

LESSONS LEARNED, CHALLENGES AHEAD –  
SAN FRANCISCO'S 2nd BICYCLE PLAN

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## **ABSTRACT**

While many North American cities are just beginning to embrace the concepts of bicycle planning, San Francisco recently completed its second comprehensive bicycle plan, a complete update of the City's original 1997 plan, with the overarching goal to "Make bicycling an integral part of daily life in San Francisco." This simple statement is a daunting proposition for one of North America's most dense and hilly cities, where motor vehicles, public transit, and bicycles must compete for precious right-of-way.

San Francisco has clearly emerged as a bicycle-friendly city, with the number of bicycle commuters more than doubling from 1990 to 2000 (bicyclist injury collisions decreased by roughly 30% during the same period). This presentation will begin by covering the lessons learned in making San Francisco the U.S. city (population over 500,000) with the highest bicycle commute mode share. While this mode share pales in comparison with many major cities outside North America, San Francisco's updated bicycle plan sets the lofty goal of "10% by 2010."

The second part of the presentation will cover the challenges in implementing San Francisco's ambitious bicycle planning goals, as well as implementing bicycle facilities based on the City's new bicycle design guidelines. With over 70 action items, a highly involved public process, and a comprehensive set of design guidelines, will the updated San Francisco Bicycle Plan be able to deliver?

Sample topics include:

### **Lessons Learned-**

- 20 Successful Road Diets
- 1,000s of Bicycle Racks
- 204 Miles of Signed Bicycle Network
- Institutionalized Bicycle Policy
- Secured 30 Million US Dollars for Bicycle Projects

### **Challenges Ahead-**

- Comprehensive Bicyclist Education in Multiple Languages
- Bicycle Priority or Transit Priority - Two Modes, Many Narrow Lanes
- Design Guidelines – Implementing Innovative Facilities
- 10% of San Franciscans Bicycling by 2010
- Spending 30 Million US Dollars on Bicycle Projects

## 1.0 INTRODUCTION

Many cities are wrestling to complete their bicycle plan, while others have just completed their first one. San Francisco has just completed its second plan, a complete update with the overarching goal of “Make bicycling an integral part of daily life in San Francisco”. This is a simple statement, but a daunting proposition for a dense, urban, and hilly North American city.

A lot has been locally learned, implemented, ignored, removed, and built since the 1997 plan was completed. Impressive results have occurred too; bicycle commuters have more than doubled from 1990 to 2000, while the number of bicyclist injury collisions has decreased by roughly 30%. This has all lead to San Francisco obtaining the highest bicycle commute mode share for U.S. cities with a population greater than 500,000 (see Table 1).

Table 1: Percentage of People Bicycling to Work in Major U.S. Cities (pop >500,000)

CITY	2000 POPULATION	PERCENTAGE COMMUTING BY BICYCLE	RANK
San Francisco, CA	776,733	2.08	1
Seattle, WA	563,373	1.97	2
Portland, OR	529,025	1.84	3
Washington, DC	572,059	1.21	4
Boston, MA	589,141	0.99	5
Denver, CO	554,636	0.99	6
Austin, TX	656,302	0.96	7
Phoenix, AZ	1,320,994	0.89	8
Philadelphia, PA	1,517,550	0.88	9
San Diego, CA	1,223,341	0.84	10
Los Angeles, CA	3,694,834	0.63	11
San Jose, CA	893,889	0.63	12

## 1.0 BACKGROUND ABOUT SAN FRANCISCO

The City and County of San Francisco has approximately 780,000 residents within approximately 47 square miles: an average population density of 16,500 persons per square mile. San Francisco’s neighborhood-based land use patterns contribute to the appeal of utilitarian and recreational bicycling.

According to Rides for Bay Area Commuters 2003 Commute Profile, about two percent (2%) of all San Francisco residents cycle to work giving the City a relatively high commute bicycling mode split. This represents five times the U.S. average of four tenths of one percent (0.4%) and about two and one half times the California average of eight tenths of one percent (0.8%). See Table 2.

Table 2: Means of Transportation to Work for SF Residents (2000 Census)

MODE	PERCENTAGE
Drive Alone	40.5
Carpool	10.8
Public Transportation	31.1
Motorcycle	0.9
Bicycle	2.1
Walk	9.4
Other	0.7
Work at Home	4.6

San Francisco is often noted for two things among bicyclists, the birthplace of “Critical Mass” (Figure 1) and its hilly topography. Both have shaped the bicycle improvements within the City, with most of these improvements only occurring within the past ten years.



Photo by Pamela Palma

Figure 1: Photo from a Monthly Critical Mass Ride

The “Critical Mass” rides of the 1990’s brought bicycle issues to the forefront, and galvanized local bicycle advocates into action. Credit should be given to the local advocates, the San Francisco Bicycle Coalition (SFBC) for leading the charge.

While the SFBC is one of the oldest bicycle advocacy organizations in the United States (founded in 1970), they were inactive throughout the 1980s. Only in the 1990’s did they come in to full force. It has been through their constant presence and persistence that many of the bicycle projects have come to fruition. Only in 1992 did the City of San Francisco establish its first Bicycle Program, and only in 1997, did San Francisco adopt its first bicycle plan.

As far as the hilly topography, wherever possible, the San Francisco Bicycle Route Network directs bicyclists to the flattest streets with the lowest traffic volumes and/or slowest motor vehicle speeds. At the same time it seeks to connect major attractions and neighborhoods.

Avoiding the hills has created unique situations like what local bicyclists call “the Wiggle” (see Figure 2), a segment of San Francisco’s Bicycle Route Network that is approximately eight blocks long with six turns to avoid the hills.

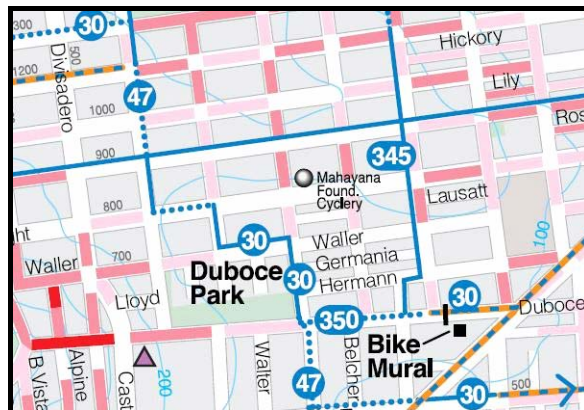


Figure 2: Detail of the “Wiggle” (shades of red denote grades/hills)

### 3.0 BICYCLE ROUTE NETWORK

The current Bicycle Route Network is approximately 330 km (205 miles) long, while the overall city transportation system contains 1751 km (1088 miles) of roadway.

San Francisco's Bicycle Route Network is classified into four types: bike path (an off-street separated bicycle path), bike lane (an on-street striped bicycle lane), signed bike route with wide curb lanes, and signed bicycle routes lacking wide curb lanes, but including other improvements.



Table 3: Breakdown of San Francisco Bicycle Route Network

Bikeway Type	Length
Bicycle Path	47 km (29 miles)
Bike Lane	55 km (34 miles)
Wide Curb lane (signed)	87 km (54 miles)
Bicycle Route (signed)	142 km (88 miles)
Total	330 km (205 miles)

In San Francisco as in other cities, there are many physical limitations and competing modes. Pedestrians, motor vehicles, transit lines, and bicyclists must compete for a finite space. Bicycle planners must take into consideration the effects of new facilities on other modes and balance them in the overall transportation vision for the city.

The City of San Francisco has engaged in several practices that have placed it out front in North America for its wiliness and ability to implement bicycle projects. These practices have been documented in the Supplemental Design Guidelines section of San Francisco's recent Bicycle Plan Update. Some of these designs are highlighted below.

### 4.0 “ROAD DIETS”

Over twenty “road diets” (the reduction of a roadway’s



width or lanes – bicycle facilities.

One of the first and controversial lane reductions for San Francisco was the road diet along Valencia Street. This led to final installation of bicycle lanes with a follow up one year trial. The City documented the effect of the project on bicycle, transit, and motor vehicle traffic along this corridor. The success of this project set the stage for future road diet projects throughout the City. A year after the bicycle lanes were installed, traffic counts were conducted. The number of bicyclists increased by over 140% and made up 16 percent of the vehicle traffic along Valencia Street during the evening rush hour.

Figure 3: Drawing of a Typical Road Diet

## 8.0 INNOVATIVE DESIGNS

### 5.1 “FLOATING BIKE LANE”

San Francisco has also employed combined parking and bike lanes, locally referred to as a “floating bike lane.” This term is a reference to the varying space for cyclist that “floats” side to side during the day as parking is allowed or restricted. This approach has succeeded in balancing the demands of peak-hour traffic capacity, parking, and adequate bicyclist accommodation along San Francisco’s waterfront. See Figure 4 below.

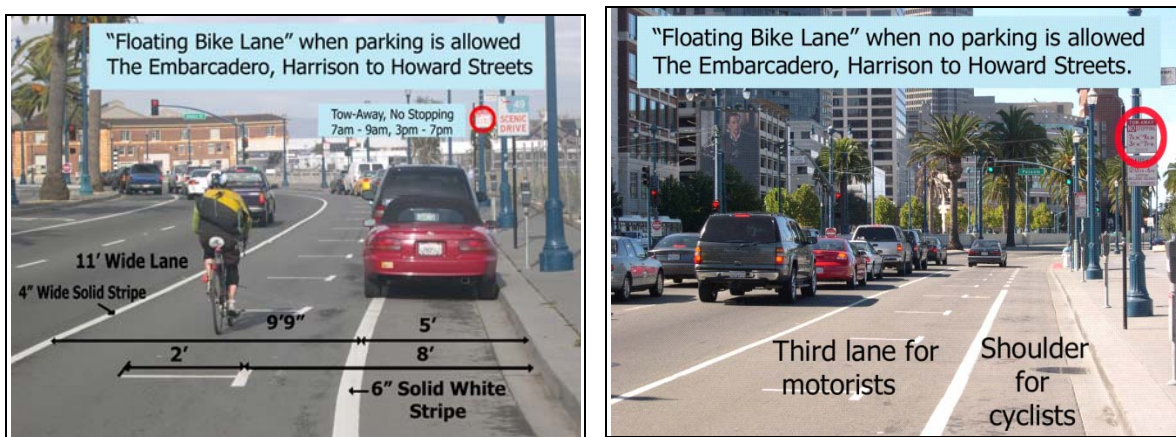


Figure 4: Floating Bike Lane where Space for Cyclists Shifts during the Day

### 5.2 SHARED ROADWAY MARKING

Another innovation in response to the particular constraints of narrow roads where motor vehicles and bicycles must share the same lane has been the installation of the Shared Roadway Marking or “sharrow”. These markings encourage bicyclists to ride outside of the “door-zone” (Figure 5) and inform motorists of where cyclists should be, especially in situations where cyclists should take the lane (Figure 6).

A before and after study, testing the effectiveness of this marking, was undertaken as part of the Bicycle Plan Update. By the end of 2006, there will be 2500 markings painted along ~100km (60 miles) of streets. Currently 850 are painted.



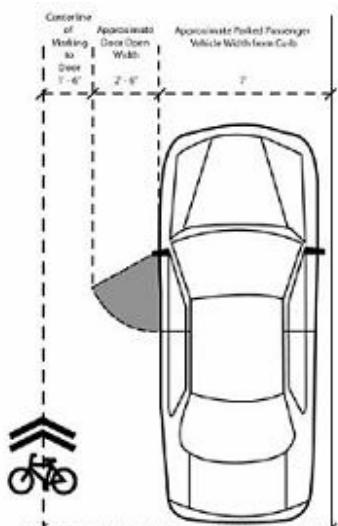


Figure 5: The Door Zone



Figure 6: Shared Roadway Marking

## 6.0 BICYCLE PARKING REQUIREMENTS

San Francisco has some of the strictest bicycle parking requirements within North America. All San Francisco public events that have an attendance greater than 2,000 people are required to have monitored bicycle parking (valet bicycle parking).

All automobile garages (public or private) with ten or more automobile spaces are required to provide bicycle parking. However, compliance still remains an issue, with only 66 percent of all garages being partially compliant. Also, all city owned or leased buildings are required to provide bicycle parking, and all new commercial and industrial buildings require shower facilities, bicycle parking, and lockers.

Most of these requirements were established with San Francisco's first Bicycle Plan in 1997. The updated plan of 2005 will increase the enforcement of the existing bicycle parking regulations but also take on issues like requiring property owners to provide bicycle parking for their tenants.

Lastly, the City of San Francisco installs about 250 sidewalk bicycle racks per year. Citizens can request a location and rack via the Bicycle Program's web site. The Bicycle Plan Update will further refine this program, and recommends the retrofitting of on-street automobile parking spaces for exclusive on-street bicycle parking facilities. The city's first project to do so was completed last year where 2 car spaces were replaced with 38 bicycle parking spaces. Parking



Figure 7: On-Street Bike

## 7.0 CHALLENGES AHEAD

## .1 COMPREHENSIVE BICYCLIST EDUCATION IN MULTIPLE LANGUAGES

San Francisco is an ethnically diverse population. To thoroughly reach out to everyone will require that we present information in a variety of languages. Spanish is often used, and Cantonese/Mandarin has also been used in translations. The city Bicycle Program will need to expand its use of translations so that necessary safety information reaches across the many ethnic lines in the city.

## .2 BICYCLES VS TRANSIT

Despite efforts to keep the routes separate, oftentimes bicycle routes and transit routes overlap. In these cases, there is a tension between the need for bicycle facilities, which often require a lane removal, and the need to keep transit moving. On one such project where the city is studying the feasibility of a road diet to make room for bicycle lanes, other transit-related improvements are being included, such as the consolidation of frequent bus stops and the installation of transit priority hardware at traffic signals.

## .3 DESIGN GUIDELINES

As mentioned earlier, San Francisco has developed a local manual of bikeway designs that can be used to address design challenges not addressed by other traffic manuals. The challenge with such an approach is that, because many of these designs have not been thoroughly studied and are often not considered official traffic control devices, San Francisco assumes some level of responsibility for using such designs. It may be that some designs do not work as intended and thus must be modified or removed. Trial and error is involved, along with the risk of using non-standard traffic control devices and designs. Though time and resource intensive, the city has worked with state and federal committees to help make some of these devices standard. The bicycle route sign and shared roadway marking are two successes, and a similar effort with colored bicycle lanes is underway.

## 7.3 TEN PERCENT BY 2010

Roughly two percent of bicycle commuters is still a small number compared to other cities worldwide, but San Francisco's advocates are pushing for "10% by 2010". With over 70 action items, clear goals and objectives, and a highly involved public process, will the new 2005 San Francisco Bicycle Plan be able to deliver?

For San Francisco to achieve another major increase in the number of bicyclists, all the action items that are listed within the Bicycle Plan should be implemented within the next five years. This will require strong leadership from our local elected officials, cooperation between multiple city agencies, and an unwavering commitment to the goals set forth within the Plan.

On a more mundane level, a systematic plan for tracking bicycle use needs to be developed to determine if the city is on track with meeting its goals. This requires additional personnel and financial resources be devoted to the Bicycle Program.

## 7.4 SPENDING \$30 MILLION ON BICYCLE PROJECTS

A sales tax to fund various transportation projects was recently approved by voters, yielding projected funds of \$30 million for bicycle projects over the next 30 years. Given the rate of bicycle improvements in San Francisco, spending the money will



not be difficult, but it does highlight the expectations that the public and the politicians have for turning out bicycle projects.

These various challenges are simply part of the evolution of bicycle planning and engineering in San Francisco. The past 10 years have been challenging, and the next 10 will continue to be too. Four years from now, we hope to report that 10% of the population is indeed bicycling to work.

## 8.0 REFERENCES

San Francisco Municipal Transportation Agency. 1998. *Implementing San Francisco's Bicycle Route and Sign System*. [Online]. Available: [http://www.bicycle.sfgov.org/site/uploadedfiles/dpt/bike/route\\_network.pdf](http://www.bicycle.sfgov.org/site/uploadedfiles/dpt/bike/route_network.pdf). [13 January 2006].

San Francisco Municipal Transportation Agency. 2003. *Supplemental Design Guidelines*. [Online]. Available: [http://www.bicycle.sfgov.org/site/uploadedfiles/dpt/bike/Bike\\_Plan/SF\\_Design\\_Guidelines\\_Feb04.pdf](http://www.bicycle.sfgov.org/site/uploadedfiles/dpt/bike/Bike_Plan/SF_Design_Guidelines_Feb04.pdf). [13 January 2006].

San Francisco Municipal Transportation Agency. 2005. *San Francisco Bicycle Plan: Policy Framework*. [Online]. Available: [http://www.bicycle.sfgov.org/site/dptbike\\_index.asp?id=25138](http://www.bicycle.sfgov.org/site/dptbike_index.asp?id=25138). [13 January 2006].

RIDES for Bay Area Commuters. 2003. *Commute Profile 2003*. [Online]. Available: <http://www.rideshare.511.org/research/commuterprofile2003.asp>. [13 January 2006].

U.S. Census Bureau. [Online]. Available: <http://www.census.gov/>. [13 January 2006].