

CHAPTER 11 TRANSPORTATION AND CIRCULATION

CHRONOLOGY OF UPDATE

NOVEMBER 30, 2005—VERSION 1



NAPA VALLEY WINE TRAIN

PURPOSE

The purpose of this chapter is to provide a summary of the transportation and circulation conditions that currently exist on major transportation facilities in Napa County. In particular, the chapter provides a detailed discussion of the transportation and circulation issues in seven technical transportation areas in Napa County: roadways, transit, non-motorized transportation (bicycles and pedestrians), rail, traffic-calming programs, transportation demand management programs, and Transportation System Management programs.

NAPA COUNTY BASELINE DATA REPORT: TRANSPORTATION AND CIRCULATION

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LIST OF ACRONYMS AND ABBREVIATIONS

2030 Plan	MTC's Transportation 2030 Plan for the San Francisco Bay Area
ADT	Average Daily Traffic
BDR	Napa County Baseline Data Report
Caltrans	California Department of Transportation
CTC	California Transportation Commission
FDOT	Florida Department of Transportation
General Plan	Napa County General Plan
GIS	Geographic information systems
HCM	Highway Capacity Manual (Transportation Research Board 2000)
I-80	Interstate 80
LOS	Level of Service
mph	Miles per hour
MTC	Metropolitan Transportation Commission
NCTPA	Napa County Transportation Planning Agency
RTP	Regional Transportation Plan
SAFETEA	The Safe, Accountable, Flexible, Efficient Transportation Equity Act
SR 12	State Route 12
SR 29	State Route 29
SWITRS	Statewide Integrated Traffic Records System
TDM	Transportation Demand Management
TEA-21	Transportation Equity Act for the 21st Century
TIP	2005 Transportation Improvement Program
TSM	Transportation System Management
vph	Vehicles per hour

INTRODUCTION

Napa County (County) has traditionally been home to primarily rural agricultural communities. Recently, however, the transportation system in the County has seen unprecedented demands from increased tourism and overall population growth in the Bay Area. This chapter provides a discussion of the transportation and circulation conditions that currently exist on major transportation facilities in the County. In particular, the chapter provides a detailed discussion of the transportation and circulation issues in seven technical transportation areas in Napa County: roadways, transit, non-motorized transportation (bicycles and pedestrians), rail, traffic-calming programs, transportation demand management (TDM) programs, and Transportation System Management (TSM) programs.

This transportation and circulation chapter begins with a discussion of the policy considerations pertinent to transportation and circulation issues in Napa County. The chapter then discusses the methods used to collect and analyze various transportation data for various modes within the County, and the results of the effort. A description is provided of the methods used to identify and quantify roadway operations on a daily and peak-hour basis, the extent of the pedestrian and bicycle circulation network, and existing programs and policies to improve traffic operations and encourage non-motorized transportation and transit. Regional transportation and circulation trends are then discussed, followed by County transportation and circulation conditions. Finally, conclusions are drawn about transportation trends in the County.

SPECIALIZED TERMS USED

Several transportation technical terms are used herein. Below are brief definitions of these terms.

- *Average daily traffic (ADT)*. The total traffic volume during a given period is divided by the number of days in that period. Current average daily traffic volumes can be determined by continuous traffic counts or periodic counts. Where only periodic traffic counts are taken, average daily traffic volume can be established by applying correction factors such as for season or day of week.
- *Level of service (LOS)*. LOS is the different operating conditions that occur on a lane or roadway when accommodating various traffic volumes. It is a qualitative measure of the effect of traffic flow factors, such as speed and travel time; interruption; freedom to maneuver; driver comfort and convenience; and indirectly, safety and operating costs. It is expressed as a letter grade ranging from LOS A through LOS F. LOS A is a condition of free traffic flow with little or no restriction in speed or maneuverability caused by presence of other vehicles. LOS F is forced-flow operation at low speed with many stoppages.

POLICY CONSIDERATIONS

Existing transportation policies, laws, and regulations that would apply to this transportation and circulation issues in this baseline data report (BDR) are summarized below. This information provides a context for both the baseline conditions transportation analysis and the future transportation impact analysis that will be provided in the general plan.

FEDERAL

The Safe, Accountable, Flexible, Efficient Transportation Equity Act, or SAFETEA, was approved by Congress in July 2005 and signed into law by the President in August 2005. This law provides \$244 billion in guaranteed funding for federal surface transportation programs for the next 5 years, an average annual increase of 35% from previous years. This law replaces the Transportation Equity Act for the 21st Century (TEA-21), which expired in September 2003.

STATE

State guidelines generally set the framework for regional and local planning efforts. State law requires the regional and local planning agencies to develop and submit a Regional Transportation Plan (RTP) every 3 years to the California Transportation Commission (CTC) and the California Department of Transportation (Caltrans). The regional planning agency, the Metropolitan Transportation Commission (MTC) in the case of Napa County, has the option of submitting a previous RTP if it is deemed adequate, or submitting a revised version. The RTP is required to contain a policy element, an action element, and a financial element. Local and regional projects must be consistent with the adopted RTP in order to receive state and federal funding.

REGIONAL

The MTC's *Transportation 2030 Plan for the San Francisco Bay Area* (2030 Plan) is a long-range transportation plan for the nine-county San Francisco Bay Area (San Francisco, Alameda, Contra Costa, San Mateo, Santa Clara, Napa, Solano, Marin, and Sonoma Counties). The 2030 Plan sets priority for funding and implementation of transportation-related projects in the Bay Area.

The 2005 Transportation Improvement Program (TIP) is a list of transportation projects and programs to be funded and implemented over a minimum of the next 3 years and is required to be updated every 2 years. By law, the TIP must be fiscally constrained such that the amount of programmed expenditures does not exceed the amount of money expected to be available.



The transportation system in Napa County has recently seen unprecedented demands from increased tourism and overall population growth in the Bay Area.

Regional Measure 2 is a voter-approved transportation funding and expenditure plan that was passed in March 2005. This measure authorizes a \$1 increase on all state-operated bridges in the Bay Area to fund various transportation improvement projects. This measure is expected to generate approximately \$125 million annually.

LOCAL

The *Napa County General Plan* (General Plan) (adopted in 1983 and amended in May 1991) provides countywide goals and policies aimed at shaping the long-term transportation conditions in the County. The Circulation Element of the General Plan provides specific goals and policy guidelines related to circulation and land use, state highway routes and county roads, transit and paratransit, air transportation, rail service, navigable waterways, and nonmotorized transportation. The Scenic Highways Element provides policy guidelines related to maintaining public accessibility and safety for scenic highways in the County. Relevant policies from the General Plan are described below.

NAPA COUNTY GENERAL PLAN CIRCULATION ELEMENT

PLANNING GOAL 1

To develop a comprehensive circulation system coordinated with planned land uses as shown in the Land Use Element of the General Plan.

Policy Guidelines

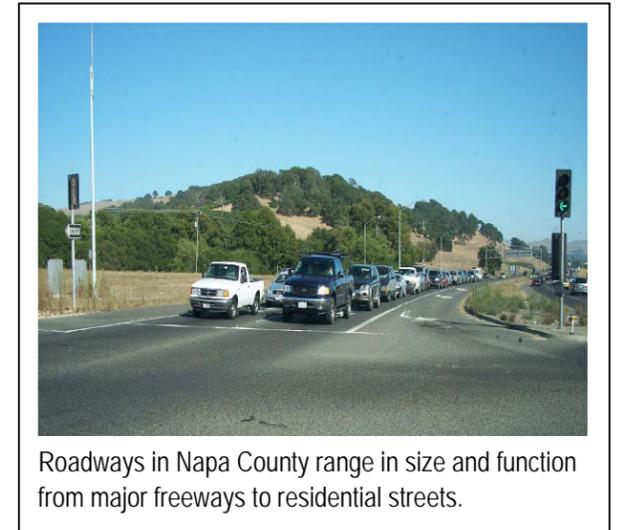
- 1b. The County should require that travel-related commercial services (i.e., gasoline stations, restaurants, and lodging facilities) along traffic arterials should be planned to avoid strip commercial development, in conjunction with the land use element. All associated transportation facilities should be planned in conjunction with the land use element.
- 1c. Create and enforce highway access standards regarding new driveways, including functional layout, location, and spacing, so as to minimize interference of major traffic flows by minor driveways. As discussed in Chapter 2 [of the *General Plan*], the County could specify that this issue be addressed, by developers and property owners, as part of the normal plan approval and environmental impact process.
- 1d. The transportation system should minimize disruption to residential neighborhoods and communities.
- 1f. The transportation system should provide access to commercial and industrial areas, recreational facilities, and other major trip generators, as appropriate.

PLANNING GOAL 2

Improve the County roadway system, including State Highway Routes, County roads and local streets (under County jurisdiction), to provide satisfactory levels of service, safety, and convenience in person and goods movement, with respect to the Land Use element of the Napa County General Plan. Such improvements should optimize the usefulness of the existing transportation system and be implemented in the most effective manner with respect to maintenance of environmental quality in Napa County.

Policy Guidelines

- 2a. Continue or commence planning and engineering activities to improve levels of service on the following critical links in the highway system. As levels of service increase, exposure to unsafe traffic conditions would decrease, therefore making the highway system safer for all concerned.
 - 2a(1) State Route 29 (SR 29), Yountville to St. Helena (widen to add left turn lanes). This improvement would increase peak-hour capacity by about 5 to 10%, reduce year 2000 peak-hour LOS from E/F to D, and increase average speeds.
 - 2a(2) SR 29, from American Canyon Road to State Route 12 (SR 12) (construct grade separated interchanges at State Route 121 (SR 121)/12, SR 121, SR 12, and American Canyon Road). These improvements would increase the capacity of SR 29 slightly (by about 5 to 10%), improve access to and egress from SR 29, improve average speeds, reduce congestion, and improve year 2000 peak-hour LOS from D/E to D.
 - 2a(3) American Canyon Road, from Interstate 80 to SR 29 (widen to four lanes). Peak-hour capacity would be improved from approximately 900 vph [vehicles per hour] (two-way) to 3,000 vph (peak direction) under this alternative, with a consequent improvement in year 2000 peak-hour LOS from F to C.
 - 2a(4) SR 121/12, Sonoma/Napa County line to SR 29 (widen to four lanes). This would increase peak-hour capacity from approximately 1,900 vph (two-way) to 3,200 vph (peak direction), thus improving year 2000 peak-hour LOS from F to B.
 - 2a(5) SR 12, Solano/Napa County Line to SR 29 (widen to four lanes). Peak-hour capacity would be increased to 3,200 vph (peak direction) from 1,900 vph (two-way), thus improving year 2000 peak-hour LOS from F to B/C.
 - 2a(6) Flosden Road, south of American Canyon Road (extend four lane section to American Canyon Road). Peak-hour capacity of this segment would be increased from 1,900 vph (two-way) to 3,200 vph (peak direction) with associated year 2000 peak-hour LOS improvement from F to C.
- 2b. Consider adding additional capacity to SR 29 between American Canyon road and the southern end of the Southern Crossing (from four to six lanes). Under this alternative, peak-hour capacity of SR 29 would be increased from 3,400 vph to approximately 5,100 vph (peak direction) with associated year 2000 peak-hour LOS improvement from D/E to B/C; increased safety would result from reduced traffic congestion
- 2c. Support continuing improvements to develop Soscol Avenue, in the City of Napa, as a major connection between Imola Avenue and Trancas Street. This would improve convenience, safety, and levels of service.
- 2d. Continue efforts to improve Silverado Trail between Trancas Street and SR 29 in Calistoga as a two lane arterial, consistent with applicable design standards for a two lane highway with a design speed of 45 miles per hour. The 45 miles per hour design speed is a County Transportation Planning Guideline. It should be considered a minimum to affect the greatest safety benefits. In conjunction with these improvements, continue to require highway improvements, such as separate left turn lanes where justified by projected or observed traffic generation at existing or new activity centers along Silverado Trail.
- 2e. Control the location, functional design, and spacing (relative to other roadways) of new driveways for new and expanding developments along SR 29 (Yountville to Calistoga) and Silverado Trail (north to Trancas Street) to optimize roadway capacity and minimize the interference caused by



Roadways in Napa County range in size and function from major freeways to residential streets.

side vehicular and pedestrian traffic. As discussed in Chapter 2, as the level of the “strip commercial” development increases, along with its associated driveways (mostly unsignalized intersections), roadway capacity decreases. Therefore, the approval of new or expanded developments should continue to be contingent upon a proper analysis of potential impacts relating to the development, especially with respect to driveway location and spacing with respect to other driveways and crossing roadways. Said controls and assessments should not be limited only to SR 29 and Silverado Trail, but should be applicable to other local arterial roadways. It would be appropriate to implement such controls in concert with Policy Guidelines 2a and 2d, and with the Goals and Policies of the Land Use Element.

- 2f. Implement a program of highway signage to direct drivers to use the Silverado Trail to reach certain destinations, to remove traffic from the sensitive section of SR 29.
- 2g. In light of the projected increase in the use of existing County highways, continue to perform periodical inspections, preventive maintenance, safety betterments and repairs, to the fullest extent possible with existing and projected financial resources.

Example: current projects include Petrified Forest Road and Silverado Trail. To partially alleviate congestion and improve safety, the section of SR 29 north of Calistoga should be included in the DPW’s current safety betterments program.

PLANNING GOAL 3

To encourage and support the development of local and regional transit services that effectively meet the needs of all segments of the population.

Policy Guidelines

- 3a. All public owned transit vehicles should be fully accessible and responsible to the needs of the elderly and handicapped population.
- 3b. Opportunities for coordinating the delivery of paratransit services should be maximized.
- 3c. The County should support efforts to coordinate schedules between the fixed route transit system in Napa and Greyhound Bus Lines, to improve intra-County and inter-County transit services.
- 3d. Expand the service coverage area for paratransit services operating in Napa County.
- 3e. Efforts should be made to link local transit services with transit systems in adjacent counties, to meet regional travel needs.
- 3f. The County and Cities should work cooperatively with interested wineries, local merchants and other private sector interests in evaluating opportunities for providing transit services to major recreational areas.
- 3g. To encourage transit and other forms of travel, the County and Cities should encourage developers to participate in transit improvements. Such improvements could provide justification for reducing the number of parking spaces provided for commercial and recreational/tourist oriented development projects.

PLANNING GOAL 5

To encourage the use of the existing rail in Napa County for the transport of goods and products.

Policy Guidelines

- 5a. The County should support all efforts to maintain and upgrade trackage in Napa County.
- 5b. All rail lanes and rights-of-way should be reserved for future transportation needs.
- 5c. To maximize opportunities for rail freight service, industrial development which could be served by rail should be concentrated in American Canyon Area on sites accessible to the railroad.
- 5d. The County should monitor the availability of railroad lines. Abandoned rights-of-way should be considered for use as pedestrian and bicycle paths.

PLANNING GOAL 7

To develop an integrated system of hiking paths and bicycle lanes where it is safe and financially feasible.

Policy Guidelines

- 7a. Hiking paths and bicycle lanes should be developed to meet both transportation and recreation needs. They should provide access to residential, employment, educational, commercial and recreation areas.
- 7b. Hiking paths and bicycle lanes should be integrated with nonmotorized transportation facilities in the incorporated cities of the County.
- 7c. To develop bicycle lanes and/or hiking trails the County should, where feasible, repave or widen shoulders when upgrading County roads and facilities.
- 7d. The development of bicycle lanes should be coordinated with the City of Vallejo Bikeway Master Plan, to facilitate inter-County bicycle travel on SR 29, Flosden Road and Elliott Drive.
- 7e. Design standards for the development, maintenance, and improvement of bicycle lanes should comply with the standards established by Section 2375 and 2376 of the Streets and Highway Code.
- 7f. A bicycle safety program for use in local schools and law enforcement agencies should be developed through a joint participation program including the County, Cities, and Unified School District.
- 7g. The County and Cities should continue providing bicycle storage and locking facilities near public buildings, and in parks and schools. Developers should be encouraged to provide such facilities in shopping and commercial areas. Bicycle parking should be provided free of charge. Funding sources such as bicycle license fees and meter revenues should be considered.
- 7h. Pedestrian and bicycle access should be integrated into all parking lots and considered in the evaluation of development proposals and public projects.

SCENIC HIGHWAYS ELEMENT

PLANNING GOAL

To provide for the protection of the scenic highway system through prevention maintenance and risk management programs, to ensure that public facilities are safe for public use and enjoyment.



The transportation system should minimize disruption to residential neighborhoods and communities.

Policies

1. The development of hike trails and bicycle lanes should be coordinated, when possible with scenic highway corridors.
6. Access and commercial development along scenic highways should be limited to prevent strip commercial development.

The *Napa County Bicycle Plan* is a countywide plan aimed at developing bikeway improvement needs. The plan was intended to develop a system of bikeway facilities to safely provide for bicycle travel for transportation and recreational purposes. Key goals of the Plan are as follows:

GOAL 1.0: PLANNING—Integrate bicycle travel in transportation planning activities and in transportation improvement projects; plan for a countywide integrated system of bicycle facilities.

GOAL 2.0: PHYSICAL FACILITIES—Safe, convenient, and continuous routes for bicyclists of all types.

GOAL 3.0: SAFETY AND EDUCATION—The improvement of bicycle safety through education and enforcement

GOAL 4.0: ENCOURAGEMENT—An increase in the acceptance of bicycling as a transportation mode that is a viable alternative to the automobile.

GOAL 5.0: IMPLEMENTATION—To maximize funding opportunities for implementation of the Napa Countywide Bicycle Plan.

METHODOLOGY

SELECTION OF STUDY AREA

Roadways in Napa County range in size and function from major freeways to residential streets. The purpose of this transportation and circulation analysis was to assess the adequacy and current operations of roadways in Napa County that serve a function of countywide significance.

The existing roadway network in Napa County was reviewed to determine which roadways would be included in this analysis and to divide the roadways of countywide significance into distinct segments with similar characteristics for purposes of analysis. This process was performed in collaboration with Napa County staff and yielded a total of 176 roadway segments. A map of the study roadway segments is shown in Map 11-1, and a map identifying roadway classifications is shown in Map 11-2 (all maps are presented at the end of this chapter). In addition, a GIS-based database has been created to manage the information.

TECHNICAL APPROACH

This analysis examines the existing conditions of several transportation components. For each component, this section describes the type of data collected, the methods by which they were collected, and the methodology by which the collected data was analyzed. The results of the analyses are described in the *Countywide Transportation and Circulation* section of this report.

The Napa County roadway system was divided into 176 roadway segments. Traffic volumes were provided by a number of different agencies: Napa County; the Cities of Calistoga, American Canyon, Yountville, Saint Helena, and Napa; Caltrans; and the Napa County Transportation Planning Agency (NCTPA). Counts provided by these agencies were supplemented based on recent transportation analyses conducted for development projects in the County.

Based on conversations with the County, the PM peak hour was selected as the critical peak hour for the transportation analysis. Traffic counts generally consisted of both daily and PM peak-hour traffic volumes, but counts were always available for at least one of these periods. When only either daily or PM peak-hour traffic volumes were provided, but not both, a factor was applied to estimate the missing data based on the percentage of daily traffic occurring in the PM peak hour at other nearby roadway segments. Daily and PM peak-hour traffic volumes were normalized to “Summer 2002” conditions based on seasonal and annual adjustment factors.

ANALYSIS METHODOLOGY

As discussed earlier, the concept of level of service, or LOS, provides a qualitative description of roadway operations in Napa County. The analysis of roadway operations was based on LOS methodology described in the *Highway Capacity Manual*, 2000 Edition (HCM) (Transportation Research Board). The specific methodology used was developed by the Florida Department of Transportation (FDOT). The “FDOT Tables” describe generalized LOS volume thresholds for both urban and rural roadways, based on daily and peak-hour volumes. The LOS thresholds are based on roadway and traffic composition factors such as speed, saturation flow rates, frequency of traffic signals, median type, number of lanes, truck percentages, and others. The daily and peak-hour volume LOS thresholds for different facility types are presented in Tables 11-1 and 11-2, respectively.

Napa County staff provided roadway facility classification. Based on the roadway classifications, number of lanes, volume LOS thresholds, and average daily and PM peak-hour traffic volumes, the typical weekday daily and PM peak-hour LOS was determined for each roadway segment.

Table 11-1. Napa County Roadway Segment Daily LOS Volume Thresholds

Facility Class	Lanes	Area Type	LOS A	LOS B	LOS C	LOS D	LOS E
Freeway	4	All	23,800	39,600	55,200	67,100	74,600
	6	All	36,900	61,100	85,300	103,600	115,300
	8	All	49,900	82,700	115,300	140,200	156,000
Arterial ¹	2	Rural ²	2,600	5,300	8,600	13,800	22,300
	2	Urban ³	1,000	1,900	11,200	15,400	16,300
	4	Rural ²	17,500	28,600	40,800	52,400	58,300
	4	Urban ³	1,500	4,100	26,000	32,700	34,500
	6	Urban ³	2,275	6,500	40,300	49,200	51,800
Collector ¹	2	All	1,067	3,049	9,100	14,600	15,600
	4	All	2,509	7,169	21,400	31,100	32,900

Notes:

¹ All two-lane roads are assumed to be undivided. Four- and six-lane roads are assumed to be divided.

² Rural roads are assumed as uninterrupted flow highways; FDOT Capacity Table 4-3.

³ Urban arterials are assumed to be Class III with >4.5 signals per mile; FDOT Capacity Table 4.1

Source: Adapted from Florida Department of Transportation 2002; and Fehr & Peers 2005

Table 11-2. Napa County Roadway Segment Peak-hour LOS Volume Thresholds

Facility Class	Lanes	Area Type	LOS A	LOS B	LOS C	LOS D	LOS E
Freeway	4	All	2,380	3,960	5,520	6,710	7,460
	6	All	3,690	6,110	8,530	10,360	11,530
	8	All	4,990	8,270	11,530	14,020	15,600
Arterial ¹	2	Rural ²	260	530	860	1,380	2,230
	2	Urban ³	100	180	1,070	1,460	1,550
	4	Rural ²	1,750	2,860	4,080	5,240	5,830
	4	Urban ³	150	390	2,470	3,110	3,270
	6	Urban ³	228	620	3,830	4,680	4,920
Collector ¹	2	All	70	180	870	1,390	1,480
	4	All	140	900	2,030	2,950	3,120

Notes:

¹ All two-lane roads are assumed to be undivided. Four-lane and six-lane roads are assumed to be divided.

² Rural roads are assumed as uninterrupted flow highways; FDOT Capacity Table 4-3.

³ Urban arterials are assumed to be Class III with >4.5 signals per mile; FDOT Capacity Table 4.1

Source: Adapted from Florida Department of Transportation 2002; and Fehr & Peers 2005



The relatively hilly terrain, beautiful scenery, and mild weather in Napa County make a physically challenging, yet attractive atmosphere for recreational cyclists.

COLLISION DATA

Collision history was reviewed for roadways in Napa County. Collision reports are compiled in the Statewide Integrated Traffic Records System (SWITRS). This analysis compiled all traffic collisions between January 2002 and December 2004. A subcategory of these collisions that occurred at or near intersections was developed, and the 20 intersections with the most collision incidents were identified. Finally, the primary collision factors were determined and reported for all traffic collisions in the County.

TRANSIT

The NCTPA expects to provide an existing transit network in an electronic, geographic information systems (GIS) file. However, this file was not available at the time of preparation of this document. Therefore, the locations of existing transit services were reviewed based on information published by the individual agencies to identify the level of transit service coverage within Napa County, and to identify gaps in service, if any.

NON-MOTORIZED TRANSPORTATION

Non-motorized transportation consists primarily of pedestrians and bicycles.

PEDESTRIANS

Because much of Napa County is rural agricultural land, walking is not a practical option for inter-city travel. Therefore, the development of comprehensive sidewalk networks within the County is primarily confined to within individual cities.

To identify locations in Napa County where pedestrian facilities have been provided, field visits were conducted to County roadways. Locations of existing sidewalk facilities within the study roadway system and major recreational trails were inserted into GIS and examined to identify gaps in the system.

The locations where the most collisions involving pedestrians had occurred were derived from the SWITRS database for the period between January 2002 and December 2004. The primary collision factor for all collisions involving pedestrians was identified.

BICYCLES

Napa County is home to both recreational cyclists and cyclists who use their bicycles for commuting. The relatively hilly terrain, beautiful scenery, and mild weather in Napa County make a physically challenging, yet attractive atmosphere for recreational cyclists. Cities in the County are typically relatively flat and provide a reasonable atmosphere for cycling. However, the distance between urbanized areas make inter-city travel via bicycle more difficult. The County roadway system includes off-street trails and paths, as well as on-street bicycle lanes and routes. Bicycle facilities are generally organized into the following groups:

Class I Bikeway (Bike Path). A completely separate facility designated for the exclusive use of bicycles and pedestrians, with vehicle and pedestrian cross-flow minimized.

Class II Bikeway (Bike Lane). A striped lane designated for the use of bicycles on a street or highway. Vehicle parking and vehicle/pedestrian cross-flow are permitted at designated locations.

Class III Bikeway (Bike Route). A route designated by signs of pavement markings for bicyclists within the vehicular travel lane (i.e., shared use) of a roadway.

Locations of existing bicycle facilities were obtained from the Napa County Bicycle Plan. The routes were classified as Class I, II, or III and entered into the County's GIS database.

In addition, the locations of highest incidents of collisions involving bicycles were derived from the SWITRS database for the period between January 2002 and December 2004. The primary collision factor for all collisions involving bicycles was identified.

RAIL

Rail transport in Napa County is almost entirely commercial and freight-serving, with some recreational rail use by the Napa Valley Wine Train. No commuter rail transportation currently exists in the County. Locations of existing rail facilities were provided by the County in GIS format. Due to the minor role that rail transport plays in the County, no further analysis was performed.

TRAFFIC-CALMING PROGRAMS

Traffic-calming programs are typically designed to address concerns about safety, noise, and quality of life issues related to vehicular traffic on neighborhood streets. They generally provide a formal process for the implementation of traffic-calming measures in neighborhoods to reduce speeds, accidents, or cut-through traffic.

Traffic-calming programs in place in Napa County were identified through consultation with Napa County staff. This consultation suggested that only the City of Napa had adopted a formal traffic-calming program. Conversations with City of Napa staff described the adopted program and also locations where specific programs had been implemented as part of the adopted program.

TRANSPORTATION DEMAND MANAGEMENT PROGRAMS

TDM programs are generally implemented to discourage use of single-occupant vehicles. They often involve transit incentives such as subsidized transit fares or shuttles from nearby transit facilities to major destinations.

Although important, transit does not play a major role in Napa County transportation. No formal TDM programs were identified in Napa County.

TRANSPORTATION SYSTEM MANAGEMENT PROGRAMS

TSM programs are typically intended to improve the efficiency of the existing transportation system capacity and include features such as changeable message signs and traffic signal coordination.

TSM programs were identified through discussions with Napa County and City of Napa staff. According to County staff, no other TSM programs exist outside of the City of Napa.

REGIONAL TRANSPORTATION AND CIRCULATION TRENDS

Based on a comparison of traffic volumes from the 1983 General Plan and the more recent traffic volumes provided by Caltrans for use in this analysis, traffic volumes on existing state highways entering Napa County have increased by 128%, or 6% annually, since 1982. This relatively high increase in traffic is largely due to growth in American Canyon and Solano County. This growth has caused traffic volumes on State Route (SR) 12, which connects American Canyon and Solano County, to more than triple over the last 20 years. Overall, the population of Napa County increased by approximately 25%, or 1.3% annually, between 1980 and 2000. This suggests that travel into and out of the County has outpaced the growth in Napa County population by nearly a five-to-one margin.

Census data also provides some interesting information regarding commute-related travel trends for County residents. Table 11-3 summarizes the journey-to-work data for County residents from 1980, 1990, and 2000. As shown, approximately 88% of County residents commute via automobile, compared with 86% in 1980. Although this is not a substantial increase, the number of single-occupant automobiles has increased from 69% in 1980 to 73% in 2000. This, along with rapid growth in Napa County and the Bay Area overall, has caused the average travel time to work to increase from 20 minutes in 1980 to over 24 minutes in 2000.

In many Bay Area communities, a major cause of increased commute times and congestion is that people now live farther from their workplace than in the past. However, as evidenced by the percentage of residents who work outside Napa County, the County does not seem to follow this trend. In fact, the number of Napa County residents who work outside the County has decreased from nearly 24% in 1980 to just over 22% in 2000.

Table 11-3. Changes in Commute Travel Demand for County Residents

Travel Characteristic	1980	1990	2000
Commute Mode Choice			
Single-Occupant Auto	68.8%	75.2%	72.7%
Carpool	17.2%	12.8%	14.8%
Public Transit	1.8%	1.1%	1.4%
Bicycling/Walking	7.6%	3.9%	4.1%
Other Means	2.0%	2.2%	1.9%
Work at Home	2.6%	4.8%	5.1%
Other Commute-Related Data			
Percentage Who Work Outside Napa County	23.7%	25.4%	22.2%
Percentage Who Work Outside 9-County Bay Area	0.3%	0.9%	0.9%
Average Travel Time to Work (Minutes)	19.7	21.4	24.3

Source: U.S. Census Bureau 2000

COUNTYWIDE TRANSPORTATION AND CIRCULATION

Based on the data collected as described earlier, the overall operations and characteristics of the existing Napa County transportation and circulation system were evaluated. The results of that evaluation are presented in this section.

DESCRIPTION OF ROADWAY NETWORK

The roadway network in Napa County comprises freeways, highways, arterials, collectors, and local streets. The functional capacity of these roadways is as follows. Freeways are high-speed facilities that move intercity or regional traffic, with access generally limited to grade-separated interchanges. Highways are also higher-speed, regional facilities, but access is provided at-grade in most cases. Arterials are high-volume facilities that connect the regional roadway network to the local roadway network, while collector streets typically connect residential and local-serving commercial areas with the arterial system. Existing classification of the Napa County roadway network is shown on Map 11-2.

Roadway classification and hierarchy are becoming an increasing concern in Napa County because they relate to access. Typically, roadways with higher capacity and function, such as Silverado Trail and SR 29, have relatively limited access both to improve the capacity of these facilities and to maintain safety. However, in Napa County, the Silverado Trail and SR 29, for example, have frequent driveways associated with numerous wineries. Cars turning into and out of these driveways impede traffic flow and create safety concerns.

This section describes the existing functional classifications of the roadway network in the County.

FREEWAYS AND HIGHWAYS

Freeways and highways, which are typically higher-capacity facilities, designed for major urban areas, or for travel between large urban centers, do not play a major role in Napa County transportation. Although there are several facilities in the County that function similarly to highways, such as SR 29 north of the City of Napa and the Silverado Trail, the County has classified these roadways as arterials. However, freeway facility does travel through Napa County.

Interstate 80 (I-80) is a major east-west freeway that crosses the U.S., originating in San Francisco and terminating in New Jersey. I-80 crosses the southeastern corner of Napa County, but does not have any interchanges in the County. Access between Napa County and I-80 is typically provided by SR 12 through Solano County or SR 29 through Vallejo. I-80 serves as a means for regional traffic to travel between Napa County and other portions of northern California and beyond. The portion of I-80 traveling through Napa County has an average daily traffic volume of 128,000 vehicles per day.

Overall, the population of Napa County increased by approximately 25%, or 1.3% annually, between 1980 and 2000. This suggests that travel into and out of the County has outpaced the growth in Napa County population by nearly a five-to-one margin.

Table 11-4 compares the commute characteristics of Napa County residents to those of California and the U.S. as a whole. Approximately 88% of Napa County residents commute in automobile. This is consistent with California (86% automobile commute) and overall U.S. (88% automobile commute) trends. One difference in the use of alternative modes is that in Napa County, a larger share of residents bicycle or walk to work and work at home compared to California and the U.S. Overall, the U.S. and California have larger portions of residents that commute via public transit than in Napa County.

Table 11-4. 2000 Census Journey to Work Results

Travel Characteristic	Napa County	California	U.S.
Commute Mode Choice			
Single-Occupant Auto	72.7%	71.8%	75.7%
Carpool	14.8%	14.5%	12.2%
Public Transit	1.4%	5.1%	4.7%
Bicycling/Walking	4.1%	3.7%	3.3%
Other Means	1.9%	1.0%	0.8%
Work at Home	5.1%	3.8%	3.3%
Other Commute-Related Data			
Percentage Who Work Outside County of Residence	22%	17%	27%
Average Travel Time to Work (Minutes)	24.3	27.7	25.5

Source: U.S. Census Bureau 2000

A section of SR 29 in the City of Napa is also a freeway, although the freeway portion is only approximately 2.5 miles long.

As mentioned earlier, although technically classified as arterials, portions of SR 29 north of the City of Napa, Silverado Trail, and SR 12, function as highways. Their main function in the County is to connect County urbanized areas together and to provide connections to other urbanized areas outside of the county. The conflict between their actual function and their hierarchical classification is becoming more noticeable as increased pressures for regional transportation conflict with increasing development along these roadways.

ARTERIALS

The primary function of arterial streets is to connect the regional roadway network with the local roadway network. In urban areas, limited access is usually provided to abutting parcels. Arterial streets are typically high-volume, high-speed roadways. Following is a list of the key north-south and east-west arterials in the County. Many of these roads have multiple names within Napa County.

- | | |
|-------------------------|------------------------|
| ■ North-South Arterials | ■ East-West Arterials |
| ■ SR 29 | ■ SR 12 |
| ■ Silverado Trail | ■ American Canyon Road |
| ■ Soscol Avenue | ■ Coombsville Road |
| ■ SR 121 | ■ Trancas Street |
| ■ Napa-Vallejo Highway | |

COLLECTORS

Collector streets serve as principal traffic arteries within residential and commercial areas. In rural portions of Napa County, many roadways that do not serve regional traffic serve as collectors by providing access between rural destinations and the regional roadway network of arterials, highways, and freeways. Following is a list of the key collectors in the County.

- | | |
|--------------------------|-------------------------|
| ■ North-South Collectors | ■ East-West Collectors |
| ■ First Avenue | ■ Oak Knoll Avenue |
| ■ Atlas Peak Road | ■ Oakville Cross Avenue |
| ■ Howell Mountain Road | ■ Deer Park Road |
| ■ Dry Creek Road | ■ Spring Street |
| ■ Solano Avenue | ■ SR 128 |

ROADWAY OPERATIONAL CONDITIONS AND DEFICIENCIES

The roadway network was evaluated to identify existing operational conditions and deficiencies using two analysis approaches: (1) roadway segment analyses, and (2) collision data. Analysis results indicated roadways in the southern portion of Napa County, particularly near and within the cities of American Canyon and Napa, are near their capacities. SR 29 is congested between Yountville and Saint Helena. Otherwise, the roadway system generally operates within its capacity. Below is a discussion of the results of the two analysis approaches.

ROADWAY SEGMENT ANALYSIS

The service level was determined for each roadway segment by comparing the LOS volume thresholds described in Tables 11-1 and 11-2 to the existing ADT and PM peak-hour volumes. Of the existing roadway segments included in the analysis, most operated at LOS D or better. However, the following segments operate at LOS E or F, indicating over-capacity conditions.

- Portions of SR 29 south of the City of Napa.
- SR 29 between the northern Yountville City limits and Bale Lane, north of Saint Helena.
- The Napa-Vallejo Highway south of the City of Napa.
- SR 12, west of SR 29.
- SR 12, near the eastern County Line.
- Flosden Road, south of American Canyon Road.
- American Canyon Road, east of SR 29.
- Imola Avenue, east of the Napa-Vallejo Highway.
- First Street, west of SR 29.
- Trancas Street, between Soscol Avenue and Silverado Trail.



Approximately 88% of Napa County residents commute in automobile. This is consistent with California (86% automobile commute) and overall U.S. (88% automobile commute) trends.

COLLISIONS

The transportation analysis of Napa County roadways also examined historical collision data for the period between January 2002 and December 2004. This analysis uses information provided in the SWITRS, published by the California Highway Patrol for years 2002 to 2004. This system compiles all reported collisions in the County and identifies the closest intersection.

The top 20 locations where traffic collisions were reported within Napa County are shown in Table 11-5. It should be noted that due to the rural nature of much of Napa County, the nearest intersection may be a considerable distance from the location of the collision. The data in Table 11-5 describes the top 20 general collision areas in Napa County. As shown in Table 11-5, nearly 75% of the collisions occurring within the top 20 general areas for traffic collisions in Napa County occurred along SR 29, including three fatalities.

Table 11-5. Top Traffic Collision Locations by nearest Intersection, January 2002–December 2004

Nearest Intersection	Collisions	Fatal	Injury
SR 29/Tubbs Lane	218	1	84
SR 29/SR 221	177	0	55
SR 29/SR 12	125	0	46
SR 29/SR 121	107	1	32
SR29/Imola Avenue	97	0	21
Jefferson Street/Pueblo Street	88	0	26
SR 29/Trancas Street	84	0	27
SR 29/American Canyon Road	69	0	15
Jefferson Street/Trancas Street	68	0	17
SR 121/Wooden Valley Road	68	0	32
SR 12/Kirkland Ranch Road	67	2	23
SR 29/Redwood Road	62	0	18
SR 29/South Kelly Road	60	0	28
SR 29/Rio Del Mar	54	0	16
SR 29/1 st Street	53	0	13
SR 29/Trower Avenue	49	0	18
SR 128/Silverado Trail	48	0	23
SR 29/Lincoln Avenue	46	1	20
Lincoln Avenue/Soscol Avenue	45	1	14
Redwood Road/Solano Avenue	44	0	8

Source: 2002–2004 SWITRS Data

Unsafe speed was the primary collision factor in approximately 43% of accidents, with other significant factors being improper turning and right-of-way violations.

When reviewing collision data, it is important to understand that as general activity at an intersection (traffic volumes, pedestrians, bicycles, etc.) increases, the chance of collision increases. Intersections with higher traffic volumes would be expected to have a proportionally higher number of collisions. Therefore, although an intersection in the tables below may have a high number of collisions, it is not necessarily indicative of a safety concern. Regardless, collision history is helpful when looking at countywide transportation safety.

Table 11-6 presents the 20 intersection locations with the most traffic collisions within Napa County. As shown in the table, 13 of the top 20 intersections in Napa County are in the City of Napa. However, the two intersections with most collisions are the intersections of SR 29/SR 121 and SR 29/SR 221. These two intersections represent 122 collisions, 32 injuries, and 1 fatality. The intersection of SR 29/SR 12 had 20 injuries, which is the intersection with the highest number of injuries. The intersections of SR 29/SR 121, Solano Avenue/Trower Avenue, and American Canyon Road/Flosden Road each recorded one fatality due to a collision between 2002 and 2004. Again, these top intersections also likely have higher traffic volumes, so the fact that they have more collisions does not necessarily mean that there is more of a safety concern at these intersections than at others.

Table 11-6. Top Intersection Traffic Collision Locations, January 2002–December 2004

Intersection	Collisions	Fatal	Injury
SR 29/SR 121	64	1	19
SR 29/SR 221	58	0	13
Jefferson Street/Pueblo Street	54	0	18
SR 29/Trancas Street	54	0	19
SR 29/American Canyon Road	53	0	9
SR29/Imola Avenue	51	0	13
SR 29/Redwood Road	48	0	12
Jefferson Street/Trancas Street	45	0	11
SR 29/Rio Del Mar	45	0	14
SR 29/SR 12	43	0	20
Lincoln Avenue/Main Street	40	0	14
SR 29/1st Street	39	0	9
Solano Avenue/Trower Avenue	38	1	18
Jefferson Street/Lincoln Avenue	37	0	10
SR 29/Trower Avenue	32	0	12
California Boulevard/Lincoln Avenue	30	0	8
Redwood Road/Solano Avenue	29	0	5
Lincoln Avenue/Soscol Avenue	28	0	9
American Canyon Road/Flosden Road	25	1	9
SR 29/South Kelly Road	24	0	14

Source: 2002–2004 SWITRS Data

The primary collision factors for the collisions shown in Table 11-5, representing 1,629 total collisions, are shown in Table 11-7. Unsafe speed was the primary collision factor in approximately 43% of accidents, with other significant factors being improper turning and right-of-way violations.

Table 11-7. Primary Collision Factors January 2002–December 2004

Intersection	Percent of Collisions
Unsafe Speed	43%
Improper Turning	11%
Automobile Right-of-Way Violation	7%
Unsafe Lane Change	5%
Driving or Bicycling Under the Influence of Alcohol or Drug	5%
Following Too Closely	5%
Unsafe Starting or Backing	5%
Traffic Signals and Signs	4%
Wrong Side of Road	3%
Unknown	3%
Other Hazardous Violation	3%
Not Stated	2%
Other Than Driver (or Pedestrian)	2%
Fell Asleep	1%
Improper Passing	1%
Other	1%

Source: 2002–2004 SWITRS Data

TRANSIT

Although transit does not play a major role in Napa County’s transportation system, there are a number of transit agencies that provide transit service in the County, including fixed-route local, intercity, and demand-responsive service (paratransit). Available transit service in the County is discussed below.

NAPA COUNTY VINE

The Napa County VINE is the primary public transportation system operating in Napa County. The VINE fixed-route and paratransit services connect passengers to attractions within the County and to the City of Vallejo in Solano County and the City of Santa Rosa in Sonoma County. Within Napa County, the VINE provides several services that are described below.

VINE CITY OF NAPA FIXED-ROUTE SERVICE

VINE City of Napa Fixed-Route Service operates seven fixed-routes within the City of Napa on weekdays between approximately 5:30 AM and 9:30 PM, on Saturdays and most holidays between 6:00 AM and 8:00 PM, and on Sundays between 8:15 AM and 6:00 PM. Headways are typically 1 hour during both peak and off-peak periods.

VINE INTERCITY FIXED-ROUTE SERVICE

VINE Intercity Fixed-Route Service operates two fixed-routes within Napa County. Route 10 travels the length of Napa County from Calistoga to the City of Vallejo in Solano County, with headways of 1 hour on weekdays, 1.5 hours on Saturdays and holidays, and approximately 2 hours on Sundays. Route 10 stops in the Cities of Calistoga, Saint Helena, Rutherford, Oakville, Yountville, Napa, American Canyon, and Vallejo. Route 11 operates between the Cities of Saint Helena and Santa Rosa in Sonoma County, with stops in the City of Calistoga. Route 11 operates three buses daily on Monday, Tuesday, Wednesday, and Saturday, with an average headway of approximately 4 hours.

AMERICAN CANYON TRANSIT FIXED-ROUTE SERVICE

American Canyon Transit Fixed-Route Service operates one fixed-route transit route within the City of American Canyon. This route travels a loop between SR 29/Napa Junction Road and SR 29/Sereno Drive, with average headways of 70 minutes on weekdays between 7:30 AM and 5:30 PM/ No service is provided on weekends.

YOUNTVILLE SHUTTLE

Yountville Shuttle operates a fixed-route shuttle route in Yountville between downtown Yountville and the Veterans Hospital west of SR 29. This service operates on 30-minute headways between 9:00 AM and 4:00 PM on Tuesdays through Sundays. There is no service on Mondays.

SAINT HELENA SHUTTLE

Saint Helena Shuttle operates a fixed-route shuttle route in Saint Helena between the Napa Valley College campus and Crane Park to the west. This service operates on headways varying between 45 minutes and 2 hours, depending on the time of day, and runs between 7:45 AM and 4:45 PM on weekdays. There is no weekend service.

CALISTOGA HANDY-VAN ON-DEMAND SERVICE

Calistoga Handy-Van On-Demand Service provides transit service within Calistoga and connections to the Napa County VINE system. The service is available on weekdays between approximately 8:00 AM and 5:00 PM and on Saturdays between 9:00 AM to 1:00 PM, with no service on Sunday. Service is available with 15- to 20-minute advance notice.

The pedestrian network in Napa County consists primarily of sidewalks and multi-use trails. Sidewalks are generally provided in developed residential and commercial areas, and are typically not provided in the lower-density, rural areas of the County.

NAPA COUNTY VINE GO PARATRANSIT SERVICE

Napa County VINE Go Paratransit Service provides curb-to-curb transportation to general public passengers in the “upvalley” communities of Calistoga, Saint Helena, Angwin, Yountville, and Deer Park. Persons with disabilities and seniors must be certified in order to ride in Napa and American Canyon. Reservations are required and may be made as far as 2 weeks in advance.

DOWNTOWN NAPA TROLLEY

The Downtown Napa Trolley operates a free trolley shuttle service within downtown Napa between the Downtown Premium Outlet Shopping Center to the west and the Napa Valley Expo to the east on Sundays through Wednesdays, with headways of approximately 45 minutes between 11:00 AM and 6:30 PM, and additional service until 8:00 PM on Sundays. On Thursdays through Saturdays, the Downtown Napa Trolley operates two routes within downtown Napa, with service to similar areas. On Thursdays through Saturdays, the Trolley operates with approximately 30-minute headways between 11:00 AM to 8:00 PM, with additional service until 10:00 PM on Fridays and Saturdays.

AMTRAK

Amtrak does not provide passenger rail service within Napa County. However, Amtrak operates fixed-route connector buses between the nearest rail stop in Martinez, California, to two locations in Napa. These connector buses are timed to arrive and depart Martinez conveniently, with respect to the train stops. At Martinez, passengers can connect to trains traveling to the Bay Area, the Central Valley, along the West Coast to Seattle, and across the country to the east coast.

INTERCITY BUS

Greyhound Bus Lines, a national bus company, ended service to Napa County in early 2005. There are no intercity buses in Napa County.

TAXIS

Taxis account for the remainder of the public transportation service in Napa County. Taxis are the only form of transit service during the night in the County. Fares are approximately \$2 per mile plus an initial \$2 fee. There is at least one taxi company based in the City of Napa and one in the City of St. Helena.

NON-MOTORIZED TRANSPORTATION

Relatively long distances between cities in Napa County make commuting between cities via bicycle difficult. However, most cities in the County are relatively flat, so there is potential for intra-city cycling to be used as a commute mode. The County's spectacular views and generally mild weather also make it an attractive location for more ambitious recreational cyclists.

With respect to pedestrian travel, most of the cities in the County, although small, have relatively dense development patterns, with small, walkable, and pedestrian-friendly streets, which make walking enjoyable as a form of transportation.

The City of Napa recently participated in a program initiated by the MTC to develop a “toolbox” of measures to improve pedestrian and bicycle safety.

With respect to pedestrian travel, most of the cities in the County, although small, have relatively dense development patterns, with small, walkable, and pedestrian-friendly streets, which make walking enjoyable as a form of transportation. The following discusses the County's existing bicycle and pedestrian systems.

PEDESTRIAN NETWORK AND COLLISIONS

The pedestrian network in Napa County consists primarily of sidewalks and multi-use trails. Sidewalks are generally provided in developed residential and commercial areas, and are typically not provided in the lower-density, rural areas of the County. Class I bicycle paths are usually designed as multi-use trails that can also be used by pedestrians. Other pedestrian facilities in the County include crosswalks and pedestrian-actuated signals at major intersections within developed areas.

Pedestrian collision data was obtained from the SWITRS database for collisions reported between January 2002 and December 2004. A total of 131 vehicular collisions involving a pedestrian were reported during this 3-year period, of which 113 resulted in injuries and three resulted in death. Approximately 79% of reported collisions occurred at intersections, while the remainder occurred at mid-block locations. Table 11-8 summarizes intersections in the County at which with either at least two injuries or at least one fatality has occurred as a result of collisions involving pedestrians. The intersection of Clay Street/Jefferson Street in the City of Napa has had five pedestrian-related collisions, the highest number of any intersection. The intersections of Jefferson Street/Pueblo Avenue and SR 29/Washington Street, each had three pedestrian-related collisions.

Table 11-8. Top Pedestrian Collision Intersection Locations, January 2002–December 2004

Intersection	Collisions	Fatal	Injury
Clay Street/Jefferson Street	5	0	5
Jefferson Street/Pueblo Avenue	3	0	3
SR 29/Washington Street	3	0	2
1st Street/Seminary Street	2	0	2
Jefferson Street/Rubicon Street	2	0	2
Jefferson Street/Sheridan Drive	2	0	2
Lincoln Avenue/Marin Street	2	0	2
3 rd Street/Soscol Avenue	2	0	1
Beard Road/Pueblo Avenue	2	0	1
Central Avenue/Jefferson Street	2	0	1
SR29/Fulton Lane	2	0	1
Mariposa/Pope Street	1	1	0
SR 29/Airport Road	1	1	0

Source: 2002–2004 SWITRS Data

Similar to automobile collisions, as the volume of pedestrians increases at an intersection, the chance of collision increases. Therefore, the list provided in Table 11-8 does not necessarily indicate that the intersections with the most collisions are less safe than the others. Rather, the number of pedestrians using them may be higher, creating more chances for, and therefore more occurrences of, collisions involving pedestrians.

The primary factors contributing to pedestrian-related collisions are listed in Table 11-9. As shown in the table, pedestrian right-of-way violation accounted for 44% of collisions involving pedestrians, while pedestrian violation accounted for 16% of collisions.

Table 11-9. Pedestrian Collision Factors January 2002–December 2004

Intersection	Percent of Collisions
Pedestrian Right-of-Way Violation	44%
Pedestrian Violation	16%
Unsafe Speed	9%
Not Stated	8%
Unknown	5%
Other Hazardous Violation	5%
Driving or Bicycling Under the Influence of Alcohol or Drug	3%
Unsafe Starting or Backing	3%
Wrong Side of Road	2%
Other Than Driver (or Pedestrian)	2%
Improper Passing	1%
Automobile Right of Way	1%
Traffic Signals and Signs	1%
Other Improper Driving	1%

Source: 2002–2004 SWITRS Data

BICYCLE NETWORK AND COLLISIONS

Napa County has a number of off-street trails and paths, as well as on-street bicycle lanes and routes. As discussed earlier, these bicycle facilities are categorized into three classes. Map 11-3 presents the County bicycle network, with the bicycle facilities color-coded by class. While bicycle facilities are often present in relatively new neighborhoods, older neighborhoods and rural areas of the County often lack adequate bicycle amenities. One example of older roadways providing inadequate bicycle facilities that occurs throughout the County is on bridges. Many east-west roadways in the County cross the Napa River. In rural areas, these roadways cross rivers and creeks on very narrow bridges, barely able to accommodate two cars passing. These narrow bridges squeeze bicyclists and cars together, forcing the bicyclists or cars to yield right-of-way to the other. Some options to address this issue suggested in

the *Napa County Bicycle Plan* include relocating the automobile bridges and maintaining the older narrower bridges as bicycle and pedestrian facilities and providing improved signage.

Bicycle collision information was gathered from the SWITRS database for the period from January 2002 to December 2004. A total of 219 vehicular collisions involving a bicycle were reported during this 3-year period, of which 176 resulted in injuries and 0 resulted in death. In general, 72% of bicycle collisions occurred at intersections. Table 11-10 lists all intersections in the County where at least two bicycle collisions were reported. The highest number of collisions (four) reported was at the California Boulevard/Trancas Street and Lincoln Avenue/Soscol Avenue intersections. The intersections of California Boulevard/Trancas Street and Jefferson Street/Pueblo Avenue each recorded three injuries related to collisions involving bicycles.

Table 11-10. Top Bicycle Collision Intersection Locations, January 2002–December 2004

Intersection	Collisions	Fatal	Injury
California Boulevard/Trancas Street	4	0	3
Lincoln Avenue/Soscol Avenue	4	0	2
Jefferson Street/Pueblo Avenue	3	0	3
SR 29/1 st Street	3	0	2
SR 29/Trancas	3	0	2
1 st Street/Freeway Drive	3	0	1
2 nd Street/Main Street	2	0	2
3 rd Street/Coombs Street	2	0	2
American Canyon Road/Broadway	2	0	2
Central Avenue/Jefferson Street	2	0	2
Claremont Way/Jefferson Street	2	0	2
Gasser Drive/Imola Avenue	2	0	2
Imola Avenue/Soscol Avenue	2	0	2
Jefferson Street/Sheridan Avenue	2	0	2
Mount Veeder Road/Redwood Road	2	0	2
Pueblo Avenue/Soscol Avenue	2	0	2
SR 29/Whitehall Lane	2	0	2
Trancas Street/Villa Lane	2	0	2

Source: 2002–2004 SWITRS Data

Table 11-11, which shows the primary collision factors for these collisions, indicates that 32% of bicycle-related collisions in Napa County during the 3-year analysis period were directly associated with cyclists riding on the wrong side of the road. Another 17% were related to automobile right-of-way violations.



Napa County has a number of off-street trails and paths, as well as on-street bicycle lanes and routes.

As part of the *City of Napa Traffic-Calming Guidelines*, a formal process for the implementation of traffic-calming measures was developed.

The City of Napa recently participated in a program initiated by the MTC to develop a “toolbox” of measures to improve pedestrian and bicycle safety. The MTC chose four cities in the Bay Area, one of which was Napa, to test the toolbox and develop recommendations. As part of the recommendations, the study recommended implementing “Bicycle Wrong Way” signs on the back of bicycle lane signs in the City of Napa to discourage wrong-way riding, which is listed as the top collision factor in the County.

Table 11-11. Primary Bicycle Collision Factors January 2002–December 2004

Intersection	Percent of Collisions
Wrong Side of Road	32%
Automobile Right-of-Way Violation	17%
Traffic Signals and Signs	11%
Improper Turning	10%
Unknown	8%
Other Hazardous Violation	5%
Unsafe Speed	3%
Driving Under the Influence of Alcohol or Drug	3%
Improper Passing	3%
Not Stated	3%
Unsafe Starting or Backing	2%
Other Improper Driving	2%
Pedestrian Right of Way	1%
Unsafe Lane Change	1%
Hazardous Parking	1%
Brakes	1%

Source: 2002–2004 SWITRS Data

With the recent adoption of traffic-calming guidelines, the City expects additional requests for traffic-calming implementation in the coming years.

RAIL

As discussed earlier, rail transportation in Napa County consists almost entirely of freight transport. The Napa Valley Wine Train is a recreational rail line operating between the cities of Napa and Saint Helena. This train does not serve as a transportation system. Rather, it is a recreational train that provides sightseeing opportunities and meals for patrons on its route.

The Counties of Napa and Solano jointly conducted a study, the *Napa/Solano Passenger/Freight Rail Study*, to assess the feasibility of passenger rail service in Napa and Solano Counties. That study identified a range of options for implementing passenger rail service in the two counties. However, to date, no funding has been identified and no formal implementation plan has been developed for passenger rail service in Napa County.

TRAFFIC-CALMING PROGRAMS

Within Napa County, the only formal traffic-calming program in place is within the City of Napa. The goal of this program is to “*protect residential neighborhoods from high-volume and high-speed traffic and its effect*” (*City of Napa General Plan*, Residential Streets, Policy Goal T-4). The *City of Napa Traffic-Calming Guidelines*, adopted on July 14, 2005, strive to meet this goal through a combination of parallel strategies known collectively as the “Three E’s.” The Three E’s are defined below.

Education. Information-sharing and awareness raising, targeting drivers, pedestrians, and cyclists about the safest, best ways to share the road.

Engineering. Physical measures constructed to lower speeds, improve safety, or otherwise reduce the impacts of automobiles.

Enforcement. Targeted police enforcement that supports neighborhood goals.

As part of the *City of Napa Traffic-Calming Guidelines* (Fehr & Peers 2005), a formal process for the implementation of traffic-calming measures was developed. Goals have also been defined to measure the success of implemented traffic-calming measures, such as 85th percentile speeds within 5 miles per hour (mph) of the appropriate speed limit, reduced severity/number of collisions, and reduced volume of cut-through traffic.

Neighborhoods that wish to have traffic-calming devices installed must submit a request to the City of Napa. The City will work with the neighborhood to identify the appropriate treatments and the data that must be collected. The neighborhood must then develop an implementation plan, identify a funding source, and achieve at least 80% support from affected neighbors.

Traffic-calming devices in the City of Napa have recently been installed on Luke Drive. The City also expects to install a traffic circle on East Avenue in late summer 2005. With the recent adoption of traffic-calming guidelines, the City expects additional requests for traffic-calming implementation in the coming years.

TRANSPORTATION DEMAND MANAGEMENT PROGRAMS

TDM programs generally include incentives for riding transit, disincentives for using single-occupant automobiles, and flexibility with respect to work schedules so that employees may commute during off-peak hours. These programs are usually implemented by employers or large attractions either voluntarily or as a requirement from local jurisdictions. According to Napa City and County staff, there are no formal TDM programs in place in Napa County.

TRANSPORTATION SYSTEM MANAGEMENT PROGRAMS

TSM programs generally include technological advances designed to enhance the capacity of the existing roadway network as an alternative to expanding the network. These programs can be as complex as traffic adaptive signal systems, in which traffic signal equipment monitors traffic volumes

and automatically adjusts timings over the entire network to respond to changes in traffic flow, and as simple as a changeable message sign or coordinated signals.

According to Napa County staff, the only TSM programs in the County are within the City of Napa. According to City of Napa staff, coordinated traffic signal systems are the primary TSM program in place in the City of Napa. Coordinated traffic signal systems generally occur along a corridor. Signals along this corridor are coordinated, so that their cycle length remains constant and “green time” that is not needed by the side streets during each cycle is automatically given to the through, or coordinated, movement. In the City of Napa, coordinated signals are located in the following corridors.

- Jefferson Street, from Clay Street to Third Street.
- Soscol Avenue, from Third Street to Vallejo Street.
- All downtown signals.

In addition to the above locations, the City is currently working to implement signal coordination at the following locations.

- Trancas Street, from Soscol Avenue to Solano Avenue.
- Lincoln Avenue, from Soscol Avenue to Solano Avenue.
- Jefferson Street, from Pueblo Avenue to Trancas Street.
- Imola Avenue, from Soscol Avenue to Gasser Drive.
- Soscol Avenue, from Magnolia Drive to Silverado Trail.

CONCLUSIONS AND REPORT UPDATE RECOMMENDATIONS

Napa County is going to experience increased pressure on its transportation system as development increases and tourism grows. As the County attempts to maintain its rural, agricultural identity while simultaneously accommodating likely growth in development and tourism, careful thought must be given to the relative trade-offs associated with these competing interests.

This section discusses conclusions regarding transportation in Napa County as well as the recommended procedure for updating the information described in this transportation chapter and the frequency at which it should be updated in order to maintain a current, working “existing conditions” or baseline database.

COUNTYWIDE

This transportation and circulation chapter documents and describes an analysis of the existing transportation system in Napa County. Overall, the system is beginning to experience pressures from both development and tourism. Although a relatively small portion of Napa County residents commute to jobs in other counties, compared to the national average, the average travel time to work has increased over the past 20 years in the County. This is likely due to an increase in the number of residents who commute in single-occupant vehicles and a decrease in the number who commute by carpooling, walking, and bicycling.

STUDY-AREA SPECIFIC

ROADWAYS

The level of service on many of the key inter-city roadways in Napa County, particularly SR 29 and SR 12 as well as several arterial roadways in the City of Napa is beginning to reach congested conditions. As pressure mounts to improve operating conditions, the County will likely face a dilemma regarding the trade-offs between widening roadways and maintaining its rural, agricultural character. Expansion of the development area on the edges of communities will also result in the need to refine the street network in these areas so that direct access to highways and arterials can be limited.

TRANSIT

Transit service in Napa County is currently minimal. Headways are often very long, and the number and frequency of inter-city routes make transit less attractive than private automobiles for travel within Napa County. The County General Plan update should address whether transit presents a viable alternative to the automobile as a means to reduce congestion without widening existing roadways. The major constraint to an effective transit system is having supportive (high density) land uses. The discussion of transit should take place as part of land use considerations.

NON-MOTORIZED

Given the relatively long distances between developed cities in Napa County, provision of inter-city pedestrian facilities is not likely a good investment of scarce transportation resources. However, within cities, sidewalks should be provided throughout developed areas to improve walkability for residents and visitors. Many cities in the County currently have a desirable combination of land use patterns and pedestrian facilities and are very walkable.

The bicycle network in the County is relatively sparse. This is likely due to the rural nature of many County roads and the hilly terrain in the County, which appeals mostly to relatively experienced cyclists. However, as shown in the collision analysis, nearly one third of all bicycle collisions in the County were

Napa County is going to experience increased pressure on its transportation system as development increases and tourism grows.

As pressure mounts to improve operating conditions, the County will likely face a dilemma regarding the trade-offs between widening roadways and maintaining its rural, agricultural character.

related to cyclists riding on the wrong side of the road. Additional marked bicycle facilities as well as improved wayfinding for cyclists may alleviate some of the wrong-way cycling in the County.

RAIL

The majority of rail service in Napa County is freight and commercial. There is one recreational rail system, the Napa County Wine Train, and no passenger rail service. Recent study has indicated that passenger rail service may be feasible in Napa and Solano Counties, although no funding has been identified, and no implementation program has been developed.

TRAFFIC-CALMING PROGRAMS

The City of Napa has recently adopted traffic-calming guidelines. These guidelines set a framework by which neighborhoods can organize and develop a traffic-calming proposal. If a neighborhood can identify a funding source and achieve an 80% support rate among all neighbors, traffic-calming measures can be implemented. The City expects requests to become more frequent now that it has implemented a formal program. According to Napa County, no additional formal traffic-calming programs exist in the County.

TRANSPORTATION DEMAND MANAGEMENT AND TRANSPORTATION SYSTEM MANAGEMENT

There are no formal TDM programs in the County. The only TSM programs in the County are in the City of Napa and include coordinated traffic signal systems at various locations in the City. TSM programs may be one way to increase the capacity of the existing roadway network in the County without widening roads.

APPROACH FOR UPDATING TRANSPORTATION INFORMATION

The methodology for performing the analysis presented in this report is described in the *Methodology* section above. For updating this chapter, each specific transportation area described herein should be reviewed and modified to reflect current conditions, if appropriate. For the existing traffic conditions section, traffic counts should be collected along each of the study roadway segments described in this report. These counts should be performed on typical summer weekdays, preferably Tuesday through Thursday, and the average of the 3 days should be reported.

The update should also consider whether new roads of countywide significance have been constructed since the most recent update and whether existing roads have changed functional characteristics.

Census data, collision statistics, locations of existing bicycle and pedestrian facilities, TSM features, TDM programs, and transit services should also be reviewed.

FREQUENCY OF UPDATE

To maintain an up-to-date traffic database, traffic counts should be no more than 3 years old. Thus, it is recommended that a regular monitoring program be implemented to collect traffic volumes at each of the count locations every 3 years. Alternatively, the traffic count locations could be split into thirds, with one third of the locations counted every year on a rotating basis. This would ensure that all counts are a maximum of 3 years old.

In addition, as other transportation studies are performed in the County, either for development projects or for infrastructure studies, the County should obtain copies of traffic counts and input them into the database.

Finally, when major roadway improvements are constructed or major development projects are implemented that have the potential to affect traffic volumes, new counts should be collected if they are not scheduled near the affected area within the upcoming year. This will ensure that major traffic pattern shifts are reflected in the existing conditions traffic counts database.

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The County attempts to balance its rural, agricultural identity with likely growth in development and tourism.

Map 11-1: Road Segments

Map 11-2: Road Classifications

Map 11-3: Bicycle Network