4. NEEDS ANALYSIS

This chapter reviews the relationship between bicycle use, commute patterns, demographics, and land use in the City of Lafayette. It identifies major activity centers and public facilities where bicyclists may be destined, along with the needs of recreational and commuter bicyclists. A review of the needs of each bicycle user group will help guide the type and routing of the bikeways system.

One of the primary reasons for creating the Bikeways Plan is to maximize the number of bicycle commuters in order to help achieve transportation goals such as providing an alternative to driving, reducing traffic congestion and air pollution. In order to set the framework for these benefits, local and national statistics are used as a basis for determining the benefits of an improved and expanded bikeways network for Lafayette. The national statistics are based on the 2000 U.S. Census, and the local statistics and information are based on the results of the 1998 BART Station Profile Study.

4.1. LAND USE AND DEMAND

The "demand" for bicycle facilities can be difficult to predict. Unlike automobile use, where historical trip generation studies and traffic counts for different types of land uses permits an estimate of future "demand" for travel, bicycle trip generation methods are less advanced and standardized in the United States. Land use patterns can help predict demand and are important to bikeways planning because changes in land use (and particularly employment areas) will affect average commute distance, which in turn affects the attractiveness of bicycling as a commute mode. The Lafayette bikeways network will connect the neighborhoods where people live to the places they work, shop, engage in recreation, or go to school. An emphasis will be placed on regional bikeways and transit connections centered on the major activity centers in Lafayette, including:

- Downtown commercial district
- Civic buildings such as the Community Center, and new Lafayette Library and Learning Center
- Schools
- BART station
- Neighborhood parks and regional recreational areas

4.2. COMMUTE PATTERNS

A central focus of presenting commute information is to identify the current "mode split" of people that live and work in Lafayette. Mode split refers to the choice of transportation a person selects to move to destinations, be it walking, bicycling, taking a bus, or driving. One major objective of any

bicycle facility improvement is to increase the "split" or percentage of people who choose to bike rather than drive or be driven. Every saved vehicle trip or vehicle mile represents quantifiable reductions in air pollution and can help in lessening traffic congestion.

2000 US CENSUS

Journey to work and travel time to work data were obtained from the 2000 US Census for Lafayette, Contra Costa County, California, and the United States. Journey to work data are shown in **Table 4-1**.

Table 4-1
Journey to Work Data

Mode	United States	California	Contra Costa County	Lafayette	
				%	Number of People
Bicycle	0.4%	0.9%	0.5%	0.12%	12
Drove Alone	78.3%	74.7%	73.4%	77.8%	8037
Carpool	12.6%	15.1%	14.1%	7.1%	734
Public Transit	4.9%	5.3%	9.4%	13.2%	1360
Walked	3.0%	3.0%	1.6%	1.2%	125
Other	0.5%	1.1%	1.1%	0.6%	61

Source: U.S. Census 2000

As shown, about 0.12% of all employed Lafayette residents commute primarily by bicycle. Census data do not include the number of people who bicycle for recreation or for utilitarian purposes, students who bicycle to school, and bicycle commuters who travel from outside Lafayette, and are therefore likely to undercount true cycling rates. In Lafayette, recreational cycling is especially popular, with pelotons of up to 15 cyclists and families out for a bike ride a common sight on the weekends. To give an example, on Saturday, January 7, 2006, despite the weather being cool and drizzly, approximately 75 cyclists were encountered during a three-hour tour of Lafayette bicycle facilities. This is more than six times the number of regular commuter cyclists counted by the US Census.

Though Lafayette's rate of commute cycling is low—a quarter that of Contra Costa County—there are possibilities for improving it. Lafayette has a very high percentage of commuters who take public transit to work—just over thirteen percent, compared with 9.4% for the County and 5.3% for the state. Two percent of Lafayette BART riders arrive at the station by bicycle.[1] If bicycle connections to the BART station are improved, and especially if these connections are coupled with improved bicycle storage and vehicle parking fees, it may be possible to shift some vehicle trips to the station into bicycle trips. Improving connections to the BART station may also encourage those who are arriving in Lafayette by BART to bicycle from the station. In July of 2006, BART implemented fee parking at the Lafayette station.

[1] BART, Office of External Affairs. "Final BART Station Profile Study". August 1999.

4.3. TRIP REDUCTION AND POTENTIAL AIR QUALITY BENEFITS

POTENTIAL FUTURE BICYCLE RIDERSHIP

A rough projection of potential future bicycle ridership in Lafayette along with the trip reduction and air quality benefits can be made based on Census data on mode split. It is possible to use this Census data, in combination with national commuting statistics from the 2001 National Household Travel Survey (NHTS) to estimate the number of working adult Lafayette residents who live close enough to their workplace to bicycle.

Table 4-2
Travel Time to Work Data

	United States	California	Contra Costa County	Lafayette %	Lafayette Number of People
9 minutes or less	14%	11%	9.3%	10%	1,181
10 to 14 minutes	15%	14%	11%	10%	1,066
15 to 29 minutes	36%	35%	27%	33%	3,423

Source: Census 2000

First, we determine the "average" commute time. According to the NHTS, the average work commute time has remained close to 20 minutes since 1983[2]. In 2001, averaging all modes, the commute time was 23 minutes.[3] Second, we determine how far a bicyclist can ride within 23 minutes. Assuming an average speed of 12 miles per hour, a cyclist traveling for 23 minutes covers 4.6 miles. Third, we determine how long it takes an average commuter to drive 4.6 miles. According to the NHTS, in 2001 the average commute speed for workers who drive was 32 miles per hour.[4] At an average commute speed of 32 miles per hour, a 4.6 mile journey would take almost nine minutes.

Finally, we find that 2000 Census data shows that 1,181 commuters within Lafayette had commute times of 9 minutes or less. (**Table 4-2**) Subtracting those residents that already walk or bike to work, (137, US Census) we find that 1,044 Lafayette residents could potentially convert their commute trip into a bicycle trip. Even if only 10% of these workers are captured (104 workers), the bicycle mode share in Lafayette would increase to 1.1%. If all one thousand commuters were captured, the mode share would increase to 10%.[5]

[2] Table 26, "General Commute Patterns by Mode of Transportation" in. "Summary of Travel Trends: 2001 National Household Travel Survey." Prepared by Patricia Hu and Timothy Reuscher. Published by FHWA, U.S. Department of Transportation. December 2004. <http://nhts.ornl.gov/2001/pub/STT.pdf>

[3] Ibid.

[4] Ibid.

[5] Shifting modes from a car to a bicycle would result in an increase from a 9-minute to a 23-minute commute. Incentives such as pleasant, safe and convenient bikeways, bike parking and changing facilities can encourage people to make this shift. Additionally, financial incentives linked to parking may be effective. One example that has been successfully implemented in other jurisdictions is a

Capturing 10% of workers is ambitious but achievable mode split, and has the potential for leading to improvements in air quality and congestion. Although total commutes of nine minutes or less may be a prime target for shifting modes, some longer commutes consist of a short segment via automobile to BART. These short trips are also potential sources for capturing additional mode shift, especially with the implementation of parking fees at BART providing additional incentive. Due to the unstable nature of vehicle flows during congestion conditions, eliminating even a few drivers from the road during peak commute hours can significantly reduce congestion. The section below explains the potential air quality benefits of increasing bicycle mode share, specifically based on the estimate of an increase in bicycle mode share to 1.1%.

EFFECTS OF TRIP REDUCTION

Improvements to the bikeway network in Lafayette not only affect residents of the City, but also people who may choose to travel through Lafayette. Bike To Work Day statistics show that the number of cyclists riding through Lafayette is increasing, and that a majority of these cyclists start their trip outside Lafayette.[6]

Bicycle counts conducted at Lafayette's Energizer Station show a steady increase in the number of cyclists passing by the station on Bike to Work Day. In 2003, 33 cyclists passed by, in 2004, 40 cyclists and in 2006, 42 cyclists. Table 4-3, below, outlines the origin and destination of cyclists who signed in at Lafayette's Energizer Station during Bike to Work Day.

Table 4-3 Bike to Work Day Origin and Destinations

Origin/Destination	2003		2006	
	Number of Cyclists	Percentage of Total	Number of Cyclists	Percentage of Total
Lafayette to Lafayette	12	36%	8	29%
Lafayette to Elsewhere	6	18%	8	29%
Elsewhere to Lafayette	6	18%	6	21%
Passing Through	9	27%	6	21%
TOTAL	**33**		**28**	

Source: City of Lafayette, 2006

Based on the data in Table 4-3, a large potential pool of bicycle trips originate outside of the City, but pass through or terminate in Lafayette. If bicycling conditions are improved, not only may more Lafayette residents be encouraged to bicycle, but trips by bicyclists with destinations within Lafayette may increase. This may potentially reduce some of the traffic impacts from trips originating outside of the City but destined for Lafayette.

parking cash-out program where employees have the option of paying the cost of parking or receiving a cash equivalent as incentive to use an alternative mode. BART is currently in the process of implementing a fee parking program at the Lafayette BART station in order to generate additional revenue but also as a means of encouraging BART riders to use other modes than driving alone to their stations.

6 City of Lafayette, Bike To Work Day data collected between 2003 and 2006.

POTENTIAL FUTURE AIR QUALITY IMPROVEMENTS

Lafayette lies within the San Francisco Bay Area Basin, which is regulated by the Bay Area Air Quality Management District (BAAQMD). According to the California Air Resources Board, as of July 2005, the air quality in the San Francisco Bay Area Basin did not meet the minimum State health-based standards for one-hour concentrations ground-level ozone and the state standards for Particulate Matter (PM10) and Fine Particulate Matter (PM2.5).[7] Currently, the Basin is classified as marginal non-attainment area for the Federal 8-hour ozone standard.

According to the BAAQMD, motor vehicles are responsible for approximately 75 percent of the smog in the Bay Area. Reducing vehicle miles traveled (VMTs) is a key goal of the BAAQMD, and fully implementing Lafayette's bicycle network will help achieve this goal by providing residents safe and functional ways to get to work, school, or shopping without using a motor vehicles.

According to Census 2000 trip to work data, the current estimate of Lafayette's mode share is 0.12%. This mode share is significantly lower than the actual mode share because it doesn't include people bicycling to school or to transit. Supplementing the Census data with estimates of bicycle mode share for students, and transit riders, this plan estimates that the actual current number of daily bicycle commuters in Lafayette is closer to 355 riders, making 710 daily trips and saving an estimated 910 VMTs per weekday. The calculations behind this estimate are described below and outlined in **Table 4-4**.

Table 4-4 quantifies the estimated increase in cyclists and resulting reduction in VMTs in Lafayette assuming completion of the bikeway network. It is predicted that upon completion of the proposed Lafayette bikeway network, the total number of work and school commuters could increase from the current estimate of 355 (2.8% mode share) to 989 (6.8% mode share). This would result in an estimated decrease of 46 lbs/day of PM10, 184 lbs/day of ROG, and 127 lbs/day of NOX. . Predicted increases in cycling are based on increases in cycling on newly built bikeways in San Francisco, California; Portland, Oregon; and Seattle, Washington.[8]

This improvement in air quality could be greater assuming that if conditions for bicyclists improve and attract new Lafayette based riders, the same conditions may attract bicyclists to the City whose trips originate outside of Lafayette.

[7] BAAQMD. Ambient Air Quality Standards & Bay Area Attainment Status. Last updated July 15, 2005. <www.baaqmd.gov/pln/air_quality/ambient_air_quality.htm>

[8] San Francisco saw 61% corridor increase at 20% network completion, translating to 305% adjusted increase. Portland saw 137% corridor increases at 50% system completion, translating to 274% adjusted increase. Seattle saw 90% corridor increase at 35% system completion, translating to 257% adjusted increase. This translates into an average 279% increase upon system completion. Adjusted increase reflects the projected amount of bicycling that will occur when the system is completed, based on studies of communities with completed or nearly completed bikeway systems. Corridor increases refers to the average increase in bicycling in the corridors in each city, before and after bikeways were installed. System completion refers to the percent completion of the citywide bikeway network in each city.

Table 4-4
Bicycle Commute and Air Quality Projections

Current Commuting Statistics		Source
Lafayette Population	23,463	*2000 US Census*
Number of Employed Persons	11,349	*2000 US Census*
Bicycle-to Work Mode Share	0.12%	*2000 US Census*
Number of Bicycle Commuters	14	*Calculated from above*
School Children Grades 1-8	3,013	*2000 US Census*
Estimated School Bicycle Commuters	151	*Lamorinda School Commute Study (Fehr & Peers Associates, 1995) and San Diego County School Commute Study (1990). (5%)*
Number of College Students	1,286	*2000 US Census*
Estimated College Bicycle Commuters	129	*National Bicycling & Walking Study, FHWA, Case Study No. 1, 1995. Review of bicycle commute share in seven university communities (10%)*
Average Weekday BART Ridership	3,094	*BART, boardings at Lafayette station (2000-2003 avg)*
Number of Daily Bike-BART Users	62	*BART, mode split at Lafayette station (1999)*
Adjusted Current Commuting Statistics		
Total Number of Bicycle Commuters (14+151+129+62=356)	356	*Total of bike-to-work, transit, school, and college bicycle trips. Does not include recreation or utilitarian.*
Adjusted Bike Commute Mode Share	2.3%	*Calculated based on number of bicycle commuters/work and school populations*
Total Daily Bicycle Trips	710	*Total bicycle commuters x 2 (for round trips)*
Reduced Vehicle Trips per Weekday	458	*Assumes 73% of bicycle trips replace vehicle trips for adults/college students and 53% for school children Based on survey results from 10 California cities conducted by Alta between 1990 and 1999, L.A. Countywide Policy Document survey (1995), and National Bicycling & Walking Study, FHWA, 1995.*
Reduced Vehicle Miles per Weekday	910	*Assumes average one-way trip travel length of 4.6 miles for adults/college students and 0.5 mile for schoolchildren*

(continued)

Table 4-4, Continued
Bicycle Commute and Air Quality Projections

Estimated Future Bicycle Commuting Statistics		
Number of Future Daily Bicycle Commuters	989	*Estimated using increase to 279% of baseline from study of three Cities with extensive bikeways. See footnote 8 for more information.*
Future Bicycle Commute Mode Share 989/(11,394+3013+1286) = 0.063	6.3%	*Calculated from above using 2000 census base numbers*
Future Total Daily Bicycle Trips	1,977	*Future daily bicycle commuters x 2*
Future Reduced Vehicle Trips per Weekday	1,276	*Assumes 73% of bicycle trips replace vehicle trips for adults/college students and 53% for school children*
Future Reduced Vehicle Miles per Weekday	2,537	*Assumes average one-way trip travel length of 4.6 miles for adults/college students and 0.5 mile for schoolchildren*
Future Reduced Vehicle Miles per Year	393,490	*180 days for students, and 256 days for employed persons*
Estimated Future Air Quality Benefits		
Reduced PM10 (lbs/weekday)	46	*(.0184 lbs per reduced mile)*
Reduced NOX (lbs/weekday)	127	*(.04988 lbs per reduced mile)*
Reduced ROG (lbs/weekday)	184	*(.0726 lbs per reduced mile)*
Reduced PM10 (lbs/year)	7240	*(.0184 lbs per reduced mile)*
Reduced NOX (lbs/year)	19,627	*(.04988 lbs per reduced mile)*
Reduced ROG (lbs/year)	28,567	*(.0726 lbs per reduced mile)*

Notes:
Sources as noted in the table. For detailed calculations, see "Bicycle and Commute Air Quality Calculations" spreadsheet provided in ***Appendix B*** *of this Plan.*

4.4. BICYCLE SAFETY AND ACCIDENT ANALYSIS

Safety is a major concern of both existing and potential bicyclists. For those who ride, safety is typically an on-going concern or even a distraction. For those who do not ride, it is one of the most compelling reasons not to ride. Nationwide, the total number of reported cyclist fatalities has dropped dramatically since 1994, with 802 fatalities reported in 1994 and 725 fatalities reported in 2004. In comparison, total traffic fatalities have increased by 5% over this ten-year period.[9]

The same study shows that in 2004, of all California traffic fatalities 2.7% were cyclist fatalities (110). This is higher than the nationwide average of 2%, but doesn't take into account the higher rates of cycling found in California.[9] Cyclist fatalities in California represent a fatality rate of just over 3 per million population.

In 2004, adult cyclists (25 and older) accounted for more than half of the cyclist fatalities in the US, and cyclists under the age of 16 accounted for 21% of the fatalities and 32% of the injuries. However, cyclists under the age of 16 have higher fatality and injury rates than other age groups (2.5

[9] Traffic Safety Facts, 2004 Data. "Pedalcyclists" NHTSA, DOT # HS 809 912

fatalities per million population, about 24% higher than the overall cyclist fatality rate, and 286 injuries per million population, more than twice the injury rate for cyclists of all ages.) [9]

According to a 1990 study of 3,000 bicycle crashes, the most common type of bicycle-vehicle crash was one where the motorist failed to yield right-of-way at a junction (21.7% of all crashes)[10]. More than a third of these involved a motorist violating the sign or signal and driving into the crosswalk or intersection and striking the bicyclist. The next most common types of vehicle-bicycle crash were where the bicyclist failed to yield right-of-way at an intersection (16.8%), a motorist turning or merging into the path of a cyclist (12.1%) and a bicyclist failing to yield right-of-way at a midblock location.

These data suggests that a bicycle safety plan should address intersection improvements and education about the rights and responsibilities of cyclists and motorists, especially regarding right-of-way laws.

In the City of Lafayette, it is legal to ride on sidewalks. However, unless the sidewalk is adjacent to low-speed, low-volume streets and the cyclist is riding slowly, sidewalk riding can be less safe than riding with traffic on the street. Cyclists riding on sidewalks can be obstructed from view by cars parked along the street and landscaping. In addition, motorists do not expect to see cyclists on sidewalks, and may turn into a cyclist as they are crossing a driveway or intersection. If cyclists must ride on the sidewalk, they should ride slowly, ride with the flow of traffic, not against it, and should be aware of drivers entering and exiting driveways and side streets.

Wrong-way riding is a widespread, yet unsafe cyclist behavior. Though wrong-way riding accounts for only 2.5% of all bicycle accidents, it has been shown to be a contributing factor in several other types of accidents. [11] According to a 1996 FHWA study, wrong-way bicycling is involved in:

- 24% of crashes where motorists drive through an intersection.
- 67% of crashes where motorists drive out of an alley or driveway
- 57% of crashes where motorists drove out of a stop sign
- 23% of crashes where a bicyclist rode out of a stop sign
- 44% of accidents where a bicyclist rode out with no stop sign
- 78% of all accidents where a motorist turned left in front of a cyclist

Wrong-way riding is unsafe for several reasons: First, turning motorists do not expect to find a bicycle coming from the wrong direction; second, the motorist and the cyclist have limited space in which to react to each other; and, third, relative speed of a motorist and a cyclist approaching each other is greater than when cyclists and motorists are traveling in the same direction.

[10] Pedestrian and Bicycle Crash Types of the Early 1990's, Publication No. FHWA-RD-95-163, W.H. Hunter, J.C. Stutts, W.E. Pein, and C.L. Cox, Federal Highway Administration, Washington, DC, June, 1996.

[11] Pedestrian and Bicycle Crash Types of the Early 1990's, Publication No. FHWA-RD-95-163, W.H. Hunter, J.C. Stutts, W.E. Pein, and C.L. Cox, Federal Highway Administration, Washington, DC, June, 1996.

Data for reported bicycle collisions were collected for the calendar years 2001 to 2004 in Lafayette, and are presented in **Table 4-5** below.

As shown, there were 21 bicycle-related collisions reported in Lafayette from 2001 to 2004. Just two of these collisions resulted in property damage only; the remainder resulted in a reported injury. No bicycle fatalities were reported. Comparing Lafayette's injury rate to the national cyclist injury rates (139 injuries per 1 million population in 2004), Lafayette would expect to have only three injury collisions per year, but according to the collision data, the City has a higher than expected injury rate[12]. Between 2001-2004, Lafayette averaged 4.75 injury collisions per year. However, it should be noted that the national injury rate does not take into account the potential for higher numbers of injuries in communities with higher than average cycling rates. Lafayette's high recreational cycling may explain the higher than expected injury rates. Additionally, compared with statewide fatality rates (3 per 1 million population), Lafayette, with no reported cyclist fatalities between 2001 and 2004, falls well within the expected range.[12]

The majority of cyclists that were involved in collisions were adults eighteen and over (16 of the 21 collisions). Of these, one collision involved a cyclist over the age of 65. The remaining four collisions involved youth twelve and under. Lafayette has a lower rate of youth-related bicycle collisions than would be expected for a City of its size. The majority of cyclists involved in collisions were male (18). This likely reflects the typically higher cycling rate among males.

The Of the 21 collisions in Lafayette, 10 were determined to be the fault of the driver, 8 to be the fault of the cyclist, and 3 with the fault unknown or not stated. Half of the collisions (11) involved a motorist turning across a cyclist's path. In six of these, the driver was at fault, in three, the cyclist was at fault, in the remaining two, at-fault status was not determined. Three collisions were related to a cyclist riding the wrong way. One collision involved a driver opening a car door into a cyclist's path. One collision involved drugs or alcohol, in which a cyclist had been drinking. There was one hit-and-run collision, in which a cyclist was injured. The most common type of collision was the broadside collision, followed by the sideswipe

Slightly more than half of the collisions (11) occurred within Downtown Lafayette. Mt. Diablo Boulevard accounts for seven (33%) of the collisions. Mt. Diablo Boulevard is the primary east-west bikeway in Lafayette, and has bike lanes striped on both sides for the entire extent, with the exception of eight blocks within downtown. Of the 7 collisions along Mt. Diablo Boulevard, 4 (almost 20% of all bicycle collisions occurring between 2001-2004) occurred within this eight-block area. This accident data suggests that any improvements to accommodate bicycles should be focused on the downtown and specifically on Mt. Diablo Blvd.

.

[12] Injury rates from Traffic Safety Facts, 2004 Data. "Pedalcyclists" NHTSA, DOT # HS 809 912

Table 4-5
Lafayette Reported Bicycle Collision Summary 2001-2004

Number of Reported Bicycle Collisions				
Street 1	**Street 2**	**Distance from Intersection (feet)**	**Type**	**Year**
Brown Ave.	Mt. Diablo Blvd	0	Injury	2001
Moraga Rd.	Wilkinson	0	Injury	2001
Mt. Diablo Blvd	W. Stuart	33	Injury	2001
2001 Summary:	**3 total accidents**	**2 intersection 1 mid block**	**3 injury 0 property damage**	
El Nido Ranch Rd	Acalanes Rd	0	Injury	2002
Las Huertas Rd	James Pl	34	Injury	2002
Moraga Rd	Hamlin Rd	0	Injury	2002
Mt. Diablo Blvd	Lafayette Cir	0	Injury	2002
Mt. Diablo Blvd	Oak Hill Road	0	Injury	2002
N. Thompson Rd.	Dollis Park Rd.	0	Injury	2002
Nogales St.	Nogales Ct.	0	Injury	2002
Olympic Blvd	Pleasant Hill Rd	0	Injury	2002
2002 Summary:	**8 total accidents**	**7 intersection 1 mid block**	**8 injury 0 property damage**	
Deer Hill Rd	Elizabeth St	278	Injury	2003
Dewing Av	Brook St	130	Injury	2003
Moraga Rd	Moraga Blvd	0	Injury	2003
Mt. Diablo Blvd	2nd St	35	Property Damage Only	2003
Mt. Diablo Blvd	Moraga Rd	160	Property Damage Only	2003
Mt. Diablo Blvd	Oak Hill Rd	61	Injury	2003
Olympic Blvd	Pleasant Hill Rd	0	Injury	2003
Rohrer Dr	Dead Horse Cyn	36	Injury	2003
2nd St	Golden Gate Wy	57	Injury	2003
2003 Summary:	**9 total accidents**	**2 intersection 7 mid block**	**7 injury 2 property damage**	
Upper Happy Valley Rd.	Los Arabis Dr.	0	Injury	2004
2004 Summary:	**1 total accident**	**1 intersection 0 mid block**	**1 injury 0 property damage**	

Source: City of Lafayette, December 2005

4.5. BICYCLIST NEEDS

The purpose of reviewing the needs of bicyclists is twofold: (a) it is instrumental when planning a system that must serve different skill levels and different trip types; and (b) it is useful when attempting to quantify future usage and benefits to justify expenditures of resources. According to a nationwide 1991 Lou Harris Poll, it was reported that "...nearly 3 million adults (about one in 60) already commute by bike, and projected the number could rise to 35 million if more bicycle friendly transportation systems existed." In short, there is a large reservoir of potential bicyclists who do not ride (or would ride more often) simply because they do not feel comfortable using the existing street system and/or do not have appropriate bicycle facilities at their destination.

While the majority of Americans own bicycles, most of these people are recreational riders who ride relatively infrequently. Schoolchildren between the ages of about 6 and 14 typically make up a large percentage of the bicycle riders, often riding to school, parks, or other local destinations. The serious adult road bicyclist makes up a small, but important, segment of bikeways users, along with serious off-road mountain bicyclists, who enjoy riding on trails and dirt roads. The single biggest adult group of bicyclists is the intermittent recreational rider who generally prefers to ride on pathways or quiet side streets.

NEEDS OF CASUAL AND EXPERIENCED CYCLISTS

Cyclist needs vary depending on the skill level of the cyclist and the type of trip the cyclist is taking. For the purposes of this Plan, cyclists are separated into two skill levels: casual and experienced. Casual cyclists include youth and adults who are intermittent riders. Some casual cyclists, such as youth under age 16, may be unfamiliar with operating a vehicle on roads and related laws. Experienced cyclists include commuters, long-distance road cyclists, racers, and those who use their bicycle as a primary means of transportation. These cyclists generally feel comfortable riding on roads and with traffic. A summary of the needs of the different types of cyclists is provided below.

Table 4-6

Characteristics of Casual and Experienced Cyclists

Casual Riders	Experienced Riders
Prefer off-street bike paths or bike lanes along low-volume, low speed arterials	Can comfortably ride alongside higher-volume, higher-speed arterials without bike lanes.
May have difficulty gauging traffic and may be unfamiliar with rules of the road. May walk bike across intersections.	Negotiates streets like a motor vehicle, including "taking the lane" and using left-turn pockets
May use less direct route to avoid arterials with heavy traffic volumes.	Prefers a more direct route.
May ride on sidewalks and ride the wrong way on streets and sidewalks.	Avoids riding on sidewalks or on multi-use paths. Rides with the flow of traffic on streets.
Cycles shorter distances: up to 2 miles	May cycle longer distances, sometimes more than 100 miles, on a recreational ride.

The casual bicyclist will benefit from route markers, bike lanes, wider curb lanes, and educational programs. Casual bicyclists may also benefit from marked routes that lead to parks, schools, shopping areas, and other destinations. To encourage youth to ride, routes must be safe enough for their parents to allow them to ride.

Crossing and Bike Path on east side of First Street

The experienced bicyclist will benefit from wider curb lanes and loop detectors at signals. The experienced bicyclist who is primarily interested in exercise will benefit from loop routes that lead back to the point of origin. Recreational bicycling may also help transition casual riders to utilitarian riders.

Because of its extensive network of trails and bike paths, Lafayette offers many good opportunities for casual cyclists. Many of these trails and paths are accessible from residential roads, though not all residential areas have easy bicycle access to trails and paths. Smaller residential streets near downtown, such as Moraga Boulevard offer on-street routes. Casual cyclists may find busy intersections to be barriers, including along Mt. Diablo Blvd. and at Highway 24 interchanges. Experienced cyclists will be able to negotiate most of these intersections, and benefit from the bike lanes on roads with heavy traffic such as Mt. Diablo Blvd. and Deer Hill Road. For this reason, an experienced recreational rider is a starting point for transitioning to utilitarian trips that can lead to congestion reduction.

NEEDS OF RECREATIONAL AND UTILITARIAN TRIPS

For the purpose of this Plan, bicycle trips are separated into two trip types: recreational and utilitarian. Recreational users cover all age groups from children to adults to senior citizens. Recreational trips can range from a 50-mile weekend group rides, to a family outing along a quiet bike path, and all levels in between. Utilitarian trips include commuter cyclists, which are a primary focus of state and federal bicycle funding, as well as cyclists going to school, shopping or running other errands.

Recreational cyclists' needs vary depending on their skill level. Road cyclists out for a 100-mile weekend ride may prefer well-maintained roads with wide shoulders and few intersections, stop signs or stop lights. Casual cyclists out for a family trip may refer a quiet bike path with adjacent parks, benches and water fountains.

Table 4-7

Characteristics of Recreational and Utilitarian Trips

Recreational Trips	Utilitarian Trips
Directness of route not as important as visual interest, shade, protection from wind	Directness of route more important than visual interest, etc.
Loop trips may be preferred to backtracking	Trips generally travel from residential to shopping or work areas and back
Trips may range from short to over 50 miles	Trips generally are 1-5 miles in length
Short-term bicycle parking should be provided at recreational sites, parks, trailheads and other recreational activity centers	Short-term and long-term bicycle parking should be provided at stores, transit stations, schools, workplaces.
Varied topography may be desired, depending on the skill level of the cyclist	Flat topography is desired
May be riding in a group	Often ride alone
May drive with their bicycles to the starting point of a ride	Use bicycle as primary transportation mode for the trip; may transfer to public transportation; may or may not have access to a car for the trip
Trips typically occur on the weekend or weekday afternoons	Trips typically occur during morning and evening commute hours (commute to school and work). Shopping trips also occur on weekends.
Type of facility varies, depending on the skill level of cyclist	Generally use on-street facilities, may use pathways if they provide easier access to destinations than on-street facilities

Utilitarian bicyclists have needs that are more straightforward. They require bike lanes or wider curb lanes along all arterials and collectors, loop detectors at signalized intersections and adequate maintenance of the pavement. At the destination points, commuters require adequate long term bicycle storage and showers or changing facilities while shoppers require short term bicycle storage.

Recreational Cyclists on Mt. Diablo Blvd.

Recreational cycling within Lafayette is already rather high, as evidenced on Saturday, January 6, 2006 when nearly 75 cyclists were counted during a three-hour bicycle tour. It is likely that not all of these cyclists are residents of Lafayette: the City is a destination or through route for many riders. Lafayette has the potential to increase the number of people who ride to work or school because of (a) a high percentage of work commute trips (22%) that are less than 15 minutes in length, (b) good bicycle connections to downtown and regional employment centers, (c) a moderate climate, and (d) a culture of recreational cycling.

4.6. PUBLIC OUTREACH

Public outreach is an important component of the planning process for the Bikeways Master Plan. Local citizens that ride bicycles for commuting and recreational reasons obviously have a personal

interest in the Plan as well as valuable insight into specific bicycle needs in Lafayette. The City of Lafayette has incorporated public input into this Plan in several ways:

BICYCLE AND PEDESTRIAN ADVISORY COMMITTEE REVIEW

The City of Lafayette's Bicycle Plan Subcommittee is comprised of three members of the Lafayette Bicycle and Pedestrian Advisory Committee, a Circulation Commission representative and City of Lafayette staff. Subcommittee members provided input in the initial kick-off meeting and reviewed and commented on all drafts of this Bikeways Master Plan. A list of participants is provided in **Appendix A** to this Plan. The full Bicycle and Pedestrian Advisory Committee also provided input and reviewed the Plan.

BIKE TOUR OF LAFAYETTE

Members of the Bicycle and Pedestrian Advisory Committee and City Staff were invited to tour Lafayette on bicycle. The three-hour tour was held on Saturday, January 7, 2006 and included Mt. Diablo Boulevard, Deer Hill Road, Pleasant Hill Road, Moraga Road, downtown Lafayette and the Lafayette-Moraga Trail. The route was determined by input from the Bicycle & Pedestrian Advisory Committee and City Staff. Special attention was paid to on-off ramps serving Highway 24, including Pleasant Hill Road, Acalanes Road and Deer Hill Road. Problems and potential solutions discussed during this tour are incorporated in the recommended bicycle facilities outlined in Chapter 5.

CIRCULATION COMMISSON REVIEW

The Lafayette Circulation Commission is composed of seven, appointed Commissioners that represent different geographic areas of the City. The Circulation Commission and Bicycle and Pedestrian Advisory Committee held a joint study session on June 5, 2006 during which the Commission provided preliminary comments on the draft Plan to staff. On June 19, 2006, the Commission held a public hearing to take public comment on the draft Plan. The Circulation Commission documented desired edits and approved the edited plan for forwarding to the Planning Commission on July 17, 2006 at its continued public hearing. On September 18, 2006, the Circulation Commission also discussed and responded to the comments made by the City Council at its meeting of September 11, 2006.

PLANNING COMMISSON REVIEW

The Lafayette Planning Commission is composed of seven appointed Commissioners. On July 20, 2006, the Planning Commission held a public hearing to consider the draft Plan as approved by the Circulation Commission. The Planning Commission found the draft Plan to be consistent with the Lafayette General Plan and approved the plan for forwarding to City Council.

CITY COUNCIL CONSIDERATION

The Lafayette City Council is composed of five elected officials. On September 11, 2006, the City Council held a public hearing to take public comment on the draft Plan. At its continued public hearing on September 25, 2006, the City Council unanimously adopted Resolution 2006-029 that found the Plan to be Categorically Exempt from the California Environmental Quality Act and adopting the Lafayette Bikeways Master Plan.