residential traffic generating sources such as institutional and commercial uses from impacting residential areas.

$ *Policy LU-10.* Protect residential areas from institutional and commercial parking impacts with methods such as encouraging use of alternative modes of transportation and strictly enforcing residential parking permit regulations.

$ *Policy LU-11.* Ensure that neighborhoods are pedestrian and bicycle friendly with well maintained street trees, sidewalks and pathways.

$ *Policy LU-17.* Wherever possible, locate or relocate public and private institutional uses and community service centers that serve the entire City or have a regional-service orientation on major arterials so that they are accessible to public transportation and will not disrupt adjacent residential areas.

$ *Policy LU-18.* Implement the Downtown Plan and take actions to achieve the three goals of the Plan:

1. Express and enhance Berkeley's unique social and cultural character in the downtown;
2. Create an appealing and safe downtown environment, with a comfortable pedestrian orientation; and
3. Diversify, revitalize and promote the downtown economy.

$ *Policy LU-19.* Contract for an in-depth study of the relationship between types of parking-free new development and quantitative reduction in automobile utilization for work and other uses by residents and commercial users and how the findings relate to the establishment of Atransit oriented districts.@

***Alternative Policy LU-19***

Eliminate existing parking requirements in the area of the Downtown and Southside that is south of University, east of Shattuck, north of Haste and West of College.

$ *Policy LU-20.* Consider waiving parking requirements for a development project in the Downtown area in order to test the impact of parking free development on the reduction of automobile use in Berkeley and its contribution to a public transit-oriented population.

***Alternative Policy LU-20A***
Consider waiving parking requirements in the area of the Downtown between the University, Haste, Oxford, and Shattuck for a period of three years to test the impact of parking free development on automobile use.

***Alternative Policy LU-20B***
Designate the City=s Oxford parking lot as the site for pilot mixed-use development project that would waive Downtown Plan parking requirements in order to test the impact of parking free development on the reduction of automobile use in Berkeley and its contribution to a public transit-oriented population.

$ *Policy LU-21.* Develop the city-owned Oxford Street parking lot as a mixed-use development with affordable housing and with the replacement of the existing parking spaces as part of the project.

$ *Policy LU-26.* Ensure that new development does not adversely impact existing transportation facilities and services.

$ *Policy LU-29.* Maintain and improve Avenue Commercial areas including University, San Pablo, and South Berkeley as pedestrian-friendly, visually attractive areas of human scale and ensure that Avenue areas fully serve neighborhood needs as well as a broader spectrum of needs.

$ *Policy LU-31.* Implement the University Avenue Strategic Plan and take actions to achieve the six goals of the Plan:

1. Increase public safety for residents, merchants, and customers.
2. Revitalize the University Avenue corridor through appropriate economic development and housing.
3. Protect and improve neighborhood quality of life.
4. Encourage more pedestrian-oriented development and an appropriate mix of uses to improve neighborhood identity.
5. Enhance University Avenue as a gateway to the City, a series of neighborhoods, and the downtown.
6. Coordinate and enhance public transit systems, pedestrian access, and bicycle circulation.

$ *Policy LU-32.* Implement the South Shattuck Strategic Plan and take action to achieve the four objectives of the Plan:

1. Improve and create commercial and mixed-use development along South Shattuck.

2. Create and enhance the identity of the South Shattuck commercial corridor as a unique and pleasant district that complements adjacent residential neighborhoods.
3. Ensure that residential properties are used and maintained according to appropriate standards.
4. Make traffic improvements which complement economic development and urban design goals, encourage the use of alternatives to the automobile, and preserve the quality of life in residential neighborhoods.

$ *Policy LU-33.* Implement the South Berkeley Area Plan and take action to achieve the 55 goals of the Plan. (See Appendix A for a listing of South Berkeley Plan=s goals and policies.)

$ *Policy LU-34.* Implement the West Berkeley Plan and take actions that will achieve the three purposes of the Plan:

1. Maintain the full range of land uses and economic activities - residences, manufacturing, services, retailing and other activities - in West Berkeley.
2. Maintain the ethnic and economic diversity of West Berkeley's resident population.
3. Maintain and improve the quality of urban life - including environmental quality, public and private service availability, transit and transportation, and esthetic and physical qualities for West Berkeley residents and workers.

$ *Policy LU-39.* Reduce traffic impacts of the University on the citywide transportation.

$ *Policy H-15: Transit Oriented New Construction.* Encourage construction of new medium and high density housing on major transit corridors and in the Downtown consistent with the scale, character, and zoning of these areas.

$ *Policy H-31: University of California.* Urge the University of California to provide housing for at least 25% of its students at affordable prices and expand housing opportunities for students and staff.

The *Draft General Plan* Transportation Element also contains maps indicating vehicular, transit, bicycle and emergency evacuation circulation routes included in this section as Figures IV.D-6 through IV.D-9.

Figure IV.D-6 Vehicular Circulation Network 8x11

Figure IV.D-7 Bike Circulation Network 8x11

Figure IV.D-8 Transit Network 8x11

Figure IV.D-9 Emergency Network 8x11

## 2. Impacts and Mitigation Measures

a. Criteria of Significance. The *Draft General Plan* would be considered to have a significant effect on transportation if it would:

- $ Cause a substantial increase in traffic volume on a roadway segment projected to operate at LOS E or worse (v/c = 0.90) without the project (Asubstantial@ = 5 percent or more relative to future volumes without the project); or
- $ Cause a roadway volume to exceed the roadway=s capacity where it would not without the project;
- $ Result in inadequate emergency access;
- $ Result in inadequate parking supply suitably located to serve projected parking demand for new development;
- $ Conflict with local or regional policies or programs supporting alternative transportation;
- $ Create unsafe conditions for pedestrians or bicyclists; or
- $ Cause a substantial delay in transit service, or increase demand for transit beyond existing or planned service capacity.

b. Impacts and Mitigation Measures. This section describes potential impacts associated with transporation that would result from implementation of the *Draft General Plan* and suggests mitigation measures to address these issues. Less-than-significant transportation impacts are listed first, followed by significant impacts.

(1 Assumptions and Project Details Needed for the Transportation Impact Analysis. For purposes of transportation impact analysis, the *Draft General Plan* consists of:

- $ The set of objectives (listed in Chapter III, Project Description) and transportation related policies contained in the *Draft General Plan* Transportation Element and other elements;
- $ The maps indicating vehicular, transit, bicycle and emergency evacuation circulation routes contained in the *Draft General Plan* Transportation Element (included in this section as Figures IV.D-6 through IV.D-9);
- $ The household and employment changes projected as part of the *Draft General Plan,* as described in Section E of the Project Description.

(2) Traffic Analysis Methodology: the Alameda County CMA Countywide Travel Model. The traffic analysis was performed using the Alameda County Congestion Management Agency's Countywide Travel Model. The model version available at the time of the analysis (August 1999) was based on Projections '94 land use

data. For reference, tables showing the complete set of Berkeley Traffic Analysis Zones (TAZs) for the base year (1990), Year 2005 and Year 2020, without the *Draft General Plan* changes, are included in the Appendix C.

The household and employment changes associated with the *Draft General Plan* are also included in Appendix C, as Table C-1 (for the Year 2005) and Table C-2 (for the year 2020). The household and employment changes are listed by TAZ, and grouped into the various areas of the City. The changes represent the difference between what is currently assumed under the 1977 *Master Plan* (and thus in the CMA model), and what is proposed under the *Draft General Plan.*

Relative to the Countywide Travel Model assumptions for the City of Berkeley in the Year 2020, the land use changes proposed in the *Draft General Plan* represent an additional 1,986 residential units, 2,200 additional dormitory beds, and an additional 1,635 jobs. The 2005 or Anear term@ land use changes were derived from the 2020 projections using a straight-line trend assumption.

(3) Impacts and Mitigation Measures. The impacts of implementing the *Draft General Plan* policies on bicycle and pedestrian use, transit accessibility and use; parking availability, traffic flow and neighborhood traffic conditions, are identified and discussed below. The significance of each impact is related to the Criteria of Significance listed above.

*(a Pedestrian and Bicycle Use*. The *Draft General Plan* contains several policies promoting the enhancement and protection of pedestrian and bicycle facilities in the City. *Policies T-12, T-19, T-21, T-26,* and *T-41* through *T-52* all contain components which support and promote bicycle and pedestrian travel. Furthermore, the *Draft General Plan* has no policies which work against non-motorized travel, such as a mandate to improve the motorized circulation system to maintain a certain standard of service, even at the expense of bicyclists and pedestrians. With the incorporation of the recently adopted Berkeley Bicycle Plan, the *Draft General Plan* contains an interconnected bikeway system that includes ABicycle Boulevards,@ which will be the City=s primary bikeways and will have measures implemented to increase bicyclist safety and convenience. The *Draft General Plan* provides for the continuation and improvement of the existing high priority for bicyclists and pedestrians in the City. No impact is therefore identified for bicycle and pedestrian circulation.

*(b Transit Policies Impacts.*

**Impact TRN-1: The *Draft General Plan*=s policies calling for Atransit first@ (*T-4*), promoting light rail or surface rapid transit on City streets (*T-5*), promoting a multi-modal transportation impact evaluation methodology wherein traffic**

**impacts can be deemed mitigated through improvements to other modes (*T-19*) and promoting traffic calming on neighborhood streets (*T-21*), may result in significant traffic congestion impacts. (PS)**

The *Draft General Plan*=s 53 transportation policies seek to balance the service provided to all modes of travel, and to achieve traffic congestion relief not just through roadway capacity improvements (*Policies T-30* and *T-31*) but through strategic management of the City=s transportation systems and the travel demand of those who live or work in the City. However, certain policies, particularly those noted above (*Policies T-4, T-5, T-19* and *T-21*), have the potential to reduce roadway capacity or to add traffic to certain roadways. For example, lanes dedicated to buses or light rail would no longer be available for auto traffic (*Policies T-4* and *T-5*). Traffic calming efforts such as stop signs, speed humps and diverters often divert traffic to other neighborhood streets or already-well-used collectors and major streets (*Policy T-21*). The methodology for mitigating traffic impacts described in *Policy T-19* could result in shifts to alternative modes of transportation without a significant reduction in traffic volume.

It is important to note that Policy T-4 has been a City policy since 1994. This policy, and the other policies in the *Draft General Plan* are aggressive and forward-thinking, attempting to manage congestion by improving *transportation* service citywide, thus giving residents and employees real transportation alternatives from which to choose. A potential by-product of this approach, however, may be worsened traffic congestion, should the desired balance of services provided by all transportation modes not be achieved. This condition constitutes a potentially significant impact.

The three-part mitigation proposed below would reduce this impact to a less-than-significant level.

> <u>Mitigation Measure TRN-1a</u>: Revise *Policies T-4* and *T-5* to clarify that transit corridors would not be modified to reduce traffic capacity unless it can be demonstrated that either: (1) the modification would not cause an over-capacity condition; (2) sufficient capacity exists on acceptable parallel routes to absorb the over-capacity volume on the affected street; or (3) it is determined that the benefits of the project outweigh potential impacts on LOS.
>
> <u>Mitigation Measure TRN-1b</u>: Revise *Policy T-19* to ensure that such CEQA findings are supported by analysis which demonstrates that the transportation level of service in a given project=s study area does not significantly deteriorate. This mitigation, in effect, requires the development and definition of a Atransportation level of service@ which measures the level of service on all modes of travel in an aggregate, equitable way.

Mitigation Measure TRN-1c: Add an action to *Policy T-21* which requires the City to set traffic volume guidelines for all streets, to ensure that traffic calming strategies do not result in a significant deterioration of service on adjacent streets. (LTS)

*(c Transit Service Impact.*

**Impact TRN-2: The *Draft General Plan* growth, along with transportation policies relating to transit service accessibility and use (*Policies T-1* through *T-9*, and *T-19*), and the land use policies supporting transit (*Policies LU-17* through *LU-21*, *LU26*, *LU-31* through *LU-33*, and *LU-39*) could increase transit demand above the capacity currently being planned by transit agencies. (PS)**

The BART Richmond - Daly City line and certain AC Transit bus routes are currently operating with relatively high load factors, and substantial additional transit use could result in transit demand exceeding the service levels planned by the transit agencies. In particular, the BART Richmond - Daly City line is heavily used with standing room only during peak hours. The *Draft General Plan*=s Atransit first@ *Policy T-4* and related policies encouraging transit use listed above may increase transit ridership to a point where certain routes would require additional service or route modifications, particularly during peak hours.

*Draft General Plan* policies supporting regional and local efforts to improve public transportation, including increasing funding, (*Policies T-1* and *T-2*), and calling for a City transportation services fee to support public transportation improvements (*Policy T-6*), will provide support to the AC Transit and BART efforts to expand transit service in the City, and can potentially improve transit access and connectivity (through the various shuttle services, for example.) However, the City has a limited ability to directly affect the funding of these agencies, and the resulting level of service they can provide to the City. Therefore, the potential for these policies to produce a transit demand that exceeds the planned service levels is a potentially significant impact.

An estimate of the *Draft General Plan*=s impact on transit ridership was developed as follows. The PM peak hour vehicle trip generation is estimated by the CMA Countywide Travel Model at approximately 1,000 trips for 2005, and approximately 3,300 vehicle trips for 2020, relative to conditions in those years without *Draft General Plan* implementation. Total transit ridership can be estimated from these numbers using 1990 census information on the commute mode choice of Berkeley=s employed residents. The 1990 census showed that 7 percent of Berkeley=s employed residents used the bus to commute, and 8 percent of Berkeley=s employed residents used BART.[6] Since these

[6] Berkeley, City of, 1993. *Conditions, Trends and Issues.*

percentages reflect commute mode choice, and transit use is typically lower for non-work trips (which actually make up the majority of peak hour trips), a conservative estimate of transit=s share of total peak hour trip generation is 4 percent for bus use and 5 percent for BART use. Using these percentages, the *Draft General Plan* impact on bus use is estimated at 40 additional bus trips and 50 additional BART trips (for 2005), and 131 additional bus trips and 164 additional BART trips (for 2020). Table IV.D-8 shows the bus and BART trip calculations.

The additional transit travel demand would be distributed among the various bus routes and three BART stations in the City, as well as the Rockridge BART station in Oakland.

The estimated increases in bus travel demand, 131 peak hour trips by 2020, would not trigger an over-capacity condition on the AC Transit routes which serve the City, as there is substantial available capacity to accommodate additional demand on most AC Transit routes in Berkeley (see Table IV.D-5).

On the primary BART line serving Berkeley, Richmond to Daly City, the peak direction load factors were 1.14 (AM) and 1.22 (PM) in 1995 (the latest load factor data available from BART) showing that this line is already operating over capacity. However, BART staff indicated that load factors can typically reach 1.3 or higher before practical operating capacity is reached, since load factors are calculated using available seating and BART trains can accommodate standing passengers during peak hours.[7] The estimated PM peak hour BART trip increase without *Draft General Plan* implementation is 321 trips (in 2020), and with *Draft General Plan* implementation the estimate increases to 485 trips, an increase of 164 trips. Relative to the 1995 PM peak hour passenger totals on the Richmond/Daly City line in 1995 (3,952 passengers), these increases constitute about 8 percent (without *Draft General Plan* implementation) and 12 percent (with *Draft General Plan* implementation).

Additional ridership growth would also be expected from other communities along the line, increasing the load factors further. It is clear that, over time, increasing ridership on the primary line serving Berkeley (Richmond/Daly City) will eventually

[7] Note that BART no longer calculates load factors when it collects new ridership information. Newly available Year 2000 ridership numbers indicate ridership is up from the 1995 levels. In November 2000, the Downtown BART Station had 22,500 entries/exits (average weekday), the North Berkeley station had 7,700, and the Ashby station had 8,800.

**Table IV.D-8**
**TRANSIT TRIP GENERATION ESTIMATES**

| | 2005 | | | 2020 | | |
|---|---|---|---|---|---|---|
| | W/o General Plan | With General Plan | Change | W/o General Plan | With General Plan | Chang e |
| Vehicle Trip Generation Change from 1990 | 5,374 | 6,372 | 998 | 6,415 | 9,701 | 3,286 |
| Estimated Bus Trips | 215 | 255 | 40 | 257 | 388 | 131 |
| Estimated BART Trips | 430 | 510 | 80 | 321 | 485 | 164 |
| Estimated Bus Percent of Total Peak Hour Trip Generation | 4% | | | 4% | | |
| Estimated BART Percent of Total Peak Hour Trip Generation | 5% | | | 5% | | |

Source: Fehr & Peers Inc., 1999.

require the addition of capacity in the form of additional trains, longer trains, or other efficiency measures developed by BART.

BART has drafted a strategic plan to help address projected increased demand for transit as part of regional growth. The *BART Strategic Plan* contains several goals which are consistent with the City=s desire to maximize transit service and use. The *Draft General Plan* supports BART=s ongoing mission to serve regional travel to and through Berkeley, through *Draft General Plan Policies T-1, T-2, and T-4.*

> Mitigation Measure TRN-2a: The City will work with AC Transit staff to monitor ridership levels and develop mutually beneficial route and service changes when necessary to maintain adequate service levels.

> Mitigation Measure TRN-2b: The City will pursue adoption of a transportation Impact Fee (*Policy T-6*) after *Draft General Plan* adoption.

> Mitigation Measure TRN-2c: The City will work with AC Transit to pursue an eco-pass program (*Policy T-3*) that will support additional ridership and be financially feasible for both the City and AC Transit.

Mitigation Measure TRN-2d: The City will work with BART to monitor BART ridership at the three Berkeley BART stations and advocate for additional County, State and Federal funding to support increased service. (LTS)

*(d Parking Impact*.

**Impact TRN-3: Implementation of *Draft General Plan* policies relating to parking provision, parking demand management, and parking impact evaluation may result in parking demand exceeding the available supply in one or more areas of the City and could impact transit services and surrounding residential neighborhoods. (PS)**

*Draft General Plan Policies T-11, T-17, T-32* through *T-38, LU-10, LU-19, LU-20,* and *LU-39* collectively promote a parking management strategy that seeks to minimize provision of long-term (all-day) parking, move long-term parking to satellite locations where possible, and reduce long-term parking demand through pricing increases (i.e., to make transit competitive). The policies are designed to work with policies promoting transit use, bicycling, and walking as viable alternatives to the automobile, so that limited or no growth in the parking supply is accompanied by a a stable or reduced parking demand. The particular proposals in *Policies LU-19* and *LU-20,* to consider and test the concept of parking-free development, would provide a direct measure of the elasticity of parking supply and demand. That is, it would answer the question: how well does reducing or eliminating a local source of parking actually reduce parking demand?

Many studies have been done on the elasticity of the parking supply/demand relationship, and these studies have shown that reducing parking supply or increasing pricing can be quite effective in reducing demand, given the right set of circumstances. Factors such as the total travel demand in the City, coverage and frequency of transit service, the distribution of major traffic generators within the City, the types of employers in the City, and the distribution of travellers= origins and destinations are some of the variables which greatly affect the elasticity. *Policies LU-19* and *LU-20* call for the City to study and test this phenomenon on a relatively small scale. However, the City=s current parking occupancy levels, particularly in the Downtown and Southside areas, may be pushed to over-capacity if the local conditions do not support the hoped-for result. Additionally, implementation of these policies could impact the neighborhoods surrounding these areas if residents, shoppers and workers cannot find parking spaces near their destinations.

*Policy T-39* establishes new local thresholds for determining significant impacts. *Policy T-39* states that, the parking impact of projects with below-standard or no parking should be deemed less than significant for CEQA purposes, based on the elasticity concept and the overriding desire to reduce traffic growth.

Mitigation Measure TRN-3 would reduce the impacts of policies which have the potential to create a parking deficit in one or more areas of the City.

> <u>Mitigation Measure TRN-3</u>: Prior to approval of any new development or zoning amendment that would allow car-free development, the City shall analyze the proposed project or zoning amendment to evaluate whether it would have an adverse impact on transit services or parking. (LTS)

*(e Traffic Impacts*. The following discussion describes the traffic impacts of the land uses in the *Draft General Plan*. This section begins with a brief summary of the methods used, followed by impact statements for the year 2005 and 2020. The Year 2005 analysis is required by the Alameda County Congestion Management Agency.

*Methodology*. The traffic impact analysis was performed on a link (roadway segment) basis using the Alameda County Congestion Management Agency=s Countywide Travel Model, for the near-term case (2005) and the long-term, or cumulative, case (2020). As previously noted, the model runs were performed using the version available in August 1999. In both cases, the model capacity assumptions and future traffic projections (without the Project) were carefully reviewed to ensure that Berkeley traffic conditions were accurately projected. As noted in the Setting section, the model=s roadway capacity assumptions appear accurate for most major streets in Berkeley, based on rough estimates using the Highway Capacity Manual methodology for arterial capacity calculations and also on a review of actual prevailing conditions. The traffic projections, however, needed adjusting to account for instances where the model under- or over-predicts volumes on City streets. This kind of adjustment is often needed when a regional, county-wide model is used to project volumes on a City street network.[8]

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[8] The volume adjustments were accomplished by taking the model=s future projections (before the Project land use changes were made), subtracting out the model=s 1990 volume, and then adding a fraction of that growth increment to the counts available from the past five years. The fraction is based on the year of the available count, as shown below (using a 1997 count as an example):

Adjusted 2020 volume = 1997 count + [(2020 model volume **B** 1990 model volume) x F]
F = (2020 **B** 1997) / (2020 **B** 1990)

In this way, the model=s future projections can be corrected using actual recent count data.

The Project impact on the roadways was calculated by running two assignments of the zones for which the Project proposes changes: one run with the changes, and one run without the changes. The resulting difference between the roadway volumes for the two runs is the Project impact. This method is superior to running a full model assignment of all zones, because the distribution and assignment process can sometimes result in a substantial re-distribution of traffic with relatively small land use changes. By limiting the runs to only those zones affected by the Project, the effect of the Project on actual traffic volume changes can be better realized.

The trip generation of the land use adjustments, as calculated by the model, is approximately 3,286 trip ends (year 2020). This compares to a total trip generation for all Berkeley zones of 63,979 trip ends (year 2020 without implementation of the *Draft General Plan*). Thus, the *Draft General Plan* would increase trip generation throughout the City by approximately 5.1 percent, relative to the condition without implementation of the *Draft General Plan*. It should be noted that the analysis is somewhat conservative in that the 2,200 dormitory beds were represented as fractions of typical households, using a (1.0 person [one bed]/2.6 persons [typical household]) ratio. Realistically, dormitory residents probably generate fewer vehicle trips than this assumption implies as many dorm residents are students without private vehicles. As modeled, the dorm component of the *Draft General Plan* would generate about 25 percent of the total trips generated by the proposed land use changes. If the dorm rooms are discounted from the trip generation figures, then the total trip generation of the *Draft General Plan* is estimated at 2,465 trips or a 3.9 percent increase. For the purpose of evaluating the *Draft General Plan* impacts, the more conservative 5.1 percent increase is being used.

*Analysis Results.* Tables AC-2 and AC-3 in Appendix C show the existing and projected directional roadway volumes, for the years 2005 and 2020, respectively, for the major streets throughout the City. Tables AC-4 and AC-5 in Appendix C calculate the *Draft General Plan* impacts in terms of the two significance criteria, stated below, that relate to traffic operations:

"The *Draft General Plan* would be considered to have a significant effect on transportation if it would:

- $ Cause a substantial increase in traffic volume on a roadway segment projected to operate at LOS E or worse (v/c = 0.90) without the project (Asubstantial@ = 5 percent or more relative to future volumes without the project); or
- $ Cause a roadway volume to exceed the roadway=s capacity where it would not without the project."

Tables AD-4 and AD-5in Appendix C compare the Future With Plan case to both (1) Existing Conditions (based on counts conducted between 1994 and 1999 at locations throughout the City), and (2) Future Without Plan conditions (i.e., the 1977 *Master Plan* policies would continue to operate).

Tables IV.D-9 through IV.D-12 summarize the significant impacts identified by this analysis.

**<u>Impact TRN-4</u>: Year 2005: Relative to existing conditions, the *Draft General Plan* would produce significant impacts on five Berkeley streets (10 street segments) in**

**the year 2005, including sections of Gilman Street, Martin Luther King, Jr. Way, Ashby Avenue, and Dwight Way (refer to Table IV.D-9). When measured relative to the 2005 Without Plan case, only two of the street segments would be significantly impacted (refer to Table IV.D-10).**

**Year 2020: Relative to existing conditions, the *Draft General Plan* would produce significant impacts on 11 Berkeley streets (26 street segments) in the year 2020, including sections of Adeline Street, Alcatraz Avenue, Ashby Avenue, Bancroft Way, Cedar Street, Dwight Way, Gilman Street, Martin Luther King, Jr. Way, and Oxford Street (refer to Table IV.D-11). When measured relative to the 2020 Without Plan case, 11 of the street segments would be significantly impacted (refer to Table IV.D-12.) (PS)**

For the Year 2005 case, four of the significantly impacted street segments are part of the CMP Designated Network, and the other six are part of the Metropolitan Transportation System. As noted above, when comparing the 2005 Without Plan case to the 2005 With Plan case, only two of the segments show significant impacts. Thus, for the other eight, conditions are projected to be essentially the same in 2005, regardless of whether the *Draft General Plan* is implemented.

For the Year 2020 case, 12 of the significantly impacted street segments are part of the CMP Designated Network, and another nine are part of the Metropolitan Transportation System. When comparing the 2020 Without Plan case to the 2020 With Plan case, 11 of the 26 segments show significant impacts. Thus, for the other 15, conditions are projected to be essentially the same in 2020, regardless of whether the *Draft General Plan* is implemented.

The impacts identified in Tables IV.D-9 through IV.D-12 could potentially be reduced through signal operations improvements, signal coordination, spot capacity improvements where feasible, and travel demand reduction efforts. However, since congestion levels on these roadway segments are in many cases either already near capacity, or are projected to be near capacity under the 1977 *Master Plan* (i.e. the 2005 Without Plan case), the effects of these mitigation efforts would not necessarily completely eliminate the impacts, or reduce them to less-than-significant levels.

The CMA requires a Deficiency Plan to be prepared when a CMP facility is shown, through annual monitoring, to fall below its LOS standard. If the deficiencies predicted in Tables IV.D-9 through IV.D-12 occur during the implementation of the *Draft General Plan,* the City would be required to prepare a Deficiency Plan in coordination with the CMA, Caltrans and other affected agencies (such as AC Transit and BART). As outlined in the 1999 Draft Congestion Management Program, the Deficiency Plan must include the following components:

- Identification and analysis of the causes of the deficiency.
- A list of improvements necessary for the deficient segment or intersection to maintain the minimum level of service otherwise required and the estimated costs of the improvements.

## Table IV.D-9
## 2005 TRAFFIC IMPACTS RELATIVE TO EXISTING CONDITIONS

| Street | Direction | Cross-Street | V/C (No Project) | V/C or Percent Volume Increase (With Project) | CMP/MTS? |
|---|---|---|---|---|---|
| **A. Capacity Impacts**[a] | | | | **V/C** | |
| Gilman | Eastbound | I-80 EB Ramp | 0.83 | 1.00 | MTS |
| Gilman | Westbound | I-80 EB Ramp | 0.90 | 1.06 | MTS |
| Martin Luther King, Jr. | Southbound | Adeline | 0.97 | 1.12 | CMP |
| Martin Luther King, Jr. | Southbound | Ashby | 0.96 | 1.13 | MTS |
| Martin Luther King, Jr. | Northbound | University | 0.93 | 1.01 | MTS |
| **B. Volume Increase Impacts**[b] | | | | **Percent Increase** | |
| Ashby | Westbound | San Pablo | 1.24 | 13.0 | CMP |
| Ashby | Westbound | Seventh | 1.30 | 20.9 | CMP |
| Dwight | Eastbound | Telegraph | 1.09 | 17.4 | MTS |
| Martin Luther King, Jr. | Northbound | Adeline | 1.55 | 13.2 | CMP |
| Martin Luther King, Jr. | Southbound | Dwight | 1.17 | 19.2 | MTS |

[a] Capacity impacts are defined as locations where the *Draft General Plan* triggers an over-capacity condition (v/c $\geq$ 1.00).
[b] Volume increase impacts are defined as locations where the *Draft General Plan* adds 5 percent or more to the existing volume.

Source: Fehr & Peers Inc., 2001.

## Table IV.D-10
## 2005 TRAFFIC IMPACTS RELATIVE TO 2005 WITHOUT PLAN

| Street | Direction | Cross-Street | V/C (No Project) | V/C or Percent Volume Increase (With Project) | CMP/MTS? |
|---|---|---|---|---|---|
| **A. Capacity Impacts**[a] | | | | **V/C** | |
| Martin Luther King, Jr. | Northbound | University | 0.98 | 1.01 | MTS |
| **B. Volume Increase Impacts**[b] | | | | **Percent Increase** | |
| Ashby | Westbound | San Pablo | 1.31 | 7.2 | CMP |

[a] Capacity impacts are defined as locations where the *Draft General Plan* triggers an over-capacity condition (v/c $\geq$ 1.00)
[b] Volume increase impacts are defined as locations where the *Draft General Plan* adds 5 percent or more to the volume projected under the 1977 *Master Plan*.

Source: Fehr & Peers Inc., 2000.

## Table IV.D-11
## 2020 TRAFFIC IMPACTS RELATIVE TO EXISTING CONDITIONS

| Street | Direction | Cross-Street | V/C (No Project) | V/C or Percent Volume Increase (With Project) | CMP/MTS? |
|---|---|---|---|---|---|
| **A. Capacity Impacts**[a] | | | | **V/C** | |
| Adeline | Southbound | Alcatraz | 0.66 | 1.02 | B |
| Alcatraz | Eastbound | College | 0.99 | 1.03 | B |
| Bancroft | Westbound | Oxford | 0.64 | 1.08 | MTS |
| Gilman | Eastbound | I-80 EB Ramps | 0.83 | 1.26 | MTS |
| Gilman | Westbound | I-80 EB Ramps | 0.90 | 1.23 | MTS |
| Martin Luther King, Jr. | Northbound | Ashby | 0.88 | 1.12 | MTS |
| Martin Luther King, Jr. | Southbound | Ashby | 0.96 | 1.21 | MTS |
| Martin Luther King, Jr. | Northbound | Dwight | 0.85 | 1.08 | MTS |
| Martin Luther King, Jr. | Northbound | Dwight | 0.85 | 1.08 | MTS |
| Martin Luther King, Jr. | Northbound | University | 0.93 | 1.08 | MTS |
| **B. Volume Increase Impacts**[b] | | | | **Percent Increase** | |
| Alcatraz | Eastbound | Adeline | 1.20 | 6.7 | B |
| Ashby | Eastbound | Adeline | 2.08 | 8.9 | CMP |
| Ashby | Eastbound | Claremont | 1.21 | 7.2 | CMP |
| Ashby | Westbound | Claremont | 1.48 | 6.0 | CMP |
| Ashby | Eastbound | Martin Luther King, Jr. | 16.7 | 9.0 | CMP |
| Ashby | Eastbound | Sacramento | 1.54 | 5.3 | CMP |
| Ashby | Eastbound | San Pablo | 1.40 | 7.6 | CMP |
| Ashby | Westbound | San Pablo | 1.24 | 20.8 | CMP |
| Ashby | Westbound | Seventh | 1.30 | 34.0 | CMP |
| Ashby | Eastbound | Shattuck | 1.24 | 8.8 | CMP |
| Ashby | Eastbound | Telegraph | 1.21 | 6.7 | CMP |
| Cedar | Westbound | San Pablo | 1.00 | 11.8 | B |
| Dwight | Eastbound | Telegraph | 1.09 | 25.7 | MTS |
| Martin Luther King, Jr. | Northjbound | Adeline | 1.55 | 29.8 | CMP |
| MartinLuther King, Jr. | Southbound | Dwight | 1.17 | 30.6 | MTS |
| Oxford | Southbound | Bancroft | 1.25 | 10.1 | B |

[a] Capacity impacts are defined as locations where the *Draft General Plan* triggers an over-capacity condition (v/c $\geq$ 1.00)

[b] Volume increase impacts are defined as locations where the *Draft General Plan* adds 5 percent or more to the existing volume.

Source: Fehr & Peers Inc., 2001.

**Table IV.D-12**
**2020 TRAFFIC IMPACTS RELATIVE TO 2020 WITHOUT PLAN**

| Street | Direction | Cross-Street | V/C (No Project) | V/C or Percent Volume Increase (With Project) | CMP/MTS? |
|---|---|---|---|---|---|
| **A. Capacity Impacts**[a] | | | | **V/C** | |
| Adeline | Southbound | Alcatraz | 0.94 | 1.02 | |
| Bancroft | Westbound | Oxford | 0.97 | 1.08 | MTS |
| **B. Volume Increase Impacts**[b] | | | | **Percent Increase** | |
| Adeline | Southbound | Alcatraz | 0.94 | 7.8 | |
| Ashby | Westbound | Claremont | 1.47 | 6.5 | CMP |
| Ashby | Westbound | San Pablo | 1.43 | 5.2 | CMP |
| Bancroft | Westbound | Oxford | 0.97 | 11.4 | MTS |
| Dwight | Eastbound | Telegraph | 1.30 | 5.7 | MTS |
| Martin Luther King, Jr. | Southbound | Ashby | 1.12 | 8.0 | MTS |
| Martin Luther King, Jr. | Northbound | Dwight | 1.03 | 5.0 | MTS |
| Martin Luther King, Jr. | Southbound | Dwight | 1.38 | 10.4 | MTS |
| Oxford | Southbound | Bancroft | 1.25 | 10.7 | |

[a] Capacity impacts are defined as locations where the *Draft General Plan* triggers an over-capacity condition (v/c $\geq$ 1.00)
[b] Volume increase impacts are defined as locations where the *Draft General Plan* adds 5 percent or more to the volume projected under the 1977 *Master Plan*.

Source: Fehr & Peers Inc., 2000.

- $ A list of improvements, programs or actions, and estimates of costs, that will measurably improve multi-modal performance of the system, and contribute to significant improvements in air quality.
- $ An action plan implementing either the improvements necessary to maintain the minimum LOS standards at the deficient segment or the improvements necessary to improve the LOS of the system and contribute to significant air quality improvements. Action plan strategies shall identify the most effective implementation strategies for improving current and future system performance. The action plan is required to include implementation strategies for those jurisdictions that have contributed to the cause of the deficiency, a specific implementation schedule and a description of its funding and implementation schedule. Special consideration for state or federal requirements must be taken into account when determining the feasibility of the action plan. Improvements funded through the CMP CIP whether having local or system impact, must not degrade air quality.

Given the right-of-way constraints along most of Berkeley's major streets, and the City's transit-first policy and related policies, it is likely that any future deficiency plan=s action plan would emphasize system-wide multi-modal LOS improvement, rather than physical capacity improvements to eliminate specific local deficiencies. The objectives, policies and programs outlined in the *Draft General Plan* are well suited to guide the development of such an action plan, given the emphasis on vehicle trip reductions and transit incentives (*Policies T-1* through *T-17*), the concept of multi-modal impact mitigation (*Policy T-19*), and the commitment to improve traffic flow on Ashby Avenue (*Policy T-26*).

It should be noted that the projected deficiencies are based on volume-to-capacity calculations which appear to be conservative based on current volumes and travel speeds. For example, the CMA's Year 2000 LOS monitoring for Ashby Avenue shows LOS E or better (based on average travel speed) on Ashby Avenue at San Pablo, while the traffic volumes recorded in recent counts imply an over-capacity condition when applying the CMA model=s capacity assumptions for Ashby Avenue. Additionally, the traffic model does not take into account the potentially beneficial effects of the *Draft General Plan* policies that promote the use of transit. Thus, the deficient condition predicted for the future may not be as severe as indicated in Tables IV.D-9 through IV.D-12.

> Mitigation Measure TRN-4a: The City shall monitor potentially affected roadways and when, or if, those roadways reach LOS E or worse, the City shall prepare an action plan to improve the LOS through trip reduction, signal modifications, and other means consistent with the objectives and policies of the Berkeley *Draft General Plan*.
>
> Mitigation Measure TRN-4b: The City of Berkeley shall prepare a Deficiency Plan for CMP routes when, or if, the deficient conditions predicted in the traffic analysis occur. The Deficiency Plan will conform to the CMA=s requirements at the time of Plan preparation. In keeping with the *Draft General Plan*=s emphasis on providing a balanced transportation system and reducing auto congestion through trip reduction, the Deficiency Plan will incorporate transit, bicycle, and pedestrian considerations in addition to strategic capacity-enhancing improvements. (SU)

It is not possible to determine that the action plan will result in an improved level of service, because:

- $ The actions necessary to improve traffic flow might not be feasible or appropriate, such as street widening, removal of on-street parking, or diversion to alternative routes or neighboring streets;
- $ The potential costs to improve the roadway may not be financially feasible for the City to make the changes; or
- $ The effect of the reduced congestion might be to discourage alternative modes of transportation (i.e., removal of bicycle lanes or bus stops) which would be inconsistent with the objectives of the *Draft General Plan*.

Therefore, the potential impact on automobile level of service that may occur if the *Draft General Plan* policies to encourage alternative transportation modes are not successful, is considered significant and unavoidable.