CALIFORNIA STATE BIKE&PED PLAN

Review of Existing Documents

California Department of Transportation

March 2016

alta PLANNING + DESIGN

Document Information		
Alta Planning + Design 100 Webster Street, Ste 300 Oakland, CA 94607 Ph. (510) 540-5008 Fax. (510) 540-5039 www.altaplanning.com	Prepared by	Hugh Louch, Connery Cepeda, Lola Torney, Emily Tracy, Kyle James
	Project Manager	Brett Hondorp
	Project Title	California State Bicycle and Pedestrian Plan
	Client	Scott Forsythe

Document Revision Schedule			
Review of Existing Documents			
Rev.	Description	Date	Reviewed by
v1	Draft report	1/19/2016	Brett Hondorp
v2	Draft report	2/10/2016	Brett Hondorp
v3	Draft report	3/17/2016	Hugh Louch

Table of Contents

1. Introduction 1
2. Existing Caltrans Policy Framework 2
   - Existing Goals 2
   - Review of Existing Plans 3
   - California Codes and Laws 13
   - Other Caltrans Policy Directives 14
   - USDOT Policy Guidance 15
3. Existing Design Standards and Guidance 16
   - California Design Standards 17
   - National Design Standards and Guides 19
4. Guidebooks and Research 26
   - Caltrans Guidebooks 26
   - Federal and National Guidebooks 29
   - Reports and Research 32
5. Review of Regional Plans 37
   - Goals, Objectives & Strategies 37
   - Challenges & Trends 38
   - Needs from Caltrans 39
   - Detailed Plan Review 39
   - District Bicycle Maps and Guides 58
6. Review of Other State Plans 61
   - Detailed Review of Plans 62

Appendix A – California Vehicle Code and Streets and Highways Code 73
   - California Vehicle Code 73
   - California Streets and Highways Code 76

1. Introduction

The California State Bicycle and Pedestrian Plan (CSBPP) will be California's first statewide bicycle and pedestrian plan. The plan is developing goals, objectives, and strategies that Caltrans can support to implement the stated goal to triple bicycling and double walking in the state by 2020.

This review provides background information to support development of a statewide policy plan for active transportation. Caltrans and other agencies have developed a number of previous plans and guidance documents that provide a foundation for bicycle and pedestrian planning in the state. The intent of this planning process is to build on these existing efforts. This review is not intended to provide a comprehensive critique of all available information, but instead to highlight key elements and issues. This information is provided to the Technical Advisory Committee to help formulate potential goals, objectives, and policies.

This document is organized as follows:

- Section 2 reviews the **existing Caltrans policy framework**, including the plans, laws, and other documents that shape how Caltrans approaches bicycle and pedestrian travel in the state
- Section 3 reviews **existing design guidance** relevant to California from both state and national sources
- Section 4 reviews a selection of **regional bicycle and pedestrian plans** from across California to identify relevant goals and objectives to consider in the statewide plan
- Section 5 reviews a selection of bicycle and pedestrian plans from **other states**

2. Existing Caltrans Policy Framework

This section describes the existing policy framework that the California State Bicycle and Pedestrian Plan (CSBPP) must fit within. As a policy plan, the CSBPP will develop a set of goals and objectives for active transportation in California. It will also identify and develop strategies, actions, and performance measures to track progress towards implementation of the plan's goals and objectives.

This section includes a review of many of the codes and laws, plans, and policies relevant to the California State Bicycle and Pedestrian Plan. This section identifies:

- Existing long range goals developed for the state
- Codes and laws that govern bicycle and pedestrian travel in California
- Other relevant state and Federal policies that help shape the policy framework

Existing Goals

Caltrans has published several reports and plans that provide policy language and showcase the direction Caltrans is heading in terms of a multimodal transportation system. The relevant Plans reviewed were

- **The California Transportation Plan (CTP) 2040** - statewide, long-range transportation plan to meet future mobility needs and reduce greenhouse gas (GHG) emissions
- **Caltrans Strategic Management Plan** – provides the strategic direction for Caltrans as an organization. The 2015-2020 SMP identified targets for doubling walking and tripling bicycling in California by 2020.
- **California Complete Streets Implementation Action Plan 2.0** - describes Caltrans complete streets policy framework and overviews Caltrans' continued complete streets efforts
- **Smart Mobility 2010: A Call to Action for the New Decade (Smart Mobility Framework)** – planning guide that provides tools and techniques that improve transportation by using six smart mobility principles to achieve sustainable outcomes

The CTP 2040 provides the overarching policy framework for all transportation in California. Table 1 compares the themes of the goals found in the CTP to the other plans reviewed.

Table 1. Goal Themes from Existing Caltrans Plans

Goal Area	CTP 2040	Caltrans SMP	Complete Streets Plan	Smart Mobility 2010
Safety	■	■	■	■
Multimodal Mobility	■	■		■
System Preservation	■		■	
Economy	■	■	■	■
Livability	■	■	■	
Health	■	■	■	■

Goal Area	CTP 2040	Caltrans SMP	Complete Streets Plan	Smart Mobility 2010
Social Equity	■			■
Environment	■	■	■	■
System Efficiency		■	■	■
Departmental Excellence		■	■	

Figure 1 presents the goals and policies from the draft CTP.

Figure 1. CTP 2040 Goals and Policies

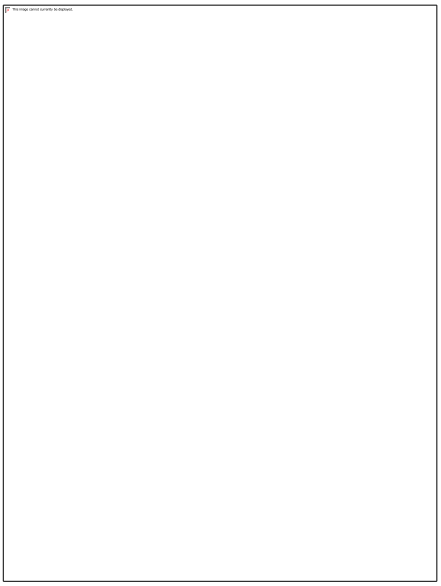
ECONOMY		**Goal 1: Improve Multimodal Mobility and Accessibility for All People**
	Policy	1) Manage and Operate an Efficient Integrated System
		2) Invest Strategically to Optimize System Performance
		3) Provide Viable and Equitable Multimodal Choices Including Active Transportation
		Goal 2: Preserve the Multimodal Transportation System
	Policy	1) Apply Sustainable Preventative Maintenance and Rehabilitation Strategies
		2) Evaluation Multimodal Life Cycle Costs in Project Decision Making
		3) Adapt the Transportation System to Reduce Impacts from Climate Change
		Goal 3: Support a Vibrant Economy
	Policy	1) Support Transportation Choices to Enhance Economic Activity
		2) Enhance Freight Mobility, Reliability, and Global Competitiveness
		3) Seek Sustainable and Flexible Funding to Maintain and Improve the System
EQUITY		**Goal 4: Improve Public Safety and Security**
	Policy	1) Reduce Fatalities, Serious Injuries, and Collisions
		2) Provide for System Security, Emergency Preparedness, Response, and Recovery
		Goal 5: Foster Livable and Healthy Communities and Promote Social Equity
	Policy	1) Expand Engagement in Multimodal Transportation Planning and Decision Making
		2) Integrate Multimodal Transportation and Land Use Development
		3) Integrate Health and Social Equity into Transportation Planning and Decision Making
ENVIRONMENT		**Goal 6: Practice Environmental Stewardship**
	Policy	1) Integrate Environmental Considerations in All Stages of Planning and Implementation
		2) Conserve and Enhance Natural, Agricultural, and Cultural Resources
		3) Reduce Greenhouse Gas Emissions and Other Air Pollutants
		4) Transform to a Clean and Energy Efficient Transportation System

Review of Existing Plans

This section provides a detailed review of existing plans.

California Transportation Plan 2040

http://www.dot.ca.gov/hq/tpp/californiatransportationplan2040/



The California Transportation Plan (CTP) 2040 identifies goals, strategies, and a long-range, performance-based policies to guide multimodal transportation investments and decisions by all levels of government, the private sector, and stakeholders. Input was gathered from 27 partner agencies and advocacy groups, as well as through seven public workshops. The CTP 2040 focused on meeting new trends and challenges, such as economic and job growth, climate change, freight movement, and public health. In addition, performance measures and targets were developed to assess performance of the transportation system and its ability to meet requirements of federal transportation funding legislation.

While the CTP 2040 is not finalized, there are several recurring themes raised through public workshops, including:

- Support for the reduction of greenhouse gases
- Support for the improvement of multimodal mobility and accessibility for all people
- Support for viable and equitable multimodal choices; including active transportation
- Support for livable, healthy communities and the promotion of social equity
- Support for the integration of land use development with multimodal transportation
- Support for the reduction of collisions resulting in serious injuries and fatalities

Table 2 summarizes relevant comments to the California State Bicycle and Pedestrian Plan by location.

Table 2. Summary of Public Bike/Ped Comments from CTP Public Meetings

Location	Key Comments
Sacramento	▪ Incorporate bicycle facilities in all Caltrans projects ▪ Use *Complete Intersections* guidebook ▪ Improved sidewalk connectivity and ADA compliance ▪ Equitable active transportation options for low income groups
Redding	▪ More concentration on complete streets at local level ▪ Funding for active transportation and flexible use of funds ▪ Separate off-street facilities for bicycling
San Diego	▪ Improved sidewalks ▪ Support active transportation choices ▪ Equity ▪ Focus investments on reducing impacts of climate change
Riverside	▪ Improve ADA at intersections for visually impaired ▪ Distribute funding according to desired mode share ▪ Better accommodation for bikes and pedestrians

Location	Key Comments
	▪ Destinations in close proximity to enable walking and biking as viable options
Los Angeles	▪ Expand regional Class I, II and IV facilities– convert flood control channels into multi-purpose greenways ▪ Increase funding and planning for active transportation ▪ Improve opportunities to walk and bike ▪ Traffic calming on neighborhood streets ▪ Aesthetic improvements for sidewalks ▪ Safe routes to schools
Fresno	▪ Incorporate pedestrian and bicycle accommodations from the beginning of any project ▪ For freeways where bicycles are prohibited, identify alternate routes ▪ Bicycle safety ▪ Gaps in bicycle and pedestrian networks
Oakland	▪ Separation of walking paths and sidewalks from traffic ▪ Active transportation options that support long distance trips ▪ Bicycle and pedestrian connections to transit ▪ Reduce burden for local jurisdictions that want to implement progressive bike/pedestrian projects on Caltrans right of way that are also city streets ▪ Tie funding to mode shift goal

Caltrans Strategic Management Plan [March 2015]

http://www.dot.ca.gov/perf/library/pdf/Caltrans_Strategic_Mgmt_Plan_033015.pdf

The Caltrans 2015-2020 Strategic Management Plan (SMP) provides a roadmap of Caltrans' role, expectations, and operations in meeting the challenges of modernizing Caltrans into a world-class Department of Transportation. The plan serves a number of functions: provides a clear direction for meeting statewide objectives; creates and deepens strategic partnerships; and provides performance measures that monitor success. The plan lists the following five goals and provides strategic objectives, performance measures, and targets for each of those goals:

- Safety and Health: Provide a safe transportation system for workers and users and promote health through active transportation and reduced pollution in communities.
- Stewardship and Efficiency: Responsibly manage California's transportation-related assets.

- Sustainability, Livability, and Economy: Make long-lasting, smart mobility decisions that improve the environment, support a vibrant economy, and build communities, not sprawl.
- System Performance: Utilize leadership, collaboration, and strategic partnerships to develop an integrated transportation system that provides reliable and accessible mobility for travelers.
- Organizational Excellence: Be a national leader in delivering quality service through excellent employee performance, public communication, and accountability.

Table 3 identifies the strategic objectives, performance measures, and targets that are most relevant to the California State Bicycle and Pedestrian Plan project

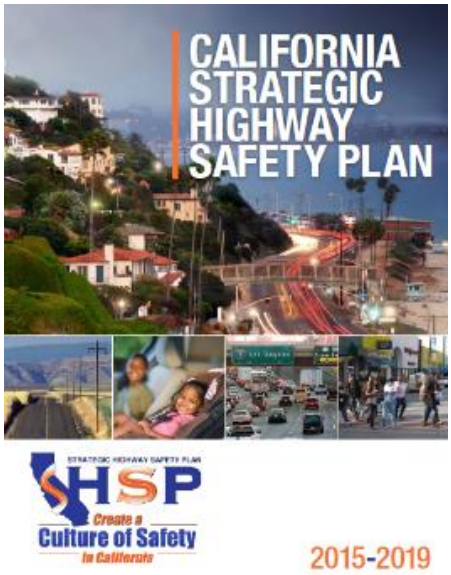
Table 3. Relevant Caltrans Strategic Objectives for the CSBPP

Strategic Objective	Measure	Target
Reduce user fatalities and injuries by adopting a "Toward Zero Deaths" practice	Number of fatalities for bicycle, pedestrian, and transit modes of travel	▪ 10 percent reduction in number of fatalities in a calendar year in each of the following mode types: car, transit, pedestrian, and bicyclist
Promote community health through active transportation and reduced pollution in communities	Increase and improvement in opportunities for safe and accessible active transportation	▪ 100 percent of funds of allocated v. programmed ▪ 100 percent of projects being allocated for construction awarded within six months
	Percent reduction of transportation system-related air pollution for criteria pollutant emissions	▪ 85 percent reduction (from 2000 levels) in diesel particulate matter emissions statewide by 2020 ▪ 80 percent reduction from (from 2010 levels) in NOx emissions in South Coast Air Basin by 2023
Improve the quality of life for all Californians by providing mobility choice, increasing accessibility to all modes of transportation, and creating transportation corridors not only for conveyance of people, goods, and services, but also as livable public spaces	Percent increase of non-auto modes for bicycle, pedestrian, and transit	▪ By 2020, increase non-auto modes by tripling bicycling, doubling walking, and doubling transit mode splits over 2010-12 California Household Travel Survey baseline
	Accessibility Score (to be determined considering e.g., multimodal transportation proximity to jobs, disadvantaged communities, housing services, transit-oriented communities, etc.)	▪ By December 2016, develop and adopt Caltrans Accessibility Score
	Livability Score (To be determined considering, e.g., quality of life, noise, safety, localized emissions, environmental justice concerns, etc.)	▪ By December 2016, develop and adopt Caltrans Livability Score

Strategic Objective	Measure	Target
Reduce environmental impacts from the transportation system with emphasis on supporting a statewide reduction greenhouse gas emissions to achieve 80 percent below 1990 levels by 2050	Per capita vehicle miles traveled	▪ By 2020, achieve 15 percent reduction (3 percent per year) of statewide per capita VMT relative to 2010 levels reported by District
	Percent reduction of transportation system-related air pollution for greenhouse gas emissions and criteria air pollutant emissions	▪ 15 percent reduction (from 2010 levels) of greenhouse gases to achieve 1990 levels by 2020
	Percent increase in transportation projects that include green infrastructure. Weighting mechanism to be determined	▪ By 2020, increase by 20 percent (5 percent per year) incorporating green infrastructure into transportation projects relative to 2010 levels
Increase the number of Complete Streets features on State highways that are also local streets in urban, suburban, and small town settings	Percentage of projects that include Complete Street features	▪ By 2016, establish baseline and by 2020, increase annual number of Complete Streets projects by 20 percent
	Number of Complete Streets features on State highway system	▪ By 2016, establish baseline and by 2020, increase annual number of Complete Streets features by 5 percent
	Percentage of high-focus actions fully implemented from the Complete Streets Implementation Action Plan 2.0	▪ By 2016, implement 80 percent of the 14 high-focus actions ▪ By 2018, implement 100 percent of the 14 high focus actions

California Strategic Highway Safety Plan Update [2015]

http://www.dot.ca.gov/hq/traffops/shsp/update.html



The California Strategic Highway Safety Plan (SHSP) Update is a statewide, data-driven, traffic safety plan that coordinates the efforts of a wide range of organizations to reduce traffic fatalities and serious injuries on all public roads. In coordination with federal, state, local, and private sector safety stakeholders, the SHSP establishes goals, objectives, and emphasis (or challenge) areas.

Federal regulations require that the California SHSP include the following:

- Consultation with a variety of stakeholders: At present, there are over 400 identified stakeholders assisting with the SHSP Update process.
- Analysis and effective use of crash data: California has or uses multiple crash data systems including Statewide Integrated Traffic Records System (SWITRS), the National Fatality Reporting System (FARS), the National Emergency Medical Services Information System (NEMSIS), and the Crash Medical Outcomes Data (CMOD) Project, modeled on the National Highway Traffic Safety Administration's Crash Outcome Data Evaluation System (CODES).
- Plans to address the 4Es of traffic safety: Engineering, Enforcement, Education, and Emergency Services. Some safety issues like vehicles running off the roadway involve engineering challenges. Treating collision injuries involves emergency service issues like improving training for first responders, and ensuring that responders have the right equipment. Some safety issues, like texting while driving, involve multiple areas of education, reminding drivers that texting is not worth it, and enforcement, citing drivers for texting while driving.
- Consideration for the safety of all public roads, and all users, including pedestrians and bicyclists.
- A program of projects or strategies to reduce or eliminate safety hazards: The SHSP represents a continual process with focused teams studying safety problems, searching for answers, and developing programs to improve traffic safety.
- Implementation and evaluation: The SHSP Update will include review of the last SHSP and the emphasis or challenge areas developed by that SHSP.

The California SHSP includes a large number of emphasis areas, including separate areas focused on bicycle and pedestrian fatalities and serious injuries. The SHSP identifies five strategies for each emphasis area. For the pedestrian emphasis area, the SHSP includes the following strategies:

- Improve the safety of pedestrian crossings by using proven effective countermeasures
- Expand effective enforcement and education of all roadway users to improve pedestrian safety based on known risk factors and data trends.
- Increase funding for pedestrian safety infrastructure and non-infrastructure projects

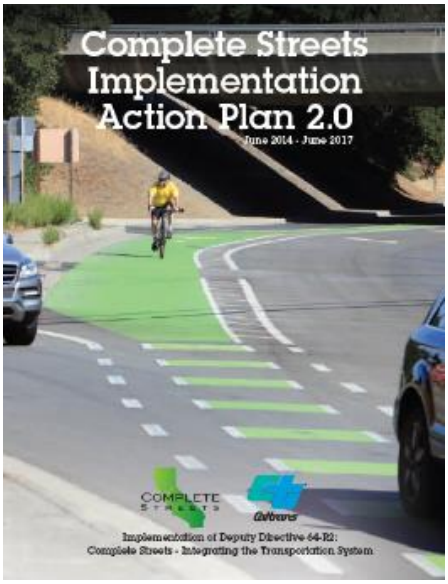
- Improve collection, use, and analysis of data needed for pedestrian safety planning and programming
- Increase pedestrian safety-focused coordination among state, regional, and local agencies including on transportation planning and land use efforts

The bicycle emphasis area includes the following strategies:

- Improve roadway and bikeway planning, design, operations, and connectivity to enhance bicycling safety and mobility to all destinations.
- Improve data collection regarding bicyclist trips, injuries, and fatalities on California roadways and bicycle paths
- Improve education and enforcement to promote safe multimodal travel
- Encourage more bicycle travel by improving public attitudes about bicycling as a safe mode of transportation
- Develop safe, direct, and connected routes for bicycling.

California Complete Streets Implementation Action Plan 2.0 [2014]

http://www.dot.ca.gov/hq/tpp/offices/ocp/docs/CSIAP2_rpt.pdf



The intent of the Complete Streets Implementation Action Plan (CSIAP) 2.0 is to describe the current Caltrans complete streets policy framework and to provide an overview of Caltrans' continued complete streets efforts. This update lays out the structure for monitoring, reporting, and overcoming barriers to further integrate complete streets into all Caltrans functions and processes. Included in the plan are the following items:

- Caltrans' mission, vision, and goals (goals are consistent with the Caltrans Strategic Management Plan)
- Complete Streets definition
- High-level benefits of Complete Streets
- List of the most successful action items from the 2010 CSIAP
- Summary of bicycle-friendly state survey
- Summary of Caltrans' endorsement of the NACTO *Urban Street Design Guide* and *Urban Bikeway Design Guide*
- Summary of Complete Streets training for Caltrans employees
- Summary of the Active Transportation Program
- An updated list of action items

The action items most relevant to the California State Bicycle and Pedestrian Plan project are listed below:

- Guidance, Manuals, and Handbooks
    - Finalize an update to the Highway Design Manual guidance related to design speed, place type terminology, lane/shoulder widths, and curb extensions (bulb-outs).

  - Assist the AASHTO Standing Committee on Design ad-hoc group comparing the NACTO *Urban Street Design Guide* with the AASHTO *A Policy on Geometric Design of Highways and Streets*.
  - Challenge Area 13 on "Improving Bicycle Safety" currently has one "active" action item and many proposed new action items. The current active action item being conducted by the CHP is a law enforcement handbook to serve as a "how to" guide for education presentations related to bicycle safety. In addition, the CA 13 group provides suggested updated language to the Driver Training Handbook used by the DMV.
  - District 5 guidance on handling bicycle traffic in work zone areas and informing the public.

- Policy and Plans
  - Develop a comprehensive, data-driven SHSP Update that defines state safety goals and describes a program of strategies to improve safety on all public roads. All modes of transportation, including pedestrian and bicycle, are to be considered in the development of this plan update.
  - Develop a Statewide Bicycle and Pedestrian Plan that is inspirational, visionary, goal and performance driven, realistic, and constitutes a strategic policy framework for bicycle and pedestrian transportation in California.
  - Receive and process ADA grievances on Caltrans infrastructure. Transition the handling of the web-based ADA request/grievance process from consultant to Caltrans staff.

- District Plans
  - Develop improvement priorities for the Pacific Coast Bike Route for state highways in District 1.
  - Update District 2 bicycle guide with new and modified laws, regulations, and bicycling information.
  - Work with Adventure Cycling and AASHTO to determine California's section of the National Designated Bike Trail for interregional and intraregional connection along local and state routes (District 3).
  - Produce maps of District 4 bicycling opportunities, which will show freeway segments open to bicyclists, alternate routes for freeway segments not open to bicyclists, and the bikeway status of conventional routes (Class II, III, or simply open to bicyclists if not a Bike Route).
  - Evaluation of conditions and identification of needs for bicycling in District 5.
  - Publish an updated version of the District 5 bicycle map.
  - Existing Bicycle Guides in Caltrans provide mostly bicycle information but do not contain Complete Streets Elements or other multimodal alternative information. Incorporate this information into the Draft Bicycle Guide for District 6, including pedestrian, transit, rail, and potentially airport information.
  - Currently District 6 does not have a Bicycle Guide. A Bicycle Guide is needed to keep pace with requests for bicycle-related data. The Bicycle Guide will include elevation charts, detailed shoulder information, bikes allowed/prohibited, a map, street/post-mile data, number of lanes, terrain, and alternative route data. A bicycle inventory has been completed but never signed off by the District 6 Planning Deputy.

  - Provide an updated guide for bicyclists showing where they are allowed to and prohibited from riding bicycles on the state highways within District 8.
  - Using a GIS-driven, web-based platform, District 11 will produce a bicycle map.
  - The District 12 Bicycle Plan will identify existing and proposed bikeways in Orange County and will provide resources for the development of future bikeways.

- Funding and Project Selection
  - Conduct a review of Caltrans Park and Ride lots, safety roadside rest areas, pedestrian over/under crossings, and on/off ramps. Develop a plan to address the needed ADA improvements.
  - Identify two District 11 interchanges – one in project development and one that is not currently a project – to improve bicycle and pedestrian mobility at both locations.
  - Identify freeway interchanges in the San Diego region that are candidates for bicycling and pedestrian improvements at locations that are not included in the Regional Transportation Plan.

- Awareness and Outreach
  - Prepare and implement rollout of outreach training for the ATP guidelines.
  - Travel behavior data profiles that can include data from current bike riders and walkers regarding the lack of complete streets features in their communities.
  - As part of the State Bicycle Plan and Bicycle Map, CT Earth GIS layers will be developed that include available information on state route types, areas closed to bicycles, alternative routes, and Class II or III bicycle facilities.

- Data and Performance Measures
  - Report the complete streets data collected from the Project Delivery Assets (PDA) Web Tool in the Caltrans Executive Fact Book.
  - Add additional complete streets questions in the 2015 National Household Travel Survey regarding the lack of sidewalks, bicycle lanes, ramps, street markings, and other features that affect mode choice. Focus on rural communities and lack of sidewalks, lighting, and other complete streets features.
  - Recognizing there are numerous efforts and activities underway on the subject of Complete Streets, the Transportation Planning Bicycle Task Force will spur more discussion among leaders in HQ and the Districts. The Task Force is a forum to allow a focus discussion with the intent of identifying actions that can foster cultural shift within Caltrans to support bicycling. The purpose of the Task Force is to advance the mainstreaming of bicycle considerations in to Caltrans' regular business practices, advance Caltrans' active support for bicycling on and off the state highway system, identify actions to enhance bicycling and permeate throughout the department's culture.
  - A report will be generated showing the effectiveness of bike box installed on State Route 227 as a possible design treatment to be used as a tool of expanding complete streets.

- Training
  - Develop the curriculum and provide ADA-related training to Caltrans construction, maintenance, and encroachment permit staff.

  - Develop an in-house training course on geometric design and operational treatments for pedestrians and bicyclists.

- Research
  - Research methodologies, and if applicable, develop a methodology to measure the economic impacts of improvements made on main streets.
  - Evaluate the use of MMLOS from the Highway Design Manual to determine its effectiveness in assessing impacts and related mitigation in Intergovernmental Review projects.
  - Caltrans has been using chip seal as a pavement preservation strategy since the 1970s. Chip seal is most commonly used on highways, including shoulders to extend the service life of the pavement. Depending on the materials used for chip seal, the surface of shoulder where bicyclists ride could be rough. This effort investigates potential ways to minimize roughness for bicyclists when chip seal is used as a pavement preservation treatment.
  - Improve and increase reporting on bicycle and pedestrian data through an expanded National Household Travel Survey. Interpret and make recommendations on how the data can best be utilized. Ongoing communication and interaction with Transportation Planning and System Information staff to advance expansion of bike/pedestrian data.

California Codes and Laws

California Vehicle Code

While Caltrans has established policies for the planning, design, and construction of bicycle and pedestrian facilities, such policies must adhere to the California Vehicle Code (CVC), enforced by the California Highway Patrol (CHP) and local law enforcement.

Relevant CVC sections (§) for bicycle travel, include:

- CVC § 21200 states that the rules of the road, set out in Division 11 of the CVC, that do not specifically apply only to motor vehicles are applicable to bicyclists.
- CVC § 21202 requires bicyclists to ride, "as close as practicable to the right-hand curb or edge of the roadway" except in certain circumstances.
- CVC § 21650.1 clarifies that cyclists, unlike drivers of vehicles, are not prohibited from riding on the shoulder of the road.
- Where bike lanes exist on roadways, CVC § 21208 requires cyclists to use them, except under certain conditions.
- The Three Feet for Safety Act (CVC § 21760), which became operative on September 16, 2014, requires motor vehicles to leave a 3-foot margin while passing a cyclist if possible.
- CVC § 21100 sets out that, "Local authorities may adopt rules and regulations… regarding the … Operation of bicycles, and, as specified in Section 21114.5, electric carts by physically disabled persons, or persons 50 years of age or older, on the public sidewalks." This allows local jurisdictions to ban sidewalk cycling in business districts, for example.

- CVC § 39002 allows local jurisdictions to implement mandatory licensing for bicycles and prohibit unlicensed riding.

Though pedestrians are, by definition, not operating a vehicle, CVC sections that reference pedestrians include:

- CVC § 21955 defines what is commonly referred to as "jaywalking" (the term itself is not in the CVC) as crossing a roadway between 2 adjacent intersections controlled by traffic signals without using a crosswalk.
- CVC § 21966 states that pedestrians shall not use a bicycle lane or path where an adjacent adequate pedestrian facility (e.g., sidewalk) exists.
- CVC § 21950(a) states that a driver (including bicyclists) shall yield to a pedestrian within any marked or unmarked crosswalk at an intersection.

California Streets and Highways Code

The California Streets and Highways Code is one of 29 legal codes enacted by the California State Legislature, which together form the general statutory law of California. The codes form an important part of California law; however, they must be read in combination with the federal and state constitutions, federal and state case law, and the California Code of Regulations in order to understand how they are actually interpreted and enforced in court.

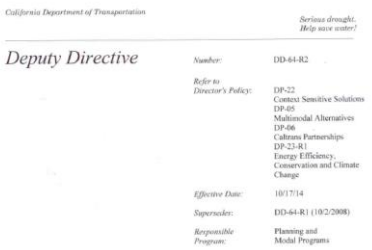
The most relevant sections of the California Streets and Highways Code for reference in the CSBPP are listed below in order of appearance:

- Tourist-Oriented Directional Signs (Div. 1, Ch. 1.5)
- Non-Motorized Transportation (Div. 1, Ch. 8); including requirement to develop a statewide bicycle map (Section 887.2)
- Active Transportation Program (Div. 3, Ch. 8)
- Pedestrian Malls (Div. 13)
- Street Lighting (Div. 14)
- Tree Planting, Landscaping, and Lighting (Div. 15)
- Particular Highway Crossings (Div. 17, Ch. 2)

Relevant excerpts of California Codes and Laws are provided in Appendix A.

Other Caltrans Policy Directives

Deputy Directive 64 Revision 2: Complete Streets – Integrating the Transportation System [2014]


California Department of Transportation

Serious drought. Help save water!

Deputy Directive

Number:	DD-64-R2
Refer to Director's Policy:	DP-22 Context Sensitive Solutions DP-05 Multimodal Alternatives DP-06 Caltrans Partnerships DP-23-R1 Energy Efficiency, Conservation and Climate Change
Effective Date:	10/17/14
Supersedes:	DD-64-R1 (10/2/2008)
Responsible Program:	Planning and Modal Programs

Arguably the first significant Caltrans policy on the pedestrian and bicycling modes was Deputy Directive 64 (DD-64), issued in March 2001, acknowledging the "need to accommodate non-motorized travelers as an important consideration in improving the transportation network." In October 2008, Caltrans issued a revision to Deputy Directive 64 (DD-64-R1) to make it more consistent with Assembly Bill (AB) 1358, the California Complete Streets Act, and to move from "accommodation" to "integration" of transportation modes. The directive was revised again in October 2014 (DD-64-R2),

reaffirming Caltrans' commitment and further directing Caltrans to provide for the needs of all travelers of all ages and abilities in all planning, programming, design, construction, operations, maintenance activities, and products on the State Highway System. The policy document defines the term Complete Streets and identifies responsibilities among Caltrans employees for creating Complete Streets.

DD-64-R2 establishes a policy within the California Department of Transportation (Caltrans) that the State highway system provide for the needs of travelers of all ages and abilities in all planning, programming, design, construction, operations, and maintenance activities and products. This Complete Street policy views all transportation improvements as opportunities to improve the safety, access, and mobility for all travelers in California and recognizes bicycle, pedestrian, and transit modes as integral elements of the transportation system.

USDOT Policy Guidance

The U.S. Department of Transportation's (USDOT) Federal Highway Administration (FHWA) has published a policy statement on bicycle and pedestrian accommodation regulations and recommendations, given below.

"The DOT policy is to incorporate safe and convenient walking and bicycling facilities into transportation projects. Every transportation agency, including DOT, has the responsibility to **improve conditions and opportunities for walking and bicycling** and to integrate walking and bicycling into their transportation systems. Because of the numerous individual and community **benefits that walking and bicycling provide** — including health, safety, environmental, transportation, and quality of life — transportation agencies are encouraged to **go beyond minimum standards** to provide safe and convenient facilities for these modes." – FHWA, March 2010 (*emphasis added*)

3. Existing Design Standards and Guidance

One of the most important roles for Caltrans is in establishing engineering standards for the development of transportation facilities. This section describes available design standards in California and nationally. For the purposes of this report, *standards* are part of a code, rule or regulation by a regulatory government agency and impose a legal obligation on specified parties to conform to it. Standards are typically the minimum or lowest acceptable limit in design, yet exceptions may be approved by providing documentation and following an established procedure. Meanwhile, *guidance* and *guides* provide best practices and examples of how to use good engineering judgement in certain contexts, but are generally not part of a code, rule or regulation. The following section describes available guidance and relevant national research in more detail.

In California, there are two key design manuals that guide the development of transportation facilities:

- The **California Highway Design Manual** (HDM) establishes uniform policies and procedures to carry out the State highway design functions of the Department. It is neither intended as, nor does it establish, a legal standard for these functions. The "Designing for Bicycle Traffic" section is not the same as "Chapter 1000 – Bicycle Transportation Design." Rather, the former restates laws from the California Vehicle Code that, "All transportation improvements are an opportunity to improve safety, access, and mobility for the bicycle mode of travel," while the latter clarifies definitions of types of bicycle infrastructure on roadways and declares the minimum widths allowed.
    - Chapter 1000 of the HDM also contains descriptions of the various bicycle facility types, but guidance for facilities contained within the roadbed are found in the parts of the manual related to roadbed design. The complete streets version released in 2012 was intended, in part, to make designers aware of bicycle treatments as they were investigating needs for motorized users. Most important are the features, dimensions, and standards for the most common situation where there is no designated bicycle facility. Bicycle users are supposed to be considered in the design of all highway types that are open to bicycle use.
- The **California Manual on Uniform Traffic Control Devices** (MUTCD) provides uniform standards and specifications for all official traffic control devices in California, including the types of signs allowed. Another pertinent guide includes Assembly Bill (AB) 819 (Bikeway Research, Experimentation, Testing, Evaluation, or Verification Related to Design Criteria), which outlines the procedures for when a bicycle project is planned on a State highway system or used federal funding.

In addition, there are several national design standards and guidelines that were reviewed as part of this project, including:

- Americans with Disabilities Act Standards
- American Association of State Highway and Transportation Officials (AASHTO) Guide for the Development of Bicycle Facilities

- AASHTO Guide for the Planning, Design, and Operation of Pedestrian Facilities
- NACTO Urban Street Design Guide
- NACTO Urban Bikeway Design Guide

Caltrans has reaffirmed and promoted flexibility in design on roadways. As part of the Design Flexibility memo, Caltrans endorsed National Association of City Transportation Officials (NACTO) guides for use, including the Urban Bikeway Design Guide. These guidelines offer designs not found in the HDM, but have been implemented elsewhere and are considered safer alternatives than some of the designs and treatments found in the HDM. In December 2015, Caltrans released Design Information Bulletin 89, which provides guidance on the design of Class IV or separated bikeways.

Like Caltrans, USDOT has also endorsed the use of alternate design guidelines, as shown in the quote below.

> "Under 23 U.S.C. 109(c), for projects on the National Highway System (NHS), FHWA and the States may consider guides from the American Association of State Highway and Transportation Officials (AASHTO) and other publications for design standards. Under 23 U.S.C. 109(o), States establish their own design standards for projects not on the NHS. FHWA supports a holistic approach to planning and design that will routinely incorporate bicycling and walking. FHWA also supports taking a flexible approach to bicycle and pedestrian facility design as described in the memo on Bicycle and Pedestrian Facility Design Flexibility."[1]

Recent federal legislative and policy changes also provide additional guidance. Specifically,

- The FAST Act transportation funding bill specifically allows for use of non-AASHTO design.
- USDOT is also in the middle of revising the controlling criteria for design of various types of facilities.

California Design Standards

California Highway Design Manual [2015]

http://www.dot.ca.gov/hq/oppd/hdm/hdmtoc.htm

This manual establishes uniform policies and procedures to carry out the State highway design functions of the Department. It is neither intended as, nor does it establish, a legal standard for these functions.

A scan of the 6th Edition of the California Highway Design Manual (HDM) shows the following sections may be most relevant to the California State Bicycle and Pedestrian Plan:

- 102.2 - Design Capacity and Quality of Service (Pedestrians and Bicycles)
- 105 – Pedestrian Facilities
- 115 - Designing for Bicycle Traffic
- 116 – Bicyclists and Pedestrians on Freeways
- 208.4 – Bridge Sidewalks

[1] http://www.fhwa.dot.gov/environment/bicycle_pedestrian/guidance/guidance_2015.cfm

- 208.6 – Bicycle and Pedestrian Overcrossings and Undercrossings
- 301 – Traveled Way Standards
- 303.4A – Typical Bulbout with Class II Bikeway (Bike Lane)
- 303.4B - Typical Bulbout without Class II Bikeway (Bike Lane)
- 403.3B - Class II Bikeway Crossing Railroad
- 403.6A – Typical Bicycle and Motor Vehicle Movements at Intersections of Multilane Streets without Right-Turn-Only Lanes
- 403.6B – Bicycle Left-Turn-Only Lane
- 405.5 - Pedestrian Refuge Island
- 903.8 – Security and Pedestrian Amenities
- Chapter 1000 – Bicycle Transportation Design

California Manual on Uniform Traffic Control Devices [2014]

http://www.dot.ca.gov/hq/traffops/engineering/mutcd/ca_mutcd2014.htm

The California Manual on Uniform Traffic Control Devices (MUTCD) is published by Caltrans and is issued to adopt uniform standards and specifications for all official traffic control devices in California, in accordance with Section 21400 of the California Vehicle Code. The California MUTCD incorporates Federal Highway Administration's Manual on Uniform Traffic Control Devices and incorporates all policies and traffic control devices issued by Caltrans that have been issued since January 2012 and other editorial, errata, and format changes that were necessary to update the previous documents. The California MUTCD provides guidance on signs, markings, highway traffic signals, traffic control devices for low-volume roads, temporary traffic control, traffic control for school areas, traffic control for railroad and light rail transit grade crossings, and traffic control for bicycle facilities.

The sections most relevant to the California State Bicycle and Pedestrian Plan project include:

- Chapter 2M – Recreational and Cultural Interest Area Signs
- Chapter 3F – Delineators
- Chapter 3G – Colored Pavement
- Chapter 3H – Channelizing Devices Used for Emphasis of Pavement Marking Patterns
- Chapter 3I – Islands
- Chapter 4E – Pedestrian Control Signal Features
- Chapter 4F – Pedestrian Hybrid Beacons
- Chapter 4L – Flashing Beacons
- Chapter 4N – In-Roadway Lights
- Chapter 5H – Traffic Control for School Areas
- Chapter 6D – Pedestrian and Worker Safety
- Part 7 – Traffic Control for School Areas

- Part 9 – Traffic Control for Bicycle Facilities

Caltrans Class IV Separated Bikeway Design Information Bulletin (DIB 89) [2015]

http://www.dot.ca.gov/hq/oppd/dib/dib89.pdf

The Protected Bikeways Act of 2014 (Assembly Bill 1193) established Class IV Bikeways, also referred to as separated bikeways or cycle tracks, for California and required Caltrans, in cooperation with local agencies and in consultation with the existing Caltrans advisory committee dedicated to improve access for persons with disabilities, to establish design criteria for separated bikeways. Approved on December 30, 2015, Design Information Bulletin (DIB) Number 89 was prepared to provide that design criteria and other general guidance on best practices related to separated bikeways to establish uniform guidance for the use of owners of these facilities.

The design criteria and guidance in this DIB has been written to allow designers to exercise sound judgment when applying it, consistent with the Project Development philosophy (see Caltrans Highway Design Manual Index 81.1) when designing projects and has been written to allow for flexibility in applying the design criteria, taking into consideration the context of the project location; which enables the designer to tailor the design, as appropriate, for the specific circumstances while maintaining safety.

This DIB provides additional design criteria and traffic operations guidance (signing and markings) in accordance with existing California codes and the California MUTCD. In addition, this DIB is also referenced in the Caltrans HDM. In particular, bikeway design guidance for Class I Bikeways (bike paths) in HDM Chapters 200 and 1000 for vertical clearance, design speed, stopping sight distance, drainage, landscaping, etc., may be used as appropriate for the Class IV Bikeway design.

National Design Standards and Guides

Americans with Disabilities Act Standards

The Americans with Disabilities Act (ADA) of 1990 prescribes that facilities, including for transportation, shall be made accessible to persons with disabilities. To comply with the ADA, the 2010 Americans with Disabilities Act Standards, as adopted by the U.S. Department of Justice (DOJ), serve as the primary basis of accessibility standards for public rights-of-way.

For transportation facilities on the California State Highway System, Caltrans (in addition to the California Department of General Services Division of the State Architect that oversees California Building Code compliance) is authorized to certify, on a project-by-project basis, that a project complies with State pedestrian accessibility design standards.

Proposed Guidelines for Pedestrian Facilities in the Public Right-of-Way

http://www.fhwa.dot.gov/environment/bicycle_pedestrian/resources/prwaa.cfm

The Draft Proposed Guidelines for Pedestrian Facilities in the Public Right-of-Way (PROWAG) ensure that sidewalks, pedestrian street crossings, pedestrian signals, and other facilities for pedestrian circulation and use constructed or altered in the public right-of-way by state and local governments are readily accessible to and usable by pedestrians with disabilities. The

Draft Guidelines are not standards until adopted by the U.S. DOJ and the U.S. DOT; the present standards to be followed are the aforementioned ADA Accessibility Guidelines (ADAAG) standards. However, the Draft Guidelines are the currently recommended best practices, and can be considered the state of the practice that could be followed for areas not fully addressed by the present ADAAG standards.

Proposed Federal Revisions to Design Controlling Criteria

This is part of a current rulemaking, so these have not been completed, but the revisions include reducing and clarifying the criteria that control design on the National Highway System (NHS), specifically:

- Eliminating three criteria related to Bridge Width, Vertical Alignment, and Lateral Offset to Obstruction
- Renaming several criteria for clarity
- Requiring the full set of remaining criteria only for high speed facilities (design speed of at least 50 mph). On low-speed NHS roadways (design speed < 50 mph), design exceptions would only be required by FHWA for deviations from the design speed or design loading structural capacity criteria.

The resulting controlling criteria for design for high speed facilities would be as follows:

- Design Speed.
- Lane Width.
- Shoulder Width.
- Horizontal Curve Radius.
- Superelevation.
- Stopping Sight Distance.
- Maximum Grade.
- Cross Slope.
- Vertical Clearance.
- Design Loading Structural Capacity.

FHWA Case Studies in Delivering Safe, Comfortable and Connected Pedestrian and Bicycle Networks

https://www.fhwa.dot.gov/environment/bicycle_pedestrian/publications/network_report/

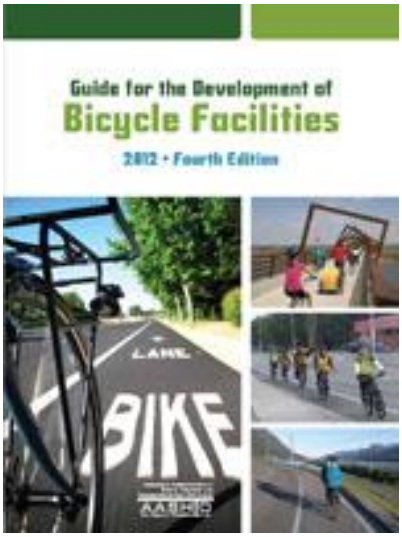
Published in December 2015, this report provides an overview of pedestrian and bicycle network principles, and highlights examples from communities across the country, building off of the 2010 U.S. DOT Policy Statement on Bicycle and Pedestrian Accommodation Regulations and Recommendations that identifies the Department's goal to support an "increased commitment to and investment in bicycle facilities and walking networks." Examples were identified, evaluated, and categorized into several key project types, including:

- Planning and Prioritization
- Shared Use Paths
- Corridor Improvements
- Bridges

- On-Road Facilities
- Intersections and Crossing Improvements

AASHTO Guide for the Development of Bicycle Facilities [2012]

https://bookstore.transportation.org/item_details.aspx?ID=1943



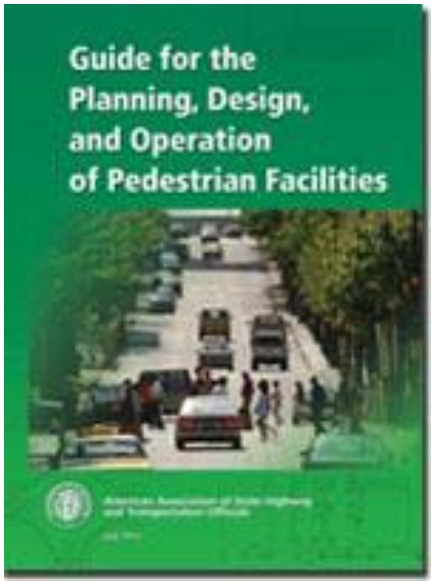
The AASHTO Guide for the Development of Bicycle Facilities provides information on the physical infrastructure needed to support bicycling. AASHTO envisions that the guide will be used as a state level design handbook or the basis for a state to develop their own handbook. The most recent edition of the guide provides guidance on how to choose between the bikeway typologies, affirms lane diets and road diets, and includes expanded bike lane, signal and shared-use path guidance. NACTO's *Urban Bikeway Design Guide* provides much of the same information as the AASHTO Bike Guide but contains more experimental solutions that are currently being tested and does not cover paths.

The AASHTO Bike Guide can serve as a basis for a California-specific design handbook. It contains chapters on:

- Bicycle Planning – overview of basic concepts in bicycle planning such as different levels of planning studies, quality of service, demand analysis, cost-benefit analysis, and the role of public input in the planning process.
- Bicycle Operation and Safety – covers design vehicle and an analysis of bicyclist collision factors.
- Design of On-Road Facilities – provides comprehensive design guidance for on-street facilities such as paved shoulders, alleviating conflicts between bicycle lanes and on-street parking, right and left turn considerations, and bicycle boulevards.
- Design of Shared-Use Paths – provides comprehensive design guidance for shared-use paths including design speed, horizontal alignment, cross slope, grade, and stopping sight distance information.
- Bicycle Parking Facilities – overview of short- and long-term bicycle parking site and facility design.
- Maintenance and Operations – covers street sweeping, vegetation, sign and marking maintenance, chip sealing, snow clearance, operating bikeways in work zones, and other related topics.

AASHTO Guide for the Planning, Design, and Operation of Pedestrian Facilities [2004]

https://bookstore.transportation.org/item_details.aspx?id=119



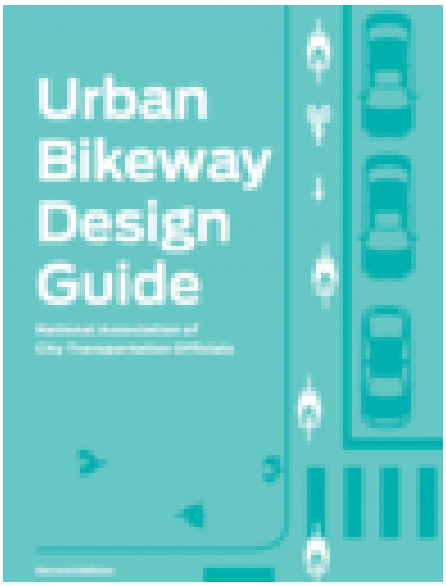
The purpose of this guide is to provide guidance on the planning, design, and operation of pedestrian facilities along streets and highways. Specifically, the guide focuses on identifying effective measures for accommodating pedestrians on public rights-of-way. Appropriate methods for accommodating pedestrians, which vary among roadway and facility types, are described in this guide. The primary audiences for this manual are planners, roadway designers, and transportation engineers, whether at the state or local level, the majority of whom make decisions on a daily basis that affect pedestrians. This guide also recognizes the profound effect that land use planning and site design have on pedestrian mobility and addresses these topics as well.

The following items from the Guide may be most relevant to the project:

- Brief overview of pedestrian-related elements within the AASHTO Policy on Geometric Design of Highways and Streets, MUTCD, HCM, Uniform Vehicle Code, and other accessibility laws, regulations, and standards.
- Walk decision factors
- Characteristics of pedestrians (walking speeds, spatial needs, and mobility issues)
- Prioritizing pedestrian improvement projects
- Rural considerations
- Phased development of sidewalks
- Pedestrian-friendly site development
- School site planning and design
- Neighborhood traffic management and traffic calming
- Roadway, sidewalk, intersection, mid-block crossing, and grade-separated crossing design
- Pedestrian signals
- Pedestrian-related signage
- Sidewalk maintenance

NACTO Urban Bikeway Design Guide [2013]

http://nacto.org/publication/urban-bikeway-design-guide/



The purpose of the NACTO Urban Bikeway Design Guide is to provide cities with state-of-the-practice solutions that can help create complete streets that are safe and enjoyable for bicyclists. Most of these treatments are not directly referenced in the current version of the AASHTO Guide to Bikeway Facilities, although they are virtually all (with two exceptions) permitted under the Manual on Uniform Traffic Control Devices (MUTCD). The Federal Highway Administration has posted information regarding MUTCD approval status of all of the bicycle related treatments in this guide and in August 2013 issued a memorandum officially supporting use of the document. All of the NACTO Urban Bikeway Design Guide treatments are in use internationally and in many cities around the US.

Below is the basic organization of the NACTO Urban Bikeway Design Guide:

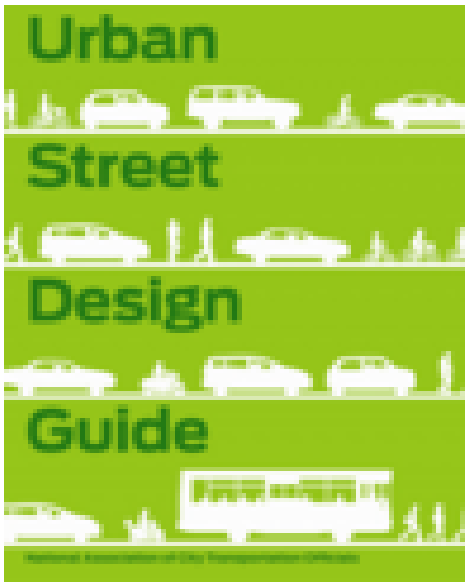
- Bike Lanes
  - Conventional Bike Lanes
  - Buffered Bike Lanes
  - Contra-Flow Bike Lanes
  - Left Side Bike Lanes
- Cycle Tracks
  - One-way Protected Cycle Tracks
  - Raised Cycle Tracks
  - Two-way Cycle Tracks
- Intersection Treatments
  - Bike Boxes
  - Intersection Crossing Markings
  - Two-stage Turn Queue Boxes
  - Median Refuge Island
  - Through Bike Lanes
  - Combined Bike Lane/Turn Lane
  - Cycle Track Intersection Approach
- Bicycle Signals
  - Active Warning Beacon for Bike Route at Unsignalized Intersection
  - Bicycle Signal Heads
  - Hybrid Beacon for Bike Route Crossing of Major Street
  - Signal Detection and Actuation
- Bikeway Signing and Marking

  - Colored Bike Facilities
  - Colored Pavement Material Guidance
  - Shared Lane Markings
  - Bike Route Wayfinding Signage and Markings System

- Bicycle Boulevards
  - Route Planning
  - Bicycle Boulevard Signs and Pavement Markings
  - Speed Management
  - Volume Management
  - Minor Street Crossings
  - Major Street Crossings
  - Offset Intersections
  - Green Infrastructure

NACTO Urban Street Design Guide [2013]

http://nacto.org/publication/urban-street-design-guide/



The *Urban Street Design Guide* focuses on the design of city streets and public spaces. While other national manuals, such as AASHTO's *A Policy on Geometric Design of Highways and Streets*, provide a general discussion of street design in an urban context, the *Urban Street Design Guide* emphasizes city street design as a unique practice with its own set of design goals, parameters, and tools. Many cities have already gone through the process of developing a local street design manual in the interest of creating internal design consensus between different local agencies. NACTO references materials from a selection of these guides and urges municipalities to use the *Urban Street Design Guide* as a basis for the creation of local standards. For most topics and treatments in this guide, the reader will find three levels of guidance:

- **Critical Features** are elements for which there is a strong consensus of absolute necessity.
- **Recommended Features** are elements for which there is a strong consensus of added value.
- **Optional Features** are elements that may vary across cities and may add value, depending on the situation.

The sections from the NACTO Urban Street Design Guide that may be most relevant to the California State Bicycle and Pedestrian Plan project include:

- Phases of Transformation
- Downtown Thoroughfare
- Lane Width
- Major Intersections

- Intersections of Major and Minor Streets
- Complex Intersections
- Complex Intersection Analysis
- Coordinated Signal Timing
- Design Speed
- Speed Reduction Mechanisms
- Design Vehicle
- Design Hour
- Performance Measures
- Functional Classification

4. Guidebooks and Research

In addition to the design standards reviewed in Section 3, other guidebooks and research efforts were reviewed. These guides provide information on designing bicycle and pedestrian facilities. In some cases, the guides may pull information from other design guidelines to highlight how bicyclists and pedestrians are accommodate.

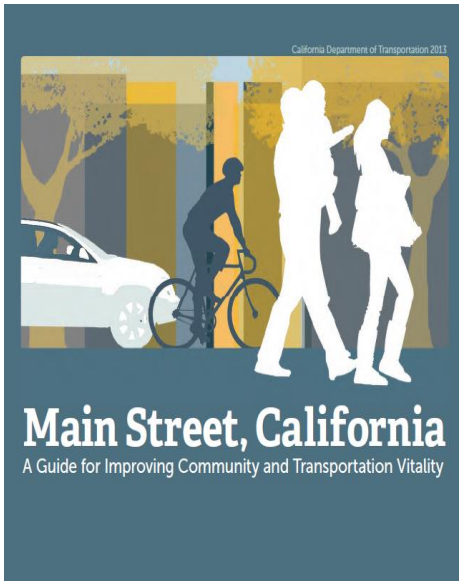
Caltrans Guidebooks

Complete Intersections: A Guide to Reconstructing Intersections and Interchanges for Bicyclists and Pedestrians

The Complete Intersections Guide provides direction on implementing an important aspect of Caltrans' Complete Streets policy, by identifying "actions that will improve safety and mobility for bicyclists and pedestrians at intersections and interchanges." The Guide is intended primarily for Caltrans planners, engineers, and other highway designers working as generalists or specialists in advising, engineering or designing for safe travel for all highway users at intersections and interchanges. The reference guide includes a disclaimer that it, "Does not constitute a standard, specification, or regulation. It is not intended to replace the existing [Caltrans] mandatory or advisory standards, nor the exercise of engineering judgment by licensed professionals."

Main Street, California: A Guide for Improving Community and Transportation Vitality

http://www.dot.ca.gov/hq/LandArch/16_livability/main_street/index.htm



This document is focused on the design of California State Highways that also serve as the "main street" of a community. The guide does not develop new guidance, but provides information from existing Caltrans manuals and policies, as well as national resources, to help communities improve multimodal access, livability and sustainability, while meeting appropriate engineering standards. The guide helps readers find information about standards and procedures described in the Caltrans Highway Design Manual (HDM), the California Manual on Uniform Traffic Control Devices (California MUTCD), and the Project Development Procedures Manual (PDPM). The guide is organized around five principles appropriate to main streets (and other State Highways):

- Flexibility in Design – recognizes that state highways that are main streets must accommodate both through movement and local circulation

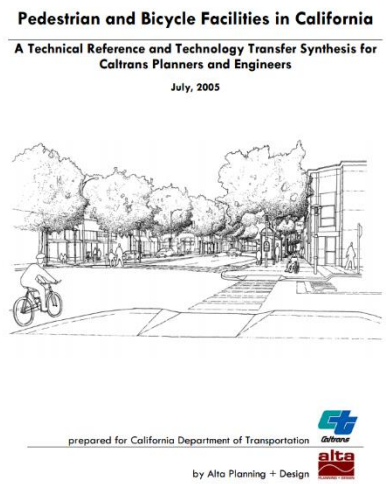
- Partnerships: Caltrans, Communities and Stakeholders – recognizes that Caltrans, the local community, and its residents and businesses must participate in the design of transportation facilities
- Main Streets for All – recognizes that all users and modes must be evaluated in transportation investments in main streets
- Livable Main Streets – recognizes that streets are places people live, work, shop and play, not just transportation routes
- Sustainable Main Streets – identifies opportunities for main streets to make use of green infrastructure and related techniques

The guide provides examples of the implementation of these principles across California and provides links to resources to help plan, design, and implement State Highway main streets that follow these principles.

Pedestrian and Bicycle Facilities in California – A Technical Reference and Technology Transfer Synthesis for Caltrans Planners and Engineers [2005]

http://atfiles.org/files/pdf/Pedestrian-Bicycle-Facilities-Caltrans.pdf

This technical reference document provides Caltrans staff with a synthesis of information on non-motorized transportation and serves as a resource on policies, laws, programs, the Caltrans planning and design process, guidelines, and best practices. Although primarily intended for Caltrans planners and engineers, local agency staff and the general public may also find it useful. This document provides a bicycle and pedestrian-focused literature review on the following topics:



- Statutes and Policies
- Planning
- Funding Sources
- Standard and Innovative Practices for Pedestrian Facilities and Traffic Calming
- Standard and Innovative Practices for Bicycle Facilities
- Benefits of Walking and Bicycling
- Pedestrian and Bicycle Mobility and Safety Data
- Pedestrian Characteristics in California Survey
- Safe Access to Transit
- Estimating Auto Trip Reduction by Non-Motorized Facilities
- Assessing State DOT Performance
- Bibliography
    - General Information and Design Resources
    - Bicycle and Pedestrian Facility Resources
    - Trail Resources
    - ADA-related Resources

- Traffic Calming Resources
- Safety Resources

While much of the information in the statues and policies, planning, and funding sources is dated and the sections on innovative pedestrian and facilities have been superseded by various NACTO guides, the appendices provide a framework for comparison of recent data to historic data and the bibliography provides a quick review of active transportation-related documents that pre-date 2005.

School Area Pedestrian Safety Manual [2006]

http://www.dot.ca.gov/hq/traffops/engineering/control-devices/pdf/TMChapter10.pdf

Chapter 10 of the Caltrans Traffic Manual is dedicated to pedestrian safety traffic control guidelines around K-12 schools. It provides guidance for signs, markings, and supervision at established school crossings, grade-separated crossings, and pedestrian walkways including flashing yellow beacons, school crossing traffic signals, heights for signs, and the schools and others' responsibilities for safe travel to schools.

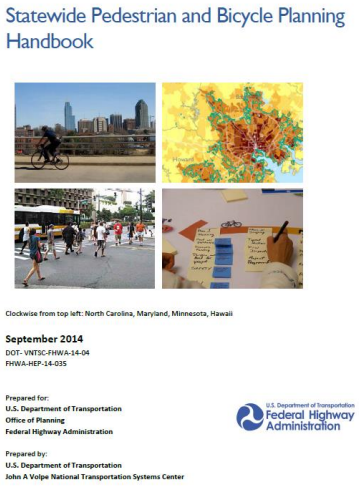
This document presents a valuable starting point for understanding the state of rules and regulations in place for walking school routes in California and provides a primer to the California Safe Routes to Schools Program.

Federal and National Guidebooks

FHWA Statewide Pedestrian and Bicycle Planning Handbook [2014]

http://www.fhwa.dot.gov/planning/processes/pedestrian_bicycle/pedestrian_bicycle_handbook/fhwahep14051.pdf

This handbook is designed to help State departments of transportation (DOTs) develop or update state pedestrian and bicycle plans. Based on research including interviews with nine state DOTs and critical evaluations of documents from 15 states, this handbook covers statewide planning from plan inception and scoping to engaging stakeholders and the general public; developing goals, objectives and strategies; collecting and analyzing data; linking to the larger statewide transportation planning process; and implementation. For each stage of the planning process, this handbook uses recent experiences and noteworthy practices from DOTs around the country, helping inform a new generation of statewide non-motorized planning and implementation.


Statewide Pedestrian and Bicycle Planning Handbook

Clockwise from top left: North Carolina, Maryland, Minnesota, Hawaii

September 2014
DOT- VNTSC-FHWA-14-04
FHWA-HEP-14-035

Prepared for:
U.S. Department of Transportation
Office of Planning
Federal Highway Administration

Prepared by:
U.S. Department of Transportation
John A Volpe National Transportation Systems Center

U.S. Department of Transportation Federal Highway Administration

As part of this handbook, the following themes emerged from discussions with statewide pedestrian and bicycle coordinators in early 2014. Discussions with DOTs in Colorado, Hawaii, Iowa, Louisiana, Maryland, Minnesota, North Carolina, Vermont, and Washington yielded the following key themes.

Plan Focus

- Most statewide plans are policy plans. Many states want plans that focus more on guidance and direction than lists of projects. Still, some plans identify specific corridors for statewide bicycling routes and include project scoping checklists and project prioritizing criteria.
- The plan needs a clear purpose. Many states felt it was important to think about how the results of the plan are used, beginning with the end in mind and working backwards. Planners should consider who will use it and what it will be used for; this helps to define the expectations of the process.

Planning Process

- The plan is a point in time. The plan may be prompted by legislative requirements, DOT priorities, and/or internal champions. Other plans and initiatives will follow it. Engagement, buy-in, and ownership are critical to making it a living document that influences departmental direction.
- Public involvement is time intensive, but essential to a quality outcome. Good public involvement requires significant energy and resources. If the budget does not allow many in-person meetings, webinars and interactive web tools can be effective.
- Plan development can span a wide range of costs and effort. Statewide pedestrian and bicycle planning efforts can vary widely in terms of cost and effort, from less than $100,000 to upwards of $800,000. The range depends on the level of detail, data collection, the balance between focusing on specific projects and corridors versus policy, and the degree to which the plan is developed in-house or uses outside consultants. Some states break up the planning process into multiple, discrete phases in order to help with funding.

Institutional Analysis

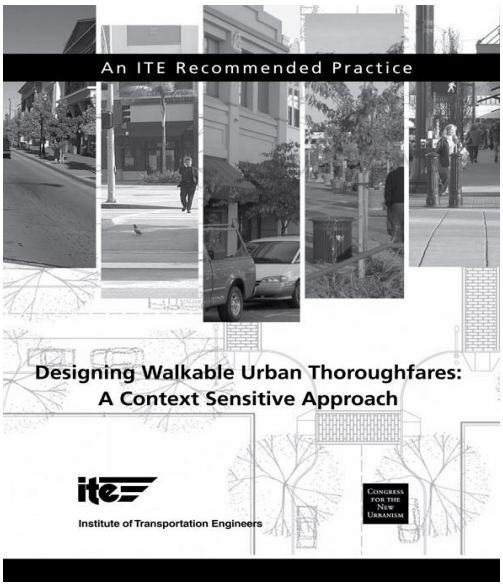
- Internal coordination is important, especially with district engineers and people tasked with collecting data. The state DOT staff are the people that ultimately implement the plan. Coordination is key for information exchange, education, and buy-in.
- Many plans place great emphasis on coordination with the agency's project development process. It is critical to link planning to project development, in order to ensure that the plan concepts are followed through into practice. This type of effort may relate to implementing "Complete Streets" policies or other design guidelines, changing internal procedures, or providing professional training internally and externally.

Performance Management

- Long-term data collection for performance management should be carefully considered. In order to successfully track plan and program performance over time, agencies must identify the right mix of accountability, ownership, and resources for long-term data collection.
- The connection between performance measures and project selection criteria needs to be strengthened. This is an emerging area in planning that some States are making progress on, but there is still much to learn about the most effective pedestrian and bicycle performance measures and how to best apply them at the statewide level.
- When selecting performance measures and indicators, planners should be careful to focus on what the state DOT can control. Performance monitoring is important for tracking progress of planning efforts and continuing to make the case for increased investments. However, planners should consider carefully the measures and indicators that they will be able to influence and track through the planning process. For instance, does the plan address bicycle facility development across the state or only on state routes? DOT plans should not rely too heavily on decisions or data collection by other entities to track the plan's success.

Designing Walkable Urban Thoroughfares: A Context-Sensitive Approach [2010]

http://www.ite.org/css/online/



This report was developed in response to widespread interest for improving both mobility choices and community character through a commitment to creating and enhancing walkable communities. While the concepts and principles of context sensitive solutions (CSS) are applicable to all types of transportation facilities, this report focuses on applying the concepts and principles in the planning and design of urban thoroughfares—facilities commonly designated by the conventional functional classifications of arterials and collectors. Freeways, expressways and local streets are not covered in this report. The following chapters emphasize thoroughfares in "walkable communities"—compact, pedestrian-scaled villages, neighborhoods, town centers, urban centers, urban cores and other areas where walking, bicycling and transit are encouraged. The objectives of this report are to:

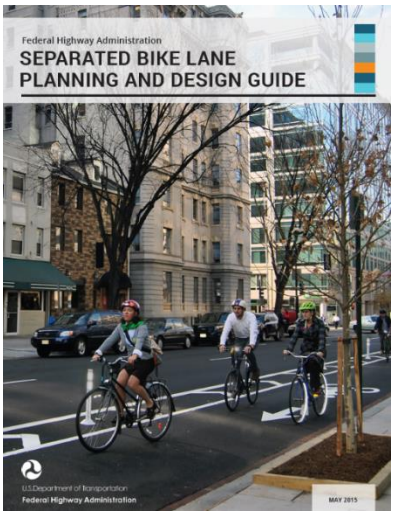
- Identify how CSS principles can be applied in the processes (for example, network, corridor, project development) involved with planning and developing roadway improvement projects on urban thoroughfares for walkable communities
- Describe the relationship, compatibility, and trade-offs that may be appropriate when balancing the needs of all users, adjoining land uses, environment and community interests when making decisions in the project development process
- Describe the principles of CSS and the benefits and importance of these principles in transportation projects
- Present guidance on how to identify and select appropriate thoroughfare types and corresponding design parameters to best meet the walkability needs in a particular context
- Provide criteria for specific thoroughfare elements, along with guidance on balancing stakeholder, community and environmental needs and constraints in planning and designing walk-able urban thoroughfare projects

The sections from the report that may be most relevant to the California State Bicycle and Pedestrian Plan project include:

- CSS in the Transportation Planning Process
- CSS in the Project Development Process
- CSS in Network Planning
- Network Design Guidelines
- CSS Example in Corridor Planning – Developing Evaluation Criteria
- Thoroughfare Types

Separated Bike Lane Planning and Design Guide [2015]

https://www.fhwa.dot.gov/environment/bicycle_pedestrian/publications/separated_bikelane_pdg/



The FHWA's *Separated Bike Lane Planning and Design Guide* outlines planning considerations for separated bike lanes and provides a menu of design options covering typical one and two-way scenarios. It highlights different options for providing separation, while also documenting midblock design considerations for driveways, transit stops, accessible parking, and loading zones. It provides detailed intersection design information covering topics such as turning movement operations, signalization, signage, and on-road markings. Case studies highlight best practices and lessons learned throughout the document.

The guide consolidates lessons learned from practitioners designing and implementing separated bike lanes throughout the U.S. It attempts to capture the current state of practice, while still recognizing that our understanding of this facility type is still evolving and that there is a need for design flexibility. To encourage continued development and refinement of techniques, the guide identifies specific data elements to collect before and after implementation to enable future analysis across facilities in different communities. It identifies potential future research, highlights the importance of ongoing peer exchange and capacity building, and emphasizes the need to create holistic ways to evaluate the performance of a separated bike lane.

Topics of relevance for the California State Bicycle and Pedestrian Plan include:

- Factors that should be considered when planning separated bike lanes
- Federal funding sources that can be used to implement separated bike lanes
- Maintenance challenges and solutions related to separated bike lanes
- Outreach needed for separated bike lanes
- Various options to provide separation

Reports and Research

California Blueprint for Bicycling and Walking [2002]

The California Blueprint for Bicycling and Walking was prepared by Caltrans for the 2002 California State Legislature. The blueprint laid out ambitious goals for improving bicycling and walking, including a 50 percent increase in bicycling and walking trips by 2010; a 50 percent decrease in pedestrian and bicycle fatality rates by 2010; and increased funding for pedestrian and bicycle programs.

Seamless Travel: Measuring Bicycle and Pedestrian Activity in San Diego County and its Relationship to Land Use, Transportation, Safety, and Facility Type [2010]

http://www.path.berkeley.edu/sites/default/files/publications/PRR-2010-12.pdf

This research paper provides the data collection and research results for the Seamless Travel project, a research project funded by Caltrans. This research is designed to (a) evaluate existing bicycle and pedestrian data sources and collection methods, (b) conduct comprehensive counts and surveys of bicyclists and pedestrians in a consistent manner using the National Bicycle & Pedestrian Documentation Project (NBPD) as a template 9, (c) conduct counts and surveys using San Diego County (with extensive historical count information) as a model community, (d) analyze how bicycle and pedestrian activity levels relate to facility quality and factors such as land use and demographics, (e) identify factors that are highly correlated with increased bicycling and walking, (e) provide methods for quantifying usage and demand that will enhance research on benefits and exposure, and (f) evaluate how the transit-linkage (bicycle and pedestrian connections to transit) can be improved. This report presents materials developed including a literature review, advisory committee meeting input, project objectives, data collection methodology, results from the data collection effort, analysis of correlations, trends, and patterns, conclusions on the accuracy and applicability of the data, and recommendations on increasing walking and bicycling in California.

The study provides a starting point for the development of a more refined bicycle and pedestrian regression model for estimating potential demand for bicycle and pedestrian facilities.

The Non-Motorized Transportation Facilities Report to the California State Legislature, Fiscal Year: FY 2013-14 [2014]

http://www.dot.ca.gov/docs/Non-Motorized_Transportation_Facilities_Report_FY_2013-14.pdf

Caltrans is required under Section 887.4 of the Streets and Highways Code to submit an annual non-motorized transportation facility report to the California Legislature. The report is divided into six chapters and five appendices:

- Completed Projects: Profiles in Community Success
- Bicycle and Pedestrian Program Highlights
- Caltrans Non-motorized Program Activities
- The Active Transportation Program
- Other State and Federal Funding for Bicycle and Pedestrian Facilities
- Committees and Advisory Groups
- State Statues on Bicycling and Walking
- Key Legislation Affecting Transportation Planning
- Non-motorized Information Websites
- Non-Motorized Report Acronyms
- Deputy Directive 64-R2

This document presents a valuable starting point for understanding the state of bicycling and walking in California and provides a primer to the California Complete Streets Implementation Action Plan 2.0.

2010-2012 California Household Travel Survey Final Report [2013]

http://www.dot.ca.gov/hq/tpp/offices/omsp/statewide_travel_analysis/files/CHTS_Final_Report_June_2013.pdf

The 2010 - 2012 California Household Travel Survey (CHTS) was a multi-modal study of the demographic and travel behavior characteristics of residents across the entire State of California, and the largest single regional household travel survey ever conducted in the United States. Detailed travel behavior information was obtained from over 42,500 households, using multiple data collection methods, including Computer Assisted Telephone Interviewing (CATI), Online, Mail surveys, wearable and in-vehicle GPS as well as using On-Board Diagnostic (OBD) sensors that gathered data directly from a vehicle's engine, which was a new and innovative approach. Details of personal travel behavior within region of residence, and inter-regionally within the state, as well as adjoining states and Mexico, were gathered. The survey sampling plan was designed to ensure an accurate representation of the entire population of the state. Under the leadership of the California Department of Transportation (Caltrans), the study was jointly sponsored and funded by Caltrans, the California Strategic Growth Council, the California Energy Commission, and the following local transportation planning agencies:

- Association of Monterey Bay Area Governments (AMBAG)
- Fresno Council of Governments • Kern Council of Governments
- Metropolitan Transportation Commission (MTC)
- San Joaquin Air Pollution Control District
- Santa Barbara County Association of Governments
- Southern California Association of Governments (SCAG)
- Tulare County Association of Governments.

Other state agencies, including the California Air Resources Board, California Department of Public Health, and California Department of Housing and Community Development as well as all of the State's Metropolitan Planning Organizations (MPOs) and Regional Transportation Planning Agencies (RTPAs) were survey stakeholders. The Federal Highway Administration (FHWA) had active involvement with the survey and assisted Caltrans with funding for a public outreach program.

The main objective of the survey was to be able to apply the data to develop and update transportation models in order to meet statutory requirements of both federal (air quality analysis) and state (AB 32, SB 375 and SB 391). Other main objectives included gathering data from a considerably larger sample than in the past, a robust collection of all travel modes and use of tolled facilities data, proper targeting of long distance travel, and an accurate representation of weekday and weekend travel. The 2010 - 2012 CHTS included additional features to support advanced model development, which included more detailed data on vehicle acquisition decisions, parking choices, work schedules and flexibility, use of toll lanes/priced facilities, and walk and bicycle trips.

Walking and Biking in California: Analysis of the CA-NHTS [2012]

http://its.ucdavis.edu/research/publications/publication-detail/?pub_id=1661.

To estimate the safety risk for pedestrians and bicyclists requires reliable counts of the number of pedestrian and bicycle crashes and collisions and the amount of walking and biking. To create estimates of the amount of walking and biking in the state that can be used to estimate the exposure of bicycles and pedestrians to crashes, the State of California purchased an add-on to the 2009 National Household Travel Survey (called the CA-NHTS in this report). The CA-NHTS provides a significant opportunity for California decision-makers to better understand walking and biking, filling an important gap in the existing knowledge base. This report calculates exposure rates for pedestrians and bicyclists in the State, each Caltrans District, and for each of the Metropolitan Planning Organizations (MPO).

NCHRP Report 717: Guidebook on Pedestrian and Bicycle Volume Data Collection [2014]

http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_rpt_797.pdf

The *Guidebook on Pedestrian and Bicycle Volume Data Collection* is a resource for those who are, or would like to be, involved in collecting non-motorized count data. The guidebook includes:

- Descriptions of methods and technologies for counting pedestrians and bicyclists
- Guidance on developing a non-motorized count program
- Gives suggestions on selecting appropriate counting methods and technologies, and
- Examples of how organizations have used non-motorized count data to better fulfill their missions

This guidebook also describes correction factors to improve the accuracy of counts produced by automated counters, factors for expanding short-term counts to longer-term volume estimates, and factors for adjusting counts to reflect environmental conditions at the time of the count, such as rain. Related topics, such as trip sampling techniques (e.g., surveys, wireless device detection, and global positioning system [GPS] data), pedestrian and bicycle presence detection, and pedestrian and bicycle trip generation estimation, are outside the guidebook's scope.

National Bicycle and Pedestrian Documentation Project [2009]

http://bikepeddocumentation.org/downloads/

The National Documentation Project (NDP) is an annual bicycle and pedestrian count and survey effort that is sponsored by the Institute of Transportation Engineers Pedestrian and Bicycle Council. This report provides guidance to local agencies and organizations conducting bicycle and pedestrian counts and surveys as part of the National Bicycle & Pedestrian Documentation Program being sponsored by the Institute of Transportation Engineers (ITE) Pedestrian and Bicycle Council.

The report provides an overview of the National Documentation program, goals and objectives of the program, and instructions on how to become involved. The report also suggests specific research topics that could be initiated through this data collection effort.

Working with universities, organizations and agencies around the country, the National Documentation Project proposes the following objectives:

- Establish a consistent national bicycle and pedestrian count and survey methodology, building on the 'best practices' from around the country, and publicize the availability of this free material for use by agencies and organizations on-line.
- Establish a national database of bicycle and pedestrian count information generated by these consistent methods and practices.
- Use the count and survey information to begin analysis on the correlations between land use, demographic, type of facility, and other factors and bicycle and pedestrian activity.

5. Review of Regional Plans in California

Alta reviewed 13 regional plans developed by Metropolitan Planning Organizations (MPOs), Councils of Governments (COGs), and counties across California in order to ascertain the issues and concerns currently expressed by each. This review was not comprehensive, but instead reflected a review of readily available plans available on public websites for MPOs and COGs across the state. While some county plans are included, these were limited to plans that have a multi-jurisdictional approach. It is important to note that most of the regional plans have a bicycle planning focus, and that pedestrian planning is predominantly done at the local (sub-regional) jurisdiction level; additional information and analysis of local pedestrian and bicycle master plans in the state is necessary for a more comprehensive assessment.

The plans reviewed included:

- Kern County Bicycle Master Plan and Complete Streets Recommendations (2012)
- Kings County Regional Bicycle Plan (2011)
- Lake Tahoe Region Bicycle and Pedestrian Plan (2010)
- Metropolitan Transportation Commission Regional Bicycle Plan for the San Francisco Bay Area (2009 update)
- Monterey Bay Area Mobility 2035 (2010)
- Sacramento Area Council of Governments Regional Bicycle, Pedestrian, and Trails Master Plan (2015)
- San Diego Association of Governments Regional Bicycle Plan (2010)
- San Luis Obispo County Bikeways Plan (2010)
- Santa Barbara County Association of Governments Regional Active Transportation Plan (2015)
- Shasta County Regional Transportation Plan (2010)
- Southern California Association of Governments (SCAG) Active Transportation Work Plan
- Stanislaus Council of Governments Non-Motorized Transportation Master Plan (2013)
- Tulare County Regional Bicycle Transportation Plan (2010)

The review focused on four questions:

1. What are the goals or objectives of the plan?
2. What challenges and trends related to walking and bicycling were identified in the plan?
3. What are the most important strategies recommended for implementation?
4. What does the region need from Caltrans to implement their plan?

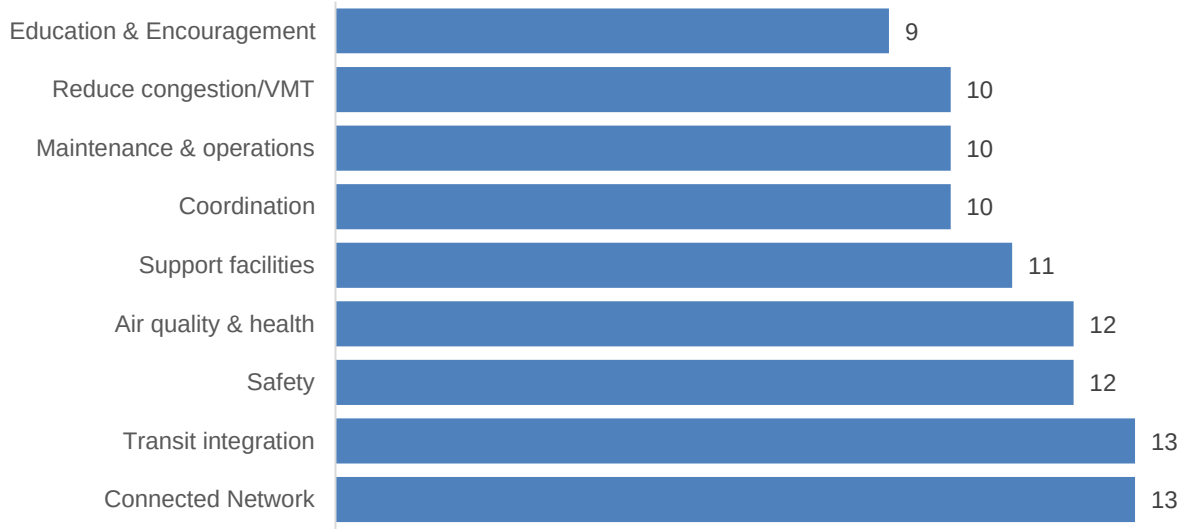
Goals, Objectives & Strategies

The themes covered most frequently in the reviewed plans are listed below in descending order.

- Provide a connected network with access to local and regional destinations, and route choices for bicyclists and pedestrians (12 plans)

- Integrate walking and bicycling with transit (12 plans)
- Increase safety or reduce collisions for bicyclists and pedestrians (11 plans)
- Improve air quality, reduce emissions, or improve public health and physical activity levels (11 plans)
- Coordinate planning across jurisdictions and agency levels, including coordinating with developers, nonprofits, and other non-government organizations (11 plans)
- Provide support facilities and wayfinding (11 plans)
- Improve the funding for and quality of maintenance and operations on bicycle and pedestrian facilities (10 plans)
- Reduce congestion or vehicle miles traveled by promoting walking and bicycling (9 plans)
- Support or implement education and encouragement programs (8 plans)

Figure 2. Priority Goals from Regional Plans



Challenges & Trends

The plans that included an assessment of current or future walking and bicycling trips were unanimous in projecting significant growth in walking and bicycling within the next 15-35 years. Additional notable trends and challenges include:

- Long-distance interregional commuting is growing, as people seek less expensive housing options
- New infrastructure tools are becoming more widely used: bike boxes, bike boulevards, mini traffic circles, long-term bike parking, lead pedestrian intervals, and pedestrian scramble phases
- Freeways, waterways, and railroads often create barriers to walking and bicycling
- Aging 'baby boomers' will increasingly rely on walking, bicycling, or transit as they become less confident or capable drivers
- On a regional scale, infrastructure investments may be less impactful than land use strategies, pricing systems, or technology solutions to discourage driving

Needs from Caltrans

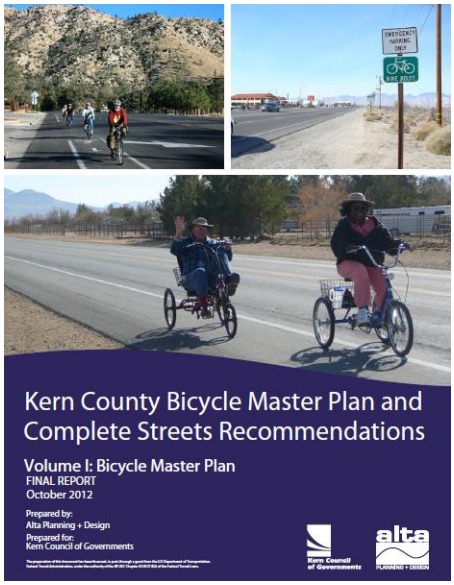
The most commonly cited need from Caltrans was increased coordination with local jurisdictions to provide bikeways on state routes, especially where state routes serve as the 'main street' for the communities.

Other needs include managing on-street bicycle facilities on state routes, expanding the scope and depth of data collection efforts like the National Personal Transportation Survey, and supporting the expansion of transit services like high speed rail.

Detailed Plan Review

A summary of the plan review is included below. Plan contents have been paraphrased or condensed to identify similar policy language. Goals, objectives, and strategies are summarized in one combined section, because there was significant overlap between these two questions in the reviewed plans.

Kern County Bicycle Master Plan and Complete Streets Recommendations [2012]



Goals and Objectives

- The goal of any "complete street" should be the mobility and safety of all roadway users
- Provide a balanced and efficient transportation system that maximizes the reduction of air pollution
- Provide safe, accessible and convenient bicycling facilities
- Support and encourage increased levels of bicycling and walking
- Promote the use of bicycles as an integral component of the regional multi-modal transportation network

Challenges and Trends

This plan estimated potential future walking and bicycling trips and the associated benefits by using the future population predictions from the 2011 Regional Transportation Plan. It is noted that additional population modeling and model calibration is recommended to better reflect potential future conditions. The analysis projects that the number of annual walking and bicycling trips in 2030 will be 44.4 million, which will reduce 31 million annual vehicle trips. Additionally, the annual number of miles bicycled and walked is forecast to be 28.6 million in 2030. This helps lead to a potential future reduction of over 17.5 million pounds of carbon dioxide from annual bicycle trips and over 5.5 million from annual walking trips.

Strategies

- Update/remove current LOS policy
- Adopt an LOS policy for pedestrian, bicycle, or transit users
- Adopt policies for proper planning and development of pedestrian facilities

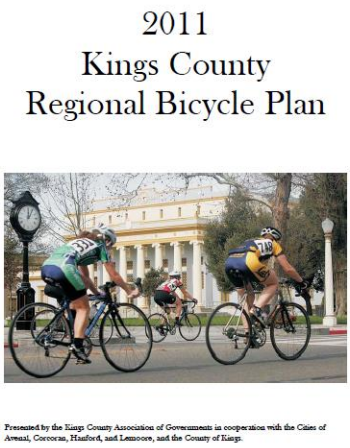
- Update Kern County Design Standards for bicycle and pedestrian facilities including installation of bike facilities along the County's standard roadways and off-street trails and paths

Caltrans Needs
County should coordinate with Caltrans to develop bikeways on state routes.

Kings County Regional Bicycle Plan [2011]

Goals and Objectives

- Provide a well-developed, safe and convenient, inter-regionally connected system of bikeways complete with support facilities
- Future public and private development should support and facilitate the expansion, improvement, connectivity, and maintenance of the bikeway system
- Encourage on-going bicycle safety education and information programs
- Bikeways should connect educational facilities, major employers, residential neighborhoods, and recreational areas
- Encourage partnerships between private, non-profit, governmental, and citizen's groups
- Encourage the use of bicycles to enhance air quality and improve the health of the rider

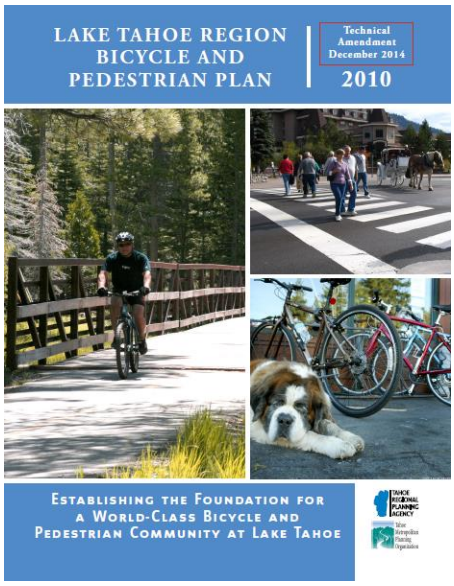


Challenges and Trends
None specifically identified.

Strategies
None specifically identified.

Caltrans Needs
Work with Caltrans in an effort to further study the concept of utilizing any relinquished ROW for potential non-motorized transportation facilities.

Lake Tahoe Region Bicycle and Pedestrian Plan [2010]



Goals and Objectives
Three main goals focused around the 5 E's.

Goal 1: Complete a bicycle and pedestrian network that provides convenient access to Basin destinations and destinations outside the Basin

- Focused Goal: A complete bicycle and pedestrian network - Construct, upgrade, and maintain a complete regional network of bicycle and pedestrian facilities that connects communities and destinations. (M2030)
  - Policies:
    - 1.1 To the extent possible, accommodate all users, encompassing a wide range of abilities and travel objectives, by the bicycle and pedestrian network
    - 1.2 Encourage the adoption of the Lake Tahoe Bicycle and Pedestrian Plan by local agencies and work collaboratively to achieve implementation (M2030)
    - 1.3 All hard-surface bicycle and pedestrian facilities should conform to the most recent design standards adopted by Caltrans and the Nevada Department of Transportation (NDOT), except where unique standards have been established by TRPA in consideration of environmental conditions and regional consistency
    - 1.4 Prioritize constructing pedestrian and bicycle facilities in urbanized areas of the Region, facilities that increase connectivity of the bicycle network, and facilities that can be constructed concurrently with other projects (M2030)
    - 1.6 The bicycle and pedestrian network shall conform to the requirements of the Americans with Disabilities Act (ADA)
    - 1.7 Design shared-use paths to support emergency vehicle access where possible
    - 1.8 Actively pursue funding for priority projects and programs
    - 1.9 To facilitate cost savings, coordinate project construction with the needs of utility providers, particularly water suppliers and communications providers
    - 1.10 Pursue "experimental status" for unique designs from the Federal Highway Administration where adherence to published standards is not feasible, or where different standards would provide safety, economic, environmental, or social benefits
- Focused goal: Bicyclist and Pedestrian Accommodation - Create and maintain bikeable, walkable communities through existing and new development (M2030)

- Policies:
  - 1.11 Include pedestrian and bicycle access equal to or greater than private vehicle access as a feature of new development and redevelopment projects proposed in proximity to major bicycle and pedestrian routes (M2030)
  - 1.12 Incorporate segments of the bicycle and pedestrian network into new and redeveloped commercial, tourist, multi-family, public service and recreation projects consistent with the Lake Tahoe Region Bicycle and Pedestrian Plan. Implementation of the facilities will be through construction, easements, or in-lieu fees as appropriate to the scale of development (M2030)
  - 1.13 Increase bicycle and pedestrian support facilities, such as sidewalks, bicycle racks, bicycle lockers, and bike-share programs at commercial and tourist centers, recreational areas, transit centers, lodging properties, and government buildings (M2030)
  - 1.14 In addition to those bicycle and pedestrian facilities shown in the BPP, consider shared-use paths and sidewalks where a connection to the existing network is needed to provide improved safety or convenience
  - 1.15 Accommodate bicyclists and pedestrians as described in the Lake Tahoe Bicycle and Pedestrian Plan in all roadway improvement projects. Include specialized pedestrian crossing treatments, traffic calming, and bicycle-activated signals as appropriate to the scale of the project (M2030)
  - 1.16 Construct, upgrade, and maintain pedestrian and Class II bicycle facilities (bike lanes) meeting AASHTO standards where feasible along major travel routes when the edge of roadway is altered or improved. Where bicycle lanes are not feasible due to environmental or land ownership constraints, provide as much shoulder area as possible for safe bicycle passage

- Focused goal: Transit Integration - Integrate the transit, bicycle and pedestrian networks to provide seamless transitions and stimulate both increased transit ridership and increased use of the bicycle and pedestrian network (M2030)
  - Policies:
    - 1.20 Provide secure bicycle storage on all transit vehicles and at all major transit stops and stations
    - 1.21 Maximize bicycle carrying capacity on new transit vehicles using best available technology (M2030)
    - 1.22 Prioritize sidewalk improvements that provide pedestrian access to transit stops

- Focused goal: Maintenance - Maintain the bicycle and pedestrian network to a high standard that encourages ridership and improves the safety of all users (M2030)
  - Policies:
    - 1.23 Where feasible, maintain the year-round use and condition of identified sidewalks and bike facilities (M2030)

- 1.24 Pursue innovative funding that covers the costs of on-going and long-term maintenance and that increases as the mileage of facilities to be maintained increases
- 1.25 Require a maintenance plan before issuing a permit or funding for any bicycle and pedestrian facilities
  - The maintenance plan shall specify a strategy for long and short-term funding for the life of the project
- 1.26 Up to 25 percent of Air Quality Mitigation Funds may be set aside for operations and maintenance of completed or future EIP projects, including EIP bicycle path projects
- 1.27 Consider creative funding mechanisms for bicycle path and sidewalk maintenance
  - Examples include, but are not limited to: non-profit maintenance partnerships, bicycle registration programs, renting conduit under shared-use paths to utility companies, or forming business improvement districts
- 1.28 Encourage jurisdictions and private property owners to minimize maintenance costs by consolidating maintenance responsibilities
- 1.29 Design and construct all portions of the bicycle and pedestrian network to reduce long-term maintenance costs and encourage efficient operation
- 1.30 Maintain and upgrade infiltration devices along paths as appropriate over time
- 1.31 Encourage jurisdictions and roadway agencies to snow-clear, sweep, and stripe bicycle routes where needed before major cycling events

Goal 2: Raise awareness of the bicycle and pedestrian network and encourage safe and increased bicycling and walking.

- Focused Goal: Education and Outreach - Cultivate enthusiasm for bicycling and walking at Lake Tahoe and awareness of the bicycle and pedestrian network through education, outreach, and signage (M2030)
  - Policies:
    - 2.1 Encourage and support all Basin communities to seek recognition as League of American Bicyclists' "Bicycle Friendly Communities"
    - 2.2 Provide clear and consistent signage to help bicyclists identify the best routes to reach their destination safely, quickly, and easily
    - 2.3 Use signage and traffic control devices consistent with the Manual on Uniform Traffic Control Devices (MUTCD) and those established by federal, state, and local standards to ensure a high level of safety for bicyclists, pedestrians, and motorists
    - 2.4 Promote National "Bike to Work" and International "Walk to School" days and other events to encourage biking and walking (TRPA, local jurisdictions, local advocacy groups)
- Focused Goal: Enforcement - Encourage safe bicycling and walking through enforcement of traffic and parking violations

- Policies:
  - 2.5 Encourage all state and local law enforcement agencies to cite drivers, cyclists, and pedestrians who create unsafe and unlawful cycling and walking conditions
  - 2.6 Encourage all state and local law enforcement agencies to enforce parking restrictions at recreation destinations, especially where nearby bicycle or pedestrian facilities provide a convenient alternative to driving

Goal 3: Provide environmental, economic, and social benefits to the Region through increased bicycling and walking.

- Focused Goal: Reduced Environmental Impacts - Reduce vehicle miles traveled (VMT), emissions, erosion, runoff, and other environmental impacts through careful implementation of the bicycle and pedestrian network
  - Policies:
    - 3.1 Minimize roadway capacity or parking facilities where they can be effectively replaced by transit bicycling and/or walking facilities
    - 3.2 Seek partnerships and opportunities for environmental restoration in conjunction with BPP facility implementation
    - 3.3 Include design features, landscaping, signage, or barriers on shared-use paths through sensitive environmental areas to discourage pets and humans from leaving the path
    - 3.4 Incorporate Best Management Practices (BMPs) into bicycle and pedestrian facility design to filter all sheet flow associated with project improvements
- Focused goal: Evaluation - Attain bicycle and pedestrian goals and environmental thresholds through performance measures consistent with the Regional Transportation Plan and the Regional Plan for the Lake Tahoe Basin
  - Policies:
    - 3.5 Conduct biannual monitoring of the bicycle and pedestrian network to track use levels over time. This data will be provided to local operational authorities to aid in prioritizing construction, maintenance and enforcement
    - 3.6 Develop measures for tracking bicycling and walking impacts on local economies (M2030)
    - 3.7 Track bicycle and pedestrian accident rates and identify high-priority locations for safety improvements with each update of the BPP

Challenges and Trends

Existing and future demand is mentioned as percentages. "Using the Tahoe Bicycle Trail User Model, TRPA/TMPO estimated future daily and annual use for a complete regional network, assuming high quality, well-maintained Class I/Shared-Use Paths on all major corridors in the Tahoe Region. This yielded approximately 40,000 trips on the entire network on a peak summer day (2.5 percent of all trips), and almost 6 million annual trips assuming no winter path maintenance. The estimated 40,000 daily trips represent a four-fold increase over current bicycling and walking rates on Class I/Shared-Use Paths.2 Assuming the same rates of

commuting that were reported in the 2007 TRPA/TCORP surveys, approximately 40 percent (16,000) of these daily trips would be for commute purposes."

Strategies

"The TRPA will have an active role in the implementation of certain policies, such as working with project developers to accommodate bicyclists and pedestrians. Other policies direct the TRPA to collaborate with local jurisdictions and agencies, for instance in identifying and obtaining funding for projects. Finally, there are many instances where the TRPA will have an advisory role, by encouraging local agencies to increase walkability and bikeability through better signage, increased maintenance, or public outreach."

Caltrans Needs

TRPA staff has held multiple meetings with Caltrans and NDOT planners, designers, and engineers to discuss the need for bicycle and pedestrian accommodation. Building on this, the 2010 BPP includes policy language on accommodation of bicyclists and pedestrians ("Complete Streets" language) that is anticipated to be adopted into the TRPA Code of Ordinances with the Regional Plan update. On-going meetings with Caltrans and NDOT are also called for as part of this BPP.

Metropolitan Transportation Commission Regional Bicycle Plan for the San Francisco Bay Area [2009]

Goals and Objectives

Goals generally emphasize the three E's: prosperous Economy, quality Environment, and social Equity. More explicitly, the principal goal of this plan is, "to ensure that bicycling is a safe, convenient, and practical means of transportation and healthy recreation throughout the Bay Area, including in Priority Development Areas; to reduce traffic congestion and risk of climate change; and to increase opportunities for physical activity to improve public health." Specific goals and policies include:

1. Routine accommodation – Policies require all transportation projects funded by MTC to consider enhancing bicycle transportation, and encourage bike-friendly design of all roadways, transit systems, and transportation facilities
2. Regional bicycle network
3. Bicycle safety – Policies include encouraging and supporting local agencies to invest in infrastructure that help reduce bicyclist fatalities, and to enforce the vehicle code for both bicyclists and motorists with an emphasis on diversion classes and education rather than punitive measures
4. Expand bicycle education and promotion, including expanding driver education, diversion programs, and outreach efforts building on Bike to Work Day successes
5. Multimodal integration – Encourage seamless transfers between bicycling and public transportation through better bicycle parking (including short and long term parking, bike repair stations, or bike garages), accommodating bicycles on transit vehicles,

providing opportunities for bike share or bike rentals at transit locations, and closing the "first/last mile" gaps around transit stops and stations

6. Funding – Consider benefits of bicycle projects in the allocation of all transportation funding and in developing performance measures, including VMT and greenhouse gas reductions, public health goals, and community livability initiatives. Create or identify new funding sources to support operations and maintenance of bicycle and pedestrian facilities, and support additional Safe Routes to School funding
7. Planning – Support planning efforts at all levels, encouraging them to incorporate guidance from higher level plans and coordinating closely with Bicycle Advisory Committees across jurisdictions
8. Data collection – Routinely collect data to monitor bicycle and pedestrian trip-making, collisions, and public transit use

Challenges and Trends

More than 300,000 bicycle trips are made every weekday by Bay Area residents. Additional tables of current ridership are provided.

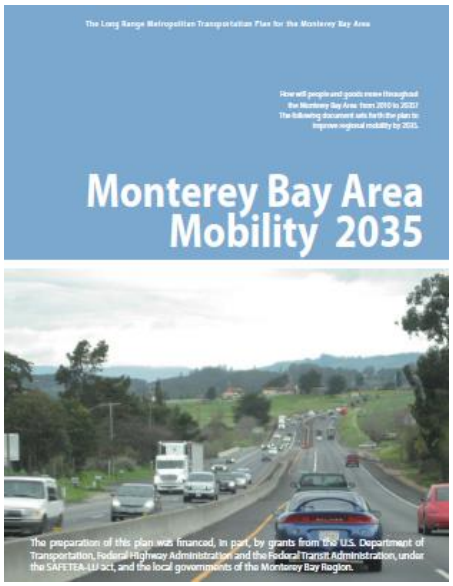
Strategies

- Routine accommodation
- Complete the regional bikeway network, update network map in between plan updates
- Help local/lower jurisdictions improve bike safety
- Fund ongoing maintenance and operations costs
- Promote education and encouragement
- Better integrate biking and transit
- Uniform support facilities including wayfinding, lockers, and signage

Caltrans Needs

Coordinate with Caltrans to complete the Bay Trail and other intercounty systems (among other agencies), encourage Caltrans to purchase additional Bay Area households for the National Personal Transportation Survey.

Monterey Bay Area Mobility 2035 [2010]



Goals and Objectives

The Monterey Bay Area Mobility Plan has several relevant goals. The tables below provide details for those goals.

- Recognizing the interdependence of transportation and land use, promote consistency between such transportation projects and adopted local, regional, and state land use plans, programs and projects.
- Plan and promote safe, healthy, efficient, coordinated, convenient, energy-conserving transportation to meet existing and reasonably foreseeable travel demand in the region, via efficient transportation modes.
- Promote transit, vanpooling, ridesharing, bicycling, pedestrian, and other alternative transportation modes to reduce single-occupant vehicle travel
- Seek consistency between planned growth in population and jobs and the planned capacity growth of the regional and interregional transportation system.
- Seek consistency between planned growth in population and jobs and the planned capacity growth of the regional and interregional transportation system.

Issue	Goal	Strategies
The Monterey Bay region lacks a unified, geographic-ally-based land use / transportation planning process.	Recognizing the interdependence of transportation and land use, promote consistency between such transportation projects and adopted local, regional, and state land use plans, programs and projects.	Design and develop transportation plans and programs that respond to the overall goals, needs and priorities of local communities and the region.
		Encourage the application of the AMBAG Regional Travel Demand Model to use as a consistent basis for assessment of impacts of plans, programs and/or projects on the local, regional and interregional circulation system.
		Ensure involvement of the public in the transportation decision-making process to ensure that the most balanced, equitable and efficient transportation improvements are implemented.
		Establish inter-agency commitments for cooperative action so that the intermodal transportation system performs efficiently in the region.
		Promote cooperative action between airport land use commissions and other public and private entities to ensure consistency between airport land use compatibility plans, specific plans and general plans.
		Consider SAFTEA-LU's Eight Planning and Strategy Areas when assessing plans, programs and projects.
Many roadways in the Monterey Bay metropolitan region are becoming congested due to increasing regional and interregional vehicular traffic.	Plan and promote safe, healthy, efficient, coordinated, convenient, energy-conserving transportation to meet existing and reasonably foreseeable travel demand in the region, via efficient transportation modes.	Promote and enhance the use of existing rail rights-of-way for regional and interregional travel.
		Protect and enhance the efficiency of commodity shipment and support the maintenance and development of inter¬modal freight terminals. Develop, contingent upon resource availability, a Regional Freight Advisory Council.
		Promote transit and alternative transportation modes that reduce vehicular congestion.
		Promote and implement regional and interregional rail passenger service when economically and operationally feasible and/or when supported by community interest.
		When feasible, apply technologies, such as Intelligent Transportation Systems (ITS), to enhance the efficiency and safety of existing facilities and integrate these technologies into the planning and programming process, as well as the development of new transportation facilities.
Traffic congestion on the region's roadways will increase unless the proportion of travel by single occupant vehicle is reduced.	Promote transit, vanpooling, ridesharing, bicycling, pedestrian and other alternative transportation modes to reduce single-occupant vehicle travel.	Use existing transportation facilities as efficiently as possible, prior to using limited capital resources for the construction of new facilities.
		In the construction of new facilities and reconstruction of old, integrate methods to enhance multi-modal travel, such as the incorporation of transit stops and shelters, park and ride lots, high-occupancy vehicle lanes, bicycle lanes and storage, shower facilities, sidewalks, curb cuts, and adequate lighting.
		Coordinate transportation demand management services and alternative transportation promotions and special events with local fixed route transit providers, large employers, employer associations, and with such programs in adjoining counties.
		Work with other agencies to increase the potential of combining bicycle travel with other modes of transportation, including the provision of bicycle lanes, storage facilities at transit stops and employment centers and ridesharing staging areas.
		Facilitate the retention, expansion and improvement of transit and non-motorized mode travel to and within activity centers, along travel corridors, in scenic areas, and for special events.
		Promote convenient and efficient transit services for commuting to and from existing and planned work, school, shop-ping, recreational and other activity centers.
		Increase access and mobility opportunities for the elderly and those with disabilities. Develop an Elderly/Disabled Regional Mobility Council.

Issue	Goal	Strategies
Growth in population and jobs may further congest the region's roadways.	Seek consistency between planned growth in population and jobs and the planned capacity growth of the regional and interregional transportation system.	Ensure adequate operation and maintenance of all existing transportation system modes.
		Constrain this transportation plan to those projects and services for which funding is secured or which may be reasonably expected.
		Program the maintenance and expansion of passenger, freight and general aviation services and facilities according to the Regional Airport System Plan, or applicable airport Master Plans.
		Focus attention on jobs/housing balance, opportunities for mixed-use development, infill development adjacent to existing transportation corridors, and other strategies for reducing the impacts of growth on the region's transportation infrastructure.
Operation or improvement of the transportation system may have adverse environmental effects.	Avoid, minimize or mitigate the environmental impacts caused by operation or improvement of the transportation system.	Strive to limit plans and programs to those transportation facilities and services which avoid, minimize or mitigate impacts to prime agricultural land, natural wetlands and riparian corridors, coastal dunes, significant scenic corridors, significant natural habitat areas, and/or cultural and historical sites.
		Strive to ensure that any air, water and noise pollution impacts associated with construction or operation of planned facilities or services are avoided, minimized or mitigated to less than significant levels.
		Avoid in residential neighborhoods, where feasible, implementation of transportation projects, with significant, immitigable impacts.
		Give preference to programs and projects which reduce emissions, or which replace conventional vehicles with optional low or zero emission vehicles and/or vehicles with reduced emissions of toxic air contaminants.
		Continue to emphasize funding of Transportation Control Measures in regional air quality plans as well as other emissions reducing projects.

Challenges and Trends

The Plan does not provide projected bicycle and walking trip numbers. However, it does give areas of opportunity for improvement such as multi-purpose trails, programmatic efforts, and funding opportunities which could provide better incentive to community members to walk or bicycle on a regular basis.

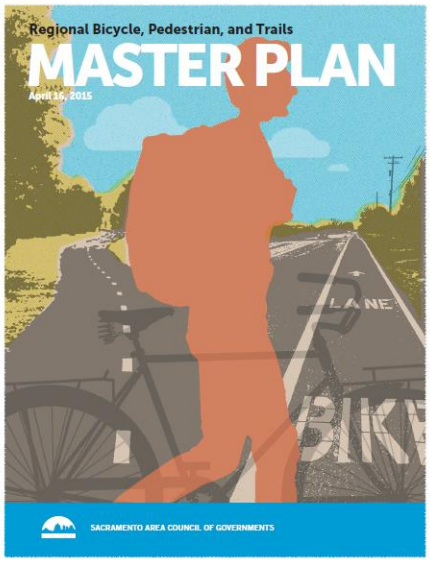
Strategies

The Plan lists several short- and long-range strategies to facilitate the development of an integrated multimodal transportation system that each regional transportation planning agency is charged with implementing. Strategies include to increase the number of bicycle facility miles in Monterey County by 10% from 246 miles to 271 miles by the year 2015 (Monterey County) and to develop a shared-use trail along the San Benito River (San Benito County).

Caltrans Needs

A memorandum of understanding exists between Caltrans and the region wherein the cities and counties implement bike and pedestrian facilities on their roadways, and Caltrans may transfer streets over to cities where pedestrian and bike amenities are to be added.

Sacramento Area Council of Governments Regional Bicycle, Pedestrian, and Trails Master Plan [2015]



Goals and Objectives

- Increase and improve bicycle and pedestrian access and mobility for residents and visitors of all ages and abilities
- Improve and maintain the quality and operation of bikeway and walkway networks
- Improve bicycle and pedestrian safety
- Increase the number of bicycle and pedestrian trips
- Increase the number of high quality support facilities to complement the bicycle and walkway networks
- Increase education, encouragement and awareness programs about bicycle and pedestrian travel
- Create a comprehensive regional bicycling and walking network within and between communities with strong current and future demand
- Increase collaboration among stakeholders throughout the region to seek funding and implement bicycle and pedestrian projects, programs, and related efforts
- Increase collection of bicycle and pedestrian related data

Challenges and Trends

Challenges listed by the Sacramento Area Council of Governments Plan include:

- Lack of sidewalks and bicycle infrastructure in urban areas, especially in the vicinity of schools and transit stops
- Lack of safe bicycle storage facilities at work sites and transit stations
- Lack of continuous facilities to enable direct walking and bicycle trips without necessitating circuitous routing
- Narrow rural roadways with poor sight distances and narrow or no shoulders to accommodate bicyclists and pedestrians
- Barriers created by natural (e.g. rivers and wetlands) and man-made (e.g. large freeway interchanges) impediments
- High speed/volume roadways, such as major arterial roads, that are uncomfortable for use by bicyclists even when bike infrastructure is provided
- Streets and corridors that do not provide access for pedestrian and bicycle transportation

While these challenges are not unique to the Sacramento region, the Plan recognizes that each jurisdiction must individually respond to the wants and needs of the residents.

Strategies

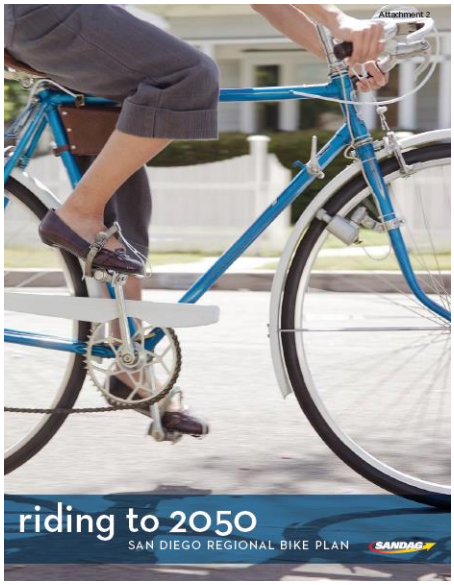
Focus Area Investments:

- Coordinate efforts between various stakeholder groups and local agencies

- Measure the performance of bicycle and pedestrian systems
- Assist with complete streets planning
- Understand the impacts to safety, public health, and the economy
- Promote traveler safety through education
- Promote multi-modal trips through transit connections
- Support infrastructure and programs

Caltrans Needs
Coordination required when Main Streets of towns are state highways.

San Diego Association of Governments Regional Bicycle Plan [2010]



Goals and Objectives

- Increase the number of people who bike
- Increase the frequency of bicycle trips for all purposes
- Encourage the development of Complete Streets
- Improve safety for bicyclists
- Support reductions in greenhouse gas emissions
- Increase public awareness and support for bicycling in the San Diego region

Challenges and Trends
Recent local and regional bicycling questionnaires have found that residents are willing to bicycle more frequently when better bicycle facilities, support facilities, and bicycle-related programs are provided. Numbers of people bicycling:

- 0.6% commute to work by bike
- Extrapolation estimates 76,000 bicyclists make 152,000 trips by bicycle daily
- Projections estimate 280,000 bicyclists and 560,000 daily bicycle trips by 2030

Strategies

- Improve connectivity and quality of the regional bicycle network: support improvements that close gaps, encourage local projects that connect to regional corridors, and promote consistent wayfinding and signage
- Provide policy direction and funding guidance to assist local jurisdictions with bicycle planning and implementation
- Support bicycle-transit integration to improve access to major employment and other activity centers, and to encourage multimodal travel for longer trip distances: support development of bicycle facilities that provide access to transit, coordinate with transit providers to ensure bicycles can be accommodated on all forms of transit vehicles, coordinate with transit agencies to provide short and long term bicycle parking facilities, provide current and relevant information to bicyclists on bicycle parking opportunities at transit locations
- Provide convenient and secure bicycle parking and support facilities region-wide

- Institutionalize Complete Streets principles in roadway planning, design, and maintenance policies: provide training to transportation-related professionals, consider development of a region-wide Complete Streets policy manual, encourage local jurisdictions to adopt a Complete Streets policy into their general plans
- Increase education, encouragement, enforcement, and performance monitoring and evaluation programs: support programs that educate the bicycling and general public about bicycle operation, rights and responsibilities, and lawful interactions between motorists and cyclists

Caltrans Needs

No significant mention beyond Caltrans bikeway guidelines, Caltrans-administered funding sources.

San Luis Obispo County Bikeways Plan [2010]

Goals and Objectives

Increase use of the bicycle as a mode of transportation.

Challenges and Trends

- The 2000 Census found that 1.3% of the San Luis Obispo County commuter population commutes by bicycle
- A 2001 City of San Luis Obispo Transportation Survey found over 90% of non-bicyclists would respond positively to improvements included in the bike plan

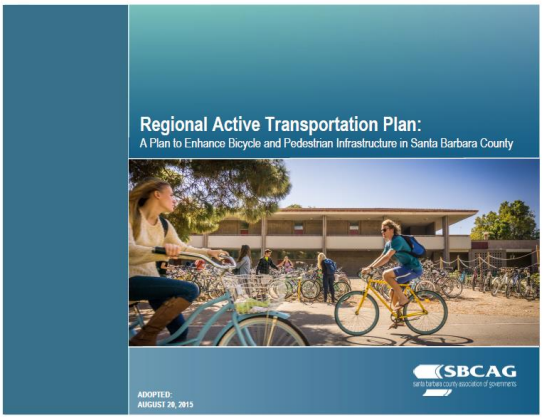
Strategies

- Prioritize links between City and County bikeways, especially those that provide access to regional destinations
    - Key element in encouraging bicycling transportation is the provision of a safe and efficient network of bikeways
- Key actions in addition to providing adequate bikeways:
    - Provide auxiliary facilities such as bicycle parking and storage
    - Make efficient connections with other modes, including public transportation
    - Integrate bicycle transportation into the relationship between land use planning and circulation

Caltrans Needs

The plan notes that "Caltrans strives for standard width shoulders (8') where applicable, instead of Class II bikeways."

Santa Barbara County Association of Governments Regional Active Transportation Plan [2015]



Goals and Objectives

- Enhance Mobility
- Increase Connectivity
- Promote Equity for all Users in all Communities
- Improve Safety and Public Health

Challenges and Trends

- Innovative infrastructure treatments mentioned in the plan include bicycle boxes, bicycle boulevards, mini-circles, long-term bicycle parking solutions, lead pedestrian intervals, and pedestrian scramble phases
- Current trip estimates: 37,200 bicycle trips and 37,000 walking trips daily in the region
    - Future estimates for 2040 are expressed as ranges: bicycling 46,300 to 48,900, walking 46,000 to 47,300 daily trips

Strategies

- Encourage the design and building of complete streets that balance the needs of all users
- Consider bicycle and pedestrian infrastructure improvements as a mitigation strategy for the traffic impacts of new land developments
- Ensure bicycle and pedestrian amenities are properly maintained to enable their continued safe use
- Stay current with evolving trends in bicycle and pedestrian infrastructure, and make recommendations to local planning staffs when new advances may be appropriate at the local level
- Promote consistent signage that directs bicyclists to destinations and increases the visibility of the regional bicycle network
- Work with local jurisdictions to improve interconnectivity between bicycle, pedestrian, and transit networks
- Coordinate planning activities, when appropriate, with neighboring jurisdictions and other related agencies, such as Caltrans to ensure connectivity across regional boundaries
- Pedestrian access should be considered in the design of transportation facilities, especially if these facilities act as a barrier to pedestrian movement
- Support education and training programs for bicyclists, pedestrians, and motorists that explain the rights and responsibilities of each mode, as well as the relevant laws and codes
- Monitor collision patterns to recognize locations needing safety improvements with the aim of an aggressive long-term downward trend in the number and severity of bicycle and pedestrian collisions

Additional 'key areas for improvement' noted in the plan include:

- Accommodating bicyclists and pedestrians through construction areas; including, "when a road shoulder is purposed as a bicycle lane, it should no longer be used for the placement of construction signs"
- Respond to pedestrian actions – well-worn paths alongside roads, or pedestrians walking on the roadway, are indications that there is unmet pedestrian access demand.
- Maintain existing infrastructure, particularly for bicycles
- Encourage the next generation of bicyclists – provide family-friendly bicycle facilities

Caltrans Needs

"Caltrans District 5 staff has stated that Caltrans will cooperate with local jurisdictions to explore options for local bike facilities within Caltrans right-of-way on a case-by-case basis. Regarding bike lanes, Caltrans generally favors standard width shoulders (usually 8 feet) for bicycle use in rural areas. In urban areas, where there is more competition for space, Caltrans is generally supportive of bike lanes. However, for bike lanes to be added to a state highway in an urban setting, several criteria must be met:

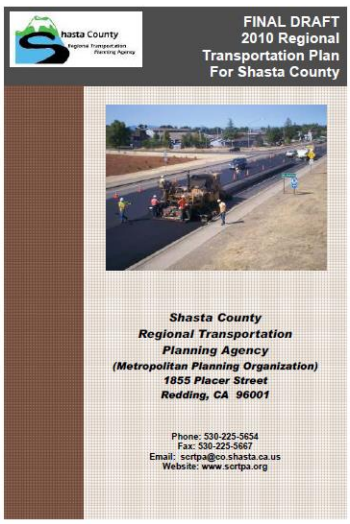
- The project must be supported by the host jurisdiction
- The host jurisdiction must be willing to repurpose space for the bike lanes, which may include the loss of parking, narrowing travel lanes, or another means
- Not cause adverse traffic or safety conditions

Caltrans also strives to work cooperatively with jurisdictions for Class III bikeways within its right-of-way. For these, Caltrans may authorize encroachment permits for the host jurisdictions to install and maintain appropriate signage."

Shasta County Regional Transportation Plan [2010]

Goals and Objectives

"Create a transportation environment that encourages non-motorized alternatives. Actions and policies listed below promote bicycling and walking as a means to decrease automobile-dependency; reduce traffic congestion, air pollution, and noise pollution; and support sidewalks, and bike and pedestrian trails."



Challenges and Trends

- Current demand:
  - Bicycling and walking together are 3% of commute trips
- Challenges:
  - Barriers to walking/biking include Interstate 5, the Union Pacific Railroad, and the Sacramento River
  - Many existing or potential on-street bicycle or pedestrian routes are not used due to a lack of shoulders, or other barriers

- Class I bikeways are costly, difficult to maintain, and used less by bicycle commuters

Strategies

- Encourage each city and the county to maintain an updated bikeway plan
- Encourage sweeping of shoulders on all feeder and arterial routes on a frequent schedule to improve conditions for bicyclists
- Encourage pedestrian and bicycle transportation as mitigation for regional transportation impacts

Caltrans Needs

None.

Southern California Association of Governments (SCAG) Active Transportation Work Plan [2012]

Goals and Objectives

Vision: Develop the Active Transportation Program at SCAG as a best practice model that can be used by other agencies in the nation.

- Reduce the number of bicycle and pedestrian fatalities to less than 50% of current levels by 2035
- Increase the number of projects/funding in the FTIP that include bicycle and/or pedestrian components
- Increase in mode share for bicycling and walking by at least 33% above the current estimate of 24% of all trips in the region
- Encourage the League of American Bicyclists to create a Bicycle Friendly Region designation because of SCAG's efforts supporting active transportation

Challenges and Trends

None mentioned.

Strategies

Because this is a Work Plan, strategies and action items feature prominently. The Work Program Areas and key strategies are listed below:

Infrastructure Development

- Develop Complete Streets Policies and Guidelines
- Develop regional first mile/last mile strategies
- Develop regional bikeways network

Health and Safety

- Develop a regional SRTS strategy
- Develop a regional implementation strategy for the California SHSP
- Document how the SHSP implementation strategy will reduce bicycling and pedestrian fatalities in absolute numbers
- Develop Active Transportation performance criteria for public health

Transportation Modeling

- Develop and expand performance measures for active transportation
- Leverage existing data to extrapolate information regarding active transportation
- Work with Caltrans to collect and expand the inventory of available data

Outreach

- Develop regional Active Transportation Advisory Committee
- Develop internal peer review committee
- Work with stakeholders/local governments to extend CycLAvia to multiple cities in the region
- Work with stakeholders and local governments to regularly update and publish interregional bikeway maps and guides
- Participate in promotional events designed to encourage bicycling and walking

Funding

- Develop Active Transportation Incentive Grant Outline
- Work with Caltrans and stakeholders to implement MAP-21 and maximize funding for regional active transportation
- Develop methods to leverage different sources of federal/state/local dollars to fund active transportation

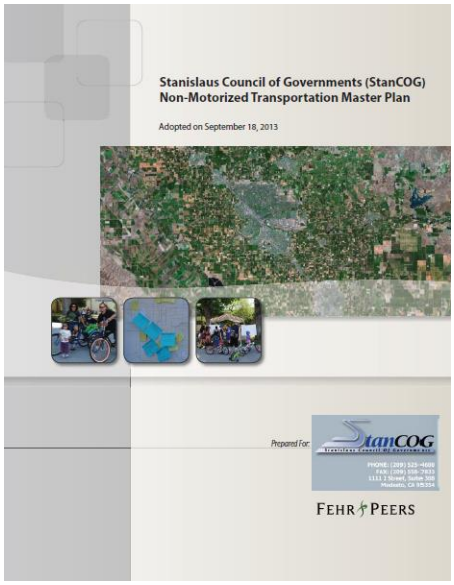
Legislative Strategy

- Develop legislative strategy to assist in meeting active transportation goals and objectives in the 2012 RTP/SCS
- Develop program to assist active transportation fundraising in future transportation authorizations

Caltrans Needs

- Work with Caltrans to collect and expand the inventory of available data
- Work with Caltrans and stakeholders to implement MAP-21 and maximize funding for regional active transportation
- Work with Caltrans and other stakeholders to regularly update and publish interregional bikeway maps and guides

Stanislaus Council of Governments Non-Motorized Transportation Master Plan [2013]



Goals and Objectives

Increase bicycle and pedestrian access and safety. Expand bicycle and pedestrian facilities and access in and between local destinations such as neighborhoods, employment centers, shopping areas, schools, and recreational sites as well as throughout the region to increase the number of bicycling trips to five percent of all trips by 2030.

Increase bicycle and pedestrian trips. Make bicycling and walking a viable option for shopping, school, and work trips in Stanislaus County and other trips of fewer than five miles by implementing and maintaining a bikeway network, providing end-of-trip facilities for bicyclists, improving access and integration with transit, and making walking and bicycling convenient and safer.

Challenges and Trends

- Currently 0.5% bicycle to work In Stanislaus County
- Assume 7,066 work trips are made by bicycle each day

Future bicycle trips are expected to depend on a variety of factors such as the availability of well-connected facilities and the location, density, and type of future land development. With appropriate bicycle facilities in place and implementation of bicycle support facilities such as bike parking, mode share could increase countywide.

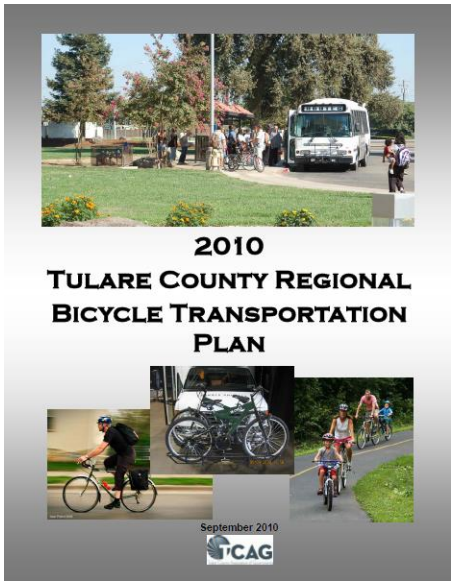
Strategies

- Maximize coordination between all municipalities, schools, and community organizations to review and comment on bicycle and pedestrian issues of mutual concern
- Implement the recommendations to regularly monitor bicycle- and pedestrian-related collision levels, and seek a reduction in these collision levels on a per capita basis over the next twenty years
- Complete existing gaps in the pedestrian network, especially in the vicinity of land use attractors such as schools, parks, and neighborhood commercial areas as well as over major barriers such as railroad tracks, highways, and water bodies
- Conduct bicycle and pedestrian counts at regular intervals and include bicycle and pedestrian counts as part of vehicle traffic counts to evaluate usage and demand, and assist in the prioritization of project funding
- Develop a bicycle parking policy to encourage or require the inclusion of bicycle parking in new development projects
- Encourage future commercial development to provide bicycle and pedestrian access to and from their businesses and surrounding developments

Caltrans Needs

Coordination with Caltrans required on some bikeway projects on state facilities.

Tulare County Regional Bicycle Transportation Plan [2010]



Goals and Objectives

- Objective A - Implement the Bicycle Transportation Plan, which identifies existing and future needs, and provides specific recommendations for facilities and programs over the next four (4) years and beyond
    - Assign a coordinator who is familiar with the plan act as a liaison to the public, and pursue funding
    - Establish and maintain uniform standards so major developments are required to make bicycle improvements as development happens
    - Update the Tulare County Regional Bicycle Plan every four years (as required by Caltrans) to reflect new policies and requirements for non-motorized transportation funding
    - Coordinate between all municipalities, schools, and community organizations to review and comment on bicycle and non-motorized issues of mutual concern
    - Regularly monitor bicycle-related accident levels and seek a significant reduction on a per capita basis over the next twenty years
    - Encourage Plan adoption by all local jurisdictions within Tulare County
- Objective B - Complete a network of bikeways that is feasible, fundable over the life of the Plan, and that serve bicyclists' needs, especially for travel to employment centers, schools, commercial districts, transit terminals and recreational destinations
    - Encourage jurisdictions to develop a bicycle network that connects neighborhoods, cities and communities
    - Seek funding for bikeway projects through regional, state, and federal funding programs and encourage multi-jurisdictional funding bicycle improvements
    - Develop and implement destination-based signage for the bikeway network
    - Coordinate with local jurisdictions and developers in Tulare County to ensure appropriate opportunities for bicycle connections are planned, constructed, and maintained
- Objective C - Maintain and improve the quality, operation, and integrity of the bikeway network and facilities
    - Encourage member agencies to undertake required maintenance of the bikeway network and facilities, such as sweeping bicycle lanes and routine surface repair, as funding and priorities allow
    - Encourage member agencies regarding repair and construction of transportation facilities to minimize disruption to the cycling environment to the extent practical

  - Encourage member agencies to undertake bicycle improvements that do not negatively impact the environment
  - Encourage member agencies to prioritize bicycle improvements based upon the projects' ability to provide connectivity to other bikeways and destinations
  - Encourage member agencies to work with Caltrans to widen shoulders on the State Highway System throughout the County to improve intercity cycling conditions

- Objective D - Provide short- and long-term bicycle parking and amenities in employment and commercial areas, in multifamily housing, at schools, and at recreation and transit facilities
  - Consider modifying zoning code ordinances requirements for bicycle parking so developments and new residential development are less dependent on automobile parking provisions
  - Encourage the installation of short and long term bicycle parking in the public right-of-way
  - Encourage local agencies to work with area elementary, middle, and high schools to promote bicycle commuting and to assist in purchasing and planning long- and short-term bicycle parking
  - Provide current and relevant information to bicyclists regarding bicycle parking opportunities through a variety of formats
  - Encourage local agencies to require bicycle parking at major events to help ease traffic and parking

- Objective E - Increase bicycle ridership in Tulare County
  - Increase the number of bicycle commuters by at least 70% in the next four (4) years
  - Include bicycle facilities as an integral part of future developments across Tulare County, and connect to other existing and proposed bicycle facilities
  - Provide bicycle access to transit vehicles whenever feasible on all municipal and regional transit buses within Tulare County
  - Provide convenient bicycle access and bicycle parking at schools, parks, neighborhoods, shopping centers, government buildings, and local businesses
  - Encourage transit providers in providing and promoting secure bicycle racks and lockers in the transit system to encourage bicycle use
  - Request that any future transit service in Tulare County provide adequate bicycle and pedestrian access and bicycle parking

- Objective F - Develop and implement education and encourage plans aimed at youth, adult cyclists, pedestrians, and motorists. Increase public awareness of the benefits of bicycling and of available resources and facilities
  - Develop adult and youth bicycle, pedestrian education and encourage safety programs at schools and community events
  - Market the health benefits of bicycling
  - Market the existing opportunities for bicycling in Tulare County

Challenges and Trends
The Scope and Organization section mentions that the plan would address these, but not specifically identified in the plan document

Strategies
None.

Caltrans Needs
Coordination and funding (through grants).

District Bicycle Maps and Guides

Most of the Caltrans Districts have created bike maps and guides. Many of the guides include policies, bicycling laws, hand signals, mile marker information, campground and rest stop locations, and helmet information.

These guides provide an overview of existing bicycle infrastructure, transit service, pedestrian access, and park and ride lots. In addition, the guide provides bicycling-related contacts and an overview of relevant legislation. The sections from the guide that may be most relevant to the California State Bicycle and Pedestrian Plan project include:

- State Laws
- Allowed/Prohibited Bicycle Map
- Bicycle Maps of State Routes

Items that may be relevant to the CSBPP include:

- Bike maps, including interactive bike maps for District 11
- Bike laws
- Park and Ride locations
- Rest stop and vista locations
- Caltrans bike routes

The list of district level resources includes:

- http://www.dot.ca.gov/dist1/planning/regional-system/bikeped/bikeguide/full.pdf
- http://www.dot.ca.gov/dist2/pdf/bikeguide.pdf
- http://www.dot.ca.gov/dist3/departments/planning/Systemplanning/BicycleGuide3-8-12.pdf
- http://www.dot.ca.gov/dist05/bike_ped/bikeguide/bikeguide.pdf
- http://www.tularecog.org/wp-content/uploads/2015/07/DOT-CalTrans-District-6-Complete-Streets-BicycleGuide.pdf
- http://www.dot.ca.gov/dist9/bicycle/d9_bike_brochure.pdf
- http://www.dot.ca.gov/dist10/docs/BIKEGUIDE0809.pdf
- http://www.icommutesd.com/bike/documents/SanDiegoBikeMap2015_North.pdf
- http://www.icommutesd.com/bike/documents/SanDiegoBikeMap2015_South.pdf
- http://dot.ca.gov/dist11/departments/planning/planningpages/bicyclepages.htm

6. Review of Other State Plans

As part of this review, bicycle and pedestrian plans from eight other states were examined, including:

- North Carolina – WalkBikeNC, 2014
- Connecticut - CT Statewide Bicycle & Pedestrian Plan Update, 2009
- Arizona – ADOT Statewide Bicycle and Pedestrian Plan Update, 2013
- Massachusetts – Massachusetts Bicycle Transportation Plan, 2008
- Ohio – Access Ohio 2040 – multimodal transportation plan, not just bicycle and pedestrian, 2014
- New York – Transportation Choices for the 21st Century: The New York State Bicycle and Pedestrian Plan, 1997
- New Hampshire, NH Statewide Bicycle and Pedestrian Plan, 2000
- Georgia, GA Bicycle and Pedestrian Safety Action Plan, 2007

These plans were reviewed for the contents and outline of the plan, goals and objectives, and major strategies. Common organizational elements from other state plans include:

- History/Context
- Definition of Terms
- Principles, Goals, and Objectives
- Safety/Crash Analysis
- Previous State/Regional Planning Efforts
- Existing State Policies and Laws
- Benchmark/Performance Standards
- Public Involvement Process
- Design Guidelines
- Roles and Responsibilities
- Operation and Maintenance
- Potential Funding Sources
- Education and Training
- Enforcement
- Recommended Policies and Procedures

Common goals from other state plans included:

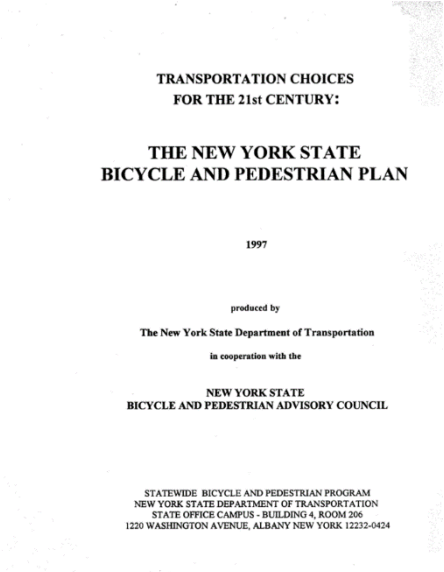
- Safety
- Encourage connections
- Education
- Funding
- Integration with other modes
- Increase bike/ped trips
- Improve infrastructure

- Improve data collection

Detailed Review of Plans

New York [1997]

In the mid-1990s, NYSDOT initiated the development of a 1,000 mile on-road bike route system. New York was among the first states in the country to do this. The planning effort involved all of the MPOs and NYSDOT regions, as well as agencies from the adjacent states of NJ, CT, MA, VT and Quebec.


TRANSPORTATION CHOICES
FOR THE 21st CENTURY:

THE NEW YORK STATE
BICYCLE AND PEDESTRIAN PLAN

1997

produced by

The New York State Department of Transportation

in cooperation with the

NEW YORK STATE
BICYCLE AND PEDESTRIAN ADVISORY COUNCIL

STATEWIDE BICYCLE AND PEDESTRIAN PROGRAM
NEW YORK STATE DEPARTMENT OF TRANSPORTATION
STATE OFFICE CAMPUS - BUILDING 4, ROOM 206
1220 WASHINGTON AVENUE, ALBANY NEW YORK 12232-0424

Structure of the Plan

1. Introduction (Mission and Goals)
2. Action Plan for Infrastructure
3. Action Plan for Programs
4. Implementation, Integration, and Evaluation

Identified Goals:

1. Increase mobility: New York State will meet or exceed the State's share of the USDOT National Bicycling and Walking Study goal of doubling the amount of bicycling and walking in the U.S. by increasing New York State bike/ped commuter trips by 15% (from 7.2% to 8.5% of all work trips) by the year 2015, and by meeting or exceeding the national goal of 16% of all trips, including trips to school, shpping, and other travel destinations.
2. Improve safety: New York will work to improve the safety of bicyclists and pedestrians of all ages and abilities, and meet or exceed the USDOT *National Bicycling and Walking Study* goal of a 10% reduction in the rate of bicyclist/pedestrian injuries and fatalities.
3. Provide accessibility: New York State will work to ensure accessibility of bicycle and pedestrian transportation to all destinations, including work sites, schools, shopping areas, parks, parks and public transportation, by integrating bicycling and walking into the local, regional, and statewide transportation infrastructure.

Priority Actions:

1. Share the Road Campaign
2. Walk and Bike to Work Promotion
3. Statewide “Bike & Hike” System
4. Urban Bicycle and Pedestrian Plans
5. High Visibility Crosswalks
6. Suburban Sidewalks
7. Bicycle and Pedestrian Design Guidelines
8. Intermodal Connections
9. Greenway and Rail Trail Development
10. State Bicycle and Pedestrian Advisory Council

North Carolina [2014]

The 2014 WalkBikeNC statewide bicycle and pedestrian plan led by NCDOT has established the benchmark method for state-wide bicycle and pedestrian planning. This robust planning effort included an update to North Carolina's State Bike Routes, which had not been reviewed since they were designated in 1975. The 1975 system goals were maintained, and additional goals were also added to make the system more compatible with modern bicyclists' needs and desires. An emphasis was placed on connecting the system to major urban centers, linking with tourist attractions, integrating the system with local and regional routes, and coordinating the system with state and national route system.

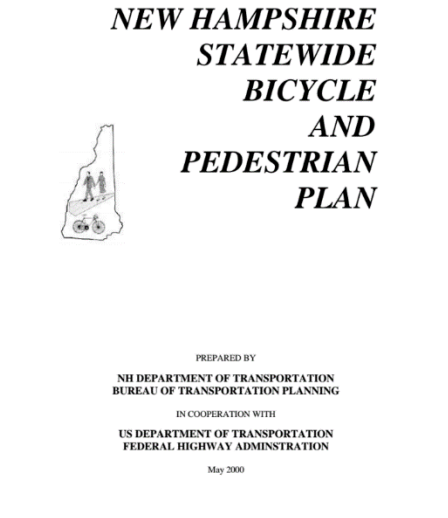
Structure of the Plan

1. Overview (Introduction and Existing Conditions)
2. Recommendations (Ped Infrastructure, Bike Infrastructure, and Policies and Practices)
3. Toolbox (Design Toolbox and Programming for Health, Safety, & Active Living)
4. Action Plan (Implementation)

Goals:

- Provide suitable roadway conditions: traffic volumes, speed limits, surface, lane width, shoulder width, grade, and curvature
- Connect to points of interest and services
- Connect major urban centers
- Link the system to state parks and other significant tourism attractions
- Integrate the system into regional and local route networks
- Provide detailed, easy-to-access online route information
- Provide high quality signage and wayfinding to routes and along routes
- Coordinate with other state and national bike route systems

New Hampshire [2000]


NEW HAMPSHIRE
STATEWIDE
BICYCLE
AND
PEDESTRIAN
PLAN

PREPARED BY

NH DEPARTMENT OF TRANSPORTATION
BUREAU OF TRANSPORTATION PLANNING

IN COOPERATION WITH

US DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINSTRATION

May 2000

Goal and Objectives:

Goal: The NHDOT recognizes, supports and encourages bicycling and walking as alternatives to motorized forms of transportation and as an element of the state's intermodal transportation system.

OBJECTIVES:

1. The NHDOT will promote bicycling and walking as viable modes of transportation.
2. The NHDOT will cooperate with other state agencies in initiating, developing and implementing programs that encourage bicycling and walking and that enhance bicyclist and pedestrian safety.
3. The NHDOT adopts the enclosed interconnected network of existing roads and bicycle facilities as its primary network of routes for inter-regional bicycle travel. The NHDOT will produce and maintain the map and will develop standards through a pilot project for appropriate signage of the network.
4. The NHDOT will provide a safe and efficient means of bicycle travel throughout the State. The NHDOT will identify deficiencies and initiate appropriate corrections within financial constraints for routes on the network in its overall transportation planning effort. The NHDOT will work with the towns and cities, through the regional planning commissions, to identify, fund, design, construct, and maintain appropriate bicycle and pedestrian facilities where feasible.
5. The NHDOT adopts and will use bicycle facility design guidelines as issued by the American Association of State Highway and Transportation Officials (AASHTO). The NHDOT also adopts the Manual on Uniform Traffic Control Devices (MUTCD) for guidance on traffic operations. The NHDOT will actively provide for the needs of bicyclists and pedestrians in all highway projects where possible.
6. The NHDOT in cooperation with Department of Resources and Economic Development (DRED) will propose a statewide plan for the integration of recreational trails with other bicycle/pedestrian facilities; set standards for their development; encourage and support their improvement to all season condition.
7. The NHDOT will, as part of its normal road striping operations on resurfaced roads, restripe roads to allow for paved shoulders where none exist now, as long as travel lanes meet width requirements.
8. The NHDOT will consider bicycle/pedestrian concerns in all projects.

Structure of the Plan

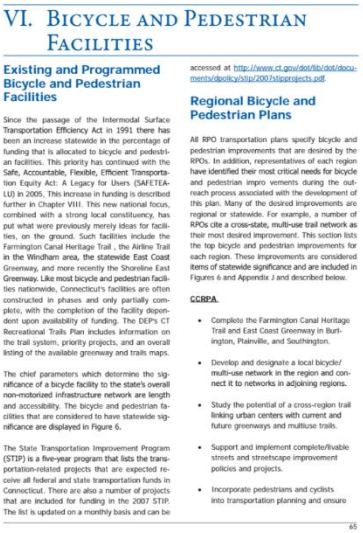
1. Executive Summary
2. Introduction and Purpose
3. Goal and Objectives
4. Background
5. Planning and Design Considerations
6. Development Process
7. Funding Categories, Levels, and Availability

8. Implementation
9. Safety and Enforcement
10. Maintenance
11. Pedestrian Specific Considerations

The 2000, New Hampshire DOT developed a State Bicycle Route System. The state uses this network to identify deficiencies in routes along the network and prioritize improvements. The network is displayed on maps that are divided by seven regions. Recommended routes are categorized based upon their suitability for bicycling, pavement surface (paved vs unpaved), and type of cyclists that would be comfortable bicycling upon the route (recreational vs advanced).

Connecticut [2009]

The 2009 Connecticut Statewide Bicycle and Pedestrian Transportation Plan involved a two-step process to State Bike Route Planning. First, the suitability for bicycling on all state routes was calculated. The intent of this analysis was to produce a map that would allow cyclists to select routes depending on their level of comfort and experience.



VI. Bicycle and Pedestrian Facilities

Existing and Programmed Bicycle and Pedestrian Facilities

Since the passage of the Intermodal Surface Transportation Efficiency Act in 1991 there has been an increase statewide in the percentage of funding that is allocated to bicycle and pedestrian facilities. This priority has continued with the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) in 2005. This increase in funding is described further in Chapter VIII. This new national focus, combined with a strong local constituency, has put what were previously merely ideas for facilities, on the ground. Such facilities include the Farmington Canal Heritage Trail , the Airline Trail in the Windham area, the statewide East Coast Greenway, and more recently the Shoreline East Greenway. Like most bicycle and pedestrian facilities nationwide, Connecticut's facilities are often constructed in phases and only partially complete, with the completion of the facility dependent upon availability of funding. The DEP's CT Recreational Trails Plan includes information on the trail system, priority projects, and an overall listing of the available greenway and trails maps.

The chief parameters which determine the significance of a bicycle facility to the state's overall non-motorized infrastructure network are length and accessibility. The bicycle and pedestrian facilities that are considered to have statewide significance are displayed in Figure 6.

The State Transportation Improvement Program (STIP) is a five-year program that lists the transportation-related projects that are expected receive all federal and state transportation funds in Connecticut. There are also a number of projects that are included for funding in the 2007 STIP. The list is updated on a monthly basis and can be accessed at http://www.ct.gov/dot/lib/dot/documents/dpolicy/stip/2007stipprojects.pdf.

Regional Bicycle and Pedestrian Plans

All RPO transportation plans specify bicycle and pedestrian improvements that are desired by the RPOs. In addition, representatives of each region have identified their most critical needs for bicycle and pedestrian impro vements during the outreach process associated with the development of this plan. Many of the desired improvements are regional or statewide. For example, a number of RPOs cite a cross-state, multi-use trail network as their most desired improvement. This section lists the top bicycle and pedestrian improvements for each region. These improvements are considered items of statewide significance and are included in Figures 6 and Appendix J and described below.

CCRPA

- Complete the Farmington Canal Heritage Trail and East Coast Greenway in Burlington, Plainville, and Southington.
- Develop and designate a local bicycle/multi-use network in the region and connect it to networks in adjoining regions.
- Study the potential of a cross-region trail linking urban centers with current and future greenways and multiuse trails.
- Support and implement complete/livable streets and streetscape improvement policies and projects.
- Incorporate pedestrians and cyclists into transportation planning and ensure

65

Vision:

To encourage and promote bicycling and walking throughout Connecticut by providing for the safe, convenient, and enjoyable use of these modes of transportation. Any person will be able to walk, bicycle, or use other types of non-motorized transportation modes safely and conveniently throughout the State. A network of on-road facilities and multiuse trails will connect towns, regions, and Connecticut to neighboring states. Specifically, residential areas, employment centers, shopping areas, transit centers, recreation and cultural attractions, and schools will accommodate the walking and bicycling needs of users, both within the development and to nearby destinations.

Goals:

- Develop and maintain a safe, efficient, accessible, and convenient pedestrian and bicycle system that allows users to travel safely and comfortably.
- Integrate and connect the pedestrian and bicycle system with other transportation systems (roads, rail, bus, etc.).
- Support and encourage pedestrian and bicycle connections between neighborhoods, commercial areas, employment centers, schools, state and municipal parks, and other destinations serving the community.
- Encourage and support pedestrian and bicycle safety (Note: These action strategies are recommend for consideration on state owned roadways and recommended for support on local roads).
- Develop and implement educational programs to ensure that transportation facilities will be used safely and responsibly.

- Provide financial and technical support and seek to utilize all available funding for the development and construction of bicycle and pedestrian facilities throughout Connecticut, within CTDOT's available resources and consistent with federal program initiatives.
- Contribute to public health by providing safe and attractive opportunities for walking and bicycling.

Structure of the Plan

1. Executive Summary
2. Introduction (Plan Purpose, Development, Existing Conditions, Other State Plans)
3. Vision, Goals, & Action Strategies
4. Demand for and Benefits of Walking and Bicycling in Connecticut (Value and Demand Analysis)
5. Policies and Practices (Design Standards, Internal and External Coordination, and Recommendations)
6. Bicycle and Pedestrian Safety (Bicycling and Walking Safely in Connecticut, Crash Data, and Recommendations)
7. Bicycle and Pedestrian Facilities (Existing and Programmed Bicycle and Pedestrian Facilities, Regional Bicycle and Pedestrian Plans, Statewide Bicycle Network, and Recommendations)
8. Bicycle and Pedestrian Funding (Review of Current Funding Program, Innovative Funding Sources, and Recommendations)

Connecticut Review of Other State Plans

The Connecticut Plan also included a comprehensive review of other state bicycle and pedestrian plans at the time it was written. The exhibits that describe these plans are provided below.

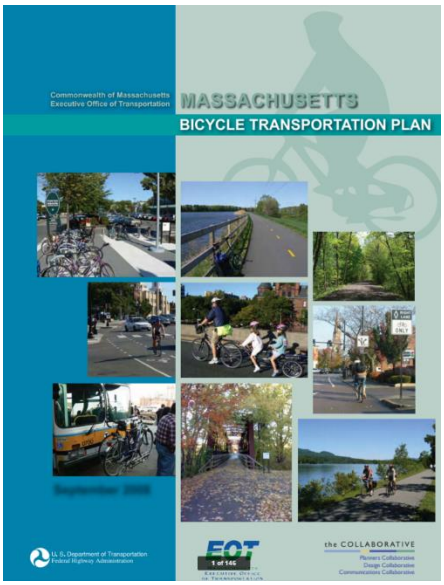
Items Included in Prior State Plans – From Connecticut Bicycle and Pedestrian Plan

Topic	FL	VT (1998)	TN (2005)	NH (2000)	NJ (2004)	OR (1995)	NV (2003)	WI (1998)	MA (2007)	MI (2007)	AZ (2003)	CT (1999)
General												
Benefits of Walking/Bicycling	X	X	X			X	X	X				
Bicycling & Walking Trends			X			X		X				
History/Context		X	X	X	X	X	X	X	X			
Vision		X			X	X	X	X		X	X	X
Principles, Goals & Objectives		X	X	X	X	X	X	X			X	
Bibliography/Supporting Documents	X	X	X		X	X					X	
Definition of Terms	X			X	X	X		X		X	X	X
Glossary of Acronyms	X	X	X	X	X	X						
Existing Conditions												
Facility Inventory & Evaluation			X		X	X		X	X		X	
Safety Analysis	X		X	X		X	X	X				X
Collision/Crash Analysis	X		X			X	X	X			X	X
Needs Analysis		X	X		X		X					
Attractors & Generators			X		X							
Challenges & Opportunities		X							X			
Practices & Policies												
Previous State & Regional Planning Efforts			X		X	X		X	X	X	X	X
Existing State Policies & Law		X	X	X		X		X	X	X	X	X
Benchmark/Performance Standards			X		X	X			X	X		
Public Involvement Process/Stakeholder Input	X	X	X	X	X	X	X	X	X	X	X	
Proposed Bicycle & Pedestrian System												
Bicycle System			X						X		X	X
Pedestrian System			X								X	X
Bicycle Suitability Model/Criteria			X	X	X		X			X	X	
Priority Ranking of Projects/Selection Criteria	X				X	X			X	X	X	
Design Standards												
Restriping Roads with Bike Lanes	X		X			X	X	X		X	X	X
Shoulder path design	X		X			X	X	X		X	X	X
Shared-use Path Design	X		X			X	X	X		X	X	X
Wide Curb Lane Design	X		X			X		X		X	X	X
Intersection Designs	X		X			X				X	X	X
Signals, Signing and Marking	X		X			X	X		X	X	X	X
ADA, AASHTO, MUTCD	X		X			X	X	X	X	X	X	X
Lockers, Maps, Bike Parking/Racks, etc.	X		X			X	X			X	X	
Planning & Design Checklist	X									X		
Implementation												
Roles & Responsibilities		X	X	X	X	X	X	X		X		
Operation & Maintenance	X	X	X	X		X			X	X	X	
Potential Funding Sources/Strategies		X	X	X	X	X	X	X	X	X	X	X
Education & Training	X	X	X		X	X	X	X	X	X	X	
Enforcement	X		X	X	X	X	X	X				
Recommended Policies, Procedures & Practices												
Promotion of Livable Communities	X	X	X	X	X	X	X	X	X	X	X	
Promotion of Environmental Stewardship	X	X	X	X	X	X	X	X	X	X	X	
Traffic Calming	X	X	X			X				X		

Items Included in Prior State Maps – From Connecticut Bicycle and Pedestrian Plan

Topic	Mary-land	Phila-delphia Region (2003)	NYC (2002)	NYC (2008)	Erie Canal (2007)	RI (2005)	Port-land, OR (2008)	Mon-treal, QC (2005)	Lakes Region, NH (2008)	Chicago (2007)	TN (2005)	CT (2002)
Scope of Map												
Region / City Insets	X	X	X	X	X	X	X	X	X	X		X
Linear Route Maps					X	X			X			
Type of Paper	Regular	Water-proof	Regular	Regular	Spiral Book	Water-proof						Regular
Bicycle Routes												
Bike Lanes			X	X			X	X		X		
Off-Road Trails	X	X	X	X	X	X	X	X	X	X		
Insets of Bridge Facilities			X	X								X
Recommended Routes	X	X	X	X	X	X	X	X	X	X	X	X
Type of Recommended Route	Signed Bicycle Routes	By Ability Level	Recom-mended On-Street Routes	Signed On-Street Routes	Recom-mended Linear Route	Suitability	Traffic Level, Road Width, Obstacles	Signed Shared Lane	Recom-mended Paved & Unpaved	Recom-mended Routes and Future Improv.	Traffic Level and Road Width	Cross-State and Loop
Loop / Scenic Routes					X				X		X	X
Unsafe Routes / Advanced Riders Only			X		X		X		X	X	X	X
Steep Grades / Recom-mended Direction						X	X		X			
Prohibited Areas	X					X					X	
East Coast Greenway	X				N/A		N/A	N/A	N/A	N/A	N/A	X
Signed / Marked Bicycle Routes in Field	X	X	X	X	X		X	X		X		
Signage Examples			X	X								
Proposed Facilities												
Proposed Bike Lanes												
Proposed Off-Road Trails		X	X	X		X						
Proposed Routes				X							X	
Bicycles on Transit												
Commuter Rail Routes	X	X	X	X	N/A	X	N/A	X	X	X	N/A	X
Light Rail / Subway Routes	X	X	X	X	N/A	N/A	X	X	N/A	X	N/A	N/A
Bus Bike Racks		X	X	X	N/A	X						X
Instructions for Transit Use	X	X	X	X	N/A	X						
Services												
Bicycle Shops		X	X	X	X		X			X		
Bicycle Parking / Lockers		X								X		
Restrooms					X	X						
Parks & Other Recreational Facilities	X	X	X	X	X	X		X	X	X	X	X
Bicycle Regulations												
Helmet Laws	X		X	X	X				X			X
Required Equipment			X	X	X				X			
Night Riding	X		X	X	X	X			X			X
Other Laws			X	X	X				X			X
Safety Tips			X	X	X	X						X

Massachusetts [2008 and 2015]



The 2008 Massachusetts Bicycle Transportation Plan emphasized that Massachusetts was a bicycle friendly state, and that the state had many resources produced commercially that supported and promoted bicycling, such as local and regional bicycle maps. The report noted that none of these resources were compiled into a central repository for bicycle information though. Modeled after the Route Verte system in Quebec, the plan sought to establish a statewide bicycle network that incorporated both on and off-road route alignments, called the called the Bay State Greenway (BSG).

Structure of the Plan

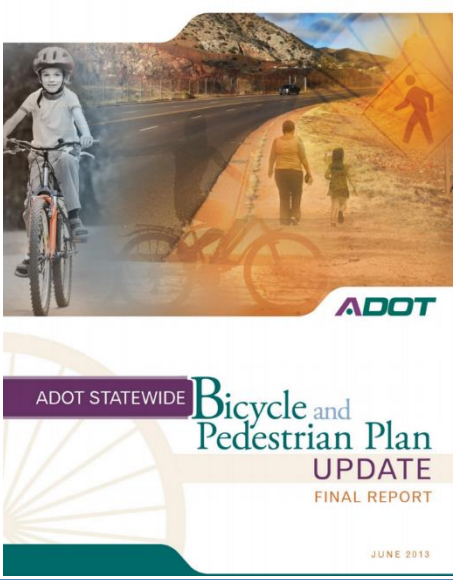
1. Executive Summary
2. Introduction (Vision, Commonwealth's Role, Investing in Bicycle Transportation, Plan Organization)
3. Plan Context (Relevant Plans and Public Outreach)
4. Bicycle Resources and Opportunities (Facility types, resources, funded projects, and Congressionally funded projects)
5. Proposed Bay State Greenway (Why?, Determining Primary Corridors, Routing Criteria, Seven Alignments, and Summary)
6. Implementation and Funding (Interim Strategy, Branding, EOT Duties, Funding Strategies, Facility Resource Allocation Strategy, and Additional Funding Strategies)
7. Other Recommendations and Action Items (Roles of Government, Outstanding Action Items from 1998 Plan, and Other Programs)

In 2015, Massachusetts released a Separated Bike Lane Planning and Design Guide (SBLPDG) that provides a comprehensive review for planning, designing, and operating bicycle facilities in the state. The guide defines separated bike lanes and identifies relevant bike lane types to implement on different types of facilities. The guide provides visual design guidance for these types of facilities in several locations, including:

- General guidance
- Intersections
- Areas of significant curbside activity (parking, bus stops, etc.)
- Signals

The guide also provides recommendations for ongoing maintenance of facilities, including winter and seasonal maintenance, sweeping and debris removal, trash collection, and construction zones.

Arizona [2013]



Structure of the Plan

1. Introduction
2. Plan Goals and Objectives
3. Existing Conditions
4. Plan Recommendations
5. Implementation Summary

Goals

- Increase Bicycle and Pedestrian Trips
- Improve Bicyclist and Pedestrian Safety
- Improve Pedestrian and Bicycle Infrastructure

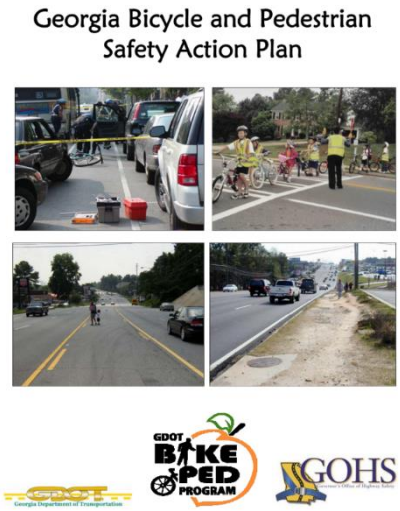
Each goal has a supporting objective, performance indicator, baseline, and target.

Goal No. 1: Increase Bicycle and Pedestrian Trips			
i. Double the percentage of trips to work by walking and bicycling statewide within the next 10 years.	Percentage of trips to work by walking and bicycling statewide.	Trips to Work by Bicycle: 1.0% Trips to Work by Walking: 2.2% (American Community Survey [ACS] 2009-2011)	Double the percentage of total trips made primarily by bicycling and walking in Arizona within the next 10 years.

Other:

- Includes proposed DOT policy language
- Includes proposed safety campaign materials and strategy

Georgia [2007]



Structure of the Plan

1. Introduction and Planning Process
2. Goals and Objectives
3. Existing Conditions Report
4. Policy & Non-Engineering Recommendations
5. Systemwide Engineering Recommendations
6. Site-Specific Recommendations for High Crash Areas

Goals and Objectives:

The following goals and objectives were identified as part of the planning process:

Goal 1: Improve Bicycle and Pedestrian Safety

- Reduce pedestrian fatalities by 33% by 2013. Statewide, the average number of annual pedestrian fatalities is 164 (2004 – 2006); a 33% reduction would result in about 110 fatalities per year by 2012
- Reduce all pedestrian crashes and injuries by 20% by end of calendar year 2013. Statewide, the average number of annual pedestrian crashes (2004-2006) was 2,582; a 20% reduction would result in 2,066 pedestrian crashes per year by 2012

- Overall 20% reduction in bicycle crashes and injuries by the end of calendar year 2013. Statewide, the average number of annual bicycle crashes (2004-2006) was 939; a 20% reduction would result in approximately 750 annual crashes
- Goal 2: Increase Trips Made by Bicycle and On Foot (including those using wheelchairs or other mobility assistance device)
- Increase bicycle and walking trips to school statewide by 20% by 2013. (Measured through the Georgia Safe Routes to School Program "before and after" parent surveys).
- Develop educational and promotional programs to encourage biking and walking.
- Goal 3: Increase Funding for Bicycle and Pedestrian Programs and Infrastructure Improvements
- Base the percentage of total safety funds spent on bicycle/pedestrian safety projects on the percentage of bicycle/pedestrian fatalities statewide
- Include bicycle and pedestrian facilities in all GDOT projects and all road projects with federal participation
- Goal 4: Improve Bicycle and Pedestrian Related Data Collection
- Conduct inventory of sidewalk, bike lane, trail and shoulder mileage
- Develop a data collection method for bicycle and pedestrian traffic counts, so that biking/walking rates can be measured

Ohio [2014]

Ohio has not created a separate bicycle or pedestrian Plan, but instead included a bicycle network chapter in their long-range transportation Plan.

Structure

- Introducing Access Ohio 2040
- How AO40 was Developed
- Public Outreach and Stakeholder Participation
- AO40 Vision
- Trends Analysis
- Other Concurrent Studies
- Existing Assets
- Safety Analysis
- State of the System Report
- Financial Analysis
- Environmental Overview
- Corridor Analysis
- Recommendations
    - Performance Management
    - Leveraging Resources
    - Future Funding
    - Asset Management
    - Freight Network
    - Transit Needs
    - Climate Variability
    - Bicycle Network

- Planning Partnerships
- Strategic Transportation System
- Regional Transportation Needs

Appendix A – California Vehicle Code and Streets and Highways Code

California Vehicle Code

http://www.leginfo.ca.gov/.html/veh_table_of_contents.html

The California Vehicle Code contains almost all statutes relating to the operation, ownership and registration of vehicles (including bicycles) in the state of California. It also contains statutes concerning the California Department of Motor Vehicles and the California Highway Patrol. The Vehicle Code is one of 29 codes containing general statutes adopted by the California legislature.

Relevant CVC sections (§) for bicycle travel include:

- "A bicycle is a device upon which any person may ride, propelled exclusively by human power through a belt, chain, or gears, and having one or more wheels" (CVC Division 1 § 231).
- CVC § 21200 states that the rules of the road, set out in Division 11 of the CVC, that do not specifically apply only to motor vehicles are applicable to bicyclists:

  (a) Every person riding a bicycle upon a highway has all the rights and is subject to all the provisions applicable to the driver of a vehicle by this division… except those provisions which by their very nature can have no application.
- CVC § 530 defines the roadway as "that portion of a highway improved, designed, or ordinarily used for vehicular travel"; CVC § 21650 sets the on-road position for all vehicles, including bicycles as the "right half of the roadway"; and CVC § 21202 requires bicyclists to ride "as close as practicable to the right-hand curb or edge of the roadway" except in certain circumstances.
- CVC § 21650.1 clarifies that cyclists, unlike drivers of vehicles, are not prohibited from riding on the shoulder of the road:

  A bicycle operated on a roadway, or the shoulder of a highway, shall be operated in the same direction as vehicles are required to be driven upon the roadway.
- Where bike lanes exist on roadways, CVC § 21208 requires cyclists to use them, except under certain conditions:

  (a) Whenever a bicycle lane has been established on a roadway pursuant to Section 21207, any person operating a bicycle upon the roadway at a speed less than the normal speed of traffic moving in the same direction at that time shall ride within the bicycle lane, except that the person may move out of the lane under any of the following situations:

  1. *When overtaking and passing another bicycle, vehicle, or pedestrian within the lane or about to enter the lane if the overtaking and passing cannot be done safely within the lane.*
  2. *When preparing for a left turn at an intersection or into a private road or driveway.*

3. *When reasonably necessary to leave the bicycle lane to avoid debris or other hazardous conditions.*
4. *When approaching a place where a right turn is authorized.*

(b) No person operating a bicycle shall leave a bicycle lane until the movement can be made with reasonable safety and then only after giving an appropriate signal in the manner provided in Chapter 6 (commencing with Section 22100) in the event that any vehicle may be affected by the movement.

- The Three Feet for Safety Act (CVC § 21760), which became operative on September 16, 2014, requires motor vehicles to leave a 3-foot margin while passing a cyclist if possible:

  (a) This section shall be known and may be cited as the Three Feet for Safety Act. (b) The driver of a motor vehicle overtaking and passing a bicycle that is proceeding in the same direction on a highway shall pass in compliance with the requirements of this article applicable to overtaking and passing a vehicle, and shall do so at a safe distance that does not interfere with the safe operation of the overtaken bicycle, having due regard for the size and speed of the motor vehicle and the bicycle, traffic conditions, weather, visibility, and the surface and width of the highway. (c) A driver of a motor vehicle shall not overtake or pass a bicycle proceeding in the same direction on a highway at a distance of less than three feet between any part of the motor vehicle and any part of the bicycle or its operator. (d) If the driver of a motor vehicle is unable to comply with subdivision (c), due to traffic or roadway conditions, the driver shall slow to a speed that is reasonable and prudent, and may pass only when doing so would not endanger the safety of the operator of the bicycle, taking into account the size and speed of the motor vehicle and bicycle, traffic conditions, weather, visibility, and surface and width of the highway. (e) (1) A violation of subdivision (b), (c), or (d) is an infraction punishable by a fine of thirty-five dollars ($35). (2) If a collision occurs between a motor vehicle and a bicycle causing bodily injury to the operator of the bicycle, and the driver of the motor vehicle is found to be in violation of subdivision (b), (c), or (d), a two-hundred-twenty-dollar ($220) fine shall be imposed on that driver. (f) This section shall become operative on September 16, 2014.

- CVC § 21100 sets out that "Local authorities may adopt rules and regulations… regarding the … Operation of bicycles, and, as specified in Section 21114.5, electric carts by physically disabled persons, or persons 50 years of age or older, on the public sidewalks." This allows local jurisdictions to ban sidewalk cycling in business districts, for example.
- CVC § 39002 allows local jurisdictions to implement mandatory licensing for bicycles and prohibit unlicensed riding.

Though pedestrians are by definition not operating a vehicle, CVC sections that reference pedestrians include:

- "A pedestrian is a person who is afoot or who is using any of the following: (1) A means of conveyance propelled by human power other than a bicycle; (2) An electric personal assistive mobility device" (CVC Division 1 § 467(a)).

- CVC § 21955 defines what is commonly referred to as “jaywalking” (the term itself is not in the CVC) as crossing a roadway between 2 adjacent intersections controlled by traffic signals without using a crosswalk.
- CVC § 21966 states that pedestrians shall not use a bicycle lane or path where an adjacent adequate pedestrian facility (e.g., sidewalk) exists.
- CVC § 21950(a) states that a driver (including bicyclists) shall yield to a pedestrian within any marked crosswalk or unmarked crosswalk at an intersection.

California Streets and Highways Code

http://www.leginfo.ca.gov/.html/shc_table_of_contents.html

The California Streets and Highways Code is one of 29 legal codes enacted by the California State Legislature, which together form the general statutory law of California. The codes form an important part of California law; however, they must be read in combination with the federal and state constitutions, federal and state case law, and the California Code of Regulations in order to understand how they are actually interpreted and enforced in court. The California Streets and Highways Code is separated into 20 divisions, listed below:

- Division 1 - State Highways
- Division 2 – County Highways
- Division 2.5 – City Streets
- Division 2.7 – Courtesy Signs
- Division 3 – Appointment and Expenditure of Highway Funds
- Division 4 – The Special Assessment Investigation, Limitation and Majority Protest Act of 1931
- Division 4.5 – Notice of Special Assessment, Special Tax, and Foreclosure Proceedings
- Division 6 – Street Opening
- Division 7 – The Improvement Act of 1911
- Division 9 – Change of Grade and Vacation
- Division 10 – The Improvement Bond Act of 1915
- Division 11 – Refunding of Bonds Issued under the "Improvement Bond Act of 1915"
- Division 11.5 – Refunding Act of 1984 for 1915 Improvement Act Bonds
- Division 12 – The Municipal Improvement Act of 1913
- Division 13 – Pedestrian Malls
- Division 14 – Street Lighting
- Division 15 – Tree Planting, Landscaping, and Lighting
- Division 16 – Highway Districts
- Division 17 – Toll Facilities and Related Matters
- Division 18 - Parking

The most relevant sections of the California Streets and Highways Code for reference in the California State Bicycle and Pedestrian Plan project are detailed below in order of appearance:

- Tourist-Oriented Directional Signs (Div. 1, Ch. 1.5) – This chapter governs the administration, standards, eligibility, and fees concerning the tourist-oriented directional sign program.
- Non-Motorized Transportation (Div. 1, Ch. 8) – This chapter, which may be cited as the Protected Bikeways Act of 2014, lists the reason why the State of California needs a multimodal system that includes bicycle infrastructure; defines the term "non-motorized transportation"; sets a minimum amount of funding per year that must be dedicated to non-motorized transportation facilities; declares the need to establish a process for identifying and promoting (including promotion through signage) bicycle routes of national, state, and regional significance; defines four classifications of bikeways; identifies the need for uniform specifications and symbols for signs, markers, and traffic

control devices for bikeways; establishes required elements in a city or county bicycle transportation plan; and establishes the Pedestrian Safety Account. Section 887.2 requires Caltrans to "publish a statewide map illustrating state highway routes available for the use of bicyclists and, where bicyclists are prohibited from using a state highway, illustrating, in such a case, safe, alternate routes available to the bicyclist."

- Active Transportation Program (Div. 3, Ch. 8) – This chapter establishes the Active Transportation Program under the state's department of transportation, identifies the goals of the program, designates the funding mechanism for the plan and the division of funding, and establishes an Active Transportation Program Workgroup which develops guidelines and project selection criteria for the program.
- Pedestrian Malls (Div. 13) – This division defines the term "pedestrian mall"; allows the legislative body of a city to establish a pedestrian mall and prohibit, in whole or in part, vehicular traffic on a pedestrian mall; and establishes provisions for the acquisition and funding of pedestrian malls.
- Street Lighting (Div. 14) – This division details the Street Lighting Act of 1919, the Street Lighting Act of 1931, the Municipal Lighting Maintenance District Act of 1927, the Highway Lighting District Act, and provisions for street lighting financial assistance through the state's department of transportation.
- Tree Planting, Landscaping, and Lighting (Div. 15) – This division includes the Tree Planting Act of 1931 and the Landscaping and Lighting Act of 1972, which provide provisions for the removal of trees and the installation of new trees, landscaping, and lighting.
- Particular Highway Crossings (Div. 17, Ch. 2) – This chapter details the responsibility for operating and maintaining different elements of the San Francisco-Oakland Bay Bridge, the San Pedro-Terminal Island Bridge, bridge access across the Carquinez Straits, the Antioch Bridge, the San Francisco-Oakland Rapid Transit Tube, the San Mateo-Hayward and Dumbarton Bridges, and the San Diego-Coronado Bridge.