

Metropolitan Transportation Commission

Regional Bicycle Plan

2008 update

DRAFT

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Chapter 0: Acknowledgements

Forthcoming

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Chapter 0: Executive Summary

This section will be written after the Plan is complete and all comments have been incorporated.

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Chapter 1: Introduction

This section will be written after the Plan is complete.

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Chapter 2: Goals and policies

This chapter documents the bicycle-related goals and policies of the Metropolitan Transportation Commission, which guided the development of this updated Regional Bicycle Plan.

PRINCIPAL GOAL:

Ensure that bicycling is a safe, convenient, and practical means of transportation and healthy recreation throughout the Bay Area, to reduce traffic congestion and risk of climate change and to increase opportunities for physical activity to improve public health.

Federal, state and regional directives place greater emphasis on considering the accommodation of pedestrians and bicyclists when designing roadway facilities than when this plan was originally adopted in 2001. That year, Caltrans issued Deputy Directive (DD) 64, which requires the State Department of Transportation to consider the needs of bicyclists and pedestrians in the planning, design, construction, operation and maintenance of its facilities (see Appendix B for full text).

In 2006, MTC adopted Resolution 3765, which requires agencies applying for regional transportation funds to document how the needs of bicyclists and pedestrians were considered in the planning and design of projects for which funds are requested. For the region to make further strides towards improving bicycle travel, the routine accommodation of bicycles and pedestrians must be embraced by other implementing agencies as well, such as countywide transportation authorities and congestion management agencies, jurisdictions, transit operators, and other partner agencies of MTC.

Objective 1: Routine Accommodation

Guarantee that accommodations for bicyclists and pedestrians are routinely considered in the planning and design of all roadway, transit and other transportation facilities funded by the Metropolitan Transportation Commission.

Policies:

- 1.1 Ensure that all regionally funded links in the regional bikeway network consider enhancement of bicycle transportation, consistent with MTC Resolution 3765 and Caltrans Deputy Directive 64.
- 1.2 Encourage bicycle-friendly design on all regional bikeway network links, public transit systems, and other transportation facilities, through new technologies, “best practices” standards, guidelines, and innovative treatments.

Objective 2.0: The Regional Bikeway Network

Define a comprehensive regional bikeway network that connects every Bay Area community with over 5,000 people; provides connections to regional transit and major activity centers and



central business districts; and includes the San Francisco Bay Trail (consistent with criteria documented in the original Regional Bicycle Plan, adopted December 2001).

Policies:

- 2.1 Develop a cohesive system of regional bikeways that provide access to and among major activity centers, public transportation and recreation facilities.
- 2.2 Ensure that the regional bikeway network serves bicyclists with a wide range of abilities and who are bicycling for a range of transportation and recreational purposes.
- 2.3 Ensure that closing gaps in the regional bikeway network—particularly those that occur over jurisdictional boundaries—are given high funding priority.
- 2.4 Ensure ongoing maintenance and monitoring efforts that support the implementation and operation of the regional bikeway system.
- 2.5 Encourage coordination of cross-jurisdictional bicycle way-finding signage.
- 2.5 Provide bicycle access across all Bay Area toll bridges whenever possible.

Objective 3.0: Bicycle Safety

Encourage local and statewide policies that improve bicycle safety.

Policies

- 3.1 Support local government efforts to improve bicyclist safety by encouraging enforcement of the California vehicle code for motorists and cyclists alike. Examples include diversion training programs and reduced fines for errant cyclists to encourage citation-writing.
- 3.2 Encourage local jurisdictions and other agencies and organizations to utilize MTC's online Safety Toolbox.
- 3.3 Assemble examples of bicycle facility maintenance standards.

Objective 4.0: Bicycle Education and Promotion

Develop training sessions and educational materials that emphasize bicycle safety and the positive benefits of cycling.

Policies

- 4.1 Encourage and support the creation or expansion of comprehensive safety awareness, driver education, cyclist education, and diversion training programs for cyclists and motorists.
- 4.2 Develop a comprehensive promotion and outreach effort—including, but not limited to, Bike-to-Work Day—that advocates for bicycling as a healthy transportation choice, both physically and environmentally.
- 4.3 Use 511.org to disseminate information to Bay Area bicyclists.
- 4.4 Sponsor training sessions on best practices bicycle facility design and safe cycling practices.
- 4.5 Develop a regional bicycle signage program.

Objective 5.0: Multimodal Integration



Work toward developing seamless mode transfers between bicycling and public transportation.

Policies

5.1 Encourage transit agencies to provide, maintain, and promote convenient and secure bicycle parking at transit stops, stations, and terminals, including racks, bike lockers, in-station bike storage, and staffed bicycle parking facilities.

5.2 Facilitate cooperation of local and regional transit agencies to ensure that bicycles are accommodated on all forms of public transit, whenever possible.

5.3 Foster collaboration between local jurisdictions and regional transit agencies to focus bicycle improvements to transit station access on the half-mile surrounding each station. Improvements to ease, speed, convenience and safety of bicycle access, including by means of signage and bikeways should be considered.

5.4 Continue to fund the Safe Routes to Transit program using Regional Measure 2 revenue or other sources.

Objective 6.0: Comprehensive Support Facilities and Mechanisms

Encourage the development of facilities and institutions that contribute to a good bicycling environment.

Policies

6.1 Encourage development of facilities at transit stations that provide long term bicycle storage, bicycle repair and bicycle rental.

6.2 Encourage local jurisdictions to adopt ordinances requiring bicycle parking and storage, and shower and locker facilities for all new developments and major redevelopments.

6.3 Encourage local jurisdictions to offer incentives for employers that provide indoor bicycle parking for their employees and, when feasible, their customers.

6.4 Continue to require cities and counties to form and maintain bicycle advisory committees, and to develop and update comprehensive bicycle plans as a condition for receiving Transportation Development Act (TDA) funds.

Objective 7.0: Funding Sources

Develop an equitable and effective regional funding and implementation process.

Policies

7.1 Renew and increase the Regional Bicycle and Pedestrian Grant Program to support improvements to, and expansion, maintenance, and operation of bicycle facilities throughout the Bay Area.

7.2 Consider the benefits of bicycling in the allocation of all transportation funding and in developing performance measures, including vehicle trip and greenhouse gas reduction, public health and community livability.

7.3 Continue funding the Safe Routes to Transit program with alternate funds once Regional Measure 2 funds are no longer available.

7.4 Develop new funding sources to support operation and maintenance of bicycle and pedestrian facilities.



7.5 Develop a regional Safe Routes to Schools funding program.

Objective 8.0: Planning

Continue to support ongoing regional bicycle planning.

Policies

- 8.1 Support ongoing planning efforts to implement projects in the Regional Bicycle Plan, with the assistance of MTC Resolution 3765.
- 8.2 Update and adopt the next Regional Bicycle Plan before the development of the next Regional Transportation Plan begins.
- 8.3 Continue to staff and support a regional bicycle working group to oversee implementation of this plan, among other efforts.
- 8.4 Create mechanisms to distribute this plan to jurisdictions and other agencies throughout the Bay Area and to encourage incorporation of applicable policies into locally adopted documents.
- 8.5 Allocate resources to increase interaction between Metropolitan Transportation Commission staff working on bicycle issues and their counterparts at Caltrans. <This needs examples.>
- 8.6 Encourage jurisdictions to consider adopting thresholds of significance that establish Level of Service (LOS) guidelines for all modes.
- 8.7 Support inclusion of transportation and land use standards in Health Impact Assessments, in recognition of the well-documented deleterious effects that automobile-oriented community design has on public health.
- 8.8 Encourage development of bicycle facilities and amenities in the process of planning in Priority Development Areas (PDAs).

Objective 9.0: Data Collection

Routinely collect region-wide bicycle, pedestrian travel and collision data, including for trips using non-motorized modes to access public transit.

Policies

- 9.1 Conduct regional travel surveys every five years to understand the role that bicycling plays in the Bay Area's transportation system and to track the effect of external trends.
- 9.2 Collect SWITRS collision data for Bay Area jurisdictions and post data on MTC website.
- 9.3 Purchase a regional add-on to the National Household Travel Survey.
- 9.4 Continue to make travel data available to the public through the MTC website.
- 9.5 Work with the National Bicycle and Pedestrian Documentation Project to standardize bicycle and pedestrian data collection throughout the region.
- 9.6 Establish a program that provides consultants to perform bicycle counts to public agencies throughout the Bay Area, including transit systems. Ensure that funding does not come from bicycle funding sources.



Chapter 2: Existing Conditions

Beyond weather, terrain, and experience, the decision to use a bicycle for transportation or recreation is influenced by the existence and quality of bicycle facilities along the route and at the destination. Evaluating these conditions, therefore, is an important first step toward developing a comprehensive and continuous regional bicycle infrastructure. This chapter begins with a backdrop of bicycling in the Bay Area—the region’s physical setting and bicycle trip-making characteristics. Next are summaries of automobile/bicycle collisions throughout the region, countywide planning and funding, and bicycle access on major public transit operators. A description of MTC’s bicycle-related programs and policies and a discussion of new technologies that were not in play when the original Regional Bicycle Plan was written follows. The Existing Conditions chapter concludes with a discussion of meaningful opportunities for implementing the updated Regional Bicycle Plan and the most significant constraints to doing so.

Physical setting

The nine-county Bay Area encompasses 7,200 square miles of varied topography, development intensity and climate. The region’s bays, rivers, hills, and mountains help define the Bay Area’s sub-regions, but they also impede travel within and among these areas. The region’s geography is unique and distinctive, but also presents challenges for bicycle transportation. Despite these obstacles, bicycling is a popular form of transportation and recreation in the Bay Area compared to both the State and country as a whole, and there are pockets of relatively high bicycle usage.

The Bay Area’s geography ranges from the cool and wet hills of the Coast Range facing the Pacific Ocean, to the dry and hot inland areas bordering the Central Valley. The urban core is centered on the plains surrounding San Francisco and San Pablo bays, the focus of the original settlement by the Spanish. While population is still concentrated around these bays, urban settlement has expanded across the East Bay hills, south from the Santa Clara Valley and north into the Russian River and Napa valleys.

While the historic urban core is home to relatively compact development, much of the Bay Area is characterized by lower density land use patterns. And while the region is strongly committed to bus, rail and ferry systems, sprawling residential and employment development patterns place pressure on fixed route transit systems to offer greater flexibility. Linking bicycling with transit lines can offer options for transit riders on either or both ends of their trips and can allow transit systems to increase ridership without constructing additional automobile parking.



Bicycle trip-making data

Every ten years, the Metropolitan Transportation Commission asks thousands of randomly-selected Bay Area households to track their travel patterns for a period of time in an “activity diary.” All members of participating households write down each time they move from one place to another, recording the origin, destination, time and mode in these diaries. Children’s activities are recorded by adults in the same household. The data collected from these trip diaries are then “expanded” — a statistical term meaning that the travel patterns of each household are multiplied by the number of Bay Area households with a similar demographic make-up—to represent the travel characteristics of the all households in the region, and published as the *Bay Area Travel Survey* (BATS).

In 2000 (the most recent BATS), 15,000 households were surveyed region-wide. The resulting dataset provides the most detailed information available regarding where Bay Area residents are bicycling and for what purposes. However, because each trip recorded (e.g., a commuter’s bike ride to work) is assumed to represent between 250 and 1,000 actual trips, depending on the demographics of the trip-maker, the dataset can provide misleading information, particularly in cases where fewer than 5,000 or so trips are reported. This limitation restricts the survey’s usefulness in the North Bay counties of Marin, Sonoma and Napa where there are lower levels of bicycling, in part due to lower populations than in other counties.

With these caveats in mind, 2000 BATS information indicates that 1.5 percent of all Bay Area trips—almost 300,000 per day—were by bicycle in 2000 (see Table 3.1). Table 3.1 provides a breakdown of these trips and shows that this figure varies from a low in Contra Costa County for high school trips to a high for work trips in Alameda County. (This range ignores the two cells in Table 3.1 that indicate 0 trips, since these are clearly anomalies of the households surveyed.)

Region-wide, 1.8 percent of all bicycle trips are to work and San Francisco commuters bike to work at almost twice that rate. San Francisco residents also bicycle to shop far more often than the average Bay Area shopper (2.5 versus 1.4 percent). In Alameda County, residents traveling for social or recreational trips do so by bike at over twice the Bay Area average (3.3 versus 1.5 percent). San Mateo grade school (3.6 percent) and college students (6.9 percent) bicycle to school at twice and three times the regional average, respectively (1.8 and 1.9 percent, respectively). Overall, Alameda County residents have the highest rate of bicycle trip-making (2.1 percent) and Santa Clara County residents have the highest absolute number (60,315 trips per day).

As interesting as this data is, it bears repeating that it is based on trip-making by just 15,000 households. An alternative source of data is the U.S. Census Bureau’s Journey-to-Work, a detailed decennial survey of one-in-eight U.S. households that reports how many people bicycle to work. Transportation planners rely on the Journey-to-Work because of its extremely large sample size—300,000 Bay Area households were surveyed in 2000. However, like BATS, this data source is imperfect for walk and bicycle trips, but for different reasons. The instructions



effectively eliminate any record of the bicycle portion of bike-to-transit trips; for commuters who do not use the same mode every day, the wording leaves the response up to the respondent; and the survey takes place in the month of March, which can be quite rainy in the Bay Area, a deterrent to bicycling. Most importantly, only work trips are surveyed, which ignores many common bike trips, such as biking to school and for errands, recreation, and exercise. According to BATS, these non-work trips represent almost three quarters of all bike trips in the Bay Area.

Table 3.1 Bay Area Bicycle Trips

| County | Home-Based Bicycle Trips | | | | | | Non-home-based | TOTAL |
|---------------|--------------------------|----------------|----------------|----------------|----------------|----------------|----------------|-----------------|
| | Work | Shopping | Social/rec | Grade School | High School | College | | |
| Alameda | 21,717 2.3% | 14,913 1.4% | 24,745 3.3% | 6,550 1.8% | 997* 0.9% | 2,654* 1.9% | 18,698 2.0% | 90,269 2.1% |
| Contra Costa | 1,766* 0.3% | 8,915 1.1% | 3,152* 0.6% | 2,770* 1.3% | 131* 0.2% | 295* 0.4% | 1,265* 0.2% | 18,293 0.7% |
| Marin | 3,110* 2.0% | 4,560* 2.2% | 2,647* 1.6% | 665* 1.6% | 180* 0.8% | 681* 4.5% | 1,273* 0.7% | 13,115 1.7% |
| Napa | 878* 1.2% | 1,787* 2.0% | 843* 1.4% | 594* 1.6% | 0* 0.0% | 165* 2.4% | 401* 0.5% | 4,668* 1.3% |
| San Francisco | 18,712 3.3% | 13,345 2.5% | 6,324 1.7% | 0* 0.0% | 497* 1.5% | 956* 1.5% | 7,629 1.1% | 47,466 2.0% |
| San Mateo | 12,564 2.5% | 6,555 1.2% | 3,068* 0.8% | 6,397 3.6% | 287* 0.6% | 3,809* 6.9% | 5,922 1.4% | 38,601 1.8% |
| Santa Clara | 15,055 1.3% | 15,266 1.2% | 7,877 0.9% | 7,782 2.0% | 2,535* 2.1% | 1,149* 0.9% | 10,651 0.9% | 60,315 1.2% |
| Solano | 2,635* 1.2% | 4,125* 1.4% | 721* 0.4% | 1,487* 1.6% | 64* 0.2% | 256* 1.3% | 371* 0.2% | 9,658 1.0% |
| Sonoma | 2,602* 0.9% | 3,709* 1.0% | 2,512* 1.0% | 814* 0.9% | 320* 1.0% | 451* 1.1% | 751* 0.3% | 11,159 0.8% |
| Region | 79,039 1.8% | 73,175 1.4% | 51,889 1.5% | 27,059 1.8% | 5,011 1.1% | 10,416 1.9% | 46,961 1.1% | 293,544 1.5% |

Source: Metropolitan Transportation Commission, Bay Area Travel Survey, trip table data.

* Insufficient sample size. Reported for information purposes only.

The bottom line in terms of understanding why a given Bay Area resident opts to use his/her/his bicycle for a given trip, is that it is difficult to draw conclusions from available data. Further analysis at the city level may reveal, for instance, that older, more compact cities encourage cycling more than cities where destinations are farther apart. Or, city-level investigation may show that a rigorous bicycle parking program or comprehensive Safe Routes to Schools program entices people out of their cars. Good, inter-city transit service that accommodates



bicycle demand may prove to be a powerful inducement to bicycle travel. Without a more reliable data source, however, any conclusions will be difficult to draw.

Automobile/bicycle collision analysis

The number of collisions between automobiles and bicycles in the Bay Area between 2001 and 2005 is shown in Table 3.2. The highest number (2,586) occurred in 2001. Since that year, there has been no discernable pattern, with the annual regional average hovering around 2,300. At the county level, there is even less of a consistent pattern.

What is the best way to use the data shown in Table 3.2 to analyze collisions? Absolute numbers of collisions by county are useful for comparing year-to-year levels, but are not as valuable for comparing the relative safety of cycling between counties because they do not consider population or the number of cyclists. Looking at the number of collisions in each county relative to population is a common analysis technique. This shows that, on average, there are 0.34 collisions per 1,000 population throughout the Bay Area. This rate ranges from 0.20 in Contra Costa County to 0.53 in Marin.

Table 3.2: Automobile/bicycle collisions

| County | 2001 | 2002 | 2003 | 2004 | 2005 | Annual average | Percent of region | Average annual bike collisions per 1,000 population | Average annual bike collisions per bike commuter | Average annual bike collisions per bike trip |
|---------------|--------------|--------------|--------------|--------------|--------------|----------------|-------------------|---|--|--|
| Alameda | 539 | 563 | 514 | 508 | 660 | 557 | 23% | 0.38 | 0.08 | 0.01 |
| Contra Costa | 245 | 207 | 225 | 230 | 89 | 199 | 8% | 0.20 | 0.09 | 0.01 |
| Marin | 143 | 159 | 120 | 115 | 123 | 132 | 6% | 0.53 | 0.11 | 0.01 |
| Napa | 49 | 55 | 50 | 71 | 68 | 59 | 2% | 0.45 | 0.11 | 0.01 |
| San Francisco | 360 | 309 | 316 | 323 | 351 | 332 | 14% | 0.42 | 0.04 | 0.01 |
| San Mateo | 287 | 229 | 217 | 208 | 199 | 228 | 10% | 0.32 | 0.09 | 0.01 |
| Santa Clara | 698 | 588 | 592 | 657 | 660 | 639 | 27% | 0.37 | 0.07 | 0.01 |
| Solano | 113 | 87 | 91 | 90 | 89 | 94 | 4% | 0.23 | 0.14 | 0.01 |
| Sonoma | 152 | 143 | 143 | 175 | 145 | 152 | 6% | 0.32 | 0.09 | 0.01 |
| Region | 2,586 | 2,340 | 2,268 | 2,377 | 2,393 | 2,393 | 100% | 0.34 | 0.07 | 0.01 |

Sources: California Highway Patrol (Statewide Integrated Traffic Records System for collision figures)
 Association of Bay Area Governments (Projections 2007 for population)
 US Census Bureau (2000 Census for bicycle commuter figures)
 Metropolitan Transportation Commission (2000 Bay Area Travel Survey for bicycle trip figures)

Although considering population compensates somewhat for the differences one would expect between a large county with, perhaps more cars on the road, to obtain an accurate sense of the relative risk of automobile/bicycle collisions, one must consider the number of cyclists on the



road as well. Using information provided by the US Census Journey-to-Work, Table 3.2 shows that when we look at the number of auto/bike collisions in the nine Bay Area counties relative to the number of bicycle commuters in each county, San Francisco (which, according to the data in Table 3.1, has the region's highest number of work trips by bike) comes out with the lowest rate of collisions per bike commuter (0.04) and Solano County (which is tied with Sonoma County for the region's fewest bicycle commuters) has the region's highest collision rate. (See previous section for a description of the Journey-to-Work dataset.)

MTC's 2000 Bay Area Travel Survey provides an alternate source of data, which looks at all bicycle trips (see previous section for a full discussion). Using this data allows us to calculate the rate of automobile/bicycle collisions per bicycle trip, perhaps the best measure of cyclists' actual risk of collision in a given county. This calculation shows that there is virtually the same collision rate (to the second decimal place) throughout the nine county Bay Area: 0.01 collisions per bicycle trip, or one collision for every 100 bicycle trips.

It is instructive to use countywide and region-wide collision statistics to obtain a sense of the magnitude of automobile/bicycle collisions and to identify broad geographies that might benefit from programs aimed at improving these numbers, such as police stings and bicycle and driver education (see Objective 4 in Chapter 2). Perhaps more important than how many collisions are occurring in a given county, however, is at what locations and for what reasons. The SWITRS¹ data, on which the analysis in this section was based, tracks the specific location and reported causes of each collision. Cities and counties can and do benefit from regularly reviewing this information as a tool for identifying problem locations and, where possible, traffic engineering solutions.

¹ Statewide Integrated Traffic Records System.



Countywide bicycle planning and funding

This section summarizes countywide planning efforts in the nine Bay Area counties. Every county has either documented these efforts in a countywide bicycle (or bicycle/pedestrian) plan, funds bicycle (and pedestrian) projects with a countywide transportation sales tax, or both (see Table 3.3). Most plans summarized in this section describe existing bicycling conditions; goals and policies (or objectives); route selection and prioritization criteria; a countywide bikeway network; other bicycle facilities; funding and implementation; and, in counties with a transportation sales tax, information on this local source of bicycle project revenue. Three counties have full-time bicycle or bicycle/pedestrian coordinators, as described below.

Alameda County

In addition to the sections listed above, the *Alameda Countywide Bicycle Plan*—prepared by the Alameda County Congestion Management Agency—describes Alameda County’s transportation sales tax, Measure B, and includes a lengthy discussion of bicycle access to transit. Five percent of Measure B funds are dedicated to bicycle and pedestrian improvements, which is estimated to generate \$80 million over the 20-year life of the Measure. Seventy-five percent of Measure B bicycle and pedestrian funds are local “pass-through” funds, which are distributed to Alameda County cities and the County based on population. The remaining 25 percent are allocated to countywide bicycle and pedestrian projects, programs and planning efforts. The Alameda County Transportation Improvement Authority administers Measure B, which, through the 25 percent countywide funds, pays for a full-time countywide bicycle and pedestrian coordinator.

For further information:

- Alameda Countywide Bicycle Plan
www.accma.ca.gov/pages/HomeBicyclePlan.aspx
- Measure B Bicycle and Pedestrian program
www.actia2022.com/bikeped.html

Contra Costa County

Contra Costa County’s Measure J replaced the original transportation sales tax (Measure C) in 2004. Measure C is summarized in the *Contra Costa Countywide Bicycle and Pedestrian Plan*, which was adopted the year before the current measure, Measure J, was approved by County voters. The Plan is currently being updated and will include a discussion of Measure J and its “Pedestrian, Bicycle and Trail Facilities” program, which sets aside 1.5 percent of Measure J funding, estimated to generate \$30 million over 25 years. Two-thirds of this funding is set aside to complete projects in the *Countywide Bicycle and Pedestrian Plan*, while the remaining third is earmarked for the East Bay Regional Park District. In addition to this program, Measure J has four other programs that can fund bicycle, pedestrian, and trail facilities: Major Streets: Traffic Flow, Safety, and Capacity Improvements; Safe Transportation for Children; Local Streets and Road Maintenance; and Transportation for Livable Communities. The *Contra Costa Countywide Bicycle and Pedestrian Plan* has chapters on the relationship between bicycling and public transit, safety projects and programs, and bikeway planning and design.



Table 3.3: Countywide bicycle planning and funding

| County | Year Adopted | Sales tax-funded bicycle program? | Eligible projects, programs, plans | Annual sales tax funding (bike&ped) | Public transit addressed in bicycle plan? |
|---------------|--------------|---|---|---|--|
| Alameda | 2006 | "Local Bicycle and Pedestrian Funds" (75%) "Countywide Discretionary Fund" (25%) | Bicycle facilities, signage, transit, plans, education/enforcement/promotion programs | 5% of revenue (\$4M/yr) | Existing conditions sections on bike access and bus, rail and ferry transit. Identification of "Transit Priority Zones," where bicycle connections to transit stations need to be improved. |
| Contra Costa | 2003+ | Ped/bike/trail facilities & completion of Plan projects (2/3); East Bay Regional Park District projects (1/3) | Projects in the Countywide Bicycle and Pedestrian Plan and East Bay Regional Park District projects | 1.5% of revenue (\$30M over 25 yrs) | Transit rider needs, safe routes to and from transit, station and stop amenities, pedestrian- and bike-friendly transit vehicles, current state of transit links, bike parking and storage, recommended improvements |
| Marin | N/A | Strategies 2, 3 and 4 | On-street and off-street bikeways & pathways, projects that reduce school-related congestion | No set-aside, so impossible to estimate | All local plans address multi-modal linkages and there is a public transit section in each plan. |
| Napa | 2003 | N/A | N/A | N/A | In goals, bike parking, and trail/trailhead locations sections. |
| San Francisco | 2005** | "Pedestrian and Bicycle Facility Maintenance" and "Bicycle Circulation/Safety" | Bike lanes and paths, bike parking, and outreach and education programs | 2.66% of revenue (\$75M over 30 yrs)* | Policies for streets with shared bus and bike use; goals and policies to improve bike access on transit vehicles whenever feasible and provide bike access to and parking at transit stations. |
| San Mateo | N/A | Bicycle and Pedestrian program | Bicycle and pedestrian facilities | 3% of revenue (\$45M over 25 yrs) | N/A |
| Santa Clara | 2000 | Transit programs/facilities | Bicycle and pedestrian access to transit | No set-aside, so impossible to estimate | Bike parking at transit stations and on-board policies of local transit operators |
| Solano | 2004 | N/A | N/A | N/A | Bike parking at multi-modal connections at transit centers, park and ride lots, ferries, rail stations, bike shuttles, & bus transfer stops & on-board policies of local operators. |
| Sonoma | 2003+ | Safe bicycle routes | Bicycle facilities | 4% of revenue (\$21M over 20 yrs) | No, but update will address public transit. |

* Bicycle facilities and programs only.

** Formal Plan adoption pending environmental review.

+ Currently being updated

For further information:



- Contra Costa Countywide Bicycle and Pedestrian Plan
www.ccta.net/GM/finalplan.htm

Marin County

Every Marin County city and the County have prepared a bicycle plan for their jurisdiction. Although there is no countywide bicycle plan, the County congestion Management agency—the Transportation Authority of Marin (TAM—is currently overseeing a contract for updating each local agency’s plan, which will each discuss Marin County’s transportation sales tax measure, Measure A. The Measure A Expenditure Plan is organized into four funding strategies, three of which fund bikeways to some degree. Strategy 2 will fund the Puerto Suello Hill bikeway project. Strategy 3 is aimed at maintaining, improving, and managing local transportation infrastructure, including bikeways and pathways. Strategy 4 is dedicated to reducing school-related congestion through Marin County’s Safe Routes to School program, school crossing guards, and Safe Pathways to School capital projects. In addition to Measure A, Marin County is one of four U.S. communities selected to receive \$25 million in the federal Non-Motorized Transportation Pilot Program.

For further information:

- Current city and County plans (updates expected 2007/08)
www.walkbikemarin.org
- Measure A Expenditure Plan
www.tam.ca.gov/Uploads/pdfs/TSTEP_050604_FINAL.pdf
- Non-Motorized Transportation Pilot Program project list
<http://walkbikemarin.org/documents/BOS%20approved%20list.pdf>

Napa County

The *Napa Countywide Bicycle Plan* was adopted in 2003 and includes language that acknowledges the importance of connecting bikeways to public transit facilities. The Plan appendices include sections on specific bikeway projects, design guidelines, and resources related to the impact of off-road bicycling facilities on private property. Napa County has neither a transportation sales tax nor any other local source of dedicated bicycle funding.

For further information:

- Napa Countywide Bicycle Plan
www.nctpa.net/docs/NCTPA%202003%20Countywide%20Bicycle%20Plan.pdf

San Francisco County

The *San Francisco Bicycle Plan* was adopted in 2005. The following year, the California Supreme Court ruled that the Plan was subject to a CEQA environmental analysis, which City staff is currently performing. Because this Plan replaces one adopted in 1997 and because adoption of the 2005 Plan is expected eventually, this brief summary refers to the more recent edition.



The *San Francisco Bicycle Plan* is different than other countywide bicycle plans in a number of ways. Because San Francisco County is also a city, the same agency that wrote the Plan—the Municipal Transportation Agency—will implement the projects called for in the Plan. As a result, the Plan goes into far greater detail than other countywide plans. Examples include much longer sections on bicycle parking; transit access; education; enforcement and promotion programs; and, in a companion document, a description of gaps in the “Bicycle Route Network.” The Plan also describes San Francisco’s transportation sales tax, Proposition K, which provides approximately \$19 million for Pedestrian and Bicycle Facility Maintenance and \$56 million for Bicycle Circulation/Safety over 30 years. The City of San Francisco has a bicycle program that is staffed with a program manager and five full-time traffic engineers, planners and an outreach coordinator.

For further information:

- San Francisco Bicycle Plan
www.sfmta.com/cms/bproj/documents/DraftBikePlanBigDoc_2.pdf
- San Francisco Bicycle Program
www.sfmta.com/cms/bhome/homebikes.htm

San Mateo County

There is no San Mateo County countywide bicycle plan, although the County’s *San Mateo County Comprehensive Bicycle Route Plan*, prepared in 2000 and currently being updated, attempts to identify connections between bicycle facilities identified in San Mateo cities’ bicycle plans. San Mateo County’s transportation sales tax, Measure A, dedicates three percent of revenue to a pedestrian and bicycle program, which will generate approximately \$45 million (\$1.8 million annually) over 25 years. Bicycle facilities such as paths, trails, and bridges are eligible for funding under this program.

For further information:

- San Mateo County Comprehensive Bicycle Plan
www.smcta.com/Expenditure_Plan/Complete.PDF

Santa Clara County

Although Santa Clara County’s original transportation sales tax, Measure B, set aside \$12 million for bicycle projects, that measure expired in 2006 and most Measure B funding has been allocated. The only bicycle projects that are eligible for Measure A, the current transportation sales tax, are improvements to bicycle access to transit. There is neither a set-aside nor a project list for bicycle/pedestrian projects in the current measure. The first set of transit projects funded under Measure A includes \$6.5 million for a bicycle/pedestrian bridge at the Santa Clara Caltrain station.

For more information:

- Santa Clara Countywide Bicycle Plan
www.vta.org/news/vtacmp/Bikes/2000BikePlan.pdf



Solano County

The *Solano Countywide Bicycle Plan* was adopted in 2004. In addition to the typical chapters outlined at the beginning of this section, the Solano County plan also addresses demand for bicycle facilities and marketing to increase awareness and use of the existing bikeway system. Solano County does not have a transportation sales tax.

For further information:

- Solano Countywide Bicycle Plan
www.sta.dst.ca.us/pdfs/Plans/STA%20Final%20Bike%20Plan%20OCT%202004%20v2.pdf

Sonoma County

The current *Sonoma Countywide Bicycle Plan* does not discuss the local transportation sales tax measure, Measure M, or transit access. However, the Plan is being updated and greatly expanded and will include a discussion of these subjects. Bicycle and pedestrian projects are allocated four percent of the total Measure M program revenues over 20 years, which is expected to generate a total of \$21 million.

For further information:

- Sonoma County Transportation Authority Countywide Bicycle Plan
www.sctainfo.org/Bike_Main_files/index.htm



Bicycle access to public transit

Introduction

The combination of bicycles and public transit offers Bay Area residents, workers and visitors perhaps the best competition to the flexibility and convenience of the single-occupant vehicle due to lower cost, parking stress and contribution to greenhouse gases. Many portions of the region are well-served by bus, rail and ferry operators that traverse long distances, climb steep hills, and provide access to and across barriers that prevent bicycle travel.

However, the Bay Area transit network is not sufficiently dense, pervasive or coordinated to allow many potential riders to travel between home and their ultimate destination using only public transit. To reach their stop, station or terminal from home, and to reach their ultimate destination from public transit, many riders and potential riders must rely on transferring to and from other forms of transit or on driving. These time-consuming transfers vastly reduce the attractiveness of public transit for such trips.

For many transit riders, however, bicycling can be the perfect method of reaching their transit stop, station or terminal, and their ultimate destination. The bicycle offers the independence of the automobile, costs less to operate than bus fare or auto parking and gas, and, on transit systems that allow bicycles on-board, can be used on the destination end of the trip, as well.

For cyclists whose destination is within convenient walking distance of transit, plentiful, secure and rain-protected bicycle parking—which is much less expensive for transit operators to provide than auto parking—allows the bicycle/transit commuter to avoid bringing their bike on-board. This leaves more space for other transit passengers and may increase the attractiveness of bicycling to transit for those who, due to the cumbersome and sometimes greasy nature of carrying one's bicycle on-board, may only consider biking if they can stow their bicycle safely at public transit.

This section summarizes the policies and practices of the Bay Area's ten largest transit operators with respect to planning for and providing bicycle access to stops and stations and on-board transit vehicles.

Transit agency bicycle coordinators

Transit agencies with an in-house bicycle planner on staff—often referred to as a “Bicycle Coordinator”—have a much greater likelihood of operating systems that welcome bicyclists, and of working with their bicycling passengers to continually improve bicycle parking and bike access to and on their systems than systems that do not have a bicycle coordinator. Effective coordinators bridge the information gap between experienced bicycle/transit riders and transit system managers, who strive to operate systems that meet the needs of all passengers. Bicycle coordinators have the time and expertise to listen to cyclists' needs and to explain transit policies to cyclists, who may not always understand when their access is restricted. Bike



coordinators often staff transit bicycle advisory committees (BACs), an effective forum for regular communication between bicyclists and transit systems.

Of the transit agencies surveyed, only the Bay Area Rapid Transit (BART) District and the (Santa Clara) Valley Transportation Authority (VTA) have in-house bicycle planning staff (see Table 3.4). Although Caltrain does not have a staff bicycle coordinator, the agency has a BAC that is staffed by their Manager of Rail Planning. Caltrain also hires contract bicycle planners to perform some of the intermittent functions of a bike coordinator, such as developing a bicycle plan (see further discussion, below) and inventorying bicycle parking at stations (also discussed below).

Table 3.4: Bicycle access to transit

| Operator | Bike Coord. | Bike Planning | Bike Pkg. Inventory | Bikes on/in vehicles |
|---------------------------------------|-------------|--|---------------------|--|
| AC Transit | --- | "Designing w/Transit" (2002) | N/A | Front rack (2) Interior (Transbay) (2-4 in cargo bay) |
| Bay Area Rapid Transit (BART) | Yes | "Access & Parking Plan" (2002) | Yes | Yes (peak hour restriction) |
| Caltrain | --- | Bicycle Plan (expected 2008) | Yes | Yes (northern-most car) |
| Capitol Corridor | --- | State Rail Plan (2005) | N/A | Yes |
| (Contra Costa) County Connection | --- | --- | N/A | Front rack (2) Inside (2)* |
| Golden Gate Transit | | SRTP | Yes | Front rack (2) Luggage bays on 45' buses (2) |
| San Francisco Muni | + | San Francisco Bicycle Plan (2005) | N/A | Front rack on buses only |
| SamTrans | --- | --- | N/A | Front rack (2) Inside (2)* |
| Valley Transportation Authority (VTA) | Yes | "Santa Clara Countywide Bicycle Plan" (2000) | Yes | Bus: Front rack (2); Inside (2)* Light rail: Inside (8) |
| Water Transit Authority (WTA) | --- | Technical designs | N/A | Yes |

N/A = Not Applicable because agency neither owns nor operates bicycle parking.

SRTP = Short Range Transit Plan

* Passenger and wheelchair load permitting

+ No, although the San Francisco Bicycle Program is involved in many Muni projects.

Transit agency bicycle planning

Whether or not a transit agency has a staff bicycle coordinator does not always correlate with the level of long-range planning for bicycle access that occurs. Caltrain, which has no staff bike coordinator, has hired a contract planner and consultants to develop the agency's first-ever bicycle plan. The published planning documents of SamTrans, Golden Gate Transit and the Water Transit Authority all consider bicycle access, both to their stops/stations and on-board vehicles, although none have a bicycle coordinator. AC Transit does not have a bicycle plan, but they are planning to develop a bicycle parking plan. And while BART and VTA both have staff bike coordinators, only VTA has a stand-alone bicycle plan (see Table 3.4).

Bicycle parking at transit facilities

Public transit passengers who bicycle to their stop, station or terminal need to be assured of secure and weather-protected bicycle parking. Bay Area transit operators offer a variety of what is considered "long-term" bicycle parking, including awning-covered bicycle racks that are in clear view of station agents, vendors, bus passengers, and commuters walking to and from their cars; rented, key-operated bicycle lockers; reserved or on-demand electronic lockers (see New Issues and Technologies section, below); and attended or automated bike stations.

There are many reasons why it is in the interest of transit operators to provide good long-term bicycle parking. In the Bay Area, bicycle parking at transit stations is considered a right; as such these facilities are eligible for a number of funding sources (see Costs and Revenue chapter). Bicycle parking is considerably less expensive to construct than is automobile parking, so every passenger that bikes rather than drives saves transit agencies much-needed resources.

Perhaps most important from the transit operator's perspective, is that every bicycle that is parked at the station is one fewer that needs to be accommodated on-board. Fewer bikes on a given transit vehicle means more space for all passengers, less resources that need to be invested in vehicle bicycle racks (which are more expensive than on-the-ground bike racks), less conflicts with passengers with disabilities (because bicycles are often stored in the wheelchair tie-down area) and with other passengers who may be inadvertently bumped by a bicycle, and less transit vehicle cleaning and repair that will be needed as a result of transporting sometimes-greasy bicycles.

Inventorying what type of (and how much) bicycle parking is available at each transit stop, station and terminal throughout the region is beyond the scope of this Plan. Instead, this discussion identifies which transit operators are tracking their supply, an important first step toward providing adequate bicycle parking (see Table 3.4).

Of the transit operators surveyed that operate bicycle parking at their facilities, all keep track of bicycle parking to some degree. Capitol Corridor stations are owned by Amtrak and bike parking is usually administered by local jurisdictions. County Connection, SamTrans, Muni



and AC Transit do not provide bicycle parking; and the Water Transit Authority has not yet built its first ferry terminal.

BART and Caltrain have, perhaps, the most detailed bicycle parking inventories: BART's includes capacity and average occupancy and is updated annually. Caltrain's covers the number of bicycle lockers and rack spaces and occupancy, but is updated sporadically. VTA has an accurate bicycle locker inventory and is updating its bicycle rack inventories at light rail stations, transit centers and park and ride lots. Golden Gate Transit updates its inventory of bicycle racks at bus stops, transit centers and ferry terminals, in conjunction with the Short Range Transit Plan update, but does not track the number of bicycles that these racks can accommodate.

On-board policies

Transit passengers are permitted to bring their bicycles on board buses, rail cars and ferries of every operator surveyed (see Table 3.4). While some policies are common among most transit operators, most differ by operator and within operators, by vehicle type.

Common on-board policies and practices

All Bay Area transit operators surveyed have a policy of not charging additional fares for bicycles. Each one also limits bicycle access in some way, whether by time of day, the location inside or on the vehicle bicycles must be stowed or the number of bikes per vehicle. And although these operators have a variety of policies in place to guide how, where and when bicycles may be brought on-board transit vehicles, all have policies, such as asking bicyclists not to board a rail car that is already too crowded, that rely on bicyclists' common sense to prevent conflicts with other passengers.

On-board bus policies

The buses of all operators surveyed are equipped with front-mounted bicycle racks, each with a capacity of two bikes. Although Muni's newer fleet of diesel and trolley buses have such racks, their historic streetcars, cable cars, and Muni Metro vehicles do not. SamTrans, VTA and County Connection allow a maximum of two bicycles inside their buses, assuming both exterior racks are filled, the bus is not already too crowded, and there are not already wheelchairs in the tie-down areas. Muni does not permit bicycles inside any vehicles, although a "Bikes on Light Rail Vehicles" study is planned to begin in 2008/09. Golden Gate Transit, whose fleet is equipped with front-mounted racks, allows two additional bikes inside buses on its Richmond-San Rafael Bridge route and in the luggage bays of their 45-foot-long buses. On AC Transit's transbay commuter coaches, two additional bikes can be stored in the cargo bays when the front rack is full. Four bikes can be stored in custom-made undercarriage racks on selected AC Transit commuter coaches crossing the San Mateo and Dumbarton bridges.

On-board rail and ferry policies

BART allows bicycles in all cars except the first, and on all trains except those traveling in the peak direction during commute hours. Bicycles are not allowed on crowded trains at any time.



BART is currently testing a new seating configuration that would remove some seats to create more space for dedicated bicycle storage.

All Capitol Corridor rail cars are equipped with bicycle racks, which collectively hold between 12 and 22 bicycles per train, depending on the cars used on a particular train. Capitol Corridor promotes the ability to bring bike on-board and allows bicycles to be stored inside the cars without being restrained in a rack when these racks are full.

Caltrain is the only operator surveyed that specifies how old a passenger must be to bring their bike on-board (12 years old), has implemented a destination tag system to expedite de-boarding (as a result of their rack configuration), and restricts bicycles to one car. Caltrain passengers can bring their bikes aboard the northern-most car only, which is always equipped with racks to accommodate either 16 or 32 bikes. At times, Caltrain attaches a second “bike car,” which doubles bicycle capacity. Today’s fleet is 80 percent 32-bike capacity Gallery cars and 20 percent 16-bike capacity Bombardier cars. Through time, Caltrain plans to replace the Gallery cars with Bombardiers. To prepare for this reduction in long-term on-board bicycle capacity, the agency is taking measures to improve bicycle parking at its stations.

VTA light rail vehicles are equipped with internal bicycle racks, which carry four bicycles per train. In addition, up to four more bicycles are permitted when the racks are full, in the turntable sections of the train. Golden Gate Transit ferries have racks that carry between 11 and 25 bicycles each (depending on the ship), which are accepted on a first-come, first-served basis. Water Transit Authority ferries are being designed to carry 35 or more bicycles.



MTC's bicycle-related programs and policies

This section will include a discussion of the following topics. Please let us know of missing sections, missing items in these and the already-listed sections and any information you feel is key (and perhaps not obvious) for any items.

Planning

- Regional Bicycle Working Group
- Regional Bicycle Plan update
- Routine Accommodation policy (checklist plus look at resolution)

Services

- Trainings
- Bicycle and Pedestrian Safety Toolbox (see ppt slide)
- Bike to work day
- Safety Technical Assistance Program (TAP)
- 511.org/bike mapper
- MTC bicycle/pedestrian planning webpage

Funding (This brief section will refer to the Costs and Revenue chapter for details)

- Regional Bicycle and Pedestrian Program (grants)
- Safe Routes to Transit
- TLC/HIP/Focus and other smart growth/TOD-related initiatives



New Issues and Technologies

In the seven years since the original Regional Bicycle Plan was adopted, new issues have arisen to challenge cyclists, while new technologies have made bicycling easier. Examples include new bicycle parking methods, policies and technologies that increase cyclists' access to public transit, and new tools that transportation planners and engineers can use to design better bicycle facilities. <This section is a work in progress: we welcome additional ideas and background material.>

Bicycle Parking

Retrofitted Headless Parking Meters (short term parking)

Several Bay Area cities, including Redwood City, Berkeley, and Oakland, are updating their on-street parking meters. Original meters served a single parked car, so that on a given block (depending on its length), there could be up to 20 meters. This proliferation of meters was costly to administer, created sidewalk obstructions, and the meters themselves were easy to vandalize. However, the meters also served as default bicycle parking, often allowing cyclists to lock their bicycles directly in front of their destination, which increased cyclists' sense of security.

The newer parking kiosks are meant to serve between three and five spaces each. They allow users to use credit cards or dollar bills in addition to change, and the meter consolidation cuts down on sidewalk obstructions. Unfortunately, a side effect is a loss of bicycle parking, which is particularly adverse in areas with no bicycle parking racks. The cities of Seattle, Berkeley and Oakland have implemented solutions to this issue, described below.

Rather than remove all of the old parking meters, Berkeley and Seattle both converted some of their "headless" parking meters to sign-and-post bicycle racks. The City of Seattle established a pilot program—which is being expanded due to its success—to create the retrofitted racks, which they call "bicycle-circle" racks in the city's Capitol Hill neighborhood. Seattle's sign-and-post retrofitted meters sport a metal bicycle welded to the inside of the circle. Although popular, the retrofitted meters are not as secure as bicycle racks designed for this purpose. Seattle's suggestions for counteracting security issues include:

- Thickening the rack itself as well as the top and bottom mounting brackets in order to make the rack harder to bend.
- Adding set screws to prevent the circular aspect from rotating around the post
- Adding a center bracket to secure the bicycle icon to the post
- Beveling the outside edge of the rack in order to reduce denting and scratching of parked bicycles.



Retrofitting old meters is more expensive than installing inexpensive U-racks²; however, under an established retrofit bicycle program, such as Seattle's, the cost imbalance might decrease over time due to economies of scale.

The City of Oakland is also currently adding new parking kiosks, but is leaving two meter posts per block face in order to allow future retrofits. Making use of the bicycle parking opportunity provided by the headless meters has been problematic in Oakland, however, as funding has been designated for meter removal but not for retrofits.

Electronic Lockers (Long Term Bicycle Parking)

For bicyclists who need to leave their bicycles for long periods of time at transit stations or in parking garages at their home or workplace, security is a key concern. Long term bicycle parking solutions have historically been limited to lockers, bicycle "lids," and other options that provide sheltered parking controlled with a key or padlock. However, while an agency may have the resources to purchase and install bicycle lockers, maintenance is an on-going issue. Lockers may be abandoned or vandalized, and often there are not sufficient resources to maintain an accurate, current list of users.

One solution to this issue is electronic lockers, which lessen the administrative burden and provide a modest source of revenue, which also discourages misuse. The cities of Palo Alto and Oakland have recently installed electronic lockers, which at approximately \$1,000 per locker, are comparable in cost to older, mechanical lockers. Cyclists purchase a paper ticket either online or at a transit station, which they use to access the locker. The lockers rent for a nominal fee (\$0.05 per hour), and are available to anyone, as opposed to the mechanical key system that limited locker rental to only one user for several months or a year at a time. Because e-lockers do not have to be assigned to a single user, the lockers can be used by many people over a given period of time, increasing the number of bicycles stored in the lockers. Alternately, they can be administered more like traditional lockers, which are assigned to a single cyclist so that he or she can rely upon the locker's availability every day. Improvements that are currently being developed include compatibility with the Translink universal transit card, and an online reservation system.

Electronic lockers are currently available at the Belmont Caltrain station and at the 12th St. and 19th St. BART stations in downtown Oakland.

Bikestation (Long Term Bicycle Parking)

A bicycle station is a location that offers attended or automated long-term bicycle parking. Other services can also be available, such as bicycle repairs, sharing, rentals, and retail sales.

² A retrofitted bike bollard rack from a local vendor, which holds two bicycles, costs \$159 versus \$99 for a basic U-rack.



The first bicycle station opened in Long Beach, California in 1996 and served as an incubator for a nonprofit known as Bikestation.

Bikestation, which serves members and non-members, manages bicycle parking, service, and retail facilities in six west coast cities, including three Bay Area locations: the Downtown Berkeley and Embarcadero BART stations and the Palo Alto Caltrain Station. Services differ at each location. Embarcadero BART offers free attended parking during commute hours (7:30-9:30 am and 3:00 pm-7:00 pm weekdays), but members are issued an electronic tag, which allows them access to the Bikestation throughout BART's hours of operation. The Downtown Berkeley Bikestation was the first in the BART system and is administered by the Bicycle Friendly Berkeley Coalition. It consists of a steel cage that holds up to 100 bicycles. Membership is free, and the station offers retail sales, attended bicycle parking, and limited bicycle repairs. At the Palo Alto Caltrain Station, a membership fee is required. This station offers repairs and retail sales upon request, but is mainly an automated bicycle parking location.

Operating costs of a Bikestation range from \$25,000 for a small, un-staffed facility to \$120,000-\$150,000 for a fully-staffed, full-service facility. Capital costs range from \$25,000 for a secure room or cage to over \$3 million for a more extensive facility. Bikestations have struggled to identify long-term revenue sources to cover their services and are often subsidized by outside funding, including membership fees and grants.

Other Storage (Long and Short Term)

The Bikstation in Palo Alto has had success with double-stacked bicycle parking. The double-decker bike storage unit allows for twice the amount of bike storage space on a storage unit with wheel guides. They come in units that hold 8-, 10-, 12-, 14-, or 16- bicycles at one time. They may be best used as storage units for areas with an attendant on duty; however, the storage units also work with U-locks and cable locks.³

Other innovative parking technologies are currently employed outside the United States. In Wales, Cyclepods—sometimes called “bicycle trees”—offer room for eight bicycles parked vertically, which minimizes the rack's footprint by 30 percent, compared to traditional horizontal racks. Vertical racks made by US manufacturers may also be a viable option for bicycle parking. Each of these options is shown on the following page. <Photos will accompany these descriptions.>

³ Sample pricing: The 8-bike rack without locking arms (essentially an extra contact point for locking your bike) is \$1,753 while the 16-bike rack with locking arms is \$2,800.



Bicycle Accessibility

Bicycle Stair Ramps

Bicycle stair ramps are channels located adjacent to stairwells, which allow cyclists to wheel a bicycle up or down a flight of stairs. These ramps allow cyclists access to public transit who do not have the strength, agility or will to carry their bicycles on stairways or who lack the patience to use elevators for this purpose (bicycles are typically banned from escalators). Bicycle stair ramps were installed at the 16th/Mission Station in San Francisco in March 2007 as a pilot program. BART is now undergoing six months' observation to see how bicyclists use the ramps and if they impede other passengers, such as the visually impaired.

Bicycle-sharing

<A paragraph on bicycle-sharing will be added to this section.>

Bikes on Board Transit Technologies

A number of Bay Area transit agencies have developed systems to allow cyclists to bring their bicycles inside buses, trains and ferries. (For additional information about bikes on transit, please see Bicycle Access to Public Transit section of the Existing Conditions chapter of this plan.)

Luggage Bay Bicycle Racks

The luggage bays of Golden Gate Transit's 45-foot MCI buses are equipped with bicycle racks. To help riders properly stow and retrieve their bicycles, the agency's website provides video and written directions. While these new racks mean that all Golden Gate Transit buses have some type of bicycle storage space, the luggage bay racks hold just one bicycle each, and each 45-foot MCI bus has just two bays.

Front-Loading Bicycle Racks

Many Bay Area transit providers, including AC Transit, Muni, and SamTrans, allow cyclists to mount their bicycles on racks attached to the front of the bus. These racks hold up to two bicycles, and bicyclists must mount and dismount their bikes from the racks.

Since these racks first gained popularity in the early 1990s, transit operators and other vendors have modified their design to overcome driver concern about the racks obscuring headlights and other minor operational issues. The benefits to this approach are a greater degree of accommodation for cyclists on transit. The disbenefits are that the racks only hold two bicycles, and many transit agencies do not allow cyclists to bring their bikes on board once the racks are full. This dilutes reliability for cyclists as they cannot know whether or not the bus can carry their bike until it arrives at the transit stop. Additionally, the racks may be confusing for first time users, and cyclists must be strong enough to mount and dismount their own bicycles, which discourages use for older and younger cyclists.



Bikes on Rail

Two of the rail providers in the Bay Area, Caltrain and Amtrak, allow a relatively large number of bicycles on board – between 12 and 32, depending on the type of rail car. However, as much of Caltrain’s fleet ages, the agency is replacing its older Gallery cars, which hold up to 32 bicycles, with Bombardier cars, which hold just 16 bicycles. Over time, the total bicycle capacity on Caltrain will diminish, unless it changes either its technology (finding a way to fit more bicycles on each car) or its policies (e.g., routinely including more “bike cars” in each trainset). Caltrain is initiating a process to examine the bikes on board issue, as their cars reach capacity. Amtrak allows cyclists to carry bicyclists on Capitol Corridor trains, even when the on-board racks are full.

Tools

This section will include a paragraph each on the following tools:

- **Shared use path level of service calculator.** This spreadsheet tool, developed by the Federal Highway Administration, allows agencies to estimate demand for bicycle/pedestrian multi-use pathways, to aid in sizing new facilities, and planning improvements to existing ones.
- **Bicycle safety index.** <This tool will be summarized when the Bicycle Safety Index write-up for the MTC website is written (see Resources section, below).>
- **Cost/benefit tool.** This new online sketch planning tool helps bicycle facility planners and designers project the relative costs and benefits of new facilities on a cost per user basis. Developed by the Transportation Research Board, this tool is appropriate only for citywide sketch planning.



Opportunities and Constraints

Bicycle transportation has made significant strides in the Bay Area since MTC's adoption of the original *Regional Bicycle Plan* in December 2001,. Bicycling has gained broader public acceptance and there are now many more facilities to serve bicyclists, such as bike paths and lanes, parking lockers and racks, and bike-carrying racks on buses. Most of the factors that made such strides possible are still present and are now combined with new opportunities that could make it even easier to implement the Bay Area's next round of bicycle-related projects, programs and policies.

On the other hand, a number of challenges and constraints persist that make it difficult to substantially expand the region's bicycle infrastructure and number of bicyclists; indeed, the most vexing constraints—including the volume of motor-vehicle traffic on our roads and the demand for scarce transportation funding and right-of-way—have only become more challenging since 2001, as the Bay Area's population and economy have expanded. Below are listed the most meaningful opportunities for implementing the updated regional bicycle plan, followed by a list of the most significant constraints.

Opportunities

1. **Awareness of benefits of bicycling.** More than ever before, there is greater awareness of the benefits of bicycle transportation (and, correspondingly, the disadvantages of car dependence). These benefits include improved personal and public health; less air, water and noise pollution; reduced impacts on global climate change; less congestion; energy independence; and monetary savings. This awareness reflects a population that is generally supportive of improvements to the region's bicycle environment.
2. **Understanding of transportation/land use relationship.** Closely related to the previous point, there is greater awareness of the disadvantages of auto-dependent development and, conversely, of the benefits of transit-oriented, mixed-use and infill development, all of which can encourage bicycling. This awareness is resulting in more of such development, allowing more people to have a lifestyle that includes bicycling.
3. **Supportive policies in place.** Practically all local governments in the Bay Area have bicycle-supportive policies in their general plans and in many other planning documents, such as master plans and specific plans. Most special districts with land use- or transportation-related responsibilities—such as transportation authorities, transit agencies, regional agencies, and park districts—also have bicycle-supportive policies. The policies of all of these public agencies allow supportive practices and projects to blossom.
4. **Adopted bicycle plans.** Seven of the nine Bay Area counties, and many cities, have by now adopted bicycle plans, either as separate documents or as combined bicycle/pedestrian plans. These plans lay out strategies to construct cohesive bikeway networks and encourage bicycling in other ways.
5. **Routine accommodation policies.** Caltrans, at the state level, and MTC, at the regional level, have adopted "routine accommodation" policies to ensure that the needs of bicyclists



(and also of pedestrians) are considered in the planning, design and construction of new transportation projects.

6. **Large and active advocacy community.** The Bay Area’s bicycle-advocacy community has become one of the country’s largest and most effective, with organizations and groups active in every part of the region. These groups put pressure on and assist governmental agencies to make improvements to the region’s bicycling environment.
7. **Viable transit network to travel long distances.** The Bay Area continues to be one of the most transit-rich regions in the country, which allows cyclists to travel far greater distances than by bicycle alone. The region’s transit operators have become increasingly bicycle-friendly, providing greater access for bicycles at stations and aboard transit vehicles.
8. **New trail opportunities.** Much progress has been made toward securing and developing right-of-way for intercity trails. Opportunities include the Bay Trail, the Iron Horse Trail, the SMART corridor in Sonoma and Marin counties, and the Union Pacific right-of-way in Alameda County.
9. **Bikable destinations.** The region has more compelling destinations for bicyclists than ever before, with revitalized downtowns, new mixed-use neighborhoods, new parks and more-accessible waterfronts, hills and other open spaces. These destinations encourage bicycling and encourage bikeway networks that connect them.
10. **New transportation and development projects.** The Bay Area’s economic dynamism means a steady stream of new transportation projects and land use developments. Replacing our transportation infrastructure and intensifying land use patterns provides valuable opportunities to undo unwise planning decisions made in previous decades to better accommodate the needs of bicyclists.
11. **Funding opportunities.** The Bay Area’s economic wealth results in a relatively high level of funding for bicycle improvements and in new as well as continuing sources of funding.
12. **Creativity and experimentation.** The Bay Area’s spirit of creativity, inventiveness and open-mindedness allows for experimentation with new types of bicycle improvements. Examples include bicycle boulevards, “sharrows,” and bike-route-network signage.

Constraints

1. **Moving cars remains a priority.** While most jurisdictions in the Bay Area have bicycle-supportive policies, most also have transportation and land use policies and requirements that work at cross-purposes, by fostering sprawl and prioritizing the movement of cars. Examples include zoning codes that segregate land uses and minimum parking requirements, lot sizes, street widths, and automobile levels of service.
2. **Limited right-of-way.** The fact that driving is the incumbent mode—reflected in high volumes of motor-vehicle traffic and a large constituency—makes it politically very difficult to reallocate right-of-way from driving to bicycling (and, to a lesser extent, to transit, which would also benefit bicyclists). Given the Bay Area’s density and largely built-out nature, creating additional right-of-way for bicycling facilities is expensive and sometimes infeasible.
3. **Limited funding.** The popularity of driving also makes it politically difficult to reallocate scarce funding from roads to bicycling facilities.



4. **Low-hanging fruit has been picked.** Many of the “easy” bicycle improvements have already been implemented. Filling in the remaining gaps in the regional bikeway network will be more expensive and more politically difficult to implement than many projects to date.
5. **Limited adherence to traffic laws.** Despite the growth in acceptance for bicycling, many motorists still do not realize that bicyclists have the right to use all roads unless expressly excluded. By the same token, bicyclists who break traffic laws do little to engender support from motorists.
6. **Demands on law enforcement.** Contributing to some motorists’ and bicyclists’ lack of adherence to traffic laws is the pressure on police officers to prioritize enforcement of more serious crimes.

DRAFT



Chapter 3: The Regional Bikeway Network

This chapter will contain:

1. Purpose of a regional bikeway network
Status: Not yet written.
2. Route selection process (unchanged from 2001 Plan)
Status: Language will be based on original Plan language and on MTC memos and presentations.
3. Table 4.1: Summary of Regional Bikeway Network, including existing and unbuilt mileage in each county.
Status: This information depends on coding by MTC GIS staff and is expected in late October/early November 2007.
4. Table 4.2: Bay Trail mileage, including existing and unbuilt mileage in each county. These links are embedded in Table 4.1, but are highlighted in a separate table in recognition of the importance of this region-wide trail system.



Chapter 4: Costs and Revenue

This chapter will contain four parts:

1. **Cost of regional network**
2. **Bicycle funding sources**
3. **Comparison of cost of regional network and revenue that may be available to fund the construction of network segments.**
4. **Need for ongoing maintenance and operation funding.**

Please see below for sections that are complete and status reports for sections that are not.

1. **Cost of regional network**

This is the sum of the estimated costs of the unbuilt segments in each county and will be summarized in Table 5.1. Table 5.2 will provide cost information for unbuilt Bay Trail links. Information was provided by the CMAs (and the Bay Trail Project) or updated from calculations done by MTC staff in 2004. This discussion will note that it underestimates the regional need due to unmet bicycle parking needs, need for educational and other programs, and because it includes only the regional network, which excludes some links on countywide networks and many local links.

Status: These calculations will be made once MTC GIS staff has reconciled the inventory of existing and unbuilt Regional Bikeway Network links, expected in late October/early November 2007.

2. **Funding sources**

Twelve funding sources have been identified (the region's seven transportation sales tax measures are treated as a single source) that routinely fund bicycle facilities and, in some cases, programs (see Table 5.3). For each source, the fund origin, average annual funding levels, and eligible projects and applicants are provided below.



Table 5.3: Projected revenues

| Funding source | Annual estimate (2006 dollars) | Total estimate (2008-2035) |
|---|--------------------------------|----------------------------|
| Transportation Enhancements (1) | \$600,000 | \$16,800,000 |
| Hazard Elimination Safety (2) | \$160,000 | \$4,480,000 |
| Transportation for Livable Communities (3) | \$2,300,000 | \$64,400,000 |
| Housing Incentive Program (4) | \$900,000 | \$25,200,000 |
| Regional Bicycle and Pedestrian Program (5) | \$4,000,000 | \$112,000,000 |
| Bicycle Transportation Account (6) | \$1,840,000 | \$51,520,000 |
| Transportation Development Act, Article 3 (7) | \$2,900,000 | \$81,200,000 |
| Transportation Fund for Clean Air (8) | \$600,000 | \$16,800,000 |
| Safe Routes to Transit (9) | \$2,000,000 | \$56,000,000 |
| Safe Routes to School (10) | \$2,600,000 | \$72,800,000 |
| Bay Trail Grants (11) | \$1,031,250 | \$28,875,000 |
| Countywide sales tax measures (12) | \$8,537,500 | \$239,050,000 |
| TOTAL | \$27,468,750 | \$769,125,000 |

General assumptions

- 20% of competitive statewide sources will go to the Bay Area, based on population.
- Funding sources will continue through 2035 or be replaced with other sources with similar levels of funding.

Source-specific assumptions

1. \$60 M per year; 25% statewide; 20% to the Bay Area; 20% for bicycle improvements
2. \$16 M per year; 20% to the Bay Area; 5% for bicycle improvements
3. \$23 M per year; 10% for bicycle improvements
4. \$9 M per year; 10% for bicycle improvements
5. \$200 M for first 25 years; 50% for bicycle improvements
6. \$9.2 M per year; 20% to the Bay Area
7. \$290 M per year; 2% under Article 3; 50% for bicycle improvements
8. \$600,000 per year
9. \$20 M for first 10 years
10. \$26 M per year; 20% to the Bay Area; 50% for bicycle improvements
11. \$1.375 M per year; 75% for bicycle improvements
12. \$10.55 M per year; 75% for bicycle improvements (with exception of SF, which is 100% bikes)

This total excludes revenue from Marin and Santa Clara counties' sales tax measures because neither county's sales tax measure sets aside funding for bicycle projects, although bicycle projects are eligible for both.



Transportation Enhancements

Under the Transportation Enhancements (TE) program, California receives approximately \$60 million per year from the federal government to fund projects and activities that enhance and have a direct relationship to the surface transportation system. The program funds projects under 12 eligible categories, including the provision of bike lanes, trails, bicycle parking and other bicycling facilities; safety-education activities for pedestrians and bicyclists; landscaping, streetscaping and other scenic beautification projects; and the preservation of abandoned railway corridors and their conversion to trails for non-motorized transportation. Under California's TE program, administered by Caltrans, 75 percent of funding is distributed by the regional transportation planning agencies. In the Bay Area, MTC allocates money through its Transportation for Livable Communities program (see below). The remaining 25 percent is allocated by Caltrans at the district level.

www.fhwa.dot.gov/environment/te/overview.htm

www.dot.ca.gov/hq/TransEnhAct/TransEnact.htm

Hazard Elimination Safety

Administered in California by Caltrans, the federal Hazard Elimination Safety (HES) program provides funds to eliminate or reduce the number and severity of traffic collisions on public roads and highways. Cities and counties compete for HES funds by submitting candidate projects to Caltrans for review and analysis. Caltrans prioritizes these projects statewide and approves priority projects for funding through its annual HES program plan. Historically, only about 20 percent of applications are approved for funding. In the 2005/2006 program cycle, Caltrans awarded approximately \$16 million under the HES program.

www.dot.ca.gov/hq/LocalPrograms/hesp/hesp.htm

Transportation for Livable Communities

MTC allocates nearly \$4.5 million of federal Transportation Enhancement funds and \$18.5 million in Congestion Management and Air Quality Improvement funds annually to its Transportation for Livable Communities (TLC) program. TLC was created in 1998 to provide technical assistance and funding to cities, counties, transit agencies and non-profit organizations for capital projects and community-based planning that encourage multi-modal travel and the revitalization of town centers and other mixed-use neighborhoods. The program funds projects that improve bicycling and walking to transit stations, neighborhood commercial districts, and other major activity centers. In 2000, the TLC program was expanded to include a Housing Incentive Program (see below).

www.mtc.ca.gov/planning/smart_growth/tlc_grants.htm

Housing Incentive Program

Part of MTC's TLC program, the Housing Incentive Program (HIP) aims to increase the housing supply in developed parts of the Bay Area, to locate new housing in areas that are rich in transportation options and to establish residential densities needed to support high-quality transit service. HIP funds capital transportation projects that support TLC program goals, including bike paths and lanes and sidewalks and crosswalks to connect housing developments



to nearby transit stations, community facilities, and other frequent destinations. HIP provides at least \$9 million annually. The maximum grant amount per jurisdiction is \$3 million and grant amounts are based on the size and density of the qualifying housing development and on the number of affordable and market-rate bedrooms that will be provided.

www.mtc.ca.gov/planning/smart_growth/hip.htm

Regional Bicycle and Pedestrian Program

MTC's Regional Bicycle and Pedestrian Program (RBPP) provides grants to construct segments of the Bay Area's regional bikeway network (as defined in this plan), regionally significant pedestrian projects, and pedestrian and bicycle facilities—including bike parking—that provide access to schools, transit, or regional activity centers. MTC has committed \$200 million to support the program over a 25-year period, including \$32 million for the first phase (fiscal years 2005-06 through 2008-09). The program consists of two components: a regional portion, comprising 25 percent of the total phase-one funds (\$8 million), and a county portion, comprising the rest (\$24 million). The regional portion is administered by MTC and is allocated through a competitive grant program. County congestion management agencies administer and allocate the county portion based on their counties' share of the Bay Area population. Eligible grant applicants under the program are local governments, transit operators and other public agencies that are eligible recipients of federal funds; community-based and non-profit organizations may be project partners but cannot receive the funds. Grants are generally between \$300,000 and \$4 million.

www.mtc.ca.gov/planning/bicyclespedestrians/RES-3644.doc

Bicycle Transportation Account

The Bicycle Transportation Account (BTA) is a Caltrans-administered program which provides funding to cities and counties for projects that improve the safety and convenience of bicycle commuting. Eligible projects include secure bike parking; bike-carrying facilities on transit vehicles; installation of traffic-control devices that facilitate bicycling; planning, design, construction and maintenance of bikeways that serve major transportation corridors; and elimination of hazards to bike commuters. In fiscal year 2006-07, the BTA provided almost \$9.2 million for projects throughout the state. To be eligible for BTA funds, a city or county must prepare and adopt a bicycle transportation plan that meets the requirements outlined in Section 891.2 of the California Streets and Highways Code.

www.dot.ca.gov/hq/LocalPrograms/bta/btawebPage.htm

Transportation Development Act, Article 3

Article 3 of California's Transportation Development Act (TDA) is perhaps the most readily available source of local funding for bicycle and pedestrian transportation projects. TDA funds are derived from a statewide ¼-cent retail sales tax. This tax is returned to the county of origin and distributed to the cities and county on a population basis. Under TDA Article 3, two percent of each entity's TDA allocation is set aside for bicycle and pedestrian projects, which generates approximately \$2.9 million in the Bay Area annually. Eligible projects include the design and construction of bike paths and bike lanes, bicycle-safety education programs, and

the preparation of comprehensive bicycle or pedestrian plans. Eligible projects must have been included in an adopted general plan or bicycle plan. Eligible applicants include cities, counties and joint-powers agencies. In the Bay Area, project requests are compiled annually by each county's congestion management agency (CMA), with input from relevant city and county bicycle advisory committees. Each CMA then submits a single countywide request for review and approval by MTC.

www.mtc.ca.gov/funding/STA-TDA/RES-0875.doc

Transportation Fund for Clean Air

The Transportation Fund for Clean Air (TFCA) is a grant program funded by a \$4 surcharge on motor vehicles registered in the Bay Area. The purpose of the program, which is administered by the Bay Area Air Quality Management District (BAAQMD), is to fund projects and programs that will reduce air pollution from motor vehicles. A sub-program of the TFCA is the Bicycle Facility Program (BFP), which provides funding for new bicycle facilities, including bike paths, lanes and signed routes, bicycle parking, and bus racks. In fiscal year 2007-08, \$600,000 was available under the BFP, for grants ranging from \$10,000 to \$210,000. Grant awards are generally made on a first-come-first-served basis to qualified projects. All public agencies with the authority to implement bicycle-related projects within the BAAQMD's jurisdiction are considered eligible applicants. Funding for bicycling projects is also available through the TFCA's County Program Manager Fund. Under that sub-program, 40 percent of TFCA revenues collected in each Bay Area county is returned to that county's congestion management agency (CMA) for allocation. Applications are made directly to the CMAs, but must also be approved by the BAAQMD.

www.baaqmd.gov/pln/grants_and_incentives/tfca/index.htm

Safe Routes to Transit

Safe Routes to Transit (SR2T) is a grant-funding program that is part of the Bay Area's Regional Measure 2 (RM2), which instituted a \$1 toll increase on the Bay Area's seven state-owned toll bridges. Through the SR2T program, \$20 million is to be allocated through the year 2013 on a competitive basis to programs, planning efforts and capital projects designed to reduce congestion on toll bridges by improving bicycling and walking access to regional transit services that serve toll-bridge corridors. Funds can be used for secure bike storage at transit; safety enhancements and barrier removal for pedestrian or bike access to transit; and system-wide transit enhancements to accommodate bicyclists or pedestrians. Projects that improve access to car-sharing pods are also eligible. The SR2T program is administered by two non-profit organizations, the East Bay Bicycle Coalition and the Transportation and Land Use Coalition, with MTC serving as the fiscal agent. The program awarded approximately \$3.9 million during each of its first two cycles, in 2005 and 2007. Future funding cycles are scheduled to occur in 2009, 2011 and 2013.

www.transcoalition.org/c/bikeped/bikeped_saferoutes.html



Safe Routes to School

California's Safe Routes to School (SR2S) is a Caltrans-administered grant-funding program established in 1999 (and extended in 2007 to the year 2013). Eligible projects include bikeways, sidewalks, crosswalks, traffic signals, traffic-calming applications, and other infrastructure projects that improve the safety of walking and biking routes to elementary, middle and high schools, as well as "incidental" education, enforcement and encouragement activities; planning projects, on the other hand, are not eligible. In fiscal years 2006-07 and 2007-08, approximately \$26.8 million and \$25.5 million respectively were available in grant funding.

www.dot.ca.gov/hq/LocalPrograms/saferoutes/sr2s.htm

Bay Trail grants

The San Francisco Bay Trail Project—a non-profit organization administered by the Association of Bay Area Governments—provides grants to plan, design, and construct segments of the Bay Trail, a planned 500-mile multi-use encircling San Francisco and San Pablo bays. In summer 2007, the Bay Trail Project announced a new, \$2.5 million round of grant funding, with funds made available from Proposition 84, the 2006 Clean Water, Parks and Coastal Protection Bond Act. Permitting costs and trail projects required as part of a permit approval or as mitigation for another project are not eligible. Eligible applicants include cities, counties, special districts, federal and state government agencies, land trusts and non-profit organizations. There are no minimum or maximum grant amounts and the grant application period will remain open until all funds have been allocated.

www.baytrail.org/grants.html

3. Comparison of cost of regional network and revenue that may be available to fund the construction of network segments.

<This analysis will be performed once costs to construct the unbuilt Regional Bicycle Network links are finalized.>

4. Need for ongoing maintenance and operation funding.

The estimated cost to implement the Regional Bicycle Plan does not include expenses to maintain and operate new or existing facilities. Nevertheless, as is the case for other transportation modes, adequate maintenance and operation are critical ingredients in sustaining a viable bicycle transportation and recreation system. For example, bike lanes need to be re-stripped and re-stenciled, bike-route signs need to be replaced, trails need to be re-paved or re-surfaced, and parking lockers need to be managed. Such expenses are usually ineligible under most grant-funding sources, which direct most of their spending to planning, design and construction of facilities. To ensure the continued growth of bicycling in the Bay Area, there is an acute need for bicycle system maintenance and operation funding. One promising development is that, with the advent of MTC's and Caltrans's "routine accommodation" policies, local jurisdictions can begin to expect that the maintenance of bicycle facilities provided as part of larger transportation projects will be covered under maintenance for the overall project.



Chapter 5: Recommendations

This chapter will contain brief discussions of the following items, each of which has been proposed during the development of this Plan update or at the conclusion of the development of the 2001 Plan. We welcome additions to this list and key points for each.

1. Develop process to update regional network between Plan updates.
 - Refine criteria for the Regional Bikeway Network
2. Create a new (not just updated) Regional Bicycle Plan
3. Calculate other costs, including bike parking, programs, bike stations, way-finding and other signage
4. Increase transit focus of plan by:
 - Coordinating with SR2T program criteria
 - Creating a flow chart to illustrate how recommended transit improvements can improve use of the bicycle for station access
 - Identifying gaps between transit stations and the bikeway network
5. Improve data collection and analysis
 - Perform, analyze and post bike counts
 - Analyze accident data and produce regional safety report
6. Enhance MTC online resources and access
 - Provide better entry to bike/ped pages from MTC homepage
 - Provide marketing outreach, including regional education information clearinghouse, web-based route finding, and regional bike map
7. Develop bikeway and way-finding signage:
 - Develop regional bikeway signage (to be added to local/county signs)
 - Provide an online signage resource



Appendix A: Inventory of unbuilt segments in Regional Bikeway Network, by county

This appendix will provide the following information for each link in the Regional Bikeway Network that has not yet been built:

- Link name (trail, roadway or highway)
- End points
- Length
- Cost in 2006 dollars (consistent with Transportation 2035 (RTP update))

This data will be available from MTC GIS staff in late October/early November, 2007.

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Appendix B: Routine Accommodation policies

This section will contain a copy of MTC Resolution 3765, Caltrans DD64 and routine accommodation language from SAFETEA-LU.

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Appendix C: Resources

There are perhaps hundreds of resources designed to help transportation professionals develop safe, functional and attractive bicycle facilities. The following resources are considered to be essential starting points for work in this area.

Manual on Uniform Traffic Control Devices

“The Manual on Uniform Traffic Control Devices, or MUTCD, defines the standards used by road managers nationwide to install and maintain traffic control devices on all streets and highways. The MUTCD is published by the Federal Highway Administration (FHWA) under 23 Code of Federal Regulations (CFR), Part 655, Subpart F.” -- Federal Highway Administration

The first volume of the MUTCD was published in 1932 in response to the proliferation of transportation infrastructure following the introduction of the “horseless carriage” in the late 19th century. Today, State and local transportation practitioners who design roadways and other facilities use the MUTCD as the foremost authority on signing and marking. In the 75 years since its first publication, there have been nine editions of the MUTCD, with the next edition scheduled for release in 2009. Local agencies can request permission to experiment with new markings or traffic controls that are not currently in the MUTCD. FHWA outlines a process for experimentation and for amending the document.

The National Committee on Uniform Traffic Control Devices (NCUTCD) is a private organization with no official affiliation with the Federal government. Committee members meet twice a year to discuss the MUTCD and develop consensus comments and recommendations, which are then submitted to the FHWA for consideration. Currently, NCUTCD membership includes more than 200 traffic control device experts, representing a wide variety of organizations with an interest in and experience with traffic control device issues.

Standards for bicycle facilities are covered in Part 9 of the MUTCD. For more information, frequently asked questions, an electronic version of the MUTCD, and a list of upcoming changes, visit: <http://mutcd.fhwa.dot.gov>.

California’s Manual on Uniform Traffic Control Devices

“As of September 26, 2006, the California Department of Transportation adopted the California Manual on Uniform Traffic Control Devices (FHWA’s MUTCD 2003 Revision 1, as amended for use in California), also called the California MUTCD, to prescribe uniform standards and specifications for all official traffic control devices in California.” -- Caltrans



California's MUTCD is comprised of the federal MUTCD plus a California Supplement, which makes the document consistent with Chapter 1000 of Caltrans' *Highway Design Manual* (see below) and provides additional standards with respect to signage.

www.dot.ca.gov/hq/traffops/signtech/mutcdsupp

Highway Design Manual

"The needs of non-motorized transportation are an essential part of all highway projects...Chapter 1000 of the Highway Design Manual discusses bicycle travel. All city, county, regional and other local agencies responsible for bikeways or roads where bicycle travel is permitted must follow the minimum bicycle planning and design criteria contained in this and other chapters of this manual (See Streets and Highways Code Section 891)." -- Caltrans

The California Department of Transportation, or Caltrans, publishes the *Highway Design Manual* (HDM) which governs the design of transportation facilities throughout the State. Chapter 1000 provides detailed information about signing and marking for on-street and off-street bicycle facilities. The HDM is not intended to provide best practices; rather, it provides minimum design standards for commonly-used bicycle facilities such as bicycle lanes.

www.dot.ca.gov/hq/oppd/hdm/pdf/english/chp1100.pdf

The American Association of State Highway and Transportation Officials publications

"The American Association of State Highway and Transportation Officials (AASHTO) advocates transportation-related policies and provides technical services to support states in their efforts to efficiently and safely move people and goods." -- AASHTO

AASHTO publishes a series of documents related to planning, operations, and design of transportation facilities. Most prominently is, *A Policy on Geometric Design of Highways and Streets, 5th Edition*, also known as the "Green Book" because of its signature color. The Green Book contains the latest design practices in universal use as the standard for highway geometric design. In addition, AASHTO also publishes the *Guide for Development of New Bicycle Facilities*, which provides information on the development of new facilities to enhance and encourage safe bicycle travel. Planning considerations, design and construction guidelines, and operation and maintenance recommendations are included.

http://downloads.transportation.org/aashto_catalog.pdf



Pedestrian and Bicycle Information Center (PBIC)

“Since its inception in 1999, PBIC’s mission has been to improve the quality of life in communities through the increase of safe walking and bicycling as a viable means of transportation and physical activity. The PBIC is managed and operated by staff at the University of North Carolina Highway Safety Research Center, including engineers, urban planners, public health specialists, web site specialists, researchers, computer programmers, communication specialists, and others.” – PBIC

The Pedestrian and Bicycle Information Center is the clearinghouse for accurate and current bicycling and pedestrian information. The portals for information-sharing are the PBIC websites, including the bicycle pages, which provide information on the latest research publications, the development of new tools, such as the Cost/Benefit Analysis Tool for new bicycle facilities, and examples of exemplary bicycle plans. The content of the site is relevant for a variety of audiences, including practitioners at every level, advocates, interested community members, and academics. www.bicyclinginfo.org

Local Design Guidelines

While the federal and State *Manuals on Uniform Traffic Control Devices*, Caltrans’s *Highway Design Manual* and the AASHTO publications cited above provide information about planning and designing bicycle facilities, local agencies have also created excellent examples of design guidelines that identify best practices rather than minimum standards. One of the most commonly-cited, extensive guides is the *Santa Clara Valley Transportation Authority Bicycle Technical Guidelines*. Another example of design guidelines that covers innovative tools is the city of San Francisco’s *Bicycle Plan Update: Supplemental Design Guidelines*, published in 2003.

VTA *Bicycle Technical Guidelines*

www.sccrtc.org/bikes/VTA_BikeTechGuidelines.pdf

San Francisco *Supplemental Design Guidelines*

[www.bicycle.sfgov.org/site/uploadedfiles/dpt/bike/SF_Design_Guidelines-final format 9 29.pdf](http://www.bicycle.sfgov.org/site/uploadedfiles/dpt/bike/SF_Design_Guidelines-final_format_9_29.pdf)



Website Material

The Regional Bicycle Working Group has communicated to the consultant team that, while it is important to include summaries of and links to the most common bicycle facility planning and engineering documents, that many resources are better posted on the MTC website. These include model ordinances, good examples of regional signage, and the updated Safety Index.

The reasoning behind this advice is that online information is more easily-updated and added to than printed material, and that the sort of data being recommended for online posting will be more commonly accessed online.

This material will be developed in the coming weeks and will be available for review at the December 13 Regional Bicycle Working Group meeting.

