

NEEDS ANALYSIS

The purpose of reviewing the needs of bicycle users is twofold: (1) it is instrumental when planning a system that must serve all user groups, and (2) it is useful when pursuing competitive funding and attempting to quantify future usage and benefits to justify future expenditures of limited resources.

Needs of Bicyclists

Commuter Bicyclists

Commuter bicyclists in the City of San Diego range from employees who ride to work to children who ride to school. Millions of dollars nationwide have been spent attempting to increase the number of people who ride to work or school, with some success.

Although different parts of the City vary in geography, demographics and topography, San Diego still lends itself to having the potential for commuter and recreational bicyclists because of:

- Favorable climate throughout most of the year
- Sections of the City that are scaled to the bicycle
- There are accessible parks and some water channels that show potential for off-road bike paths

In addition to the reasons why there is a potential for commuter bicycling, there is a population in the area that is prime for bicycle commuting. The type of commuter bicyclists and the characteristics of their cycling are summarized below.

- Commuter bicyclists typically fall into one of three categories: (1) adult employees, (2) students, and (3) shoppers.
- Commuter trips usually range from several blocks to ten miles.
- Commuters typically seek the most direct and fastest route available, with regular adult commuters often preferring to ride on arterials rather than side streets.
- Commute periods typically coincide with peak traffic volumes and congestion, increasing the exposure to potential conflicts with vehicles.
- Places to safely store bicycles are of paramount importance to all bicycle commuters.
- Major commuter concerns include changes in weather (rain), riding in darkness, personal safety, and security.
- Rather than be directed to side streets, most commuting adult cyclists would prefer to be given bike lanes or wider curb lanes on direct routes, which are often arterial streets.
- Intersections are a primary concern for bicyclists.
- Commuters generally prefer routes where they are required to stop as few times as possible, thereby minimizing delay.
- Many younger students (ages 7-11) use sidewalks for riding to schools or parks, which is acceptable in areas where pedestrian volumes are low and driveway visibility is high. Older students (ages 12-14) who consistently ride at speeds over 10 mph should be directed to riding on streets wherever possible.

- Signal controls that function for bicyclists are of significant concern for bicyclists.
- Facilities maintenance has also been identified numerous times as a significant concern for bicyclists.

Recreational Bicyclists

The needs of recreational bicyclists in the City of San Diego must be considered, as they are often different from commuter bicycling. San Diego currently has a high level of recreational cycling, but strong potential exists for increasing this activity in the City. A large number of school-aged people, adults, and retired people enjoy cycling. Additionally, during tourist season, many tourists in the area enjoy taking to a bicycle to exercise in the pleasant weather. Specific needs and patterns for recreational bicyclists are:

- Recreational bicycling typically falls into one of four categories: (1) exercise, (2) non-work destinations such as parks, (3) touring, long distance treks or events, or (4) sight-seeing.
- Recreational users range from adults to children to senior citizens. Each group has their own abilities, interests, and needs.
- Directness of the route is typically less important than routes with less traffic conflicts. Visual interest, shade, protection from weather, moderate gradients or other "comfort" features are also very important.
- People exercising or touring often prefer a loop route rather than having to retrace their route.
- Adjacent vehicle speeds and the number of driveways are also important factors to be taken into consideration, especially along Class III bike routes.

Public Input

Public Workshops

The first of two public workshops were held in the City of San Diego on May 21, 2001. At this first workshop, attendees were asked to identify their bicycle needs and to draw their route preferences and problem areas on a map. Approximately 60 people attended the workshop. Some of the most common needs and problems identified are listed below. Items with asterisks next to them indicate that this issue was identified more than once.

- ****Barnett/Pacific Highway merge needs significant improvement
- **Fairmount-Montezuma-Camino del Rio North connections made easier
- **Morena to Santa Fe - need connection, perhaps a bridge over the railroad tracks
- **Carmel Valley Road - need bike lanes
- **San Clemente Canyon Class I needed to connect with Rose Canyon path, Regents, and Genesee
- *Connect Mission Valley Path under 163
- *SR-56 Bikeway needs to cross I-5 to the west
- *Coronado Bridge bike lanes needed
- *Balboa/I-5/Morena interchange needs improvement
- *Miramar Road - bad surface and disappearing bike lanes

- *Texas Street from Mission Valley to University Heights - need better maintenance and pavement quality
- *Gilman/I-5 interchange traffic backs up at peak periods
- *SR-56 Inland-Coastal bikeway needs to be completed
- Harbor Drive s/o Downtown - rough shoulders
- Mission Valley Path - bridge over street crossings needed
- Fay Avenue Path - need better signage
- Rose Canyon Path to Mission Bay - make a Class I connection
- Rail Trail is a good idea
- Mission Bay-to-San Diego Bay link is a good idea
- Harbor Drive near Airport - need improvements
- Beach Path in Pacific Beach - improve northern terminus, car conflicts
- I-8 gap between Fairmount and College
- Qualcomm Stadium needs better access
- Mesa College - signs say "no bikes" on streets
- Ardath connection from Rose Canyon to La Jolla needed
- I-805 connection needed between Sorrento Valley and La Jolla Village
- I-805 at Mira Mesa interchange needs improvement
- Friars Road at 163 interchange needs improvement
- Aldine Drive blind curve and no space for bikes
- Morena Blvd across San Diego River/Friars needs pavement rehab
- Torrey Pines at Genesee - need bike sensors and better bicycle guidance through the intersection

Some more general statements from the public about bicycling conditions in the City are summarized in the list below. Items with asterisks next to them indicate that this issue was identified more than once.

- **Sweeping and resurfacing needed in many areas of the City
- **Trenching, construction treatments, and compaction need to be done to standard and in a way that ensures smoothness
- Transit should be more bike-friendly - especially the Trolley
- Education of motorists and bicyclists is badly needed
- Better coordination among agencies and different jurisdictions is needed
- Traffic calming and bike boulevards should be experimented with in order to make cycling safer
- Educate the Police about bicyclists' rights and legitimacy on the road
- Bikeway continuity problems are a serious concern in the City
- Freeway on-ramp queues are a big problem for bicyclists

The second public meeting, held August 16, 2001, drew 21 people. Most of the comments were very supportive of the Plan recommendations. Some of the comments are listed below.

- Add Mission Bay Drive as a bikeway project
- Add Harbor Drive as a Class I bikeway project
- Substitute 3rd Avenue for 5th Avenue south of Laurel Street in the 4th-5th Avenues Project
- Downtown bikeway network is a good idea
- Add a metered signal to the Barnett Avenue merge onto Pacific Highway
- Narrow the number of lanes merging from Barnett Avenue to Pacific Highway from two to one
- Add a convex mirror to improve sight at the Barnett/Pacific Highway merge
- Add safety as one of the criterion for determining the prioritization of bikeway projects
- Add Mira Mesa Boulevard between Parkdale Avenue and Reagan Road as a bikeway project
- Elaborate and provide more detail in the section discussing the bicycle safety education program
- Field inspection of maintenance and construction projects is a critical issue
- Utility companies should coordinate schedules when trenching projects occur
- Require an analysis of striping plans when a street is resurfaced

Public comments were taken into consideration with the development of this Plan. Many of the improvements suggested at both meetings have been incorporated into the Bicycle Master Plan.

Surveys

Bicycle survey forms were distributed through the San Diego County Bicycle Coalition and at 19 bicycle shops in various areas throughout the City of San Diego. Approximately 750 surveys were delivered to bicycle shops for interested persons to fill out and return via fax or mail. A total of 91 surveys were returned and analyzed. The responses that were analyzed included those that pertained to the following questions.

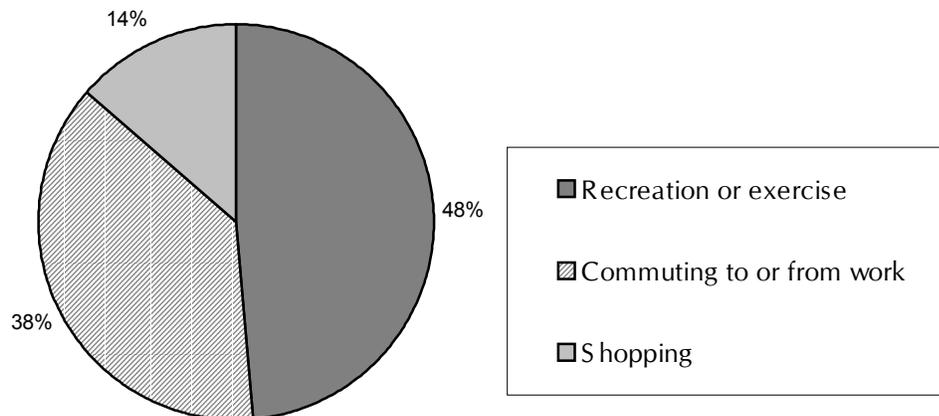
- Does the bicyclist prefer to ride on off-street bike paths, on-street bike lanes, or bike routes on neighborhood streets?
- How often does the bicyclist ride a bicycle?
- How far from work or school does the bicyclist live?
- What are the most typical destinations that the bicyclist uses a bicycle to access?
- What are some reasons why the bicyclist doesn't ride more often in San Diego?

The tables and charts below summarize the responses to the questions posed above. Table 5.1 shows that people overwhelmingly preferred off-street paths and on-street bike lanes to signed routes with no dedicated riding space or routes that utilize quiet neighborhood streets. This may reflect the desire for more direct routes for commuting (on arterial bike lanes) as well as a desire for more recreational paths for the large number of people who stated that they ride a bicycle primarily for exercise and recreation.

**Table 5.1
Bikeway Facilities Cyclists Prefer**

<i>What type of bikeway facility do you prefer?</i>		
Response	Total	%
Off-street paths	44	48.9%
On-street lanes	38	42.2%
On-street neighborhood routes	8	8.9%
TOTAL	90	

Figure 5.1 shows that the most common reasons for making a bicycle trip were for recreation/exercise and commuting.



**Figure 5.1
Typical Reasons for Making a Bicycle Trip**

Figure 5.2 illustrates that the most frequently cited issues were concerns about safety and the lack of bikeway facilities. The presence of high-speed traffic on many arterial streets and the many merging freeway ramps probably contribute to this sense of lack of security when riding a bicycle in the City. Consistent with other surveys conducted in previous studies, it could be speculated that the existence of more bikeway facilities would increase the sense of safety and provide bicyclists with a sense of legitimacy on the roads. Increased safety and the existence of bikeway facilities may be correlated.

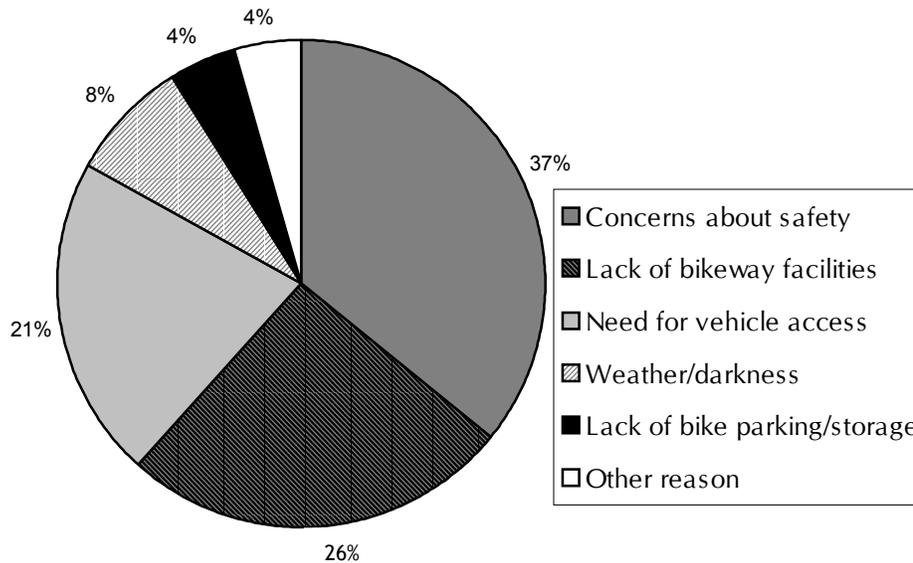


Figure 5.2
Reasons Why People Don't Ride Their Bicycles More Often

Tables 5.2 and 5.3 show the results from questions posed regarding frequency of cycling and the distance people live from their place of work or school.

**Table 5.2
Survey Responses**

<i>How often do you ride a bicycle?</i>		
Response	Total	%
At least once a day	23	25.6%
1 - 6 times per week	60	66.7%
1 - 3 times per month	7	7.8%
TOTAL	67	

**Table 5.3
Survey Responses**

<i>How far from work or school do you live?</i>		
Response	Total	%
0 - 5 miles	21	24.1%
6 - 10 miles	31	35.6%
>11 miles	35	40.2%
TOTAL	87	

Respondents were also asked to list five problem areas or constraints that currently exist for bicyclists in the City. They were also asked to suggest improvements that could be made in the San Diego bicycling environment in the future. The items listed below include many of the problem areas identified by bicyclists in the survey.

- The intersection of La Jolla Shores Drive and Torrey Pines Road
- Torrey Pines Road at Genesee Avenue
- Gilman Drive at I-5
- Nobel Drive at I-5
- Miramar Road
- Miramar Road at Kearney Villa Road
- Mission Bay Drive at Sea World Drive
- Nimitz Boulevard
- Harbor Drive in Downtown
- Lack of safe bicycle routes in Downtown
- Friars Road at Qualcomm Stadium

- Texas Street
- University Avenue
- Washington Street
- Mission Gorge Road
- Carmel Valley Road between Torrey Pines Road and El Camino Real
- Genesee at I-5
- Sorrento Valley Road at I-5
- Sorrento Valley Road/ Mira Mesa Blvd. at I-805
- Coaster Station in Sorrento Valley
- Mira Mesa Blvd.
- Pomerado Road through Scripps Ranch (Between Poway and Miramar)
- Lusk Boulevard

In addition to problem areas, the respondents also provided suggested bikeways for the City. Some of these suggestions are listed below.

- Continuous San Diego Bay bikeway
- Extension of the San Diego River bikeway
- Completion of the Silver Strand path
- Coronado Bridge
- A link from Old Town to Mission Bay

Many cyclists offered their opinions on what could be done to enhance the quality of cycling in San Diego. Most often cited were:

- A maintenance program to remove debris from bike lanes and paths
- Programs to educate motorists about sharing the road
- The installation of bicycle loop detectors at intersections
- The elimination of permit requirements to board the Trolley with bicycles. (This last suggestion was submitted before implementation of this change in MTDB policy in July 2001.)

An overwhelming number of respondents noted that they incurred obstacles to cycling due to construction activity. Suggestions that could improve cycling during roadway construction would be a system to notify cyclists of upcoming construction activities, possibly through a website. Many respondents wanted a policy put into place where construction signs are appropriately placed that do not block bicycle access and that at the completion of construction activities bicycle lanes are restored to their previous conditions or better.

Bicycle Counts

The San Diego Association of Governments (SANDAG) conducts bicycle counts as part of their Regional Bicycle Counting program intended to identify bicycle volumes at specified street intersections in the San Diego region. The information is intended for use by local agencies in planning for future bicycle facilities. Since 1980, SANDAG has been conducting bicycle counts every four years at 18 master sites throughout the San Diego region. Master sites are those that

SANDAG has identified to be critical locations, such as near colleges, universities, beaches, and major employment centers, and/or those that are representative of bicycling conditions in the County. Additional count locations are selected based on demand or request.

Traffic counts are gathered during the months of September and October in order to include students while school is in session and include the period of time when there is adequate daylight to capture a reasonable number of bicyclists. Counts are conducted from 6 a.m. to 9 a.m. and from 3 p.m. to 6 p.m. Monday through Thursday.

For the period from 1987 through 1997, bicycle counts were conducted at 14 locations in the City of San Diego. The 1997 counts have been identified as suspect due to the unusual weather patterns that occurred during that year. These unusual conditions may have had an effect on the number of bicyclists that were counted.

The following table represents a 10-year period, from 1987 to 1997, of bicycle counts at fourteen locations in the City of San Diego.

**Table 5.4
Bicycle Counts in San Diego**

Location	Number of Bicyclists (6-9 am, 3-6 pm)				Percentage Change			
	1987	1990	1993	1997	1987-1990	1990-1993	1993-1997	1987-1997
Laurel St / 6th Ave	152	162	107	99	6.6%	-34.0%	-7.5%	-34.9%
Harbor Dr / Ferry Landing	116	222	199	197	91.4%	-10.4%	-1.0%	69.8%
Imperial Ave / Euclid Ave	68	71	58	36	4.4%	-18.3%	-37.9%	-47.1%
Howard Ave / Idaho St	104	113	70	42	8.7%	-38.1%	-40.0%	-59.6%
Harbor Dr / 28th Street	146	137	95	93	-6.2%	-30.7%	-2.1%	-36.3%
Paradise Valley Rd / Woodman St	49	66	35	18	34.7%	-47.0%	-48.6%	-63.3%
Camino del Rio South / Fairmount Ave	204	195	66	34	-4.4%	-66.2%	-48.5%	-83.3%
Montezuma Rd / College Ave	1175	712	495	342	-39.4%	-30.5%	-30.9%	-70.9%
Torrey Pines Rd / Genesee Ave	330	206	175	192	-37.6%	-15.0%	9.7%	-41.8%
East Mission Bay Dr / Clairemont Dr	290	205	94	154	-29.3%	-54.1%	63.8%	-46.9%
Balboa Ave / Genesee Ave	344	138	72	81	-59.9%	-47.8%	12.5%	-76.5%
Rose Canyon Bike Path / Gilman Dr	209	227	196	129	8.6%	-13.7%	-34.2%	-38.3%
Black Mountain Rd / Mira Mesa Blvd	265	239	134	136	-9.8%	-43.9%	1.5%	-48.7%

Location	Number of Bicyclists (6-9 am, 3-6 pm)				Percentage Change			
	1987	1990	1993	1997	1987-1990	1990-1993	1993-1997	1987-1997
Dairy Mart Rd / Beyer Blvd	163	92	66	79	-43.6%	-28.3%	19.7%	-51.5%
TOTAL	3,615	2,785	1,862	1,632	-23.0%	-33.1%	-12.4%	-54.9%

Overall, the bicycle count data suggest a continuous decline in bicycle ridership between 1987 and 1997. However, SANDAG has stated that the methodology used to collect the data may have varied year to year, and unusual weather patterns may have also affected the number of bicyclists observed in 1997. Because of these caveats and the fact that a comprehensive effort to perform bicycle counts at more locations was not performed, it is difficult to draw significant conclusions from the data presented here.

City of San Diego Bicycle Count Methodology

The City of San Diego currently performs bicycle counts along with peak-hour vehicle counts. These are performed at various intersections within the City every year. In order to compare count data from year to year and take a consistent measurement of bicycle use in the City, a new count program should be developed. Bicycle counts should utilize the same locations so that a measurement of use can be determined in future planning efforts for new bikeway projects, and so that a trend in bicycling can be measured. This new count methodology should have the following components:

- Count bicyclists at the same intersections approximately every three years.
- Approximately 40 count locations should be identified and should be representative of the City. Areas to be included are:
 - Downtown
 - University areas
 - Beaches
 - Parks
 - Near schools
 - Employment centers
 - Shopping areas
 - Other representative areas of San Diego
- Most of the counts should be along bikeways, including Class I, II, and III facilities, and the others should consist of other street locations. This would be coordinated with existing manual count locations at other requested intersections.
- Counts should be conducted during the same week each year on Tuesday, Wednesday, Thursday, and Friday to capture commute and utilitarian trips.
- Counts should be conducted on consistent weekend days to capture recreational trips on bikeways that are primarily more recreational in nature.
- Ideally, counts should be conducted from 6 a.m. until 8 p.m., but a more limited timeframe could be 6 a.m.-9 a.m. and 3 p.m.-6 p.m.
- Count days would be changed to account for days with bad weather, such as rain.
- For new bikeway projects, before and after counts should be employed to see if the new bikeway project yielded new riders at a particular location.

- Installing loop detectors to count bicycles on Class I facilities, such as the Mission Bay bikeway or the Mission Valley Path.
- Tallying the characteristics of bicyclists as they are counted. These may include helmet use and approximate age and gender of the riders.

Implementing a comprehensive bicycle count methodology could assist the bicycle planning process in determining where new bikeway facilities should be constructed in the future. It could also provide data to compare rates of bicycle use when new projects are implemented to expand the existing bikeway network in San Diego. Moreover, it could help the City assess the cost effectiveness of facilities and assist the City’s planning efforts in the future.

Existing Bicycle Commuters and Commuter Ridership Forecast

Table 5.5 Ridership Forecast and Air Quality Analysis

	Forecast Parameters	San Diego	Methodology Notes
1	Population	1,277,168	2000 US Census
2	# of Employed Persons	645,068	1990 US Census extrapolated employed persons to 2001
3	# Bicycle-to-Work Commuters	7,028	1990 US Census extrapolated bike to work consistent with population growth
4	Bicycle-to-Work Mode Share	1.09%	Work commuters (including bike-transit users) x 7 miles + college and school students x 1 mile (round trip)
5	Population: Ages 6-14 years	140,647	1990 US Census extrapolated consistent with population growth
6	# of College Students	151,603	1990 US Census extrapolated consistent with population growth
7	# of Daily Bike-Transit Users	2,679	San Diego Regional Transit Bike Rack Counts for San Diego Transit, extrapolated for San Diego Trolley
8	Total # of Bicycle Commuters	31,899	assumes 5% of school students and 10% of college students commute by bicycle - from national studies and estimates
9	# Miles Ridden by Bicycle Commuters per Weekday	90,141	work commuters (including bike-transit users) x 7 miles + college and school students x 1 mile (round trip)
10	# of Future Daily Bicycle Commuters	89,000	estimated using increase to 279% of baseline from 2000 LACMTA study by Alta Transportation
11	Future # Miles Ridden by Bicycle Commuters per Weekday	251,492	estimated using increase to 279% of baseline from 2000 LACMTA study by Alta Transportation
12	Reduced Vehicle Miles per Weekday	161,352	future bicycle miles traveled (row 10) minus existing bicycle miles ridden (row 8)
13	Reduced PM10 (lbs/weekday)	2,968.87	(.0184 tons per reduced mile)
14	Reduced NOX (lbs/weekday)	8,048.22	(.04988 tons per reduced mile)
15	Reduced ROG (lbs/weekday)	11,714.13	(.0726 tons per reduced mile)
16	Reduced Vehicle Miles per Year	38,286,945	180 days for students, and 256 days for employed persons
17	Reduced PM10 (lbs/year)	704,480	(.0184 tons per reduced mile)
18	Reduced NOX (lbs/year)	1,909,753	(.04988 tons per reduced mile)
19	Reduced ROG (lbs/year)	2,779,632	(.0726 tons per reduced mile)

(NOX are nitrogen oxides, PM-10 are particulate matter of diameter less than 10 microns, ROG are reactive organic gases.)

Table 5.5 shows the projected mode share of bicycling for the City of San Diego. This forecast is based on census data and a methodology developed by Alta Transportation to estimate the number of bicycle commuters if an expanded bikeway network were to be implemented. Much of the census-based information is extrapolated from the 1990 U.S. Census consistent with population growth during the period 1990-2000.

As the table shows, the estimated number of future miles ridden by bicycle for San Diego is 251,492 per weekday. This would result in a reduction of 161,352 vehicle miles traveled each weekday. This reduction would in turn result in an air quality improvement of reduced emissions of unhealthful gases and particulates shown in the last column in rows 13-15. These reduced emissions would amount to 704,480 pounds per year of PM-10 (particulate matter of diameter less than 10 microns), 1,909,753 pounds per year of NOX (nitrogen oxides), and 2,779,632 pounds per year of reactive organic gases (ROG).